



HEALTH & SAFETY PROGRAM MANUAL

2016

Developed by:	YGS Occupational Health and Safety Committee	
Approved by:	Carolyn Relf, Director YGS	May 2016

Please note: Every employee of YGS is responsible for reading, understanding and adhering to the guidelines and information presented in this document, and you will be tested on this material periodically to ensure this has been achieved.

This document (and all other relevant references cited herein) can be found in the “G:\1275 Occupational Health & Safety\Safety” folder on the network.

YGS is committed to providing active leadership and support to develop and maintain:

- A health and safety program designed to prevent personal injury and property damage;
- A program that prepares all personnel to care for victims of an accident or sudden illness until professional medical help is available;
- A program that ensures the security, protection, and well-being of personnel and property in our offices, at the Core Library and in the field, by preventing and controlling physical violence and misconduct, theft and sabotage;

All staff endorse and actively participate in this vital program.

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CHAPTER 1: GENERAL HEALTH & SAFETY POLICIES

1.1 BACKGROUND

1.1.1 Legislation

In 2003, the Criminal Code of Canada was significantly amended under Bill C-45 with respect to the occupational health and safety duties and responsibilities of organizations, supervisors and managers. Under the amended Bill, individuals and organizations can be held accountable for the health and safety of anyone under their direction, and both organizations and individuals can be convicted of criminal negligence if they have not followed due diligence in implementing an adequate safety management program. This program must include policies, procedures and physical measures that communicate the potential risks involved for employees, and provide reasonable measures such as education, training and personal protective equipment to prevent bodily harm to any person.

This manual outlines the YGS health and safety management program. The manual is a work in progress as YGS is currently working to bring its health and safety management program up to COR (Certificate of Recognition) standards, as directed by the Yukon Workers' Compensation Health and Safety Board (YWCHSB) on March 29, 2007.

- For more information on the COR program, visit the Northern Safety Network website at:
<http://www.yukonsafety.com/cor-programs.htm>

1.1.2 EMR Occupational Health and Safety Committee

The Yukon Government's Department of Energy, Mines and Resources has an Occupational Health and Safety Committee dedicated to, among other things, preventing workplace injuries, investigating injuries and near-misses and implementing recommendations from those incidents. See the internal website for more information and minutes from committee meetings:

[G:\1275 Occupational Health & Safety\Safety\YGS_OHS_subcommittee](G:\1275 Occupational Health & Safety\Safety\YGS_OHS_subcommittee)

<http://www.healthandsafety.gov.yk.ca/>

The Yukon Geological Survey (YGS) representative on this committee is Carolyn Relf. Please direct any general questions or safety concerns to her, no matter how trivial. Alternatively, you can always direct your concerns to your immediate supervisor.

1.1.3 YGS Occupational Health and Safety Committee

YGS has an Occupational Health and Safety committee with a similar role to that of EMR's, but this committee focuses on branch-specific safety concerns and ongoing development of the YGS safety management program. All employees have the right to participate on the safety committee at any time, and all full-time staff will be rotated through to participate on the safety committee, with turnover occurring on a two- to three-year basis.

The committee members currently include:

Carolyn Relf (co-chair)	Jeff Bond
Olwyn Bruce	Sarah Laxton
Craig Nicholson	Rosie Cobbett

Minutes from committee meetings can be found on the network at: ***G:\1275 Occupational Health & Safety\Safety\YGS_OHS_subcommittee.***

1.2 STATEMENTS OF INTENT

The management of YGS is committed to providing active leadership and complete support in order to develop and maintain:

- A program designed to prevent human pain and suffering from personal injury and to prevent economic losses from property damage.
- A program that prepares all personnel to care for victims of an accident or sudden illness until professional medical help is available.
- A program that ensures the security, protection and well-being of personnel and property in our offices, at the Core Library and in the field, by preventing and controlling physical violence and misconduct, theft and sabotage.
- Complete endorsement, active participation, and enthusiastic cooperation of this vital program by everyone.

Employees at all levels, including management, are responsible and accountable for the organisation's overall safety initiatives. Complete and active participation by everyone, every day, in every job is necessary for the safety excellence for which YGS strives. YGS and senior EMR management support the coordination and cooperation of all workers concerning safety on the job.

Management encourages all employees to participate in the program and provides proper equipment, training and procedures. Employees are responsible for following all procedures, working safely, and, wherever possible, improving safety measures.

An injury and accident-free workplace is our goal. Through continuous safety and loss control efforts, we can accomplish this.

1.3 STATEMENTS OF RESPONSIBILITIES

The Yukon Occupational Health and Safety Act (2002) outlines the various legal responsibilities of the employer (Government of Yukon), supervisors and employees. These responsibilities are summarized below.

- The Act is available online at: <http://www.gov.yk.ca/legislation/acts/ochesa.pdf>

1.3.1 Employer's Responsibilities

The Employer's responsibilities are defined in section 3 of the *Occupational Health & Safety Act*:

3(1) Every employer shall ensure, so far as is reasonably practicable, that

- a) the workplace, machinery, equipment, and processes under the employer's control are safe and without risks to health;
- b) work techniques and procedures are adopted and used that will prevent or reduce the risk of occupational illness and injury; and
- c) workers are given necessary instruction and training and are adequately supervised, taking into account the nature of the work and the abilities of the workers.

3(2) Without limiting the generality of subsection (1), every employer shall, so far as is reasonably practicable:

- a) ensure that workers are made aware of any hazard in the work and in the handling, storage, use, disposal, and transport of any article, device, or equipment, or of a biological, chemical, or physical agent;
- b) cooperate with and assist safety and health representatives and committee members in the performance of their duties;

- c) ensure that workers are informed of their rights, responsibilities, and duties under this Act; and
- d) make reasonable efforts to check the well-being of a worker when the worker is employed under conditions that present a significant hazard of disabling injury, or when the worker might not be able to secure assistance in the event of injury or other misfortune.

1.3.2 Manager's Responsibilities

1. To provide information, instructions, and assistance to all supervisory staff in order to protect the health and safety of all the employees.
2. To understand and enforce the accident prevention policy as well as the Occupational Health and Safety legislation.
3. To provide all supervisory staff with an understanding of our accident prevention program as well as relevant Occupational Health and Safety legislation.
4. To provide all supervisory staff with proper, well maintained tools and equipment, as well as any other special personal protective devices that may be required.
5. To provide ongoing safety education programs and approved first aid training courses as required.
6. To monitor departments and projects and hold them accountable for their individual safety performance.

1.3.3 Supervisor's Responsibilities

1. To know and apply the firm's safety policy and relevant Occupational Health and Safety legislation.
2. To ensure that all employees are educated to work in a safe manner and that they use all protective devices and procedures required by this firm and by legislation to protect their health and safety.
3. To warn all employees of any potential or actual dangers and to advise them how to isolate, prevent, or remove such dangers.
4. To arrange for medical treatment when required, in the case of injury or illness, including transportation to a doctor or hospital when necessary.
5. To report all accidents immediately, to investigate all accidents fully, and to advise management on how to prevent similar accidents in the future.
6. To carry out regular inspections of the work place to ensure a safe and healthy environment.

Supervisors are essentially responsible for:

- Instructing workers to ensure their work is done without risk.
- Ensuring machines, tools and equipment are in good condition.
- Ensuring workers have and wear personal protective equipment.
- Advising workers of the actual and potential hazards in the workplace.
- Ensuring only trained and authorized people operate tools, equipment and machinery.
- Enforcing safety instructions and regulations on the job.
- Reporting all near-misses, accidents and injuries (both serious and minor).
- Correcting unsafe conditions, once identified.

Of particular note, the following orders were issued specifically to the YGS by YWCHSB on March 29, 2007:

"Supervisors shall, in accordance with the Occupational Health and Safety Act, Section 7, document or ensure that documentation is completed and a written record kept on file for workers under their direction and control for:

- orientation instruction for students and new employees;
- outlining of potential hazards they may encounter in the field;
- ensuring students and new employees are aware of the safety manual;

- briefings by helicopter pilots, and all of the various types of training, instructions, and briefings taken by workers that deal with their protection in the field; and
- near misses that field workers have encountered.

1.3.4 Employee's Responsibilities

1. To read, understand, and comply with this firm's safety policy, safe work practices, procedures, and rules.
2. To wear the safety equipment and personal protective devices and clothing required by legislation and their employer.
3. To notify their supervisor(s) of any unsafe conditions or acts that may be of danger to other workers or themselves.
4. To report all accidents, near misses and injuries to their supervisor(s) as soon as possible.
5. To take every reasonable precaution to protect the safety of other workers and themselves.

All employees must also:

- Take all necessary precautions to ensure health and safety of self and others in the workplace.
- Develop a personal concern for health and safety – for yourself and others, particularly newcomers and young people.
- Learn the proper methods and carry out work in a manner so as not to create a health and safety hazard to yourself or others.
- Assist in the reduction and control of accident and illness producing conditions.
- Correct hazards if possible, otherwise report hazards to supervisor.
- Suggest ways to eliminate hazards to your supervisor, co-workers or safety committee member.
- Use all appropriate safety clothing, equipment and devices.
- Use the correct tools and equipment for the job, keep them in good condition and report any defects.
- Stay off the worksite if impaired by drugs or alcohol.
- Read, understand and comply with the workplace health and safety procedures and instructions (as outlined in this section).
- **Report any accidents, incidents, near misses, injuries or illnesses to your supervisor.**
- Cooperate with health and safety committee members and representatives.

Minor Incident Reporting Action		Responsible Party			
		Employees	Supervisors	Safety Committee or Representative	Senior Management
1	Report any incident or near miss involving you, or another person, to a supervisor as soon as possible. Reporting can occur in person, by phone or by completing the Employee section of the “MINOR – Incident and Near Miss Investigative Report.”	X			
2	Render first aid when necessary.	X	X		
3	If necessary, arrange for transportation of anyone injured to a hospital, nursing station or medical professional.	X	X		
4	Investigate and complete the supervisor section of the “MINOR – Incident and Near Miss Investigative Report.”		X		
5	Send the completed report to the Safety Committee/Safety Representative for review and additional recommendations.		X		
6	Safety Committee/Safety Representative to forward the report (with further recommendations, if required) to senior management.			X	
7	Senior Management to review and decide further actions regarding the recommendations brought forward.				X
8	Senior Management to forward completed document to Safety Committee/Safety Representative for communication of any further actions and for filing.				X
9	Senior Management/Safety Committee/Safety Representative to communicate decision to supervisors.			X	X
10	Supervisor to communicate decisions and recommendations to employees.		X		
Note	If the injured worker sought medical attention and was assessed by a physician, nurse practitioner or nurse complete a Worker and Employer Report of Injury/Illness and forward to YWCHSB within 72 hours.	X	X		

This table is located at: <http://www.healthandsafety.gov.yk.ca/our-health-safety-system/incident-near-miss-investigating-reporting/investigating-and-reporting-minor-incidents-and-near-misses>

1.4 EMPLOYEES' RIGHTS

All employees have the following rights pertaining to health and safety in the workplace:

- To know safe processes and procedures.
- To know the hazards of their job.
- To know the safeguards from those hazards.
- To participate in the worksite safety program.
- To refuse work which they believe is unduly hazardous.

1.4.1 Worker's Right to Refuse Unsafe Work

At all times, you have the legal right to refuse unsafe work that you feel is unduly hazardous or for which you haven't been trained adequately, and which you or your supervisor cannot immediately correct.

If at any time you ever feel uncomfortable or unsafe in a situation, and/or you wish to refuse unsafe work, you must report this to your supervisor immediately so that appropriate action can be taken to either remedy the situation or develop better guidelines or training for similar potential situations in the future. You will never be judged or frowned upon for bringing up safety concerns.

1.5 REPORTING INCIDENTS AND NEAR-MISSES

As highlighted above under the Occupational Health and Safety Act, and as required by the YWCHSB Order dated 29 March 2007, **all "near-misses", safety concerns and injuries must be reported.** A near-miss is any incident that had the potential to cause significant personal injury, property damage or both.

Near-misses and safety concerns should be reported immediately to your supervisor using the "YGS Incident Report" form provided in Appendix 1. Appropriate action will then be taken to deal with the situation by either remedying it, or developing better procedures for avoiding similar situations in the future.

- When in the field, crew chiefs must document all incidents in their daily log book and report them verbally at their next telephone or radio check-in. Completed "YGS Incident Report" forms must then be submitted in the office at the next available opportunity (either in person or in the mail).
- **If anyone is actually injured while at work (whether in the field or in the office), both YGS Incident Report forms and YWCHSB Worker's Report of Injury/Illness forms must be completed immediately and submitted to your supervisor.** It is not necessary to file a YWCHSB Worker's Report of Injury/Illness if you did not need medical attention off the worksite or if you did not lose work time beyond the day of your injury/illness.
- If property loss or damage over \$1000 occurs as a result of an incident, a Yukon Government Damage and Loss Report must also be completed and submitted to your supervisor.

1.5.1 Employee Reporting Responsibilities

Type of Incident	Required Action	Paperwork
Lost/damaged equipment <\$1,000	Inform supervisor	
Lost/damaged equipment >\$1,000	Inform supervisor	YGS Incident/Near-miss Report <u>and</u> Yukon Government Damage & Loss Report
Any incident involving a vehicle (regardless of damage)	Inform supervisor	Will vary depending on nature of incident (e.g., whether other drivers were involved; nature of damage and/or injuries; etc.)
Near miss or minor incident	Inform supervisor	YGS Incident/Near-miss Report
Minor Injury (no medical attention required/no lost time)	Inform supervisor	YGS Incident/Near-miss Report
Injury (medical attention required and/or lost work time)	Inform supervisor	YGS Incident/Near-miss Report <u>and</u> YWCHSB Worker's Report of Injury/Illness

1.6 RULES, INVESTIGATIONS AND DISCIPLINE POLICY

1.6.1 Background

Under Federal Bill C-45, individuals and organizations are accountable for safety in the workplace, and both can be convicted of criminal negligence if they fail to implement an adequate safety management program.

Employees who fail to comply with YGS' safety policies and practices as outlined in Section 1.3.4 of this document, may be disciplined as outlined in the Collective Agreement.

1.6.2 Purpose

The purpose of this policy is to define a process for investigating incidents involving YGS personnel or individuals working on projects for which YGS is providing funding or logistical support. It further identifies disciplinary measures that may be applied in cases where an incident is caused by negligence of a YGS employee.

1.6.3 Investigations

Yukon Geological Survey's Health and Safety committee reviews all Incident Reports filed by employees and individuals collaborating with employees on YGS projects and, where appropriate, provides recommendations for training and/or modified safe practices and procedures to reduce the risk of a recurrence.

An investigation is a more rigorous examination of an incident, and involves not only a review of the Incident Report, but an examination of all relevant records including but not limited to: training, minutes of safety meetings, notes and recordings taken during and following the incident, and interviews with affected parties. The purpose of an investigation is to identify the underlying cause(s) of the incident, determine whether human error, negligence or malice contributed to the incident, and to determine what corrective action will prevent recurrence.

Investigations will be carried out by a sub-committee of the Health and Safety Committee, comprising the Director and two other members, to be appointed by the Committee. They will be undertaken for any incident involving death, serious injury¹, or loss/damage of equipment valued at over \$10,000. An investigation may also be triggered by any employee at their request.

If an incident happens in the field, the crew chief or an uninjured employee is responsible for documenting the incident in detail, including photographing the site and interviewing witnesses as appropriate.

In addition to its own investigation, YGS will cooperate and provide support as required to all external investigations by the Workers' Compensation Board, the RCMP, Fire Marshall, or other organizations. If the investigation leads to legal proceedings, the evidence and findings of the YGS investigation sub-committee may be used in court.

The following general procedure will be used by the investigation sub-committee when investigating an incident:

1. Get the "big picture" of what happened.
2. Examine equipment/materials involved.
3. **Preserve the evidence** - collect and safeguard any physical evidence. Where practicable, the scene of any accident should be left untouched, except for activity necessitated by rescue work or to prevent further failures or injuries, until the accident has been investigated.

¹ "Serious injury" is defined here as any injury that requires advanced medical care beyond basic first aid (e.g., medical evacuation from the field and/or extended hospital care).

4. Take photographs of the scene.
5. Interview witnesses and obtain written statements where appropriate.
6. Analyze all the available information to determine the causes.
7. Look for causes where "the system failed the worker," not only for those where "the worker failed the system."
8. Determine what corrective action will prevent recurrence.
9. Complete a report outlining the findings.
10. Follow-up to ensure corrective action is completed.

Whenever an incident requiring investigation occurs in the field, the crew chief or the most senior uninjured employee is responsible for carrying out steps 3 through 5 above (preserving evidence, taking photographs and interviewing witnesses), and that all related notes, photographs and documentation are forwarded as soon as possible to the YGS Director.

Note: Accident/Incident Investigations are **not** conducted to fix blame. They are conducted to find facts to help prevent recurrence.

1.6.4 General Rules

Employees must be aware of their responsibilities regarding workplace safety, as outlined in Section 1.3.4 of this Chapter, and are required to follow the Safe Work Practices outlined in Chapter 4 of this manual. The safe work practices address specific hazards associated with various tasks, and provide specific instructions outlining how to carry out work in a safe manner.

1.6.5 Discipline of Employees

While a number of disciplinary "tools" exist within Yukon Government, it is not the intent of this policy to define rigid, prescriptive standards for applying them. Furthermore, without specific guidance from Human Resources, it is not clear which of the following disciplinary measures would be applied by the Investigation Sub-committee, as opposed to the manager or director. The following is a list of disciplinary measures and the types of offence that might trigger their application.

Training:

- Near miss or incident for which additional training may reduce likelihood of a recurrence
- Consequences of incident relatively minor

Verbal Notice:

- Near miss or incident for which incumbent had adequate training and chose to take risk
- Consequences of incident relatively minor but with potential to have been significant

Written Notice:

- Near miss or incident for which incumbent had adequate training and had previously received verbal notice
- Consequences of potential significance
- Repetition indicates lack of understanding of responsibilities

Suspension:

- Near miss or incident for which incumbent had adequate training, had received verbal and written notice, but failed to change behaviour to reduce risk
- Consequences of potential significance

Dismissal:

- Repeated risky behaviour that demonstrates lack of respect for safety program regardless of consequences

Legal Action:

- Negligence in ensuring due diligence and fulfilling responsibilities regarding safe work practices, resulting in injury, death or destruction of property

1.6.6 Discipline of Non-YGS Employees

YGS lacks the authority to discipline non-employees; however, it may write a letter and provide a copy of the Incident and Investigation Reports to the individual's employer. Furthermore, if an individual is found to have caused an incident through willful negligence, YGS employees will no longer be able to work with that individual and YGS will no longer provide funding or support for that individual. Depending on the severity of the incident, YGS may pursue legal action.

CHAPTER 2. TRAINING POLICY

2.1 PURPOSE

The purpose of this policy is to ensure that all personnel within Yukon Geological Survey receive appropriate safety-related training and regular refresher or recertification courses. This will help to prevent or minimize human injury and loss or damage to property and/or the environment which may occur while personnel carry out job duties.

2.2 POLICY

- Yukon Geological Survey will provide and ensure that all YGS personnel participate in relevant safety training which includes, but is not limited to, that outlined in Table 1.
- The cost of all safety training will be covered by the department.
- Additional training may be provided upon request for personnel who wish to take additional safety-related training or more frequent recertification courses than what is specified in Table 1.
- In order to ensure the safety of YGS staff, non-YGS employees accompanying YGS personnel in the field (such as guests, volunteers and university research partners) must be able to demonstrate they have received training equivalent to that of YGS field staff by filling out the safety training record in section 12.5. Please see Chapter 12 for further details.

2.3 SAFETY TRAINING REQUIREMENTS

See Table 1 on next page.

Table 1: YGS Safety Training Requirements

Number	Category	Details (certification standard, content, length)	Formal Certificate Required?	Mandatory (M) or Encouraged (E)?	For Who?	Recertification Requirement	Possible Training Providers
ADMINISTRATIVE TRAINING FOR OFFICE AND FIELD STAFF*:							
1	YGS Safety Program	New employee orientation, <u>on first day of hire</u> - a brief overview of YGS safety program, office policies and emergency procedures		M	all staff		Immediate supervisor or YGS Operations Manager
2		Detailed overview of YGS office safety policies and protocols (hazard assessments, safe work practices and procedures)		M	all staff	annual	Pre-field all-staff meeting
3		Detailed overview of YGS field safety policies and protocols (hazard assessments, safe work practices, and procedures)		M	field staff *	annual	Pre-field all-staff meeting
4	Respectful Workplace	Harrassment awareness/prevention (1-day course)	Y	M	all staff (indeterminate only)		YG/PSC
5	Safety Management	Principles of Health and Safety Management (1-day course) - for safety committee members	Y	E	safety committee staff		Northern Safety Network
6	Corporate Safety	Detailed overview of EMR safety Program and requirements		M	All EMR staff		PSC/EMR
7	Safety Leadership	Leadership for safety excellence (1 or 2-day course) - for all supervisors and managers	Y	E	supervisory or managerial staff		Northern Safety Network

* Field staff are considered all indeterminate or determinate staff hired directly by YGS and who will be required to work in the field for any length of time

GENERAL FIELD TRAINING FOR ALL FIELD STAFF:							
7	First Aid	Red Cross Standard First Aid with CPR/AED Level C, or equivalent (16-hr course)	Y	M	field staff	8-hr course every 3 years, or as required by training agency	Red Cross (Yukon College), St. John Ambulance, Wilderness Medical Associates, Sirius, Arctic Response
8		Red Cross Advanced Wilderness and Remote Standard First Aid or equivalent (40-hr course) - <i>strongly encouraged in place of 16-hr course</i>	(Y)	M	field staff	20-hr course every 3 years, or as required by training agency	as above
9	Bear Awareness	Yukon conservation officers (1/2 day course) or "Safety in Bear Country" video		M	field staff	annual	YG Environment - Conservation Officers
10	Wilderness Readiness/Survival	Wilderness survival course (1 or 2 days) or equivalent field experience		M	field staff		YG/PSC
SPECIALIZED FIELD TRAINING ONLY FOR FIELD STAFF INVOLVED WITH SPECIFIC ACTIVITIES, MATERIALS OR ENVIRONMENTS LISTED BELOW:							
11	Firearms	Canadian Firearms Safety Course (PAL)	Y	M	field staff		RCMP
12		Shotgun awareness (1/2 day) - handling and firing procedures, static and moving target practice		M	field staff		YG Environment - Conservation Officers
13		Shotgun proficiency - review of handling and firing procedures and demonstrated target practice proficiency (range or field practice)		M	field staff	annual (following completion of #12)	YGS field supervisor
14		Handgun proficiency - review of handling and firing procedures, and demonstrated target practice proficiency		M	field staff with a restricted firearms license	annual	YGS field supervisor

Number	Category	Details (certification standard, content, length)	Formal Certificate Required?	Mandatory (M) or Encouraged (E)?	For Who?	Recertification Requirement	Possible Training Providers
SPECIALIZED FIELD TRAINING ONLY FOR FIELD STAFF INVOLVED WITH SPECIFIC ACTIVITIES, MATERIALS OR ENVIRONMENTS continued:							
15	Aircraft	Comprehensive aircraft safety course (2 days), including aircraft entry/exit, hands-on helicopter toe-in entry/exit, and underwater aircraft egress	Y	M	field staff		Rescue Canada, Arctic Response, YG - Wildland Fire, YG/EMR - CM&I
16		Aircraft orientation refresher course (1/2 day) or equivalent, including hands-on helicopter toe-in entry/exit		M	field staff	Every 3 years (following completion of #15)	Rescue Canada, Arctic Response, YG - Wildland Fire, YG/EMR - CM&I
17		Aircraft safety orientation delivered by pilot each time staff fly with new pilot, aircraft or crew members		M	field staff		pilot
18	Boats	Pleasure Craft Operator	Y	M	field staff using small boats		Yukon College or online course approved by Transport Canada
19		Power Boat Handling Proficiency - e.g. , Marine Emergency Duties (MED) A3, Small Vessel Operator Proficiency (SVOP) or equivalent	(Y)	M	field staff using small boats		Transport Canada, Canadian Power and Sail Squadron, Raven Rescue, YG/PSC
20		Canoes - Introduction to Moving Water	Y	M	field staff using small boats		Arctic Response
21	Summer Driving	All terrain vehicles - ATV Safe Handling (1 day)	Y	M	field staff using ATV's		Canada Safety Council, YG/EMR - CM&I
22		Overland 4x4 Driving - winching, jacking, stream crossing, rough roads		M	field staff using ATV's		YG/PSC
23		Defensive Driving (city and highway)		E	field staff using ATV's		
24	Winter Travel	Winter Driving - skid control		E	field staff		Arctic Response
		Snowmobile - safe handling		M	field staff using snowmobiles		Arctic Response
25		Working or skiing in avalanche terrain - Avalanche Skills Training Level 1 (AST1)	Y	M	field staff		Canadian Avalanche Association
26		Working on frozen lakes and rivers - Rescue 3 International Ice Rescue Technician course (2 days)	Y	E	field staff		Rescue 3 International: Arctic Response, Raven Rescue/Tatshenshini Expediting
27		Glacier travel and crevasse rescue		M	field staff working on or near glaciers		Parks Canada; Up North Adventures; Yukon College
28		Winter survival		E	field staff		
29	Hazardous Materials	Transportation of Dangerous Goods (TDG)	Y	M	field staff		Yukon College or online course approved by Transport Canada
30		Workplace Hazardous Materials Information System (WHMIS)	Y	M	field staff	Every 3 years	YGS or YG/PSC (Ralph Shopland)
31	Counter Balanced Forklift	Counter balanced forklift operator training (1 day)	Y	M	Warehouse Staff		Northern Safety Network, YMTA
32	Skid-Steer Loader	Skid-steer loader operator training (1 day)	Y	M	Warehouse Staff		Northern Safety Network, YMTA
33	Portable X-Ray Fluorescence Analyzer	NRCan Portable X-Ray Fluorescence Analyzer Operator training (1 day)	Y	M	Field Staff using the analyzer in the field	Every 3 years	Innov-x Canada
34	On-the-job task-specific training	Hands-on training in use of basic field equipment such as rock hammers, communications and GPS equipment		M	field staff	as required, at supervisor's discretion	Immediate supervisor

* Field staff are considered all indeterminate or determinate staff hired directly by YGS and who will be required to work in the field for any length of time



SEASONAL EMPLOYEE SAFETY DEBRIEF FORM

TO BE COMPLETED BY SEASONAL FIELD EMPLOYEES AT THE END OF THEIR WORK TERM:

ALL SEASONAL FIELD EMPLOYEES ARE REQUESTED TO PROVIDE FEEDBACK:

	QUESTION	COMMENTS
Y/N ☐ / ☐	Did you find the pre-field safety training you received prepared you adequately for the type of work you carried out over the summer?	
Y/N ☐ / ☐	Would you suggest any changes or additions to the training provided by YGS? (Elaborate in the space to the right, or on a separate page)	
Y/N ☐ / ☐	Do you feel that YGS recognizes and supports your rights regarding occupational health and safety?	
Y/N ☐ / ☐	Did YGS clearly articulate your responsibilities regarding occupational health and safety?	
Y/N ☐ / ☐	During your work in the field, did you encounter any situations that, in your opinion, were unsafe? (Elaborate in the space to the right, or on a separate page)	
Y/N ☐ / ☐	If you responded Yes to the above question, did you bring the situation to your supervisor's attention?	
Y/N ☐ / ☐	If you responded Yes to the above question, did you fill out an Incident/Near Miss report? (if not, please indicate the reason in the space to the right)	
Y/N ☐ / ☐	Did your field party hold regular field safety meetings? If so, please indicate frequency in the space to the right.	
Y/N ☐ / ☐	Do you feel you had opportunities to ask questions and/or raise concerns on issues related to safety?	
Y/N ☐ / ☐	I found the YGS Health & Safety Program manual to be a useful document	
Y/N ☐ / ☐	I would suggest making changes to YGS Health & Safety Program manual (Please elaborate below or on a separate page)	
NAME:		
SIGNATURE:		DATE:

Please add any additional comments in the space below or on a separate page.

CHAPTER 3. HAZARD ASSESSMENTS

Note: All employees are expected to read the entire manual upon hire, and a copy should be available in each field camp.

3.1 INTRODUCTION TO HAZARDS

3.1.1 Hazard Definition

A **hazard** is anything that could potentially cause physical injury to a person, including (but not limited to):

- Environmental factors (temperature, light, noise, dust, weather);
- Mechanical factors (electricity, chemicals, equipment/machinery/tools, fuels);
- Vehicle & transportation factors (car, truck, helicopter, ATV, snowmobile, boat);
- Biological factors (bears, snakes, insects, poisonous plants);
- Terrain factors (wet rocks, working under overhangs, working at cliff tops, fast water);
- Muscle strain causes (repetitive activities, poor posture or carrying heavy weights);
- Employee mental or physical fatigue

Note that any factor resulting in a slip, trip or fall is also considered a hazard.

3.1.2 Hazard Assessments

Hazard assessments must be performed for the following types of tasks:

- Any task that is associated with frequent accidents/incidents;
- Any task that has produced injuries resulting in fatality or leaving anyone disabled;
- Any task that has the potential for serious injury;
- New or recently changed tasks;
- Tasks that are seldom performed;
- Tasks involving new or unskilled workers.

3.1.3 Hazard Assessment Procedure

The procedure for performing hazard assessments is as follows:

1. Examination of how the task is performed or how a piece of equipment is designed.
2. Observations are made on how employees perform the task, and the task is broken down into basic steps.
3. The potential hazards associated with each step are identified. Each hazardous aspect of the task is considered, *e.g.*, electricity, pressure, leaks, fuels or explosives, noise, direction of movement, impacts, pinch points, stability of equipment, actions of others, work-site layout and weather.
4. Risk levels for each hazard are assigned using the criteria outlined below.
5. Control measures are identified that could be used to eliminate or reduce each hazard.
6. The hazard assessments and control measures are reviewed annually by employees who are familiar with the task and any necessary modifications to the guidelines are made.

3.2 HAZARD IDENTIFICATION

The YWCHSB order dated March 29, 2007 requires that all potential hazards that a field worker is likely to encounter are included in this safety manual.

Individual hazard assessments were carried out for the highest priority hazards. The hazard assessment followed by the safe work practices and job procedures are in Chapter 4 and can be viewed online at:

[G:\Safety\YGS_safety_manuals](G:\Safety\YGS_safety_manuals)

- These documents will be reviewed annually. Additional hazards, mis-information or shortcomings should be reported to the YGS safety committee immediately so that they can be updated.

3.3 FIELD HAZARD STATISTICS

Geological fieldwork, especially in frontier regions such as the Yukon, is inherently hazardous. The severity of potential consequences from risks is significantly increased due to working in wilderness, infrastructure-poor areas where transport and access to medical facilities is limited and time-consuming. Environmental and biological risks are also more prevalent in Yukon: temperatures range from well below zero to 30+ degrees Celsius depending on the month, time of day and altitude; the terrain and passage through vegetation are typically challenging; in season, insect infestations are more than bothersome; and wildlife encounters can potentially occur anywhere in the territory.

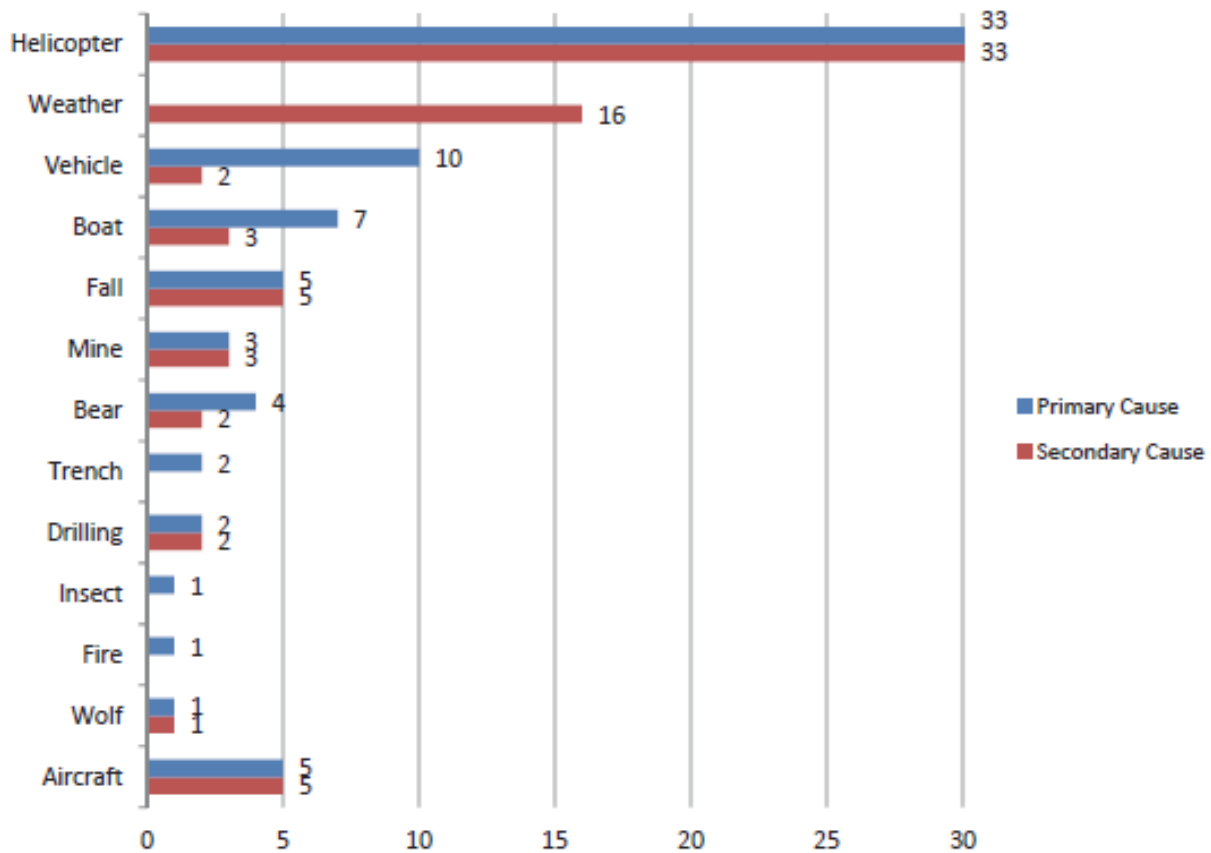
The following tables compare the risks that resulted in **lost-work** (from a survey of lost-work accidents during mineral exploration projects in BC between 1982 and 2004) and **fatalities** (occurring in the mineral exploration industry in western Canada between 1946 and 2004). The main points to note are: slips, trips and falls are the main cause of lost-work in the industry; the difference in aircraft statistics between the two groups suggests that accidents involving aircraft typically result in severe consequences and that despite the prevalent environmental and biological risks in Yukon, incidents involving insects/animal attacks/tree-falls are relatively infrequent.

LOST-WORK ACCIDENTS	
<i>(see p. 176 of Association of Mineral Exploration – BC field manual for complete breakdown)</i>	
46%	Slips, trips and falls
12%	Improper lifting
11%	Vehicle accidents
9%	Cuts
5%	Accidents involving the eyes
3%	Tendonitis
3%	Falling objects
2%	Infections
2%	Burns
2%	Aircraft
<1%	Each of: canoes, allergic reactions, animal attacks, tree-fall and frozen feet

FATALITIES	
<i>(117 fatalities, statistics in percentage format)</i>	
26%	Aircraft (21% helicopters, 5% fixed-wing)
23%	Avalanches
19%	Drowning (canoe capsize, crossing creeks, no life jackets, falling through ice)
8%	Asphyxiation in tunnels, pump-houses and shafts
7%	Falls from cliffs and into crevasses
4%	Vehicle and ATV
3%	Mudslides
3%	Lightning strikes
3%	Bear attacks
<1%	Each of: getting lost, tree-fall in wind storms, wasp sting

Data from the Canadian Mineral Exploration Health & Safety Annual 2010/2011 report highlights that helicopters are the prime cause of fatalities in exploration (see graph below). This graphic also shows that weather, as a secondary cause, should not be overlooked as a significant cause to exacerbating lost-work accidents and contributing to fatalities.

Figure 8: Fatalities in Mineral Exploration in Canada by Primary and Secondary Cause 1980-2011



3.4 RISK ANALYSIS CRITERIA

The following criteria were used to complete the hazard assessment forms in *Chapter 4*. The values and definitions are based on the Yukon Workers Compensation Health and Safety Board document entitled “A system for effective risk assessment and setting solution priorities.”

The Risk Score = Frequency of Exposure x Incident Probability x Potential Consequence

3.4.1 Frequency of Exposure (A)

How often are workers exposed to a risk of injury from this hazard?

10	Continuously (many times daily)
6	Frequently (approximately once daily)
3	Usually (once per week to once per month)
2	Occasionally (once per month to once per year)
1	Rarely (less than once per year, but has been known to occur)
0.5	Very Rarely (not known to have occurred, but is remotely possible)

3.4.2 Incident Probability (B)

Probability of an incident occurring if no safeguards were in place and a variety of workers of varied backgrounds were involved in the task:

10	Most Likely (fully expected if activity takes place)
6	Quite Possible (would not be unusual; has a 50/50 chance of occurring)
3	Possible (would be unusual)
1	Unlikely (would be unlikely, but has been known to happen)
0.5	Very Unlikely (conceivably possible, but has never happened after several years of exposure)
0.1	Almost Impossible (one-in-a-million chance; has never happened despite exposure over many years)

3.4.3 Potential Consequence (C)

Severity of the most probable consequence if an incident occurred:

100	Catastrophic (numerous fatalities; property damage > \$1 000 000; major disruption of workplace)
75	Grave (several (more than two) fatalities; property damage \$500 000 - \$999 999; major work disruption)
50	Severe (single fatality; property damage \$100 000 - \$499 999; work is likely disrupted)
30	Major (extremely serious injury or occupational disease or permanent disability; property damage \$1000 - \$99 999; work is likely disrupted)
10	Serious (disabling injuries, reversible tissue damage; property damage up to \$999; likely some work disruption / time loss)
2	Minor (cuts, bruises, irritations; minor property damage; work disruption is minimal / no time loss)
1	No injury

3.4.4 Risk Scoring

For each hazard, all possible relationships between consequence and probability are considered to determine the worst potential risk score.

Risk Score (D) and Risk Class (E)

Risk Score = Frequency of Exposure x Incident Probability x Potential Consequence (A x B x C):

Risk Score	Risk Class
>750	VH
250-750	H
90-249	M
20-89	L
<20	VL

3.5 HAZARD CONTROL MEASURES

Hazard control measures are required to eliminate or reduce hazards, and are also outlined in the hazard assessment forms. Control measures can be divided into three main categories: **engineering controls**, **administrative controls** and **personal protective equipment**.

Examples of engineering and administrative controls are shown below, but it should be noted that the majority of engineering controls are focused more towards equipment/machinery usage (e.g. in the core preparation and storage environment) than towards fieldwork. Personal protective equipment is only applied as a hazard control measure when engineering or administrative controls are not a viable alternative.

Engineering Controls <i>(elimination, substitution, isolation and ventilation)</i>	Administrative Controls	Personal Protective Equipment <i>(only provided when engineering or administrative controls are not a viable alternative)</i>
• ventilation systems • equipment redesign • specialized equipment • workspace design • lockout procedures • guards • monitoring and warning devices • noise control	• safe work procedures/practices • training and education • organizational rules • staff rotation or scheduling • clean, tidy workspaces • regular briefings, monitoring and follow-up • regular safety inspections • preventative maintenance program (including regular inspections, repair/replacement of parts and service records) • hiring practices • posting warning signs	• develop safe work procedures/practices • specify where and when PPE is required • specify which type of PPE is required • training on proper use and care of PPE • policy for use and enforcement • inspection of PPE equipment

Potential hazards can largely be controlled by 1) using appropriate and well-maintained equipment 2) adopting a 'Safety-first' approach to our work, 3) following safe work practices and job procedures. We look for hazards before an accident happens, and report 'near-miss' incidents. Getting hurt on the job is no fun, a lot of paperwork, and nobody likes to remain in camp or be reassigned because of an avoidable workplace injury.

Some safe work procedures are also outlined in the Association for Mineral Exploration British Columbia (AMEBC) Safety Guidelines (5th edition, 2013). An electronic version of the entire guidelines can be found at: G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals.

3.6 THE DIFFERENCE BETWEEN WORK PRACTICES AND JOB PROCEDURES

Safe work practices and safe job procedures are a critical component of the control measures required for most hazardous tasks. Several sets of safe work practices and safe job procedures have now been established at the YGS to provide guidelines for carrying out particular tasks safely; these are presented in Chapter 4.

Safe work practices provide a general overview, including advice on what to do (and not do), what to look out for, positions to take, movements to make, equipment maintenance and repair considerations.

Safe job procedures include specific details on: equipment and materials required, roles, responsibilities and training, as well as are step-by-step instructions to correctly perform the task. In most cases they are no substitute for experience and familiarity with the equipment.

Both work practices and job procedures were written by YGS staff familiar with the tasks and are annually reviewed by other YGS staff. They include websites with additional information or the applicable regulation.

CHAPTER 4. WORKPLACE HAZARDS, SAFE WORK PRACTICES AND SAFE JOB PROCEDURES

4.1 INTRODUCTION

This chapter presents risk analyses and best practices/procedures for activities undertaken by the Yukon Geological Survey (YGS). These documents have been developed by YGS employees familiar with each activity. All documents are reviewed and updated annually by revolving staff members to ensure that the collective corporate experience is integrated.

This chapter is arranged into four sections, based on the general location and season of business activities.

- **4.2 OFFICE ENVIRONMENT**
- **4.3 CORE LIBRARY (storage and working with samples, core and other materials)**
- **4.4 TRANSPORTATION**
- **4.5 FIELD ACTIVITIES**
- **4.6 WINTER FIELDWORK AND TRAVEL**

Within each of these sections, hazard assessment tables outline conceivable hazards associated with each aspect of YGS' work. Coloured boxes in these tables indicate the relative level of risk for each activity (see Chapter 3 for more information).

Following the hazard assessment tables are 'Safe Work Practices' (guidelines) and 'Safe Job Procedures' (step-by-step instructions) for many of these activities. Some Safe Work Practices and Safe Job Procedures are applicable to and therefore repeated in multiple sections. The YGS Safety Committee is proud of the accumulated wisdom this chapter represents, trusts that by reading it your understanding of the job and hazard awareness improves, and is confident that it will become a valuable resource for your work.

Please direct constructive criticism and comments to any member of the YGS Safety Committee (revolving membership; incumbent list in chapter 1).

4.2 OFFICE WORK



HAZARD ASSESSMENT & CONTROL REPORT

Date Completed: March, 2010

Reference No: HA-O

Completed By: J. Chakungal

Version: 2014-1

Last Reviewed By: J. Bond

Date Reviewed: 12/04/2016

General Activity or Task: **Office Work**

Worksite: **Whitehorse offices (Elijah Smith Building, K-10 & K-102), H.S. Bostock Core Library (K-14)**

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1) (0.5 to 10)	Incident Probability (See Note 2) (0.1 to 10)	Potential Consequence (See Note 3) (1 to 100)	Risk Score (A x B x C) (0.05 to 10 000)	Risk Class (See Note 4) (VH, H, M, L, VL)				
O01	Obstruction of passageways	injury due to obstruction of passageways (i.e. rocks, rock pails, hammers, chairs, display cases and boxes);	10	6	10	600	H	n/a	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-0166
O02	Hazardous material storage	injury caused by exposure to hazardous materials in office space (i.e. bear spray, chemicals)	1	0.5	30	15	VL	Establish designated area for storage of hazardous materials.	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016
O03	Falling objects	injury caused by large and/or heavy objects falling from high places (i.e. bookshelves or filing cabinets) during earthquake or otherwise	1	1	30	30	L	Do not store large and/or heavy objects on book shelves or filing cabinets.	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016
O04	Muscle strain	injuries sustained from trying to reach large and heavy object stored in high places (i.e. bookshelves or filing cabinets)	1	1	30	30	L	Replace tall bookshelves with shorter ones; bolt book shelves into wall.	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016
O05	Kitchen cleanliness	illness caused by unsanitary kitchen area	5	3	10	150	M	Install hand sanitizer dispensers, keep supply of cleaning agents on hand.	Safe work practices. Regularly scheduled office inspections. Clean dishes after using them; maintain regular fridge and microwave cleaning schedules.		SWP-016
O06	Bathroom cleanliness	illness caused by unsanitary restrooms	5	3	10	150	M	Install touchless sinks and paper towel and soap dispensers.	Safe work practices. Regularly scheduled office inspections. Wash hands thoroughly after each visit to the restroom.		SWP-016
O07	Electrical cords	tripping over exposed electrical cables and extension cords	1	3	30	90	M	Hire electrician to move power sources rather than using extension cords.	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016
O08	Electrical plugs/sockets	injury or fire caused by plugs and/or sockets in poor working order or misused	1	3	45	135	M	Building maintenance	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016
O09	Baseboard heaters	fire caused by objects (papers, wires, furniture etc.) in contact with baseboard heaters	2	1	50	100	M	Installation of fire alarms	Safe work practices. Regularly scheduled office inspections conducted by a member of the safety subcommittee.		SWP-016

O10	Harassment or violence	Any premeditated and/or unwelcome behaviour directed at and offensive to another person. Could be violent, sexual, passive aggressive and/or racial/sexual discrimination.	1	1	30	30	L	n/a	Training and safe work practices.		SWP-016, SJP-T09; YG respectful workplace training mandatory for full time employees.
O11	Ergonomics	tendonitis, eye strain, carpal tunnel syndrome, back and shoulder pain	10	6	25	1500	VH	Ergonomically designed workstation, chair and desk	Safe work practices; YG ergonomic assessments available upon request from PSC.		SWP-016
O12	Colleague illness	contracting an illness by working in close proximity to colleagues suffering from airborne illnesses (<i>i.e.</i> , flu or colds)	6	6	10	360	H	n/a	Safe work practices. Encourage employees to use sick days when feeling unwell or work from home.		SWP-016
O13	Strongly scented personal products	respiratory issues from working in close proximity to colleagues wearing strongly scented products (<i>i.e.</i> perfumes, cosmetics; aftershave)	6	3	2	36	L	Installation of ventilation systems	Safe work practices and training (respectful workplace).		SWP-016
O14	Poor air quality	respiratory issues due to airborne fungal spores (mold due to moisture in building, plumbing leaks etc)	1	3	10	30	L	Installation of ventilation systems; general building maintenance	Encourage employees use sick days when necessary (<i>i.e.</i> when work performance impeded by physical/mental wellness).		
O15	Stress	stress and frustration	3	6	7	126	M	n/a	Effective management and supervision. Encourage employees to use stress leave if necessary (<i>i.e.</i> when work performance impeded by physical/mental wellness).		SWP-016
O16	Cigarette smoke	respiratory issues from inhalation of cigarette smoke as a result of individuals smoking in close proximity to open windows/doors.	10	3	10	300	H	n/a	Safe work practices and training (respect in the workplace). Enforce rules regarding smoking in close proximity to public buildings.		SWP-016
O17	Excessive temperatures	discomfort/heat stress due to excessive hot or cold temperatures indoors	8	3	10	240	M	Install portable heaters and/or air conditioners	Safe work practices. Managers should ensure employees are comfortable in their workplace.		SWP-016
O18	Personal security - working alone during office hours.	harassment by member of public who enters building	3	1	40	120	M	Install panic buttons in key locations, keep outside doors locked.	Safe work practices; organizational rules; lockdown procedures		SWP-016
O19	Personal security - working alone outside office hours.	harassment by member of public who enters building	3	1	40	120	M	Ensure entrances into building are locked outside regular office hours (fob system)	Safe work practices; organizational rules; lockdown procedures		SWP-016

Safe Work Practices: SWP-016 (office work)

Safe Job Procedures: SJP-T09 (harassment)

Forms: Template for office inspections



SAFE WORK PRACTICES

Reference No:	SWP-016	
Version:	2016-1	
	Name	Date
Developed by:	J. Chakungal	2010/03/19
Last updated:	J Bond	2016/04/12

TASK: OFFICE WORK

PURPOSE: The purpose of the following guidelines is to ensure that all YGS employees work in a safe and comfortable office environment.

GUIDELINES:

ALWAYS:

1. Check yourself in and out of the office on the white boards by the main entrance, even if you leave for a short coffee break, so that your whereabouts might be accounted for in the case of an evacuation. If you are not in your office during work hours, write where you have gone (for meetings, etc) on the white board so that you can be contacted if required.
2. Note locations of emergency exits, fire alarms, fire extinguishers and first aid kits and know how they work.
3. Ensure employees are familiar with and know where to find the Emergency Response plan for Elijah Smith Building and Core Library. In the Elijah Smith Building, every office and work space should have a copy. A back-up copy of the plan is located by the First Aid Box on the back wall of the admin area.
4. In the event of a fire, leave the building calmly and quickly.
5. Ensure your workspace meets the office inspection standards at all times and correct or report any violations noted anywhere in the workplace immediately to your supervisor. Inspections are conducted throughout the office on a bimonthly basis by safety committee representatives to oversee the general housekeeping, electrical and fire safety, and emergency preparedness.
6. Check regularly that no objects (papers, wires, furniture etc) are in contact with baseboard heaters in your workspace.
7. Keep all passageways, stairwells and emergency exits clear of obstructions at all times.
8. Do your part to contribute to general housekeeping around the office.
9. Set up your work station ergonomically, practice good posture at all times and take regular stretching breaks to avoid repetitive strain injuries. Contact Ralph Shopland (667-5963) for an ergonomic assessment of your workstation.
10. In consideration of your fellow employees, don't come to work if you are not feeling well (*i.e.*, flu, cold, any ailment that prohibits a productive day of work). Inform your supervisor via email or telephone of your absence from the workplace.
11. Wash your hands after using the toilet and before handling food.
12. Try to maintain a healthy, balanced lifestyle and find ways of minimizing stress.
13. Contact the YG Employee Assistance Program if you require assistance in dealing with personal problems that affect or have the potential to affect your work performance.
14. Avoid the use of strongly scented products (cosmetics, perfumes, aftershaves, flowers). Some visitors and staff are sensitive or allergic to these products.
15. Show respect and be courteous to your co-workers and members of the public. Avoid any activities that may be interpreted as harassment, which includes a wide spectrum of behaviour ranging from inappropriate remarks that make a person feel uncomfortable to sexual discrimination.
16. Report any violent incident or threat to your supervisor. All reported incidents of violence shall be investigated.
17. Always wear appropriate footwear at the office.
18. Load filing cabinets and bookshelves from the bottom up.
19. Anchor tall bookshelves to the wall, and ensure filing cabinet drawers lock when one drawer is open.
20. Keep communal food preparation areas clean: wash your own dishes immediately after use; clean up your own food spills immediately; and establish a monthly cleaning schedule to ensure microwaves and fridges are kept clean and rotten food is disposed of regularly.
21. Sign the first aid kit's log book if you use supplies from the first aid kit so that it can be restocked.
22. Fill out an incident report form for any injuries, damages or near-misses that occur and report these to your supervisor.
23. Make sure **all outside** office doors are locked if you are working extended office hours or if you are the last to leave at the end of the day.

NEVER:

24. Never come to the workplace if you are ill – take a sick day.
25. Never run around the office or up and down stairs.
26. Never place large and/or heavy objects up high (*i.e.*, on a bookshelf or in a filing cabinet).
27. Never treat colleagues and members of the public with disrespect.
28. Never store hazardous materials (bear spray, chemicals, *etc.*) in your office – keep them in appropriate storage locations.
29. Never overload extension cords or run them across a room to create a tripping hazard.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- US Dept of Labor computer workstation ergonomic guidelines: <http://www.osha.gov/SLTC/etools/computerworkstations/index.html>
- Yukon Government Respectful Workplace Office - 667-3536: <http://www.psc.gov.yk.ca/rws.html>
- Yukon Government Employee and Family Assistance Program - 668-3277: <http://www.psc.gov.yk.ca/services/eap.html>
- EMR Wellness Committee website: http://internal.gov.yk.ca/depts/emr/wellness/wellness_committee.html



SAFE JOB PROCEDURES

Reference No:	SJP-T09	
Version:	2016-1	
	Name	Date
Developed by:	C. Welsh	2009/02/02
Last Updated:	J. Bond	2016/04/12

TASK: Harassment

HAZARD ASSESSMENT ISSUE NO: O10
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Understanding Human Rights
- Do not ignore harassment whether you witness it or experience it.
- Helping foster a respectful work environment.
- Familiarization with “Workplace Harassment Prevention and Resolution Policy”.
- Treat others with respect.
- Refrain from embarrassing, humiliating or offending others.
- Alert people when you do not approve of disrespectful or harassing behavior.
- Apologize immediately if someone is offended by your words or actions.

TRAINING REQUIREMENTS:

- Yukon Government Respectful Workplace

TASK STEPS:

If you experience harassment:

1. If possible speak to the person about their behavior. If your request for the behavior to stop does not resolve the problem, speak to your manager or someone in authority.
2. Keep a record of dates, times, witnesses and what was said and done.
3. Ask for help or support. Speak to someone you trust – a manager, a supervisor, human resource advisor or otherwise and do this as soon as possible.
4. Any criminal behavior, physical violence or where personal safety and security is in danger must be reported to the RCMP.

Witness to harassment:

1. Where possible speak up and make it known that you do not approve of the behavior.
2. Lend a supportive ear to those being harassed.
3. Tell your manager or another person in a position of authority.
4. Cooperate with any management reviews, investigations or remedies.

If accused of harassment:

1. Take it seriously; if someone is offended consider their point of view.
2. Be sincere in offering an apology and seek a resolution. If you feel the accusation is a misunderstanding, ask your manager for help in resolving the situation.
3. Learn about your rights and responsibilities.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Yukon Government Respectful Workplace Office:

- Confidential Phone: (867) 667-3536
- Email: respectful.workplace@gov.yk.ca
- Website information: <https://yukonconnect.gov.yk.ca/department/PSC/Branches/Pages/RWO.aspx>
- Workplace Harassment Prevention & Resolution Policy and Guidelines: https://yukonconnect.gov.yk.ca/department/PSC/RWO/QA_About_New_RWO_Policy.pdf#search=harassment

Office Safety Inspection Checklist

Form 5.16

Building: _____ Room: _____ Date: _____

Building #: _____

Inspection Performed 1) _____ 2) _____ 3) _____

YES NO N/A Comments

A. Walking Surfaces

1. Aisles established and clear				
2. No tripping hazards present				
3. Floors even (no holes or cracks)				
4. Carpets and rugs secure				
5. Floors kept dry - not slippery				
6. Entrance mats available (wet weather)				

B. Bookcases, Shelves and Cabinets

1. Wall shelves designed for intended load				
2. Heavy storage cabinets, bookcases and file cabinets secured/ bolted from tipping				
3. File drawers closed when not in use (only one open at a time to prevent tipping)				

C. Electrical Hazards

1. All extension cords are 3 wire type and in good condition no splices or broken insulation				
2. Limit extension cords to ten feet in length				
3. Only one extension cord used - not plugged into other extension cords				
4. Equipment power cords in good condition - no slices or broken insulation				
5. Plugs in good condition - no exposed wires				
6. Wall outlet and junction box covers in place				
7. Electric circuit panels clear (at least 30 inches open area)				
8. Circuits not overloaded - all multiple outlet strips equipped with overload protection				
9. No wires or extension cords under carpets or rugs, through doorways, or placed in other traffic area				

D. Stairways, Ramps, Corridors and Storage Areas

1. Adequate lighting in place (including emergency lighting)				
2. Stair treads in good condition				
3. Stairways clear - not used for storage				
4. Corridors kept clear of equipment and supplies				

Office Safety Inspection Checklist

Form 5.16

Building: _____ Room: _____ Date: _____

Building #: _____

Inspection Performed 1) _____ 2) _____ 3) _____

	YES	NO	N/A	Comments
5. No storage within 18 inches of sprinklers heads				
6. Ladder provided for high storage areas				
E. Office Equipment				
1. Chairs in good condition and adjustable (when appropriate)				
3. Step stools available for use, where needed (consult with EOHS for proper design)				
F. Fire Prevention, Emergency Exits and Housekeeping				
1. Fire extinguishers have current inspection tags				
2. Fire doors not blocked open				
3. Exits not obstructed and kept unlocked during normal business hours or special events				
4. Exits properly marked, exit signs illuminated				
5. Good housekeeping practiced - excess paper, computer cartons and trash removed				
6. Office has an evacuation/emergency action plan - occupants trained upon initial hire and as necessary thereafter.				
G. First Aid kit: Review log and check all required items are present				

Related Document: SWP Workplace Inspections 3.8

4.3 CORE LIBRARY

4.3.0 Core Library

4.3.1 Hazardous Material

4.3.2 Forklift

- *4.3.2.1 Counterbalanced Forklift Daily Hazard Assessment*
- *4.3.2.2 Forklift Pre-operation Daily Checklist*

4.3.3 XRF

4.3.4 Skid-steer

- *4.3.4.1 CASE Skid-steer Pre-operation Checklist*



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-L
Version: 2016-1

General Activity or Task: H.S. Bostock Core Library
Worksite: Whitehorse - 918 Alaska Hwy

Date Completed: 2008/04/30
Completed By: Lara Lewis
Last Reviewed By: D. Moynihan
Date Reviewed: 2016/04/15

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
Rock Saws and Sieve Shakers											
L01	Improper use of equipment (including heavy lid on oil saw)	injury to user	3	6	30	540	H	n/a	Education, safe work practices and safe job procedures	eye and ear protection, ventilation/face mask, gloves, protective clothing	SWP-007 & 012 SJP-L01
L02	Equipment-generated noise	hearing damage	3	6	10	180	M	n/a	Education, safe work practices and safe job procedures	ear protection (double ear protection for rock saws)	SWP-007 & 012 SJP-L01
L03	Flying rock debris	eye damage	3	6	30	540	H	n/a	Education, safe work practices and safe job procedures	eye protection	SWP-007 & 012 SJP-L01
L04	prolonged & repetitive use of rock saw	muscle strain	3	6	2	36	L	n/a	Education, safe work practices and safe job procedures		SWP-007 & 012 SJP-L01
L05	equipment malfunction	injury to user	3	3	30	270	H	Well-maintained equipment	Education, safe work practices and safe job procedures	eye and ear protection, ventilation/face mask, gloves, protective clothing	SWP-007 & 012 SJP-L01
L06	use of electrical equipment in a wet area	electrocution	3	3	30	270	H	Well-maintained equipment	Education, safe work practices and safe job procedures	appropriate footwear	SWP-007 & 012 SJP-L01
L07	Rock Splitter	personal injury	1	3	2	6	VL	n/a	Education, safe work practices and safe job procedures	eye and ear protection, ventilation/face mask, gloves, protective clothing	SWP-007 & 013 SJP-L02
L08	entanglement of loose clothing or hair in equipment	personal injury	2	3	30	180	M		Education, safe work practices and safe job procedures; no loose clothing; tie back long hair		SWP-007 & 011 & 012 SJP-L01
Hazardous Material Storage											
L09	Battery Storage	acid leak	2	1	2	4	VL	separate storage room	Education and training, safe work practices and safe job procedures	eye protection	SWP-007&014, SJP-M01, WHMIS course
L10	Gasoline & propane storage	propane or gas leaks	3	6	75	1350	VH	separate storage facility	Education and training, safe work practices and safe job procedures		SWP-007&014, SJP-M01, WHMIS course
L11	spills	slips & falls	3	10	2	60	L	n/a	Education and training, safe work practices and safe job procedures	appropriate footwear	SWP-007&014, SJP-M01, WHMIS course
L12	explosions	personal injury	1	1	75	75	L	n/a	Education and training, safe work practices and safe job procedures		SWP-007&014, SJP-M01, WHMIS course
L13	inhalation & poisons	personal injury	1	3	50	150	M	n/a	Education and training, safe work practices and safe job procedures		SWP-007&014, SJP-M01, WHMIS course
Equipment Storage											
L14	Improper storage of ATVs and trailers	Potential obstruction	1	1	2	2	VL	Proper storage	Education and safe work practices		SWP-007
L15	Gear/sample storage	Falling objects - injury to individual	3	6	10	180	M	Proper storage	Education and safe work practices		SWP-007
Environment											
L16	improper lighting for task	personal injury	3	3	30	270	H	Well designed equipment	Education and safe work practices		SWP-007
Air Quality											
L17	High levels of airborne dust particles	respiratory irritant	2	6	2	24	VL	Adequate ventilation	Education, safe work practices and safe job procedures	ventilation mask	SWP-007&012&013&, SJP-L01&02&03
Handling Core Boxes											
L18	falling off ladder	injury to self	2.5	1	50	125	M	Proper ladder	Education, safe work practices and safe job procedures	appropriate footwear	SWP-007, SJP-C02
L19	Lifting light objects from low levels	Bending and/or twisting of the back	2	5	5	50	L	n/a	Education, safe work practices and safe job procedures	gloves, steel toed boots	SWP-018; SJP- C02
L20	dropping core box	injury to self or others	2.5	3	50	375	H	n/a	Education, safe work practices and safe job procedures	appropriate footwear, gloves	SWP-007 & 018, SJP-C02, SJP-B01
L21	improper lifting	back strain	2.5	6	10	150	M	Hoist/trolley	Education, safe work practices, safe job procedures		SWP-007 & 018, SJP-C02, SJP-B02
L22	Overhead Loads	back strain	2	2	50	200	M	Hoist/ladder	Education, safe work practices, safe job procedures	gloves, steel toed boots, hard hat	SWP-007 & 018, SJP-C02, SJP-B03
L23	Using trolleys	back strain	2	2	10	40	L	n/a	Education, safe work practices, safe job procedures	gloves, steel toed boots, hard hat	SWP-018
L24	Carrying Loads	Bending and/or twisting of the back	3	6	20	360	H	Hoist/trolley	Education, safe work practices, safe job procedures	gloves, steel toed boots, hard hat	SWP-018; SJP- C02
L25	Team Lifting	back strain	2	6	10	120	M	n/a	Education, safe work practices and safe job procedures	gloves, steel toed boots	SWP-018; SJP- C02

Safe Work Practices: 007 (use of the core library), 011 (use of sieve shaker), 012 (use of rock saws), 013 (use of manual core splitter), 014 (WHMIS), 018 (lifting heavy objects)
Safe Job Procedures: L01 (use of rock saws), L02 (use of core-splitter), L03 (use of test sieve shaker), M01 (WHMIS)
Forms: YGS Liability Waiver



SAFE WORK PROCEDURE

Reference No:	SWP-007	
Version:	2016-1	
	Name	Date
Developed By:	L. Lewis	2008/04/28
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: USE OF THE CORE LIBRARY

PURPOSE: The H.S. Bostock Core Library is a facility in Whitehorse owned by the Government of Yukon and used by the Yukon Geological Survey, Forestry, non-government geologists, prospectors and field researchers. It contains indoor and outdoor storage units for drill core samples, tables for viewing core samples, indoor cabinets and racks for storing field gear and rock samples, and outdoor sheds for storing gasoline & propane. The building houses rock saws that are available for use by YGS employees and others working in the minerals industry (by permission). Potential hazards are primarily related to the use of rock saws and other tools, lifting of heavy and awkward items (e.g., core boxes), and the improper storage of materials. See separate safe work practice (SWP-012) for rock saw use.

GUIDELINES:

ALWAYS:

1. Keep working area clean and free of obstructions.
2. Immediately clean up any spills that may pose a hazard, or report them to your supervisor.
3. Wear gloves and proper footwear when loading and unloading gear and samples. See separate safe practices sheet for proper lifting techniques (SWP-018).
4. Wear hard hat around core racks and high shelves in the warehouse, and a high visibility vest when working around the forklift.
5. Appropriate warm clothing is recommended when working in the unheated area of the core library.
6. Promptly pack field gear into assigned storage cabinets or racks when returning equipment to the core library.
7. Organize gear in an orderly manner in cabinets to avoid falling items when cabinets are opened. Store heavy items on bottom shelves.
8. Use ladders properly if handling gear that is stored out of reach.
9. Wash your hands after handling gear and samples.
10. Ensure fuel jerry cans and propane tanks are stored in outdoor sheds at all times. Jerry cans are to be emptied before storage.
11. Ensure deep-cycle batteries are stored in the battery storage room.
12. Ensure the room is adequately lit when performing tasks in the building.
13. Know the location of fire extinguishers, first aid kits, eye wash stations, all emergency exits and muster points.
14. Take special care when pulling out core and rock sample trays to view them. Ensure you are balanced and can handle the weight of the tray. Enlist the help of someone else if you need it. See separate safe work practices for proper lifting techniques (SWP-018).
15. Keep the washroom area clean.
16. Maintain clear evacuation paths throughout the building and ensure no doors in the building are blocked.
17. Lock the building and ensure compound gates are closed if you are the last person to leave for the day.
18. Park your vehicle in an appropriate place so you do not obstruct other vehicles, door ways, and especially, the large garage doors.

NEVER:

19. Never store fuel jerry cans or propane tanks inside the core library – always lock them up in the designated outdoor sheds.
20. Never use the mechanical room as storage for any gear or rocks.
21. Never store rock samples or heavy gear above lock-ups or in unsecured elevated areas where they could cause damage during an earthquake.
22. Never use the forklift if you are not qualified and approved to do so.
23. Never lift heavy objects with your back.
24. Never leave field equipment or rock pails in the warehouse aisles.

Further information:

See Chapter 9 for further information on core library policies, contact information and equipment available for use.



SAFE WORK PRACTICES

Reference No:	SWP-011	
Version:	2016-1	
	Name	Date
Developed By:	L. Lewis	2009/03/25
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: USE OF THE SIEVE SHAKER

PURPOSE: The H.S. Bostock Core Library is equipped with a test sieve shaker located in a ventilated locked room next to the saw area. Members of the mineral industry and researchers may use the equipment provided they receive permission and training to do so from Mineral Services and that they observe safe work practices and safe job procedures while using the equipment.

GUIDELINES:

ALWAYS:

1. Ask a qualified designate from Minerals Services for a demonstration on the safe operation of the sieve shaker before using the equipment for the first time.
2. Wear personal protective equipment when operating the sieve shaker, including safety glasses or face mask and ear protection.
3. Check ventilation system before sieving. This consists of the main ventilation system that sucks airborne dust out to bags in the adjacent room, plus the overhead air cleaner. Make sure both systems are functioning.
4. Keep work area clean.
5. Ensure the room is adequately lit when using sieve shaker.
6. Remove loose clothing and secure long hair when working around sieve shaker.
7. Keep fingers and hands well clear of shaker while it is operating.
8. Do not leave sieve shaker unattended while it is operating.
9. Warn others in the immediate area when you are about to use the equipment.

NEVER:

10. Never interfere with the sieve while it is in operation.
11. Never turn off ventilation unit while sieving



SAFE WORK PRACTICES

Reference No:	SWP-012	
Version:	2016-1	
	Name	Date
Developed By:	L. Lewis	2009/04/07
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: USE OF THE ROCK SAWS

PURPOSE: Rock saws are available for use by Yukon Geological Survey employees and members of the mineral industry (with permission) for cutting rock samples. The rock saws are stored at the H.S. Bostock Core Library. Rock saws present potential hazards in terms of injury, particulate matter in the air, noise, and exposure to oil coolant.

GUIDELINES:

ALWAYS:

1. Familiarize yourself with the safe operation of rock saws before using them by referring to posted instructions and asking the Core Library Manager, Head of Minerals Services, or designated YGS employee for a training briefing and demonstration before using the equipment for the first time.
2. Familiarize yourself with the location of the first aid station.
3. Keep rock saw area clean and free of obstructions.
4. Clean the rock saw after use (see safe job procedures for rock saws - SJP- L01).
5. Ensure the room is adequately lit when using rock saws.
6. Wear appropriate personal protective equipment when operating saws, including eye protection, ear protection (double ear protection, *i.e.*, earplugs and earmuffs), coveralls or raincoat, and face mask.
7. Remove loose clothing and secure long hair when working with or around rock saws.
8. Remain focused on task at hand when cutting rocks.
9. Ensure saw blade is in good condition – not warped or dished, not loose, not cracked, no undercutting, no uneven segment wear. A sharpening brick is provided for blade maintenance if you have been instructed on its use.
10. Ensure the water and ventilation system is turned on with timer switches.
11. Ensure water saws have a constant supply of cold water.
12. Ensure slab saw has adequate oil coolant in the reservoir.
13. Ensure samples are firmly clamped into vises in oil saws.
14. Hold rock sample on either side of blade with both hands and apply moderate and constant pressure when sawing.
15. Keep fingers at least 5 cm away from saw blade and do not cut samples so small that you cannot hold them in place.
16. Ease up on applied pressure on water saws if blade slows down while cutting.
17. Immediately clean up any oil or water spills when working around saws.
18. Clean up oil spills with absorbent located in plastic container marked "Absorbent" next to wall.
19. Ensure hood on oil saw is closed when cutting samples.
20. Ensure hood on oil saw is latched securely when working around an open saw hood.

NEVER:

21. Never use a rock saw if you are untrained or unsure of how to use it safely.
22. Never open the oil saw cover when the saw is in use.
23. Never use kerosene, flammable solvents, water or water soluble oils in oil saws.
24. Never attempt to cut a rock that is larger than the acceptable size for the particular blade (see Safe Job Procedure guidelines).
25. Never touch electrical wires or components while the motor is running.
26. Never have 14" oil slab saw blade more than ¼ inch submerged in oil as this causes friction and potentially overheating.
27. Never leave samples unattended while they are being cut in oil saws.



SAFE WORK PRACTICES

Reference No:	SWP-013	
Version:	2016-1	
	Name	Date
Developed by:	L. Lewis	2009/03/26
Last Reviewed By:	M. Nordling	2016/04/15

TASK: USE OF THE MANUAL CORE SPLITTER

PURPOSE: The H.S. Bostock Core Library is equipped with a manual core splitter. Any person may use the equipment provided they receive permission and training to do so from the Core Library Manager (or Mineral Services) and that they observe safe work practices and safe job procedures while using the equipment.

GUIDELINES:

ALWAYS:

1. Familiarize yourself with the safe operation of rock splitter before using it by asking the Core Library Manager or designated qualified YGS employee for a training briefing and demonstration.
2. Wear personal protective equipment when operating core splitter, including safety glasses, gloves, face mask, protective clothing and earplugs.
3. Ensure metal pans are in place to catch split rock pieces.
4. Ensure the room is adequately lit when using core splitter.
5. Remove loose clothing and secure long hair when working around core splitter.
6. Keep fingers and hands well clear of blade.
7. Inspect splitting blade before use. It should feel slightly sharp to touch.
8. Remain focused on task at hand and watch for flying rock chips.
9. Keep rock work area clean.
10. If you feel pain in your arms or wrists while operating the equipment, take a rest and stretch. Tendonitis is a common over-use injury associated with manual core splitters.
11. Warn others in the immediate area when you are about to use the equipment.

NEVER:

12. Never remove safety glasses while using the core splitter.



SAFE WORK PRACTICES

Reference No:	SWP-014	
Version:	2016-1	
	Name	Date
Developed By:	R. Dufour	2009/05/14
Last Reviewed By:	J. Bond	2016/04/12

TASK: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

PURPOSE: You must be properly informed of all hazardous materials that you may come in contact with on site. Recognizing labels, being able to access Material Safety Data Sheets (MSDS) and learning about proper handling and precautions and first-aid procedures is the only way to protect yourself and your coworkers.

WHMIS CONTROLLED MATERIALS:

YGS has a number of WHMIS controlled materials, stored in various locations.

The following materials are stored in a locked cabinet at the core library on the Alaska Highway:

- Hydrochloric Acid
The MSDS binder for these materials is located by the first aid station outside the saw room at the core library. For access please ask Tiffani Fraser or Craig Nicholson.

Employees are also occasionally exposed to the following materials, which are stored in designated locations at the Core Library when not being used in the field:

- Sulphuric acid (car batteries, stored in battery room at Core Library)
- Propane (stored in the hazardous materials shed in the locked compound behind the core library)
- Gasoline (stored in the hazardous materials shed in the locked compound behind the core library)
- Diesel and jet fuel (stored in the hazardous materials shed in the locked compound behind the core library)
- White Gas (Naphtha, stored in the hazardous materials shed in the locked compound behind the core library)
The MSDS binders for these materials are located by the first aid station outside the saw room at the core library as well as in the hazardous materials sheds.

GUIDELINES:

ALWAYS:

- Look at supplier label information for risks, precautionary measures and first aid.
- Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
- Refer to MSDS for in-depth product information.
- Use appropriate personal protective equipment/clothing when recommended for certain products.
- Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
- Inform employer of hazards and damaged or missing labels.
- Add acid to water (never water to acid) if diluting chemicals.
- Store WHMIS-controlled substances in appropriate locations at the Core Library.

NEVER:

- Never use any of the listed products without referring to supplier labels.
- Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures as well as a statement confirming MSDS is available.
- Never store any flammable substance (propane, gasoline, diesel, white gas) inside the office or Core Library.

ADDITIONAL INFORMATION AND REFERENCES

- Poison Control Center: 867-393-8700 (Whitehorse Hospital, ask for Poison Control)
- Northern Safety Network Yukon (867-633-6673) - WHMIS train the trainer program
- Ralph Shopland (867-667-5963) – Yukon Government Public Service Commission, Corporate Health and Safety, WHMIS trainer
- Tiffani Fraser (867-667-3228) – YGS WHMIS trainer
- Work Safe BC: <http://www2.worksafebc.com/Topics/WHMIS/Home.asp>



SAFE WORK PRACTICES

Reference No:	SWP-018	
Version:	2016-1	
	Name	Date
Developed By:	E. Long	2010/12/20
Last Reviewed By:	J. Bond	2016/04/12

TASK: LIFTING HEAVY OBJECTS

PURPOSE: In the office and in the field, the need to lift and move heavy objects will often arise. Potentially serious hazards associated with this task include: placing undue strain on back, leg and arm muscles and unintentionally crushing your extremities or those of a co-worker.

GUIDELINES:

ALWAYS:

When lifting heavy objects, follow the standard lifting technique:

1. Check that the path to be travelled is clear.
 2. Approach the load and size it up (weight, size and shape). Consider your ability to handle the load. If in doubt, get assistance.
 3. When lifting with another person(s), establish clear communication protocols before you start lifting.
 4. Wear adequate foot protection.
 5. Place feet close to object to be lifted. Adopt a balanced position, one foot beside the load pointing in the direction of travel, the other behind the load.
 6. Bend knees to comfortable degree and get a good handhold. Maintain normal upright spinal curves. **Always bend your knees not your back.**
 7. Tighten stomach muscles. Commence to lift the load keeping it close to the body.
 8. Lift the load using leg muscles and allow the load to rest in fully extended arms.
 9. With the load comfortably supported by the hands and arms, move off in the direction of travel.
 10. Setting the load down is just as important as picking it up. Using leg muscles, lower the load by bending your knees, keeping back upright.
 11. When lifting objects that are difficult to grasp (*i.e.*, too large or awkward in shape) utilize a mechanical aid such as a trolley, or ask someone for assistance. **Note:** A greater number of individuals assisting with a set task does not mean increased lifting capacity.
 12. Always use a step-stool or ladder to avoid over reaching.
 13. Always remember to bend the knees when lifting objects that are below waist level.
 14. Always slide an object to bring it close to you before lifting.
 15. Always test the weight of an object before removing the item from a shelf.
 16. Always hold an object close to the body as you descend.
- When using a trolley to move heavy objects:*
17. Hold the trolley as low as possible and use your leg muscles to push the load.
 18. Pushing is easier than pulling.
 19. IF YOU MUST PULL A TROLLEY - Face the object squarely, with feet shoulder width apart (one foot in front of the other; keep your back straight, bend your knees slightly and pull in a smooth motion).
 20. When loading and unloading the trolley ensure that you move your feet to turn. Do not twist your back.
 21. Make sure the load is as close as possible before lifting.

NEVER:

22. Never lift a heavy load with your back.
23. Never twist your back to turn, move your feet instead.
24. Never bend forward, backwards or sideways while carrying a heavy load.
25. Never attempt to lift heavy or awkward items by yourself.
26. Never walk with items stacked so high that your vision is obstructed.
27. Never stack items so that they are precarious and unstable.
28. Never lift heavy objects without adequate foot protection (*i.e.* closed toed shoes or boots); never lift in bare feet or sandals.



SAFE JOB PROCEDURES

Reference No:	SJP-L01
Version:	2016-1
Name	Date
Developed By:	L. Lewis 2009/03/25
Last Reviewed By:	D. Moynihan 2016/04/15

TASK: Use of the Rock Saws

HAZARD ASSESSMENT ISSUE NO: L01-L06 & L08
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Eye protection Double ear protection (ear plugs and ear muffs) Protective clothing (gloves bib and rain gear) Ventilation/dust mask

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure emergency communications are available

TRAINING REQUIREMENTS:

Each individual using the rock saws within the H.S. Bostock Core Library **MUST** receive permission and a training briefing and demonstration from the H.S. Bostock Core Library Manager or designated and trained YGS employee before using the rock saws. All non-YGS users MUST sign the release of liability form, or in the safety manual outside the saw room. Record saw use in log book provided.

TASK STEPS:

ROCK SAW SAFETY

- Check in with the H.S. Bostock Core Library Manager for permission to use any of the rock saws.
- If you have not used a rock saw before ensure that the H.S. Bostock Core Library Manager or a trained YGS employee gives you a training briefing and demonstration of how to properly cut samples before attempting to use a saw. Sign the release of liability form .
- Read instructions before using any saw.
- Mandatory personal protective equipment while using saws includes double ear protection** (ear plugs and ear muffs), **protective eye wear and dust mask**. Gloves, bib and rain gear are provided and are recommended.
- Ensure that the Core Library Manager or a designated YGS employee is aware of your presence at the core library while you are using a rock saw, especially if you are alone. Upon completing your work, report back that you are done using the saws.
- Before using any of the saws, familiarize yourself with the core library's first aid station which is located by the industrial sink in the next room.

WATER SAWS

- Before using the water rock saw ensure the sample you are cutting is not too large. The rock saws have 14" blades and can cut samples up to 4" high.
- Ensure the blade is set at the appropriate height so that the edge of the blade dips just below the slot in the conveyor assembly.
- If using the core cutting attachment, raise the blade so that the edge of the blade dips just below the "V" in the attachment.
- Visually inspect blade while it is spinning to see that it is not warped or damaged before you start cutting. If the blade is warped or damaged, notify the Core Library Manager immediately, attach a repair tag to the saw and do not use the saw until it has been repaired. A sharpening brick is provided for blade maintenance.
- Ensure that the water filtration system and ventilation system is turned on with the timer switch.
- Ensure that there is a steady stream of water running onto the blade while cutting.
- Apply equal pressure to both sides of your rock as you cut it. Do not attempt to trim samples by shaving off small pieces of rock.
- Keep fingers a minimum of 5 cm from the saw blade. Hold on to the rock on both sides and move it along with the conveyor assembly forward to initiate contact with the blade.



SAFE WORK PROCEDURE

9. Apply moderate pressure to the rock against the blade. If the saw blade starts spinning more slowly and the sound of the motor decreases in frequency (becomes lower), ease the pressure you are applying.
10. Toward the end of a cut, ease off the pressure to ensure a clean cut without a break-off at the end.
11. If, after several hours use, the saw starts to cut less effectively, make three or four cuts into the masonry brick stored beside the saws to re-expose the cutting diamonds.
12. When finished cutting for the day, hose down the conveyor assembly and the inside of the saw where sediment builds up. Ensure that the rock saw is as clean as you found it.
13. Throw all larger rock fragments into the metal rock bucket provided.

OIL SAWS

14" Lortone oil-cooled slab saw

1. Ensure adequate coolant is in the reservoir. The lower ¼" to ½" of the blade should dip into the oil coolant.
2. Visually inspect blade to ensure it is not warped or damaged. If the blade is warped or damaged, notify the Core Library Manager immediately and attach a repair tag to the saw. Do not use the saw until it has been repaired.
3. Securely clamp rock sample into vise. Do not exceed sample size of 5 ½" high by 6 ½" wide.
4. Close hood and turn on machine to cut.
5. Do not leave sample unattended while cutting.
6. Listen for steady sound of motor to ensure efficient cutting.
7. After turning off switch, allow a minute for oil coolant to drip back into reservoir before opening up the hood.

36" large oil-cooled saw

1. Ensure adequate coolant is in the reservoir.
2. Visually inspect blade to ensure it is not warped or damaged. If the blade is warped or damaged, notify the Core Library Manager immediately and attach a repair tag to the saw. Do not use the saw until it has been repaired.
3. Securely clamp rock sample into vise. Use wooden wedges if necessary.
4. Do not exceed sample size of 14" high, 25" deep and 35" wide.
5. Ensure oil hydraulic pump is plugged in and oil is trickling through the oil catchment under the saw (oil comes through a hole on the backside of the saw and sprays oil onto the blade).
6. Close hood and turn on machine to cut.
7. Ensure pressure dial is set to appropriate pressure for type of rock being cut. See instructions posted on large saw.
8. Never exceed 35 psi pressure.
9. Do not leave sample unattended while cutting.
10. Listen for steady sound of motor to ensure efficient cutting.
11. After turning off switch, allow a couple of minutes for oil coolant to drip back into reservoir before opening up the hood.
12. Ensure that the oil hydraulic pump is unplugged.



SAFE JOB PROCEDURES

Reference No:	SJP-L02
Version:	2016-1
Developed By:	Name: L. Lewis Date: 2009/04/07
Last Reviewed:	D. Moynihan 2016/04/15

TASK: Use of the Core Splitter

HAZARD ASSESSMENT ISSUE NO: L7
RISK CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Eye protection Ear protection Gloves and other protective clothing Face mask

ROLES AND RESPONSIBILITIES:

Have an emergency preparedness plan and ensure emergency communications are available.

TRAINING REQUIREMENTS:

- Instruction and demonstration from the H.S. Bostock Core Library Manager or designated YGS employee, and familiarity with YGS safe work practices (SWP-013) and safe job procedures.

TASK STEPS:

CORE SPLITTER SAFETY

1. Check in with H.S. Bostock Core Library Manager for permission to use the core splitter.
2. If you have not used the core splitter before ensure that the Core Library Manager or a trained YGS employee gives you a training briefing and demonstration of how to properly use the splitter before you attempt any core splitting, and sign the release of liability form
3. Use ear protection, protective eye wear, a dust mask, and gloves and other protective clothing while operating the splitter.
4. Keep hair, clothing, fingers and hands out of the way while splitting core.
5. Before using the splitter familiarize yourself with the core library's first aid station.

PROCEDURE

1. Ensure metal trays are in place to capture core samples after they are split.
2. Inspect blade to make sure it is not dull or damaged. Feel the blade with your thumb. It should feel slightly sharp to the touch.
3. Insert piece of core in holder (core will be split lengthwise). Rotate hand wheel until cutter blade is in contact with core sample and hit the rod cap with a hammer.
4. Keep fingers away from the blade at all times.
5. When split is complete, counter-rotate hand wheel until it is wide enough to accommodate another piece of core.
6. Remove split core from metal tray and discard left-over debris in tray.
7. When finished cutting for the day, discard any rock debris in trash cans and brush down counter area beside rock splitter.



SAFE JOB PROCEDURES

Reference No:	SJP-L03	
Version:	2016-1	
Developed By:	Name	Date
	L. Lewis	2009/03/07
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: Use of the Test Sieve Shaker

HAZARD ASSESSMENT ISSUE NO: L01-03, L08
RISK CLASS: LOW TO HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Eye protection Ear protection Gloves and other protective clothing Face mask

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure emergency communications are available.

TRAINING REQUIREMENTS:

- Instruction and demonstration from a qualified representative from H.S. Bostock Core Library Manager or designated YGS employee, and familiarity with YGS safe work practices (SWP-011) and safe job procedures.

TASK STEPS:

TEST SIEVE SHAKER SAFETY

- Check in with the Core Library Manager to receive instruction or permission to use the sieve shaker.
- If you have not used a sieve shaker before ensure that the Core Library Manager or a trained YGS employee gives you a training briefing and demonstration, and that you sign a release of liability form.
- Before using the sieve familiarize yourself with the core library's first aid station.
- Use ear protection, protective eye wear, and a dust mask while operating the sieve.
- Keep hair, clothing, fingers and hands well clear of equipment while sieving.

PROCEDURE

- Check ventilation system before sieving. This consists of main ventilation system that sucks the dirt out to the bags in the adjacent room, plus the overhead air cleaner. Make sure both systems are functioning well while sieving.
- Select appropriate number and mesh of round sieve trays.
- Stack trays so that coarsest tray (largest mesh openings) is at the top. Ensure there is a metal pan at the bottom of the stack to capture the finest material.
- When adding sample to be sieved, the dry sediment should cover the wire mesh of the top sieve but not overload the surface. (Overloading will cause blockage of openings, preventing the sample from being properly processed.)
- Place test sieve stack trays into sieve shaker and cover the top of the stack. Secure the sieves in place.
- Activate shaker for recommended amount of time.
- After emptying sediment from each tray, gently tap the tray to remove extraneous material. A soft nylon brush can be used to gently brush the underside of the sieve to remove any remaining particles.
- For very fine sieves, an ultrasonic sieve cleaner is available as well. Please ensure you have read the manual (attached to cleaner) and have had instruction from YGS staff before using this.
- When finished sieving for the day, wipe down counter surfaces and dispose of any debris in a trash can. Report any damaged sieves to YGS staff.



SAFE JOB PROCEDURES

Reference No:	SJP-M01
Version:	2016-1
Developed By:	Name: Rachelle Dufour
Last Reviewed By:	Date: 2009/05/14
	J. Bond 2016/04/12

TASK: Workplace Hazardous Materials Information System

HAZARD ASSESSMENT ISSUE NO: M01-M13, C21
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Refer to supplier labels and MSDS sheets for each hazardous product.

ROLES AND RESPONSIBILITIES:

- Ensure safe use, handling, storage and disposal of on-site hazardous materials and know what to do in an emergency/spill situation.

TRAINING REQUIREMENTS:

- All staff must review the WHMIS program self-study workbook and complete the test.
- Each project chief must inform team members of site-specific hazardous materials used and provide procedures for safe use, storage and handling as well as reviewing what to do in an emergency (found in Material Safety Data Sheets/MSDS).

Poison Control Phone Number: 867-393-8700. This number is for the Whitehorse Hospital – ask for Poison Control.

TASK STEPS:

The following are general procedures for use/handling, storage and disposal as well as emergency procedures for each product used by YGS.

Refer to MSDS sheets for further details.

MSDS binders can be found in two locations:

1. In the hazardous material sheds in the compound behind the core library.
2. Outside the rock saw room by the first aid station in the basement of the core library.



SAFE JOB PROCEDURES

HYDROCHLORIC ACID (field + core library)

Handling: Do not breathe gas/fumes/vapor/spray. Do not use pressure to dispense. Do not get in eyes, on skin, or on clothing. Wash well after use. Always pour acid into water; never pour water into acid.

Storage: Store in a cool place away from heated areas, sparks, and flame. Keep container tightly closed and dry.

Disposal: According to all applicable regulations.

Emergency/Spill: Ventilate the area. Cover with soda ash or lime. This will release carbon dioxide, so use caution. Place in a suitable container and mark for disposal. Wash spill site after material pick up is complete. DO NOT empty into drains.

First Aid:

Eye contact: Immediate first aid is needed to prevent eye damage. Immediately flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Speed is essential. Seek immediate medical attention. Do not use chemical antidotes.

Skin contact: Immediately flush skin with plenty of water for at least 30 minutes while removing contaminated clothing and shoes. Do not use chemical antidotes. Speed is essential. Seek immediate medical attention. Wash contaminated clothing before reusing. Discard contaminated leather articles such as shoes and belt.

Inhalation: Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.

Ingestion: If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk, repeating if vomiting. DO NOT induce vomiting. Aim to dilute acid 100 times approximately. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

SULPHURIC ACID (car batteries) (field + vehicles)

Handling: Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

Storage: Store in a cool, dry, well-ventilated area away from combustible substances. Do not store near alkaline substances.

Disposal: According to all applicable regulations

Emergency/Spill: Clean up spills immediately and ensure appropriate protective clothing to prevent skin exposure. Cover with sand, dry lime or soda, ash, and place in a closed container for disposal.

First Aid:

Eyes: Immediately flush eyes and skin with copious amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Do NOT allow victim to rub eyes or keep eyes closed. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with copious quantities of soap and water for at least 15 minutes while removing contaminated clothing and shoes. SPEEDY ACTION IS CRITICAL! Call a physician.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Consult a physician immediately. Never give anything by mouth to an unconscious person.

Inhalation: Get medical aid immediately. Remove patient from exposure to fresh air immediately. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.



SAFE JOB PROCEDURES

PROPANE (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. Inspect tanks frequently for damage (e.g., rust)

Disposal: Dispose of in an approved environmental fashion.

Emergency/Spill: Eliminate all ignition sources. Evacuate area and isolate/restrict hazard area.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If frostbite or burn occurs get medical attention.

Skin: If victim has received cold burns, treat by immersing in lukewarm water (32 to 43 °C) for 30-45 minutes. Remove contaminated clothing unless stuck to a burn area in which case cut around it. Obtain medical attention as soon as possible after first aid has been initiated and completed.

Ingestion: Not applicable.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

GASOLINE (field + Core Library)

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers. Material will accumulate static charges, which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapours. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with the ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning "Flammable". Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

DIESEL AND JET FUEL (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Avoid excessive heat, sparks, open flames and all other sources of ignition. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapors. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Combustible”. Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

WHITE GAS (also known as Naphtha), Coleman stove fuel; field and Core Library

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Storage: Sealed or tightly closed metal or plastic containers, in a cool, dry, well ventilated area, away from heat and ignition sources.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Flammable”. Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

VARATHANE (Core Library)

Handling: Avoid breathing vapor or mist. Avoid contact with eyes.

Storage: Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Isolate from heat, electrical equipment, sparks and open flame.

Disposal: Dispose of in a manner consistent with federal, state, and local regulations.

Emergency/Spill: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust.

First Aid:

Eye Contact: Hold eyelids apart and flush with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

BLEACH

Handling: Do not get in eyes, on skin or on clothing.

Storage: Store upright in original closed container.

Disposal: Dispose of in accordance with applicable regulations.

Emergency/Spill: Sweep up to suitable containers for disposal.

First Aid:

Skin Contact: Wash with soap & water for 15 minutes. See physician if burning persists.

Eye Contact: Flush with flowing water for 15 minutes & see physician.

Inhalation: Remove to fresh air. If breathing has stopped, apply suitable artificial respiration. Get medical help.

Ingestion: Give milk or water to dilute material; DO NOT induce vomiting. Avoid alcohol. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

ASSUMPTION OF RISKS, WAIVER and RELEASE OF CLAIMS, and INDEMNITY AGREEMENT
FOR _____
(hereinafter, the "Agreement")

BY SIGNING THIS AGREEMENT, YOU WILL WAIVE OR GIVE UP IMPORTANT LEGAL RIGHTS, INCLUDING THE RIGHT TO SUE.

PLEASE READ CAREFULLY BEFORE SIGNING

IN CONSIDERATION for _____ (the "Activity"). **I, ACKNOWLEDGE AND AGREE** on behalf of myself, my heirs, executors, administrators, personal representatives, next of kin and assigns to the following terms and conditions:

- 1.)** I am aware that my participation in this Activity involves many **RISKS AND DANGERS**, including known and unknown risks and dangers that may result in personal injury, death, property damage or loss, which may also be caused or contributed to by the **NEGLIGENCE OR CARELESSNESS** of others.
- 2.) I ASSUME AND ACCEPT, FREELY AND VOLUNTARILY, WITHOUT QUALIFICATION OR LIMITATION, ALL RISKS AND DANGERS** associated with this Activity.
- 3.) I ASSUME FULL RESPONSIBILITY** for my personal safety at all times and for obtaining, understanding and following any rules and safe practices associated with this Activity.
- 4.) I, RELEASE, WAIVE AND FULLY AND FOREVER DISCHARGE YG**, and its officers, directors, elected officials, employees, agents, successors, and assigns from all claims, liabilities, obligations, and demands of any kind or nature whatsoever, arising directly or indirectly, from any act or omission of **NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY, ANY INJURY OR DEATH TO ME, DAMAGE OR LOSS to MY PROPERTY**, or any cause whatsoever related to my presence or participation in this Activity, and I accept that this Agreement covers and includes, but is not limited to, all unknown and unforeseen claims, injuries, permanent disability, damages and losses, and any consequences arising directly or indirectly from my presence or participation in this Activity.
- 5.)** I, shall **HOLD HARMLESS and FULLY INDEMNIFY YG**, and its officers, directors, elected officials, employees, agents, successors, and assigns from and against all claims, liabilities, demands, damages, losses, costs (including legal costs) and other expenses, arising directly or indirectly, from **MY NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY**, or any claim whatsoever related to my presence or participation in this Activity.
- 6.)** This Agreement shall be interpreted and enforced in accordance with the laws in Yukon.
- 7.) I HAVE READ THIS AGREEMENT THOROUGHLY and UNDERSTAND THAT YG IS RELYING ON MY FULL RELEASE AND WAIVER OF ALL CLAIMS WHEN ALLOWING ME TO PARTICIPATE OR ENGAGE IN THIS ACTIVITY.**
- 8.) I, ACKNOWLEDGE and AGREE that ALL** the terms and conditions of this Agreement are set out herein in their ENTIRETY and that the execution of this Agreement has not been induced by, nor have I, relied upon, any representation, warranty, condition or agreement, whether written or oral, other than as expressly set out or referred to herein.

PRINT NAME: _____ **SIGNATURE:** _____

DATE: _____



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-M

Version: 2014-1

Date Completed: 2007/05/14

Completed By: Panya Lipovsky

Last Reviewed By: R. Cobbett

Date Reviewed: 2016/05/04

General Activity or Task: Use, transport and storage of hazardous materials

Worksite: Core Library, Offices, Fieldwork

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
											all safe work practices and procedures reviewed annually; training courses offered annually
	Chemicals used or stored in office/Core Library										
M01	household cleaners (bleach, Comet)	body contact / ingestion	2	0.5	2	2	VL	n/a	Education and training, safe work practices, safe job procedures	gloves, eye protection	SWP-014, SJP-M01, WHMIS course, first aid course
M02	sulphuric acid	body contact / ingestion	1	3	2	6	VL	purchase sealed car batteries only; store in ventilated battery room	Education and training, safe work practices, safe job procedures	gloves	SWP-014, first aid course
M03	printer toner	body contact / ingestion	2	3	2	12	VL	seal used cartridges in plastic bags.	Appropriate disposal/recycling	gloves	SWP-014, first aid course
M04	microscope fluids	body contact / ingestion	1	0.5	10	5	VL	n/a			
	Chemicals used in field / stored in office										
M05	hydrochloric acid	body contact / ingestion	6	5	2	60	L	n/a	Education and training, safe work practices, safe job procedures (always pour acid into water if diluting)		SWP-014, SJP-M01, WHMIS course, first aid course
M06	bear spray	body contact / ingestion from accidental or intentional discharge	10	3	10	300	H	Kozee-Tote container for transport and field storage; central / isolated storage location in office and at Core Library	Education and training, safe work practices, safe job procedures		SWP-014, SJP-W04, first aid course, bear awareness course
M07	zinc zap	body contact / ingestion	2	0.5	2	2	VL	n/a	Education and training, safe work practices, safe job procedures		SWP-014, first aid course
M08	firearm cleaning kits (solvent and oil)	body contact / ingestion	2	0.5	2	2	VL	store in safe with firearms accessories	Education and training, safe work practices, safe job procedures		SWP-014, first aid course, firearms safety/awareness/proficiency course
	Chemicals used in field or stored at Core Library										
M09	propane	fire, explosion	7	1	30	210	M	isolated storage location at Core Library and outside vehicle cabs	Education and training, safe work practices, safe job procedures, Transport Canada regulations		SWP-014&015, SJP-M01&V04, WHMIS course
M10	gasoline	fire, body contact / ingestion	3	1	30	90	M	isolated storage location at Core Library and outside vehicle cabs	Education and training, safe work practices, safe job procedures, Transport Canada regulations		SWP-014&015, SJP-M01&V04, WHMIS course
M11	diesel	fire, body contact / ingestion	3	1	10	30	L	isolated storage location at Core Library and outside vehicle cabs	Education and training, safe work practices, safe job procedures, Transport Canada regulations		SWP-014&015, SJP-M01&V04, WHMIS course
M12	Jet fuel	fire	5	1	30	150	M	n/a	Education and training, safe work practices, safe job procedures, Transport Canada regulations		SWP-014&015, SJP-V04, WHMIS course
M13	automotive fluids (antifreeze, washer fluid, motor oil, battery acid)	body contact / ingestion	2	0.5	2	2	VL	n/a	Education and training, safe work practices, safe job procedures		SWP-014&015, SJP-V04, first aid course

Safe Work Practices: 014 (WHMIS), 015 (transportation of dangerous goods (TDG))

Safe Job Procedures: M01 (WHMIS), V04 (vehicle use with TDG), W04 (bear spray)

* **For all chemicals:** Education & training; safe work practices for filling personal containers; hand-washing; central / isolated storage; use of appropriate containers; poison control line.



SAFE WORK PRACTICES

Reference No:	SWP-014	
Version:	2016-1	
	Name	Date
Developed By:	R. Dufour	2009/05/14
Last Reviewed By:	J. Bond	2016/04/12

TASK: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

PURPOSE: You must be properly informed of all hazardous materials that you may come in contact with on site. Recognizing labels, being able to access Material Safety Data Sheets (MSDS) and learning about proper handling and precautions and first-aid procedures is the only way to protect yourself and your coworkers.

WHMIS CONTROLLED MATERIALS:

YGS has a number of WHMIS controlled materials, stored in various locations.

The following materials are stored in a locked cabinet at the core library on the Alaska Highway:

- Hydrochloric Acid
The MSDS binder for these materials is located by the first aid station outside the saw room at the core library. For access please ask Tiffani Fraser or Craig Nicholson.

Employees are also occasionally exposed to the following materials, which are stored in designated locations at the Core Library when not being used in the field:

- Sulphuric acid (car batteries, stored in battery room at Core Library)
- Propane (stored in the hazardous materials shed in the locked compound behind the core library)
- Gasoline (stored in the hazardous materials shed in the locked compound behind the core library)
- Diesel and jet fuel (stored in the hazardous materials shed in the locked compound behind the core library)
- White Gas (Naphtha, stored in the hazardous materials shed in the locked compound behind the core library)
The MSDS binders for these materials are located by the first aid station outside the saw room at the core library as well as in the hazardous materials sheds.

GUIDELINES:

ALWAYS:

- Look at supplier label information for risks, precautionary measures and first aid.
- Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
- Refer to MSDS for in-depth product information.
- Use appropriate personal protective equipment/clothing when recommended for certain products.
- Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
- Inform employer of hazards and damaged or missing labels.
- Add acid to water (never water to acid) if diluting chemicals.
- Store WHMIS-controlled substances in appropriate locations at the Core Library.

NEVER:

- Never use any of the listed products without referring to supplier labels.
- Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures as well as a statement confirming MSDS is available.
- Never store any flammable substance (propane, gasoline, diesel, white gas) inside the office or Core Library.

ADDITIONAL INFORMATION AND REFERENCES

- Poison Control Center: 867-393-8700 (Whitehorse Hospital, ask for Poison Control)
- Northern Safety Network Yukon (867-633-6673) - WHMIS train the trainer program
- Ralph Shopland (867-667-5963) – Yukon Government Public Service Commission, Corporate Health and Safety, WHMIS trainer
- Tiffani Fraser (867-667-3228) – YGS WHMIS trainer
- Work Safe BC: <http://www2.worksafebc.com/Topics/WHMIS/Home.asp>



SAFE WORK PRACTICES

Reference No:	SWP-015	
Version:	2016-1	
	Name	Date
Developed By:	T. Allen	2009/10/14
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: TRANSPORTATION OF DANGEROUS GOODS

PURPOSE: Everyone who handles dangerous goods, including the person who loads or unloads the goods, is responsible for making sure the goods are transported safely to their final destination. The following items used by personnel at YGS are designated as 'dangerous goods' under the TDG Act and Regulations and have restrictions on transport in vehicles and aircraft. Individuals who handle, prepare for transport, or carry dangerous goods must be trained and certified in Transportation of Dangerous Goods.

DANGEROUS GOODS:

- Note that dangerous goods in small quantities (refer to Column 6 of the dangerous goods list) may be exempt from the regulations (look up individual items by following the link provided in note ⁽²⁾ below).
- Some items listed below have restrictions or may be forbidden ⁽⁵⁾ from transporting in passenger vehicles or aircraft – refer to Columns 8 & 9 in Schedule 1 by following the link provided in note ⁽²⁾ below.

Shipping Name ²	UN Number ²	Col. 5 Special Provisions ³	Col. 6 Explosive Limit and Limited Quantity Index ⁴
Sulphuric acid (battery fluid)	UN2796	none	1 litre
• Batteries, wet, non-spillable	UN2800	39	5
• Batteries, wet, filled with acid	UN2794		5
• Lithium batteries	UN3090/3091	34	0
• Propane ⁵	UN1978	88	0.125 (exceptions see below)
• Gasoline	UN1203	17, 82, 88	30 litres (exceptions see below)
• Diesel	UN1202	82, 88	30 litres (exceptions see below)
• Jet A/A-1	UN1863	17, 82	60 litres (exceptions see below)
• Jet B	UN1863	17, 82	1 (no exceptions)
• White gas (stove fuel) ⁵	UN1268	none	0.5, 1, 5 litres
• Aerosols (incl. bear spray) ¹	UN1950	80	0.125, 1
• Paint (lacquer, varnish)	UN1263/3066	59, 83	
• Matches (strike anywhere) ⁵	UN1331	none	5 kg
• Ammunition ⁵	various none	none	0
• Hydrochloric acid	UN1789	none	1, 5 litres

¹ There is no reference to either bleach (sodium hypochlorite) or bear spray in the DG list, so bear spray is provisionally included under aerosols.

² Shipping Name/UN numbers: <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

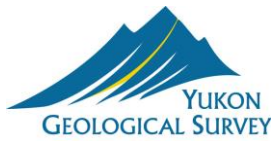
³ Column 5 Special Provisions: see end of this document or <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

⁴ Quantity limits are in units of kg for solids, litres for liquids and for gases as the capacity of the means of containment.

⁵ Forbidden on board passenger carrying vehicles or ships. A person may apply for a permit for equivalent level of safety to transport these dangerous goods (see Part 14, Permit for Equivalent Level of Safety).

- Any dangerous goods over 500 kilograms or 500 litres must have appropriate placards as listed in the table below. If transporting less than this amount ensure that the dangerous goods are labeled on their container.
- Only for special situations with quantities under 500 kg or 500 litres will you need placards on your vehicle. The shipper would then inform you, these items are usually very dangerous.

Dangerous Good	UN # and Placard Needed
Diesel	1202
Gasoline	1203
Propane	1978
Jet Fuel	1863



SAFE WORK PRACTICES

- Pilots need to be informed if any dangerous goods are being brought on board aircraft. Such goods include but are not limited to:
 - Lead-acid batteries
 - Ammunition/firearms
 - Bear spray
 - Camp fuel
 - Matches
 - Lighters

GUIDELINES:

ALWAYS:

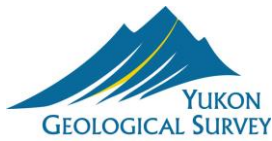
1. Inform your pilot if you have to transport any of the goods listed above in an aircraft. Hazardous items should be listed on the flight ticket.
2. Familiarize yourself with the hazards of dangerous goods (*i.e.*, flammable, toxic, corrosive, etc.).
3. Make sure that the classification details are complete, so the information will be available to emergency responders if there is an accident or incident during transport.
4. Refer to Material Safety Data Sheet (MSDS) for in-depth product information.
5. Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
6. Look at supplier label information for risks, precautionary measures and first aid.
7. Use appropriate personal protective equipment/clothing when recommended for certain products.
8. Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
9. Inform employer of hazards and damaged or missing labels.
10. In the case of a spill or leak of dangerous goods while in your care, you need to protect yourself, keep other people away and try to keep the danger from spreading.

NEVER:

11. Never use any of the listed products without referring to supplier labels.
12. Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures and contains a statement confirming that MSDS is available for the product.

Air Transportation of TDG:

- Transportation of dangerous goods by aircraft is covered under the Transportation of Dangerous Goods Regulations, Part 12 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm>)
- Transportation of dangerous goods within an aircraft can only occur by an air charter company that is certified to transport dangerous goods. It is the responsibility of the project manager to make sure any company that the YGS flies with is certified.



SAFE WORK PRACTICES

TRAINING CERTIFICATE REQUIREMENTS (Section 6.1, TDG Regulations, <https://www.tc.gc.ca/eng/tdg/clear-part6-121.htm#sec61>):

- (1) A person who handles, offers for transport or transports dangerous goods must:
 - (a) be adequately trained and hold a training certificate in accordance with this Part; or
 - (b) perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.
- (2) An employer must not direct or allow an employee to handle, offer for transport or transport dangerous goods unless the employee:
 - (a) is adequately trained and holds a training certificate in accordance with this Part; or
 - (b) performs those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.

Exceptions:

- No TDG certificate or training is needed to transport up to 2000 L of diesel, gasoline or Jet A/A-1, or 500 kg or less of propane, provided:
 - the diesel, gasoline or Jet A/A-1 is in separate drums (*i.e.*, in containers with a capacity of 450 L or less)
 - the propane is contained in no more than 5 small containers (*i.e.*, containers cannot exceed 100 kg in capacity)
 - the containers meet TDG standards
 - the shipper (*i.e.*, the driver of the vehicle) is aware of the hazards associated with the material being shipped (*i.e.*, MSDS)
 - placards detailing the dangerous goods being transported are required on vehicle if the labels on individual drums/containers are not visible from outside the vehicle
 - For more details see TDG Regulations 1.32.3, 1.33 and 1.35
 - propane is ok for air transport provided the propane is in a certified container under 100 L in capacity and the air charter company is certified to transport dangerous goods: TDG Regulations 12.9 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm#sec129>)
 - **There is no exception for Jet B, this material must be transported by someone that is certified to transport dangerous goods.**

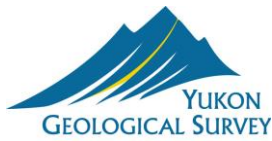
TRAINING PROVIDERS:

- Transportation of Dangerous Goods training is available online through www.Danatec.com or www.Solocks.com
- Yukon College also offers the following course: “TDG 001: Transportation of Dangerous Goods” which is taught in the classroom.

ADDITIONAL INFORMATION AND REFERENCES

Important Contacts/Information:

- Transport Canada – TDG Information <http://www.tc.gc.ca/eng/tdg/safety-menu.htm>
- Transport Canada – CANUTEC (Canadian Transport Emergency Centre) <http://www.tc.gc.ca/eng/canutec/menu.htm>
 - Dangerous goods emergency 613-996-6666 or *666 (from a cell)
 - Dangerous goods information 613-996-4624
- Dangerous goods emergency – Yukon HPW (carrier compliance) 867-667-5920 (John Warkentin)
- Publications/training: DANATEC Educational Services, www.Danatec.com (800-465-3366) or Solocks.com (877-977-8339)



SAFE WORK PRACTICES

Relevant Regulations:

- Transportation of Dangerous Goods Act <http://www.tc.gc.ca/eng/tdg/act-menu-130.htm>
- Transportation of Dangerous Goods Regulations <http://www.tc.gc.ca/eng/tdg/clear-menu-497.htm>

Col. 5 Special Provisions:

17 These dangerous goods may be handled, offered for transport or transported under the UN number and shipping name UN1268, PETROLEUM DISTILLATES, N.O.S., PETROLEUM PRODUCTS N.O.S., DISTILLATS DE PÉTROLE, N.S.A. or PRODUITS PÉTROLIERS, N.S.A. **34**

34 (1) Lithium cells and batteries may be transported under this shipping name, if

- (a) each cell or battery is included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 12 g of lithium or lithium alloy;
- (c) each battery contains not more than 500 g of lithium or lithium alloy;
- (d) each cell or battery has a safety venting device or is designed to prevent a violent rupture under normal conditions of transport;
- (e) each cell or battery is equipped with an effective means of preventing external short circuits;
- (f) each battery containing cells or a series of cells connected in parallel is equipped with diodes to prevent reverse current flow; and
- (g) the cells and batteries are packed in a means of containment to prevent short circuits and movement that could lead to short circuits.

34 (2) These Regulations do not apply to lithium cells and batteries if

- (a) each cell with a liquid cathode contains not more than 0.5 g of lithium or lithium alloy;
- (b) each battery with a liquid cathode contains a total quantity of not more than 1 g of lithium or lithium alloy;
- (c) each cell or battery with a liquid cathode is hermetically sealed;
- (d) each cell with a solid cathode contains not more than 1 g of lithium or lithium alloy;
- (e) each battery with a solid cathode contains a total quantity of not more than 2 g of lithium or lithium alloy;
- (f) each lithium-ion cell contains a total quantity of not more than 1.5 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the cell in ampere-hours;
- (g) each lithium-ion battery contains a total quantity of not more than 8 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the battery in ampere-hours;
- (h) for a liquid cathode battery that contains more than 0.5 g of lithium or lithium alloy or a solid cathode battery that contains more than 1 g of lithium or lithium alloy, the battery does not contain a liquid or gas that is dangerous goods unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery;
- (i) the cells are separated to prevent short circuits; and
- (j) the batteries are separated to prevent short circuits and, except when they are installed in electronic devices, are packed in strong means of containment.

34 (3) These Regulations do not apply to lithium cells or batteries if

- (a) the cells or batteries are not included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 5 g of lithium or lithium alloy;
- (c) each battery contains not more than 25 g of lithium or lithium alloy; and
- (d) the cells and batteries are packed or are designed to prevent short circuits under normal conditions of transport.

59 Substances that are listed by name in Schedule 1 must not be transported under this shipping name. Substances transported under this shipping name may contain not more than 20 per cent nitrocellulose if the nitrocellulose contains not more than 12.6 per cent nitrogen (by dry mass).

80 Despite section 1.17 of Part 1, Coming into Force, Repeal, Interpretation, General Provisions and Special Cases, a person must not offer for transport or transport these dangerous goods unless they are in a means of containment that is in compliance with Part 5, Means of Containment.

82 These dangerous goods require an emergency response assistance plan in accordance with subsection 7.1(5) of Part 7, Emergency Response Assistance Plan.



SAFE WORK PRACTICES

83 Section 5.12 of Part 5, Means of Containment, does not apply to these dangerous goods if:

- (a) the dangerous goods are included in Packing Group II or III;
- (b) the dangerous goods are in quantities less than or equal to 5 L and are in a metal or plastic means of containment;
- (c) the metal or plastic means of containment is inside an outer means of containment and the gross mass of the outer means of containment is less than or equal to 40 kg;
- (d) the means of containment are designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- (e) the dangerous goods are transported in palletized loads, a pallet box or unit load device so that individual means of containment are placed or stacked and secured to the pallet by strapping, shrink- or stretch-wrapping or other suitable means; and
- (f) when the dangerous goods are on a road vehicle or a railway vehicle that is to be transported by ship, the pallets, pallet boxes or unit load devices are secured inside the vehicle and the vehicle is closed.

88 Despite the quantity limits in column 9 of Schedule 1 for these dangerous goods, a road vehicle is not a passenger carrying road vehicle unless the passengers in it are transported for hire or reward.



SAFE WORK PRACTICES

Reference No:	SJP-M01
Version:	2016-1
Name	Date
Developed By: Rachelle Dufour	2009/05/14
Last Reviewed By: J. Bond	2016/04/12

TASK: Workplace Hazardous Materials Information System

HAZARD ASSESSMENT ISSUE NO: M01-M13, C21
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Refer to supplier labels and MSDS sheets for each hazardous product.

ROLES AND RESPONSIBILITIES:

- Ensure safe use, handling, storage and disposal of on-site hazardous materials and know what to do in an emergency/spill situation.

TRAINING REQUIREMENTS:

- All staff must review the WHMIS program self-study workbook and complete the test.
- Each project chief must inform team members of site-specific hazardous materials used and provide procedures for safe use, storage and handling as well as reviewing what to do in an emergency (found in Material Safety Data Sheets/MSDS).

Poison Control Phone Number: 867-393-8700. This number is for the Whitehorse Hospital – ask for Poison Control.

TASK STEPS:

The following are general procedures for use/handling, storage and disposal as well as emergency procedures for each product used by YGS.

Refer to MSDS sheets for further details.

MSDS binders can be found in two locations:

1. In the hazardous material sheds in the compound behind the core library.
2. Outside the rock saw room by the first aid station in the basement of the core library.



SAFE JOB PROCEDURES

HYDROCHLORIC ACID (field + core library)

Handling: Do not breathe gas/fumes/vapor/spray. Do not use pressure to dispense. Do not get in eyes, on skin, or on clothing. Wash well after use. Always pour acid into water; never pour water into acid.

Storage: Store in a cool place away from heated areas, sparks, and flame. Keep container tightly closed and dry.

Disposal: According to all applicable regulations.

Emergency/Spill: Ventilate the area. Cover with soda ash or lime. This will release carbon dioxide, so use caution. Place in a suitable container and mark for disposal. Wash spill site after material pick up is complete. DO NOT empty into drains.

First Aid:

Eye contact: Immediate first aid is needed to prevent eye damage. Immediately flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Speed is essential. Seek immediate medical attention. Do not use chemical antidotes.

Skin contact: Immediately flush skin with plenty of water for at least 30 minutes while removing contaminated clothing and shoes. Do not use chemical antidotes. Speed is essential. Seek immediate medical attention. Wash contaminated clothing before reusing. Discard contaminated leather articles such as shoes and belt.

Inhalation: Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.

Ingestion: If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk, repeating if vomiting. DO NOT induce vomiting. Aim to dilute acid 100 times approximately. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

SULPHURIC ACID (car batteries) (field + vehicles)

Handling: Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

Storage: Store in a cool, dry, well-ventilated area away from combustible substances. Do not store near alkaline substances.

Disposal: According to all applicable regulations

Emergency/Spill: Clean up spills immediately and ensure appropriate protective clothing to prevent skin exposure. Cover with sand, dry lime or soda, ash, and place in a closed container for disposal.

First Aid:

Eyes: Immediately flush eyes and skin with copious amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Do NOT allow victim to rub eyes or keep eyes closed. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with copious quantities of soap and water for at least 15 minutes while removing contaminated clothing and shoes. SPEEDY ACTION IS CRITICAL! Call a physician.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Consult a physician immediately. Never give anything by mouth to an unconscious person.

Inhalation: Get medical aid immediately. Remove patient from exposure to fresh air immediately. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.



SAFE JOB PROCEDURES

PROPANE (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. Inspect tanks frequently for damage (e.g., rust)

Disposal: Dispose of in an approved environmental fashion.

Emergency/Spill: Eliminate all ignition sources. Evacuate area and isolate/restrict hazard area.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If frostbite or burn occurs get medical attention.

Skin: If victim has received cold burns, treat by immersing in lukewarm water (32 to 43 °C) for 30-45 minutes. Remove contaminated clothing unless stuck to a burn area in which case cut around it. Obtain medical attention as soon as possible after first aid has been initiated and completed.

Ingestion: Not applicable.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

GASOLINE (field + Core Library)

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers. Material will accumulate static charges, which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapours. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with the ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning "Flammable". Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

DIESEL AND JET FUEL (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Avoid excessive heat, sparks, open flames and all other sources of ignition. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapors. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Combustible”. Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

WHITE GAS (also known as Naphtha), Coleman stove fuel; field and Core Library

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Storage: Sealed or tightly closed metal or plastic containers, in a cool, dry, well ventilated area, away from heat and ignition sources.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Flammable”. Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

VARATHANE (Core Library)

Handling: Avoid breathing vapor or mist. Avoid contact with eyes.

Storage: Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Isolate from heat, electrical equipment, sparks and open flame.

Disposal: Dispose of in a manner consistent with federal, state, and local regulations.

Emergency/Spill: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust.

First Aid:

Eye Contact: Hold eyelids apart and flush with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

BLEACH

Handling: Do not get in eyes, on skin or on clothing.

Storage: Store upright in original closed container.

Disposal: Dispose of in accordance with applicable regulations.

Emergency/Spill: Sweep up to suitable containers for disposal.

First Aid:

Skin Contact: Wash with soap & water for 15 minutes. See physician if burning persists.

Eye Contact: Flush with flowing water for 15 minutes & see physician.

Inhalation: Remove to fresh air. If breathing has stopped, apply suitable artificial respiration. Get medical help.

Ingestion: Give milk or water to dilute material; DO NOT induce vomiting. Avoid alcohol. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.



SAFE JOB PROCEDURES

Reference No:	SJP-V04
Version:	2015-1
Developed By:	Name C. Welsh
Last Reviewed By:	Date 2009/01/29 R. Cobbett 2016/04/01

TASK: Vehicle Use – transportation of dangerous goods (TDG)

HAZARD ASSESSMENT ISSUE NO: V13-15
RISK CLASS: HIGH to VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
vehicle	MSDS Emergency Response Guidebook, placards, shipping documentation	gloves, eye protection where necessary, spill kit

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation.
- Make sure all hazardous substances are marked accordingly.
- Know the location of the Material Safety Data Sheets (MSDS) and WHMIS binders.
- Do not carry propane, gasoline, bear spray or other dangerous goods in the cab of a vehicle.

TRAINING REQUIREMENTS:

- Transportation of Dangerous Goods
- WHMIS
- Driver's license
- Aircraft emergency training

TASK STEPS:

Refer specifically to TDG manual for specific substances: IATA for air transportation and TDG Handbook for ground transportation.

In general, when transporting dangerous goods, the following procedures should be adhered to:

1. All hazardous materials should be classified, stored and packaged in containers that comply with all applicable safety standards. The shipping label must:
 - a. be affixed to the container
 - b. have the proper shipping name
 - c. have required safety marks
2. All transport of dangerous goods shall be documented and completed to Federal Regulation standards and include:
 - a. Identification of commodities by shipping name
 - b. Classification numbers
 - c. Compatibility Group
 - d. UN/ PIN numbers
 - e. Packing Group
 - f. Net Quantity
3. Display all applicable prescribed safety marks on shipping containers with predefined placard requirements. Placards must be:
 - a. retro-reflective
 - b. show class, division and compatibility group
 - c. show UN/ PIN number
4. Ensure all dangerous goods and compressed gases (*i.e.*, bear spray) are kept outside the vehicle in a trunk or in the box of a truck.
5. Only handle dangerous goods when safety standards have been complied with.
6. Every shipment of dangerous goods ***MUST*** be accompanied by a shipping document with information pertaining to steps 1 and 2 above. Information may be used by emergency response personnel in the event of an emergency (*i.e.*, car/plane/helicopter accident).

Ensure the vehicle operator (*i.e.*, driver or pilot) is made aware of the fact that there are dangerous goods in the cargo being transported.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Transport Canada – TDG Information: <http://www.tc.gc.ca/eng/tdg/safety-menu.htm>
- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- Douma, John, 1990. Transportation of Dangerous Goods in Canada, a Practical Guide to the Law. Buttersworth Canada Ltd, pages 26 – 69.
- A Guide to the Transportation of Dangerous Goods (TDG) – Handbook, Danatec



SAFE JOB PROCEDURES

Reference No: **SJP-W04**
Version: 2015-1

Developed By:	Name	Date
Last Reviewed By:	C. Welsh	2009/01/29
	R. Cobbett	2016/04/01

TASK: Use of bear spray

HAZARD ASSESSMENT RISK ISSUE NO: WL05
CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Bear spray		

ROLES AND RESPONSIBILITIES:

- The spray is a concentrated powdered pepper which irritates mucus linings. Do not spray it on anything that you might touch because if your hand transfers it to your lips or eyes you will regret it. Also, some animals are attracted to old spray; perhaps they think it spicy!
- Check the expiry date on the spray can; old ones may have reduced charge, leaky gaskets, and may not work if previously frozen.
- Carry bear spray clipped on your belt or shoulder sling, not in your pack. It won't be useful if not immediately accessible.
- Draw the attention of coworkers to wildlife presence in or around the area of work.
- Pepper spray is a weapon. Do not use it to harass wildlife or threaten people.
- Wilderness first aid training will teach you the proper response to a medical emergency.
- Have an emergency preparedness plan and ensure emergency communications are accessible to everyone (satellite phone and 2-way radio, if helicopter supported)

TRAINING REQUIREMENTS:

- Bear awareness course (including handling of bear spray and flares with a pen-launcher).
- Dry-run practice removing it from its holster and holding it in position, ready to fire.

TASK STEPS:

If you determine the use of bear spray is necessary in a wildlife encounter, adhere to the following procedures:

- If a bear is approaching within 15 m, remove the safety clip and fire a short burst. This will let you know that the can is working, and possibly the bear, sniffing deeply and still approaching, will enter this orange fog. The spray travels less than 5 m, so by continuing to back away the bear may encounter the lingering fog.
- If a bear is charging, hold fire until the bear is within 5 m range, then spray the bear directly in the face. The effect will likely be immediate and the bear will likely back off. Stand your ground unless sanctuary is very close.
- Depending on size and age, the spray in the can will last 5 to 11 seconds. The bear may return if the attractant is early (such as a habitual food source); although a dose of spray continues to irritate for at least 10 minutes.
- Attempt to maneuver so that you can discharge the spray downwind. If the fog of your first burst wafts toward you, seek a breath of uncontaminated air, and move to avoid the cloud. The orange color quickly dissipates, but your hot, dry throat will discourage you from further inhaling it.
- Take care not to let the spray residue on the nozzle, vegetation or clothing get on your hands — it is easily transferred to your lips or eyes, even hours after skin contact and washing.
- If skin or eye contact occurs, flush the affected area with water (discomfort may last up to an hour).

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 147-155.
- "Carry bear spray and know how to use it": <http://www.wildsmart.ca/bearspray.htm>: accessed (April 2015)
- <http://www.bearsmart.com/becoming-bear-smart/home/bear-deterrents/bear-spray>: accessed (April 2015)



HAZARD ASSESSMENT & CONTROL REPORT

General Activity or Task: Forklift Operation
Worksite: HS Bostock Core Library, Whitehorse - 918 Alaska Highway

Reference No: HA-FL
Version: 2016-1
Date Completed: 3/21/2013
Completed By: L.R. Blackburn
Last Reviewed By: S. Israel
Date Reviewed: 4/12/2016

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
Environmental Factor											
FL-01	Situational/spatial awareness	Co-workers, walls, overhead obstructions and furniture; injury	6	1	50	300	H	Proper signage, high-visibility vest, adequate lighting.	Education, safe work practices and safe job procedures.	Eye protection, gloves, steel-toed boots, hard hat, high visibility vest	SJP-FL01
FL-02	Obstructed vision	Objects in path; damage and injury	1	3	50	150	M		Education, safe work practices and safe job procedures. Walk area prior to using forklift and identify possible hazards.	Eye protection, gloves, steel-toed boots, hard hat, high visibility vest	SJP-FL01
FL-03	Ramps	Tipping or bottoming-out; damage or injury	2	3	50	300	H		Education, safe work practices and safe job procedures for use on inclined surfaces. Approach ramps with caution and only move light loads on inclined surfaces.		SJP-FL01
FL-04	Snow and mud	Getting stuck	1	6	2	12	VL		Avoid use in marginal seasons and snow/muddy conditions, or ensure area is adequately cleared.		SJP-FL01
Equipment											
FL-05	Tipping forklift	Entrapment, injury	0.5	1	75	37.5	L		Education, safe work practices and safe job procedures.		SJP-FL01
FL-06	Tipping load	Entrapment, injury	1	1	50	50	L		Education, safe work practices and safe job procedures. Do not exceed recommended weight, center load on forks.		SJP-FL01
FL-07	Unstable load	Load dumped or tipped; injury	0.5	1	50	25	L		Education, safe work practices and safe job procedures. Do not exceed recommended weight, center load on forks and/or secure load.		SJP-FL01
FL-08	Overloading*	Load dumped or tipped; injury	0.5	1	50	25	L		Education, safe work practices and safe job procedures. Do not overload forklift.		SJP-FL01
FL-09	Unloading	Damage to truck beds; tipping, injury	6	1	50	300	H		Education, safe work practices and safe job procedures. Use spotter to unload.		SJP-FL01
FL-10	Using forklift as a work platform**	Dropping them; injury or death	0.5	1	75	37.5	L		Education, safe work practices and safe job procedures. Do NOT use forks as a work platform.		SWP-020
FL-11	Sudden stops and starts	Load dumped or tipped; injury	0.5	3	50	75	L		Education, safe work practices and safe job procedures. Avoid sudden movements.		SJP-FL01
FL-12	Falling off forklift	injury	0.5	0.5	10	2.5	VL		Education, safe work practices and safe job procedures. Wear seat-belt while operating lift and NEVER jump from machine.	Eye protection, gloves, steel-toed boots, hard hat	SJP-FL01
FL-13	Speeding*	Damage; injury	1	3	75	225	M		Education, safe work practices and safe job procedures. Wear seatbelt and do NOT drive at excessive speeds.		SJP-FL01
Machinery											
FL-14	Poor maintenance	Break-down , damage, injury	1	1	30	30	L	Complete daily inspection sheets and monthly maintenance checks.	Education, safe work practices and safe job procedures.		SJP-FL01, Forklift pre-operation - daily checklist, counterbalanced forklift - daily hazard assessment
Chemical											
FL-15	Charging Battery	Electrocution; corrosion	6	0.1	50	30	L		Education, safe work practices and safe job procedures.		SJP-FL01
FL-16	Changing Battery	Acid spill	1	0.1	10	1	VL		Education, safe work practices and safe job procedures.		SJP-FL01

*Completely avoidable - do not drive at excessive speeds or overload machine.

**The YGS' forklift does not have the proper basket to lift people - DO NOT ATTEMPT TO LIFT PEOPLE ON FORKS

Safe Work Practices: SWP-020 (Use of counterbalanced forklift)

Safe Job Procedures: SJP-FL01 (Counterbalanced forklift operation)

Forms: Pre-operation safety checklist



SAFE JOB PROCEDURES

Reference No:	SWP-020	
Version:	2015-1	
Developed By:	Name	Date
Last Reviewed By:	S.Roy	08/03/2013
	S. Israel	2016/04/12

TASK: USE OF COUNTER BALANCED FORKLIFT

PURPOSE: To promote use of the counter balance forklift in accordance with safe work practices and current legislation.

GUIDELINES:

ALWAYS:

1. Ensure you have received the required training and are a certified user.
2. Ensure you are familiar with the safety features of the counter balanced forklift and the manufacturer's recommended operating procedures.
3. Inspect the forklift for damage before use.
4. Know and adhere to federal and territorial legislation, particularly "Part 6 - Mobile Equipment" in the Yukon WCHSB regulations.
5. Ensure forklift is well-maintained.
6. Wear your seatbelt while operating a forklift.
7. Wear required personal protective equipment.
8. Watch for hazards along path (e.g., oil spots, wet spots, loose objects, holes, rough surfaces, people and vehicles).
9. Follow the Safe Job Procedures as outlined in SJP-FL01.
10. Keep your hands, arms, head, feet and legs inside the forklift truck.
11. Position the load evenly on both forks.
12. Travel with the load facing uphill on inclines; keep unloaded forks facing downhill.
13. Refuel or recharge only at safe/designated locations.
14. Drive only on smooth surfaces such as cement or asphalt. This vehicle is not designed to operate on rough terrain.
15. Ensure travel surface is cleared adequately of mud and snow when operating forklift outside.
16. Ensure that the operating (road) surface is free from ice. Use tire chains if required.
17. Observe standard traffic rules around other vehicles and keep to the right.
18. Travel at speeds that allow safe stops. Avoid sudden stops.
19. Slow down or stop at all blind intersections; yield to all others.
20. Observe all traffic rules, warning load limits, and overhead clearance.
21. Avoid operating forklift in high volumes of pedestrians. Wait for a quieter time to deliver to busy congested areas.
22. When operating in area of pedestrian traffic minimize risk to others by cordoning off areas with signage and/or traffic cones to prevent walk through traffic.
23. Use horn as a warning device for oncoming pedestrians at all cross aisles exits, elevators, sharp corners, ramps and blind corners.
24. Face direction of travel.
25. Keep forks 4 to 6 inches above the ground when traveling.
26. Operate in reverse when carrying bulky loads and whenever you cannot see over the load.
27. Tilt back load and secure if necessary before travelling.
28. Lower forks to safe height (3-6 inches?) when travelling.
29. Stay on the forklift when the load is in a raised position.
30. Use a spotter when unloading if required.

NEVER:

31. Never allow unauthorized personnel to operate the lift.
32. Never raise or lower the fork unless the lift truck is stopped and braked.
33. Never allow someone to stand or walk under lifted forks, whether they are loaded or not.
34. Never raise anyone on the forks or load.
35. Never back up without looking.
36. Never drag forks on the ground.
37. Never turn on an inclined surface.
38. Never exceed the load limits of the forklift.
39. Never jump from machine.
40. Never drive under the influence of alcohol, fatigue or aggression
41. Never ignore safe work practices.

ADDITIONAL INFORMATION AND REFERENCES

- Thompson Rivers University. "Forklift Truck Safety": <http://www.tru.ca/hsafety/workinglearningsafely/work/forklift.html> (accessed 28 Mar 2014).
- Canadian Centre for Occupational Health and Safety, Forklift Truck Safety: <http://www.ccohs.ca/headlines/text16.html> (accessed 28 Mar 2014)
- Yukon WCHSB Regulations and Act (see Part 6 – Mobile Equipment): <http://www.wcb.yk.ca/Regulations/LIB0136.aspx> (accessed 28 Mar 2014)



SAFE JOB PROCEDURES

Reference No: **SJP-FL01**Version: **2016-1**

Developed by:	Name	Date
	S. Roy	08/03/2013
	& L. Blackburn	
Last Updated:	D. Moynihan	15/04/2016

TASK: Counter Balanced Forklift Operation

HAZARD ASSESSMENT ISSUE FL-05 to 09
NO: FL-11 to 16;
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Counter Balanced Forklift	n/a	Hard hat if raising loads, gloves for loading/unloading, steel-toed boots

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation, particularly "Part 6 - Mobile Equipment" in the Yukon WCHSB regulations.
- Ensure forklift is well-maintained
- Watch for hazards along path
- Do not drive under the influence of alcohol, fatigue or aggression

TRAINING REQUIREMENTS:

- Canada Safety Council certified – Counter Balanced Forklift Operator Training

TASK STEPS:

Preshift:

1. Perform a pre-shift inspection once per day prior to use, and complete an inspection checklist which is handed in to the Supervisor or Instructor.
2. Do not operate a forklift that has a maintenance problem, or is not safe to operate. Remove the key from the ignition switch and put an "Out of Service" tag on the forklift. Notify Core Library Manager of the problem.
3. WCB regulations require all forklift operators to wear seat belts when forklift is in operation.
4. Put on required personal protective equipment (e.g., hard hat, steel-toed boots and gloves). Mount and dismount carefully.

Loading:

1. Check the rating capacity on the forklift nameplate.
2. Determine if the load weight is within the capacity of the forklift. Note that for every one inch further away from the carriage that the load is placed, there is a loss of approximately 100 pounds carrying capacity.
3. The forklift should be started with the forks down.
4. Lift the forks to 3 inches.
5. Do not allow passengers on the forklift.
6. Never raise anyone up in the air while they stand on the forks. Use an appropriate safety platform.

Lifting a Palletized Load:

1. Drive to the pallet. This applies to either a pallet on a lower or upper shelf. Stop with the fork 3 inches from the load.
2. Level the mast. The mast must be at right angles to the load.
3. Raise the forks to 1 inch below the slot on the pallet.
4. Drive forward into the pallet.
5. Lift forks 4 inches.
6. Tilt back load until secured for travel. If load will obscure vision drive the lift in reverse taking care while turning as the extra swing may cause load instability.
7. Look back. Honk. Drive back so that load clears the pallets below.
8. Lower the load to 3 inches above ground. Do not drag forks on the ground.
9. Materials and equipment are to be loaded on the forklift in a manner that prevents any movement of the load that could create a hazard to workers or others.
10. All loads that could be subject to shifting during transport are to be restrained if shifting would result in the forklift becoming unstable.
11. Position the load evenly on both forks.
12. Never permit anyone to stand or pass under the elevated portion of the mast or attachment.



SAFE JOB PROCEDURES

Picking Up Drums:

1. Place drums securely on a pallet. If there is any possibility of shifting of the drums, have drums strapped together to minimize movement.
2. Tilt mast forward, slide fork tips along floor to position forks under object, raise forks and tilt back slightly to prevent shifting of the drums.
3. If drums are filled with a liquid, be careful to drive slowly as the fluid in the drums may cause shifting during transportation.

Traveling

1. Do not drive with arms, head or legs outside the confines of the forklift.
2. Always wear your seatbelt while operating a forklift.
3. Turn forklift only when the forks are lowered to a safe travelling height as specified in operators manual.
4. Drive only on smooth surfaces such as cement or asphalt, this vehicle is not designed to operate on rough terrain.
5. Ensure that the operating (road) surface is free from ice. Use tire chains if required.
6. Observe standard traffic rules around other vehicles and keep to the right.
7. Travel at speeds that allow safe stops.
8. Slow down or stop at all blind intersections; yield to all others.
9. Always observe all traffic rules, warning load limits, and overhead clearance.
10. Avoid operating forklift in high volumes of pedestrians. Wait for a quieter time to deliver to busy congested areas.
11. When operating in area of pedestrian traffic minimize risk to others by cordoning off areas with signage and/or traffic cones to prevent walk through traffic.
12. Use horn as a warning device for oncoming pedestrians at all cross aisles exits, elevators, sharp corners, ramps and blind corners.
13. Face direction of travel. NEVER back up without looking.
14. Keep forks 4 to 6 inches above the ground when traveling.
15. Operate in reverse when carrying bulky loads and whenever you cannot see over the load.
16. Drive to point of deposit. Position the forklift in front of deposit area.

Unloading Pallets:

1. Raise load 5-10 inches above the unloading point (space permitting).
2. Drive forward stopping 3-4 inches in front of deposit point.
3. Tilt mast forward to a right angle position so load is level.
4. Drive forward until load is aligned with corners of the stack.
5. Stop. Lower load to resting-place. Stack pallets loaded with cases, cartons straight and square. Stagger the top tier to "tie-in place".

Unloading Round Objects:

1. Stack round objects together tight and straight.
2. Hold securely in place with wedges.
3. To nest round objects - place the bottom tier tightly together and secure with wedges. Place wedges against each roll in the bottom for a more secure stack.
4. Look behind you. Back up so that forks clear other pallets.
5. Lower forks to 3 inches from the ground.
6. Use a spotter when unloading if required.

Parking:

1. Tilt the upright forward until the forks are level or flat on the floor.
2. Apply the parking brake place transmission in neutral; chock the wheels if you have any doubt about the forklift moving.

Operations on Grades and Ramps

1. Never turn on an angled grade.
2. Keep unloaded forks facing downgrade.
3. When driving a loaded forklift up a grade, ensure that forklift is driven forwards.
4. When driving a loaded forklift down a grade, the forklift must be driven in reverse.
5. Travel with the load facing uphill on inclines and downgrades.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Thompson Rivers University. "Forklift Truck Safety": <http://www.tru.ca/hsafety/workinglearningsafely/work/forklift.html> (accessed 12 April, 2016)
- Canadian Safety Council, Safe Operation of a Forklift/Lift Truck Training Course : <https://canadasafetycouncil.org/training/safe-operation-forklift-truck-training-course> (accessed 12 April, 2016)
- Yukon WCHSB Regulations and Act (see Part 6 – Mobile Equipment): <http://www.wcb.yk.ca/Regulations/LIB0136.aspx> (accessed 12, April, 2016)

Counterbalanced Forklift

Daily Hazard Assessment



Week of:

Y= Hazard Present

N= Not Present

N/A= Not Applicable

Environmental Hazards	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Overhead Obstructions							
Ramps							
Tight Spaces							
Snow, mud, gravel							
Working Alone							
Pedestrian Traffic							
Equipment Hazards							
Tire Pressure Low							
Windows Dirty							
Faulty Brakes or hydraulic lines							
Moving heavy workloads							
High lifts							
Chemical Hazards							
Battery Charged?							
Other							
Fatigue							
Stress							
Heat/Exposure							
Operators Initials							

Forklift Pre-Operation - Daily Checklist



Forklift Make:

Date:

Operator:

	OK	MAINTENANCE REQUIRED
Is the forklift's appearance in good condition and clean?	☐	☐
Is the manufacturer's capacity plate clean and legible?	☐	☐
Check lift chains for equal tension, broken pins and extra wear.	☐	☐
Check the forks for damage.	☐	☐
Check for loose bolts and cracks on overhead guard, back rest & tilt cylinders .	☐	☐
Are the hydraulic hoses in good condition?	☐	☐
Check tires for cracks, wear and air.	☐	☐
Do the lights and horn work?	☐	☐
Check that the parking brake is working properly.	☐	☐
Check that the seat & seatbelt are in good condition.	☐	☐
Any signs of oil, coolant or fluid leaks ?	☐	☐
Check the fluid levels (brake fluid, engine oil, coolant...).	☐	☐
Start the engine and check the dashboard gauges for proper readings.	☐	☐
Make sure that there is no excessive free play in the steering wheel .	☐	☐
Do the mast and forks raise, lower and tilt properly?	☐	☐
Check the brake pedal for play and pressure.	☐	☐
Is the battery charged?	☐	☐

Developed by: L.R. Blackburn, March 21st 2013

Reviewed by: M. Nordling, 2015



HAZARD ASSESSMENT & CONTROL REPORT

Date Completed: 2012/04/25
Completed By: Lara Lewis
Last Reviewed By: S. Israel
Date Reviewed: 12-Apr-16

Reference No: HA-XRF
Version: 2014-1

General Activity or Task: Portable XRF analyzer use
Worksite: Core library, office, field

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General Use										all safe work practices and procedures reviewed annually; training courses available according to demand
XRF-01		X-ray exposure due to unsafe handling	8	1	10	80	M		Safe work practices, safe job procedures and certified training of user	n/a	SWP-019, SJP-XRF01
XRF-02		X-ray exposure due to damaged unit	1	1	10	10	L		Safe work practices, safe job procedures, safety check each time unit is used, quarterly inspection of device and certified training of user	n/a	SWP-019, SJP-XRF01

Safe Work Practices: SWP-019 (Use of the portable XRF analyzer unit)
Safe Job Procedures: SJP-XRF01 (portable XRF analyzer handling and storage)



SAFE WORK PRACTICES

Reference No:	SWP-019	
Version:	1	
Developed by:	Name	Date
Reviewed by:	L. Lewis	18/03/2013
	S. Israel	12/04/2016

TASK: USE OF PORTABLE XRF ANALYZER UNIT (XRF UNIT)

PURPOSE: Portable XRF analyzers emit radiation in the form of x-rays when in use. To safely use a portable XRF analyzer unit, the user must understand the dangers of x-rays, know the fundamentals of radiation protection and operate the unit in a manner consistent with XRF analyzer safe work practices and Federal and Territorial legislation.

GUIDELINES:

ALWAYS:

1. Ensure you have received the training and are a certified user if using the XRF unit *without* the Innov-X Integrated Test Stand (herein called the Test Stand), or an orientation from a YGS certified user to use the XRF unit *with* the Test Stand if you are not a certified user.
2. Ensure you are familiar with the safety features of the XRF unit and the manufacturer's recommended operating procedure.
3. Inspect the XRF unit for damage before use
4. Each time you use the XRF unit, record the resolution, check safety features and indicate results on safety log book.
5. Ensure you adhere to the principles of ALARA (as low as reasonably achievable) with respect to minimizing exposure time, maximizing distance from radiation source and shielding people from radiation.
6. Ensure that the instrument nose (with window) is firmly placed on your sample and point the instrument at the sample such that no part of your body (including hands, and/or fingers) is near the measurement window.
7. Engage the trigger lock whenever the device is 'on' but not in immediate use.
8. Handle the instrument with care, avoiding bumping or dropping the instrument.
9. Carry your certification wallet card with you when using the XRF unit and be prepared to show it upon request.
10. Have an appropriately calibrated radiation survey meter on hand when using the XRF unit.
11. Ensure the Radiation Safety Officer (RSO; Lara Lewis) does a safety inspection on a quarterly basis, including an inspection of the XRF unit and a review of all safety log books.
12. Ensure the XRF unit is visible to the operator when the unit is on.
13. When using the Test Stand, ensure the XRF unit is secured to the stand and the latch on the lid is fully closed whenever testing a sample.
14. Ensure the radiation indicator on the Test Stand is functioning when using the stand with the XRF unit.
15. Ensure XRF unit is turned off when you are finished using it. Detach the unit from the Test Stand (if applicable), place the unit within the designated pelican case and store the case in a locked cabinet.

NEVER:

16. Never allow unauthorized personnel within the immediate area of the operating XRF unit (<1 m).
17. Never leave the XRF unit unattended when the unit is on.
18. Never point the instrument at yourself or another person.
19. Never point the instrument into the air and perform a test.
20. Never hold a sample in your hand when testing.
21. Never test samples while sitting at a desk or table. Radiation may penetrate the desk and provide exposure to legs or feet.
22. Never attempt to dismantle or perform repairs on the XRF unit.

ADDITIONAL INFORMATION AND REFERENCES

- Canadian Radiation Emitting Devices Act 2004 (RED Act) (<http://laws-lois.justice.gc.ca/PDF/R-1.pdf>)
- Canadian Radiation Emitting Devices Regulations (amended 2006) (<http://laws-lois.justice.gc.ca/PDF/C.R.C., c. 1370.pdf>)
- Health Canada Safety Code 34: Radiation Protection and Safety for Industrial X-ray Equipment (2003) (http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/safety-code_34-securite/index-eng.php)
- Radiation Protection Regulations of Yukon Occupational Health and Safety Act (<https://www.wcb.yk.ca/Regulations/LIB0227.aspx>)



SAFE JOB PROCEDURES

Reference No:	SJP-XRF01
Version:	2014-1
Developed by:	Name L. Lewis
Last Reviewed by:	Date 25/04/2012 R. Cobbett 01/04/2016

TASK: Portable XRF Analyzer handling and storage

HAZARD ASSESSMENT ISSUE NO: XRF-01;2
RISK CLASS: LOW-MODERATE

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Pelican case, locked storage cabinet	n/a	n/a

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to federal legislation governing use of the XRF analyzer unit (XRF unit, herein).
- Be aware of who is the Radiation Safety Officer (RSO; Lara Lewis) for the Yukon Geological Survey.
- Be aware that notification of Ownership of Radiation Equipment Form was sent to the Director, Yukon Occupational Health & Safety (YOHAS) within 30 days of receiving the XRF unit as per territorial legislation. This form states the individual responsible for the safe use of the equipment (Radiation Safety Officer), the owner of the unit (YGS) and where the unit is stored (Elijah Smith Building). Any changes to this information must be relayed via Form A to the Director, YOHAS.
- Every user must have an individual safety log book in which he/she records when the XRF unit was used, for how long and whether all safety features were properly functioning. All guest users use a communal logbook labeled 'GUEST'.

TRAINING REQUIREMENTS:

- Initial orientation by certified YGS staff, if ONLY using XRF unit with test stand
- Innov-X certification training and X-ray Fluorescence Operator Level 1 certificate if using XRF unit without test stand

TASK STEPS:

When using XRF analyzer in core library with Innov-X Integrated Test Stand:

1. Ensure that you have received orientation by certified YGS staff on use of instrument.
2. Secure the XRF unit to the Test Stand and ensure that cords to computer and XRF analyzer are attached. Turn XRF unit on. Turn computer on. Ensure survey meter is nearby and functioning.
3. Record resolution number and go through checklist in individual safety log book.
4. Test a sample by putting it inside the enclosed Test Stand. Ensure lid of Test Stand is latched during test.
5. Do not open the Test Stand lid while the unit is emitting x-rays (*i.e.*, testing a sample).
6. Ensure XRF unit is turned off when not in use, detached from the Test Stand, placed within the designated pelican case and stored within a locked cabinet.
7. If the XRF unit won't turn off, open the battery cover, remove the battery and report the problem to the RSO for rectification.



SAFE JOB PROCEDURES

When using XRF analyzer without Innov-X Integrated Test Stand:

1. Ensure survey meter is nearby and functioning.
2. Ensure you have your XRF certification card with you when using the unit.
3. Turn XRF unit on. Record resolution number on and go through checklist in individual safety log book.
4. Ensure ALARA (Exposure that is As low As Reasonably Achievable) concept is adhered to at all times.
- 5.
6. Ensure that the instrument nose (with window) is firmly placed on your sample and point the instrument at the sample such that no part of your body (including hands, and/or fingers) is near the measurement window.
7. Engage the trigger lock whenever the device is 'on' but not in immediate use.
8. Handle the instrument with care, avoiding bumping or dropping the instrument.
9. Ensure XRF unit is turned off when not in use, placed within the designated pelican case and stored within a locked cabinet.
10. If the XRF unit won't turn off, open the battery cover, remove the battery and report the problem to the RSO for rectification.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Canadian Radiation Emitting Devices Act 2004 (RED Act) (<http://laws-lois.justice.gc.ca/eng/acts/R-1/>)
- Canadian Radiation Emitting Devices Regulations (amended 2006) (http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1370/)
- Health Canada Safety Code 34: Radiation Protection and Safety for Industrial X-ray Equipment (2003) (http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/safety-code_34-securite/index-eng.php)
- Radiation Protection Regulations of Yukon Occupational Health and Safety Act (<https://www.wcb.yk.ca/Regulations/LIB0227.aspx>)



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-FL
Version: 2014-1

General Activity or Task: Skid Steer Operation
Worksite: HS Bostock Core Library, Whitehorse - 918 Alaska Highway

Date Completed: 4/11/2014
Completed By: P. Sack
Last Reviewed By: S. Israel
Date Reviewed: 12-Apr-16

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	Environmental Factor										
FL-01	Situational/spatial awareness	Co-workers, walls, overhead obstructions and furniture; injury	6	1	50	300	H	Proper signage, high-visibility vest, adequate lighting.	Education, safe work practices and safe job procedures.	Eye protection, gloves, steel-toed boots, hard hat, high visibility vest	SJP-FL02
FL-02	Obstructed vision	Objects in path; damage and injury	1	3	50	150	M		Education, safe work practices and safe job procedures. Walk area prior to using forklift and identify possible hazards.	Eye protection, gloves, steel-toed boots, hard hat, high visibility vest	SJP-FL02
FL-03	Ramps	Tipping or bottoming-out; damage or injury	2	3	50	300	H		Education, safe work practices and safe job procedures for use on inclined surfaces. Approach ramps with caution and only move light loads on inclined surfaces.		SJP-FL02
FL-04	Snow and mud	Getting stuck	1	6	2	12	VL		Use caution and be conservative when in snow and mud.		SJP-FL02
	Equipment										
FL-05	Tipping forklift	Entrapment, injury	0.5	1	75	37.5	L		Education, safe work practices and safe job procedures.		SJP-FL02
FL-06	Tipping load	Entrapment, injury	1	1	50	50	L		Education, safe work practices and safe job procedures. Do not exceed recommended weight, center load on forks.		SJP-FL02
FL-07	Unstable load	Load dumped or tipped; injury	0.5	1	50	25	L		Education, safe work practices and safe job procedures. Do not exceed recommended weight, center load on forks and/or secure load.		SJP-FL02
FL-08	Overloading*	Load dumped or tipped; injury	0.5	1	50	25	L		Education, safe work practices and safe job procedures. Do not overload forklift.		SJP-FL02
FL-09	Unloading	Damage to truck beds; tipping, injury	6	1	50	300	H		Education, safe work practices and safe job procedures. Use spotter to unload.		SJP-FL02
FL-10	Sudden stops and starts	Load dumped or tipped; injury	0.5	3	50	75	L		Education, safe work practices and safe job procedures. Avoid sudden movements.		SJP-FL02
FL-11	Falling off forklift	injury	0.5	0.5	10	2.5	VL		Education, safe work practices and safe job procedures. Wear seat-belt while operating lift and NEVER jump from machine.	Eye protection, gloves, steel-toed boots, hard hat	SJP-FL02
FL-12	Speeding*	Damage; injury	1	3	75	225	M		Education, safe work practices and safe job procedures. Wear seatbelt and do NOT drive at excessive speeds.		SJP-FL02
	Machinery										
FL-13	Poor maintenance	Break-down , damage, injury	1	1	30	30	L	Complete daily inspection sheets and monthly maintenance checks.	Education, safe work practices and safe job procedures.		SJP-FL02, Forklift pre-operation - daily checklist, counterbalanced forklift - daily hazard assessment

*Completely avoidable - do no drive at accessive speeds or overload machine.

Safe Work Practices: SWP-021 (Use of skid steer)
Safe Job Procedures: SJP-FL02 (Skid steer operation)
Forms: Daily hazard assessment; Pre-shift inspection



SAFE WORK PROCEDURE

Reference No:	SWP-021	
Version:	2014-1	
Developed By:	Name	Date
Last Reviewed By:	P. Sack S. Israel	11/04/2014 12/04/2016

TASK: USE OF SKID STEER

PURPOSE: To promote use of the skid steer in accordance with safe work practices and current legislation.

GUIDELINES:

ALWAYS:

1. Ensure you have received the required training and are comfortable with the task.
2. Ensure you are familiar with the safety features of the counter balanced skid steer and the manufacturer's recommended operating procedures.
3. Inspect the skid steer for damage before use.
4. Know and adhere to federal and territorial legislation, particularly "Part 6 - Mobile Equipment" in the Yukon WCHSB regulations.
5. Ensure skid steer is well-maintained, complete pre-shift inspection.
6. Wear your seatbelt while operating a skid steer.
7. Wear required personal protective equipment (hard hat, gloves, steel toe boots).
8. Watch for hazards along path (eg. oil spots, wet spots, loose objects, holes, rough surfaces, people and vehicles).
9. Follow the Safe Job Procedures as outlined in SJP-FL02.
10. Keep your hands, arms, head, feet and legs inside the skid steer cabin.
11. Position the load evenly on both forks.
12. Travel with the load facing uphill on inclines; keep unloaded forks facing downhill.
13. Refuel only at designated location.
14. Observe standard traffic rules around other vehicles and keep to the right.
15. Travel at speeds that allow safe stops. Avoid sudden stops.
16. Slow down or stop at all blind intersections; yield to all others.
17. Observe all traffic rules, warning load limits, and overhead clearance.
18. Avoid operating skid steer in high volumes of pedestrians. Wait for a quieter time to deliver to busy congested areas.
19. When operating in area of pedestrian traffic minimize risk to others by cordoning off areas with signage and/or traffic cones to prevent walk through traffic.
20. Use horn as a warning device for oncoming pedestrians at all cross aisles exits, elevators, sharp corners, ramps and blind corners
21. Face direction of travel.
22. Keep forks 4 to 6 inches above the ground when traveling.
23. Operate in reverse when carrying bulky loads and whenever you cannot see over the load.
24. Tilt back load and secure if necessary before travelling.
25. Stay on the skid steer when the load is in a raised position.
26. Use a spotter when unloading if required.

NEVER:

27. Never allow unauthorized personnel to operate the lift.
28. Never allow someone to stand or walk under lifted forks, whether they are loaded or not.
29. Never raise anyone on the forks or load.
30. Never back up without looking.
31. Never drag forks on the ground.
32. Never turn on an inclined surface.
33. Never exceed the load limits of the skid steer.
34. Never jump from machine.
35. Never drive under the influence of alcohol, fatigue or aggression
36. Never ignore safe work practices.

ADDITIONAL INFORMATION AND REFERENCES

- Thompson Rivers University. "Skid steer Truck Safety": http://www.tru.ca/hsafety/workinglearningsafely/work/skid_steer.html (accessed 12 April 2016).
- Canadian Centre for Occupational Health and Safety, Skid steer Truck Safety: <http://www.ccohs.ca/headlines/text16.html> (accessed 12 April 2016)
- Yukon WCHSB Regulations and Act (see Part 6 – Mobile Equipment): <http://www.wcb.yk.ca/Regulations/LIB0223.aspx> (accessed 12 April 2016)



SAFE JOB PROCDEURES

Reference No: **SJP-FL02**Version: **1**

	Name	Date
Developed by:	P. Sack	11/04/2014
Last Updated:	S. Israel	12/04/2016

TASK: Skid Steer Operation (Provisional)

**HAZARD ASSESSMENT ISSUE NO: FL-05 to 09;
FL-11 to 16
RISK CLASS: HIGH**

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Case SV300 Skid Steer	n/a	Helmet if being raised, gloves for loading/unloading, steel toe boots

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation
- Ensure skid steer is well-maintained
- Watch for hazards along path
- Do not drive under the influence of alcohol, drugs, or fatigue

TRAINING REQUIREMENTS:

Yukon College course BBCT 001: Bobcat Operator Training for Safe Workplaces or equivalent

TASK STEPS:

Preshift:

7. Perform a pre-shift inspection once per day prior to use, and complete an inspection checklist which is handed in to the Supervisor.
8. Do not operate a skid steer that has a maintenance problem, or is not safe to operate. Remove the key from the ignition switch and put an "Out of Service" tag on the machine. Notify Core Library Manager of the problem.
9. WCB regulations require all operators to wear seat belts when skid steer is in operation.
10. Mount and Dismount Carefully.

End of shift or parking:

1. Tilt the forks forward until level or flat on the floor.
2. Apply the parking brake, place transmission in neutral; chock the wheels.
3. Only refuel outside near fuel shed.

Loading General:

1. Check the rating capacity on the skid steer nameplate. Note that the MAXIMUM load capacity of the Case SV300 is 3000 lbs.
2. Determine if the load weight is within the capacity of the skid steer.
3. The skid steer should be started with the forks down.
4. Lift the forks to 3 inches.
5. Do not allow passengers on the skid steer.
6. Never raise anyone up in the air on any attachment.

Lifting a Palletized Load:

1. Drive to the pallet. This applies to either a pallet on a lower or upper shelf. Stop with the fork 3 inches from the load.
2. Level the forks so they are right angles to the load.
3. Raise the forks to 1 inch below the slot on the pallet.
4. Drive forward into the pallet.
5. Lift forks 4 inches.
6. Tilt back load until secured for travel. If load will obscure vision drive in reverse taking care while turning as the extra swing may cause load instability.
7. Look back. Honk. Drive back so that load clears the pallets below.
8. Lower the load to 3 inches above ground. Do not drag forks on the ground.
9. Materials and equipment are to be loaded on the skid steer in a manner that prevents any movement of the load that could create a hazard to workers or others.
10. All loads that could be subject to shifting during transport are to be restrained if shifting would result in the skid steer becoming unstable.
11. Position the load evenly on both forks.
12. Never permit anyone to stand or pass under the elevated portion of the forks or attachment.



SAFE JOB PROCDEURES

Lifting Drums:

1. Place drums securely on a pallet. If there is any possibility of shifting of the drums, have drums strapped together to minimize movement.
2. Tilt forks forward, slide fork tips along floor to position forks under object, raise forks and tilt back slightly to prevent shifting of the drums.
3. If drums are filled with a liquid, be careful to drive slowly as the fluid in the drums may cause shifting during transportation.

Traveling

17. Do not drive with arms, head or legs outside the confines of the skid steer.
18. Always wear your seatbelt while operating skid steer.
19. Turn skid steer only when the forks are lowered to a safe travelling height.
20. Observe traffic and keep to the right.
21. Travel at speeds that allow safe stops.
22. Slow down or stop at all blind intersections; yield to all others.
23. Always observe all traffic rules, warning load limits, and overhead clearance. Height to the top of the Case SV 300 ROPS (i.e. height of machine without extending arms and attachment) is 79 inches (~2 m or over 6 ½ feet – taller than most operators).
24. Avoid operating skid steer in high volumes of pedestrians. Wait for a quieter time to deliver to busy congested areas.
25. When operating in area of pedestrian traffic minimize risk to others by cordoning off areas with signage and/or traffic cones to prevent walk through traffic.
26. Use horn as a warning device for oncoming pedestrians at all cross aisles exits, elevators, sharp corners, ramps and blind corners
27. Face direction of travel. NEVER back up without looking.
28. Keep forks 4 to 6 inches above the ground when traveling, and tipped slightly towards machine so as to not catch on ground.
29. Operate in reverse when carrying bulky loads and whenever you cannot see over the load.
30. Drive to point of deposit. Position the skid steer in front of deposit area.

Unloading Pallets:

1. Raise load 5-10 inches above the unloading point (space permitting).
2. Drive forward stopping 3-4 inches in front of deposit point.
3. Tilt mast forward to a right angle position so load is level.
4. Drive forward until load is aligned with corners of the stack.
5. Stop. Lower load to resting-place. Stack pallets loaded with cases, cartons straight and square. Stagger the top tier to "tie-in place".

Unloading Round Objects:

1. Stack round objects together tight and straight.
2. Hold securely in place with wedges.
3. To nest round objects - place the bottom tier tightly together and secure with wedges. Place wedges against each roll in the bottom for a more secure stack.
4. Look behind you. Back up so that forks clear other pallets.
5. Lower forks to 3 inches from the ground.

Operations on Grades and Ramps:

1. Never turn on an angled grade.
2. Keep unloaded forks facing downgrade.
3. When driving a loaded skid steer up a grade, ensure that skid steer is driven forwards
4. When driving a loaded skid steer down a grade, the skid steer must be driven in reverse.
5. Travel with the load facing uphill on inclines and downgrades.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Canadian Safety Council, Safe Operation of a Forklift/Lift Truck Training Course : <https://canadasafetycouncil.org/training/safe-operation-forkliftlift-truck-training-course> (accessed 12 April 2016)
- Yukon WCHSB Regulations and Act (see Part 6 – Mobile Equipment): <http://www.wcb.yk.ca/Regulations/LIB0136.aspx> (accessed 12 April 2016) Spellman, Frank R. *Environmental Impacts of Hydraulic Fracturing*. (Chapter 9). Ohio: CRC Press, 2013.

CASE Skid-steer Pre-Operational Checklist



Week of:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Capacity Plate Clear							
Hydraulic Hoses							
Tires (Cracks, wear, air)							
Lights and Horn							
Parking Brake							
Seat/Seatbelt							
Signs of leaks							
Fluid Levels (Oil/Hydraulic/Coolant)							
Engine Start							
Steering Operational?							
Hydraulics Operational							
<i>x = needs attention</i>							

Operators Initials							

4.4 TRANSPORT

4.4.1 Vehicles

- *4.4.1.1 Trucks*
- *4.4.1.2 All-terrain vehicles (ATVs)*

4.4.2 Aircraft

- *4.4.2.1 Helicopter use*
- *4.4.2.2 Fixed wing use*

4.4.3 Boat use



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-V
Version: 2014-1

General Activity or Task: Vehicle Use
Worksite: Highways and back roads

Date Completed: 2007/05/01
Completed By: Steve Israel & Panya Lipovsky
Last Reviewed By: R. Cobbett
Date Reviewed: 4/1/2016

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General vehicle use										all safe work practices and procedures reviewed annually; training courses offered annually
V01	Loss of control from excessive speed	serious injury or death	6	6	75	2700	VH	n/a	Safe work practices and safe job procedures	seat belt	SWP-006, SJP-V01
V02	Wildlife collision	serious injury or death	6	3	75	1350	VH	n/a	Safe work practices and safe job procedures	seat belt	SWP-006, SJP-V02
V03	Vehicle collision	serious injury or death	6	3	75	1350	VH	n/a	Safe work practices and safe job procedures	seat belt	SWP-006, SJP-V03
V04	Loss of control during poor driving conditions (snow & ice, poor light, gravel surface)	serious injury or death	6	6	75	2700	VH	use of 4x4	Safe work practices and safe job procedures	seat belt	SWP-006, SJP-V01
V05	Jump starting battery	chemical burns, or explosion of battery acid	2.5	1	10	25	L	n/a	Safe work practices and safe job procedures	gloves, eye protection	SWP-006, SJP-V05
	Off-road / 4x4 driving										
V06	Roll-over off steep terrain	serious injury or death	2.5	1	75	187.5	M	n/a	Safe work practices, safe job procedures and training	seat belt	SWP-006, overland driving course
V07	Use of winch	serious injury or death	2.5	1	30	75	L	n/a	Safe work practices, safe job procedures and training	gloves, eye protection	SWP-006, SJP-V06, overland driving course
V08	Improper use of jack to get unstuck	serious injury or death	2.5	1	50	125	M	n/a	Safe work practices, safe job procedures and training	gloves	SWP-006, SJP-V07, overland driving course
V09	Loss of control on gravel roads	serious injury or death	3.5	2	75	525	H	n/a	Safe work practices and training	seat belt	SWP-006, overland driving course
	Changing tire										
V10	Improper use of jack to change tire	serious injury or death	2.5	1	50	125	M	n/a	Safe work practices, safe job procedures and training	gloves	SWP-006, SJP-V08, overland driving course
V11	Jack failure	serious injury or death	2.5	0.5	50	62.5	L	n/a	Safe work practices and training		SWP-006, SJP-V07&08, overland driving course
V12	Lifting tire	muscle strain	2.5	0.5	10	12.5	VL	n/a	Safe work practices and training		SWP-006, SJP-V08, overland driving course
	Transport of hazardous materials										
V13	Portable propane tanks - ignition of leaking fuel	serious injury or death from fire or explosion	8	1	75	600	H	n/a	Safe work practices and safe job procedures		SWP-006,014&015, SJP-V04
V14	Gasoline, diesel or aviation fuel in jerry cans or drums - ignition of leaking fuel	serious injury or death from fire or explosion	8	1	75	600	H	n/a	Safe work practices and safe job procedures		SWP-006,014&015, SJP-V04
V15	Bear spray - accidental discharge from excessive heat in cab or from unintentional impact	body contact / ingestion / incapacitation while driving	8	3	50	1200	VH	n/a	Safe work practices and safe job procedures		SWP-006,014&015, SJP-V04
	Other - Miscellaneous										
V16	driver has poor or untested eye sight	serious injury or death	1	1	75	75	L	n/a	drivers license eyesight testing	corrective lenses (glasses or contacts)	

Safe Work Practices: SWP-006 (Vehicle use), SWP-014 (WHMIS), SWP-015 (Transportation of dangerous goods; TDG)
Safe Job Procedures: SJP-V01 (Vehicle use-general), SJP-V02 (Vehicle use-wildlife collision), SJP-V03 (Vehicle use-collision), SJP-V04 (Vehicle use with TDG), SJP-V05 (Jumpstarting a dead battery), SJP-V06 (winching), SJP-V07 (getting unstuck), SJP-V08 (changing a tire)
Forms: Vehicle road kits - checklist; Vehicle roadworthiness inspection form



SAFE WORK PRACTICES

Reference No:	SWP-006	
Version:	2	
Developed By:	Name L. Lewis	Date 2008/04/09
Last Reviewed By:	R. Cobbett	2016/04/01

TASK: VEHICLE USE

PURPOSE: Rental trucks and 'fleet' vehicles are used in town, on the highway, and to access camps and properties, some of which may require off-road driving or driving in marginal conditions. Vehicle accidents are the second most common type of accident associated with geological field work. Following these guidelines will help you minimize the possibility of accidents and incidents associated with vehicle use.

GUIDELINES:

ALWAYS:

1. Carry safety gear in your truck (communications device, shovel, jumper cables, tow rope, jack, wheel wrench, spare tire, flashlight, first aid kit, etc.)
2. Ensure there is adequate survival gear in the vehicle when driving in winter (food, warm clothes, sleeping bag).
3. Ensure vehicle is mechanically sound and suitably equipped - check fuel, oil and fluid levels and tire condition (uneven tread, cuts, cracks and bulges) and pressure.
4. Perform safety checks regularly, especially if the vehicle has been driven by someone else and/or through harsh conditions.
5. Drive in a safe and controlled manner that is suitable for road and weather conditions, and obey all traffic laws.
6. Wear a seat belt at all times while traveling in a vehicle, **except** when crossing ice bridges.
7. Check road and weather reports, and investigate potential hazards that may be encountered on your route **before** setting out (e.g., washouts, deteriorated bridges, water-crossings, rockslides, etc.)
8. Secure loose cargo items (e.g., fuel containers, jacks, spare tires) that might cause further damage in the case of an accident.
9. Be aware of other vehicles on the road and check your rearview and side mirrors frequently.
10. Be aware of large commercial vehicles on the road. They take more than twice the distance to stop. Avoid cutting in front of large trucks or braking suddenly in front of them.
11. Avoid staying too long in a driver's blind spot. Never pass vehicles on the right unless road signs allow.
12. Check any water crossing before attempting to drive across in order to determine depth of water, obstacles and bottom conditions (mud, gravel, boulders, etc.)
13. Proceed with caution near accident sites. Other drivers may be looking at the accident and not paying attention to their driving.
14. Be aware and drive carefully when animals, cyclists, parked cars or people are on the road.
15. Drive carefully and slow down on narrow, steep roads or winding roads with blind corners. Be especially cautious when driving in winter, or in snowy, icy or muddy conditions, and on loose gravel.
16. Be aware that highway shoulders are often soft and can cause loss of control if you accidentally steer onto the shoulder at speed.
17. Be aware of trip duration and driving direction, e.g., driving westward into a blinding setting sun can pose a risk.
18. Use caution when driving at dusk or dawn when animals tend to emerge to forage. Remember that animals can be unpredictable.
19. Be a defensive driver. Do not assume other vehicles will always turn in accordance with their turn signals.
20. Use caution when driving through intersections, even when you have the right of way. Each year, 40% of serious injuries from vehicle collisions occur at intersections.
21. Avoid tailgating. Maintain a sufficient distance from the vehicle ahead of you to allow yourself time to stop if the other vehicle stops abruptly. Use the 3 second rule when following a vehicle.
22. Check fuel level before every trip, considering your range and the distance to gas stations along the route.
23. Be aware of the type of fuel the vehicle requires. Filling a gas-powered vehicle with diesel or vice-versa can destroy the engine.
24. Ensure your driving companion is carrying a spare truck key, or secure a spare key in a safe place on the outside of the vehicle.
25. Promptly report any accident to the police and report to your supervisor.
26. Keep your hands on the wheel, your eyes on the road and your mind on the driving.
27. Get someone to stand outside the vehicle to guide you if you must maneuver over or around an obstacle, or if you must back-up with limited visibility. Have your guide stand 10 m from the vehicle, out of your travel path, but where they can see you or your mirror and all four wheels.
28. Operate a winch only when adequately trained to do so - wear gloves and eye protection when handling the winch cable.
29. Use parking brake when parked on a hill.

NEVER:

30. Never operate a vehicle while impaired by drugs, alcohol or fatigue.
31. Never ride in the back or box of a pick-up truck.
32. Never attempt maneuvers (e.g., operate a winch, tow another vehicle, go over obstacles) for which you are untrained.
33. Never rush or push your limits - if you feel tired or unwell, stop and have a nap, or change drivers.
34. Never overload your vehicle. Check the load limit of your vehicle posted on the inside of the driver's door.
35. Never allow yourself to be distracted by eating, adjusting the stereo, talking on the phone, emailing, texting or doing other activities while driving - pull over if necessary.
36. Never carry hazardous or highly flammable items such as bear spray, gasoline or propane in a vehicle cab.
37. Never position your body under the vehicle when jacked up to change a tire.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- Road Safety. Insurance Corporation of British Columbia (ICBC). <http://www.icbc.com/road-safety>



SAFE WORK PRACTICES

Reference No:	SWP-014	
Version:	2016-1	
	Name	Date
Developed By:	R. Dufour	2009/05/14
Last Reviewed By:	J. Bond	2016/04/12

TASK: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

PURPOSE: You must be properly informed of all hazardous materials that you may come in contact with on site. Recognizing labels, being able to access Material Safety Data Sheets (MSDS) and learning about proper handling and precautions and first-aid procedures is the only way to protect yourself and your coworkers.

WHMIS CONTROLLED MATERIALS:

YGS has a number of WHMIS controlled materials, stored in various locations.

The following materials are stored in a locked cabinet at the core library on the Alaska Highway:

- Hydrochloric Acid
The MSDS binder for these materials is located by the first aid station outside the saw room at the core library. For access please ask Tiffani Fraser or Craig Nicholson.

Employees are also occasionally exposed to the following materials, which are stored in designated locations at the Core Library when not being used in the field:

- Sulphuric acid (car batteries, stored in battery room at Core Library)
- Propane (stored in the hazardous materials shed in the locked compound behind the core library)
- Gasoline (stored in the hazardous materials shed in the locked compound behind the core library)
- Diesel and jet fuel (stored in the hazardous materials shed in the locked compound behind the core library)
- White Gas (Naphtha, stored in the hazardous materials shed in the locked compound behind the core library)
The MSDS binders for these materials are located by the first aid station outside the saw room at the core library as well as in the hazardous materials sheds.

GUIDELINES:

ALWAYS:

1. Look at supplier label information for risks, precautionary measures and first aid.
2. Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
3. Refer to MSDS for in-depth product information.
4. Use appropriate personal protective equipment/clothing when recommended for certain products.
5. Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
6. Inform employer of hazards and damaged or missing labels.
7. Add acid to water (never water to acid) if diluting chemicals.
8. Store WHMIS-controlled substances in appropriate locations at the Core Library.

NEVER:

9. Never use any of the listed products without referring to supplier labels.
10. Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures as well as a statement confirming MSDS is available.
11. Never store any flammable substance (propane, gasoline, diesel, white gas) inside the office or Core Library.

ADDITIONAL INFORMATION AND REFERENCES

- Poison Control Center: 867-393-8700 (Whitehorse Hospital, ask for Poison Control)
- Northern Safety Network Yukon (867-633-6673) - WHMIS train the trainer program
- Ralph Shopland (867-667-5963) – Yukon Government Public Service Commission, Corporate Health and Safety, WHMIS trainer
- Tiffani Fraser (867-667-3228) – YGS WHMIS trainer
- Work Safe BC: <http://www2.worksafebc.com/Topics/WHMIS/Home.asp>



SAFE WORK PRACTICES

Reference No:	SWP-015
Version:	2016-1
Name:	T. Allen
Date:	2009/10/14
Developed By:	T. Allen
Last Reviewed By:	D. Moynihan
	2016/04/15

TASK: TRANSPORTATION OF DANGEROUS GOODS

PURPOSE: Everyone who handles dangerous goods, including the person who loads or unloads the goods, is responsible for making sure the goods are transported safely to their final destination. The following items used by personnel at YGS are designated as 'dangerous goods' under the TDG Act and Regulations and have restrictions on transport in vehicles and aircraft. Individuals who handle, prepare for transport, or carry dangerous goods must be trained and certified in Transportation of Dangerous Goods.

DANGEROUS GOODS:

- Note that dangerous goods in small quantities (refer to Column 6 of the dangerous goods list) may be exempt from the regulations (look up individual items by following the link provided in note ⁽²⁾ below).
- Some items listed below have restrictions or may be forbidden ⁽⁵⁾ from transporting in passenger vehicles or aircraft – refer to Columns 8 & 9 in Schedule 1 by following the link provided in note ⁽²⁾ below.

Shipping Name ²	UN Number ²	Col. 5 Special Provisions ³	Col. 6 Explosive Limit and Limited Quantity Index ⁴
Sulphuric acid (battery fluid)	UN2796	none	1 litre
• Batteries, wet, non-spillable	UN2800	39	5
• Batteries, wet, filled with acid	UN2794		5
• Lithium batteries	UN3090/3091	34	0
• Propane ⁵	UN1978	88	0.125 (exceptions see below)
• Gasoline	UN1203	17, 82, 88	30 litres (exceptions see below)
• Diesel	UN1202	82, 88	30 litres (exceptions see below)
• Jet A/A-1	UN1863	17, 82	60 litres (exceptions see below)
• Jet B	UN1863	17, 82	1 (no exceptions)
• White gas (stove fuel) ⁵	UN1268	none	0.5, 1, 5 litres
• Aerosols (incl. bear spray) ¹	UN1950	80	0.125, 1
• Paint (lacquer, varnish)	UN1263/3066	59, 83	
• Matches (strike anywhere) ⁵	UN1331	none	5 kg
• Ammunition ⁵	various	none	0
• Hydrochloric acid	UN1789	none	1, 5 litres

¹ There is no reference to either bleach (sodium hypochlorite) or bear spray in the DG list, so bear spray is provisionally included under aerosols.

² Shipping Name/UN numbers: <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

³ Column 5 Special Provisions: see end of this document or <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

⁴ Quantity limits are in units of kg for solids, litres for liquids and for gases as the capacity of the means of containment.

⁵ Forbidden on board passenger carrying vehicles or ships. A person may apply for a permit for equivalent level of safety to transport these dangerous goods (see Part 14, Permit for Equivalent Level of Safety).

- Any dangerous goods over 500 kilograms or 500 litres must have appropriate placards as listed in the table below. If transporting less than this amount ensure that the dangerous goods are labeled on their container.
- Only for special situations with quantities under 500 kg or 500 litres will you need placards on your vehicle. The shipper would then inform you, these items are usually very dangerous.

Dangerous Good	UN # and Placard Needed
Diesel	1202
Gasoline	1203
Propane	1978
Jet Fuel	1863



SAFE WORK PRACTICES

- Pilots need to be informed if any dangerous goods are being brought on board aircraft. Such goods include but are not limited to:
 - Lead-acid batteries
 - Ammunition/firearms
 - Bear spray
 - Camp fuel
 - Matches
 - Lighters

GUIDELINES:

ALWAYS:

1. Inform your pilot if you have to transport any of the goods listed above in an aircraft. Hazardous items should be listed on the flight ticket.
2. Familiarize yourself with the hazards of dangerous goods (*i.e.*, flammable, toxic, corrosive, etc.).
3. Make sure that the classification details are complete, so the information will be available to emergency responders if there is an accident or incident during transport.
4. Refer to Material Safety Data Sheet (MSDS) for in-depth product information.
5. Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
6. Look at supplier label information for risks, precautionary measures and first aid.
7. Use appropriate personal protective equipment/clothing when recommended for certain products.
8. Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
9. Inform employer of hazards and damaged or missing labels.
10. In the case of a spill or leak of dangerous goods while in your care, you need to protect yourself, keep other people away and try to keep the danger from spreading.

NEVER:

11. Never use any of the listed products without referring to supplier labels.
12. Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures and contains a statement confirming that MSDS is available for the product.

Air Transportation of TDG:

- Transportation of dangerous goods by aircraft is covered under the Transportation of Dangerous Goods Regulations, Part 12 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm>)
- Transportation of dangerous goods within an aircraft can only occur by an air charter company that is certified to transport dangerous goods. It is the responsibility of the project manager to make sure any company that the YGS flies with is certified.



SAFE WORK PRACTICES

TRAINING CERTIFICATE REQUIREMENTS (Section 6.1, TDG Regulations, <https://www.tc.gc.ca/eng/tdg/clear-part6-121.htm#sec61>):

- (1) A person who handles, offers for transport or transports dangerous goods must:
 - (a) be adequately trained and hold a training certificate in accordance with this Part; or
 - (b) perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.
- (2) An employer must not direct or allow an employee to handle, offer for transport or transport dangerous goods unless the employee:
 - (a) is adequately trained and holds a training certificate in accordance with this Part; or
 - (b) performs those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.

Exceptions:

- No TDG certificate or training is needed to transport up to 2000 L of diesel, gasoline or Jet A/A-1, or 500 kg or less of propane, provided:
 - the diesel, gasoline or Jet A/A-1 is in separate drums (*i.e.*, in containers with a capacity of 450 L or less)
 - the propane is contained in no more than 5 small containers (*i.e.*, containers cannot exceed 100 kg in capacity)
 - the containers meet TDG standards
 - the shipper (*i.e.*, the driver of the vehicle) is aware of the hazards associated with the material being shipped (*i.e.*, MSDS)
 - placards detailing the dangerous goods being transported are required on vehicle if the labels on individual drums/containers are not visible from outside the vehicle
 - For more details see TDG Regulations 1.32.3, 1.33 and 1.35
 - propane is ok for air transport provided the propane is in a certified container under 100 L in capacity and the air charter company is certified to transport dangerous goods: TDG Regulations 12.9 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm#sec129>)
 - **There is no exception for Jet B, this material must be transported by someone that is certified to transport dangerous goods.**

TRAINING PROVIDERS:

- Transportation of Dangerous Goods training is available online through www.Danatec.com or www.Solocks.com
- Yukon College also offers the following course: "TDG 001: Transportation of Dangerous Goods" which is taught in the classroom.

ADDITIONAL INFORMATION AND REFERENCES

Important Contacts/Information:

- Transport Canada – TDG Information <http://www.tc.gc.ca/eng/tdg/safety-menu.htm>
- Transport Canada – CANUTEC (Canadian Transport Emergency Centre) <http://www.tc.gc.ca/eng/canutec/menu.htm>
 - Dangerous goods emergency 613-996-6666 or *666 (from a cell)
 - Dangerous goods information 613-996-4624
- Dangerous goods emergency – Yukon HPW (carrier compliance) 867-667-5920 (John Warkentin)
- Publications/training: DANATEC Educational Services, www.Danatec.com (800-465-3366) or Solocks.com (877-977-8339)



SAFE WORK PRACTICES

Relevant Regulations:

- Transportation of Dangerous Goods Act <http://www.tc.gc.ca/eng/tdg/act-menu-130.htm>
- Transportation of Dangerous Goods Regulations <http://www.tc.gc.ca/eng/tdg/clear-menu-497.htm>

Col. 5 Special Provisions:

17 These dangerous goods may be handled, offered for transport or transported under the UN number and shipping name UN1268, PETROLEUM DISTILLATES, N.O.S., PETROLEUM PRODUCTS N.O.S., DISTILLATS DE PÉTROLE, N.S.A. or PRODUITS PÉTROLIERS, N.S.A. **34**

34 (1) Lithium cells and batteries may be transported under this shipping name, if

- (a) each cell or battery is included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 12 g of lithium or lithium alloy;
- (c) each battery contains not more than 500 g of lithium or lithium alloy;
- (d) each cell or battery has a safety venting device or is designed to prevent a violent rupture under normal conditions of transport;
- (e) each cell or battery is equipped with an effective means of preventing external short circuits;
- (f) each battery containing cells or a series of cells connected in parallel is equipped with diodes to prevent reverse current flow; and
- (g) the cells and batteries are packed in a means of containment to prevent short circuits and movement that could lead to short circuits.

34 (2) These Regulations do not apply to lithium cells and batteries if

- (a) each cell with a liquid cathode contains not more than 0.5 g of lithium or lithium alloy;
- (b) each battery with a liquid cathode contains a total quantity of not more than 1 g of lithium or lithium alloy;
- (c) each cell or battery with a liquid cathode is hermetically sealed;
- (d) each cell with a solid cathode contains not more than 1 g of lithium or lithium alloy;
- (e) each battery with a solid cathode contains a total quantity of not more than 2 g of lithium or lithium alloy;
- (f) each lithium-ion cell contains a total quantity of not more than 1.5 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the cell in ampere-hours;
- (g) each lithium-ion battery contains a total quantity of not more than 8 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the battery in ampere-hours;
- (h) for a liquid cathode battery that contains more than 0.5 g of lithium or lithium alloy or a solid cathode battery that contains more than 1 g of lithium or lithium alloy, the battery does not contain a liquid or gas that is dangerous goods unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery;
- (i) the cells are separated to prevent short circuits; and
- (j) the batteries are separated to prevent short circuits and, except when they are installed in electronic devices, are packed in strong means of containment.

34 (3) These Regulations do not apply to lithium cells or batteries if

- (a) the cells or batteries are not included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 5 g of lithium or lithium alloy;
- (c) each battery contains not more than 25 g of lithium or lithium alloy; and
- (d) the cells and batteries are packed or are designed to prevent short circuits under normal conditions of transport.

59 Substances that are listed by name in Schedule 1 must not be transported under this shipping name. Substances transported under this shipping name may contain not more than 20 per cent nitrocellulose if the nitrocellulose contains not more than 12.6 per cent nitrogen (by dry mass).

80 Despite section 1.17 of Part 1, Coming into Force, Repeal, Interpretation, General Provisions and Special Cases, a person must not offer for transport or transport these dangerous goods unless they are in a means of containment that is in compliance with Part 5, Means of Containment.

82 These dangerous goods require an emergency response assistance plan in accordance with subsection 7.1(5) of Part 7, Emergency Response Assistance Plan.



SAFE WORK PRACTICES

83 Section 5.12 of Part 5, Means of Containment, does not apply to these dangerous goods if:

- (a)** the dangerous goods are included in Packing Group II or III;
- (b)** the dangerous goods are in quantities less than or equal to 5 L and are in a metal or plastic means of containment;
- (c)** the metal or plastic means of containment is inside an outer means of containment and the gross mass of the outer means of containment is less than or equal to 40 kg;
- (d)** the means of containment are designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- (e)** the dangerous goods are transported in palletized loads, a pallet box or unit load device so that individual means of containment are placed or stacked and secured to the pallet by strapping, shrink- or stretch-wrapping or other suitable means; and
- (f)** when the dangerous goods are on a road vehicle or a railway vehicle that is to be transported by ship, the pallets, pallet boxes or unit load devices are secured inside the vehicle and the vehicle is closed.

88 Despite the quantity limits in column 9 of Schedule 1 for these dangerous goods, a road vehicle is not a passenger carrying road vehicle unless the passengers in it are transported for hire or reward.



SAFE WORK PRACTICES

Reference No:	SJP-V01	
Version:	2014-1	
	Name	Date
Developed By:	C. Welsh	23/01/2009
Last Reviewed By:	R. Cobbett	2016/04/01

TASK: Vehicle use - general

HAZARD ASSESSMENT ISSUE NO: V-1 & 4
RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
vehicle	n/a	seat belt

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation.
- Ensure vehicle is well maintained.
- Wear your seatbelt and ensure other passengers are wearing theirs.
- Do not drive at excessive speeds.
- Watch for hazards along roadways.
- Do not use a cell phone while driving.
- Carry an emergency kit with a communications device, tools, survival gear and food.
- Ensure you have a check-in so someone knows where you are.
- Do not drive under the influence of alcohol, drugs, fatigue or aggression.
- Ensure the vehicle is capable of the load to be carried or towed.

TRAINING REQUIREMENTS:

- Driver's license

TASK STEPS:

1. Do a regular "vehicle walk-around", checking tire pressure, lug nuts, fluid levels, lights, windshield, mirrors and anything unusual.
2. Take careful note of weather and road conditions before departing.
3. Travel within posted speed limits and drive slower when weather and/or road conditions are poor.
4. Drive with two hands placed at the ten and two o'clock positions.
5. Brake only when travelling in a straight line and avoid braking suddenly whenever possible. Slow down before reaching a curve in the road.
6. Drive a minimum of 3 seconds behind any vehicle in front of you.
7. Anticipate the actions of other road users and drive defensively.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- Yukon Driver's Basic Handbook: <http://www.hpw.gov.yk.ca/mv/newhandbook.html>



SAFE JOB PROCEDURES

Reference No:	SJP-V02
Version:	2015-1
Developed By:	Name: C. Welsh Last: R. Cobbett
	Date: 2009/01/23 2016/04/01

TASK: Vehicle Use – wildlife collision

HAZARD ASSESSMENT ISSUE NO: V-02
RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
vehicle		seat belt

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation
- Ensure vehicle is well-maintained
- Wear your seatbelt and ensure other passengers are wearing theirs
- Do not drive at excessive speeds
- Watch for hazards along roadways
- Do not use a cell phone while driving
- Carry an emergency kit with a communications device, tools, survival gear and food
- Ensure you have a check-in so someone knows where you are
- Do not drive under the influence of alcohol, drugs, fatigue or aggression
- Ensure the vehicle is capable of the load to be carried or towed

TRAINING REQUIREMENTS:

- Driver's license

TASK STEPS:

Reducing the Risk of a Wildlife Collision:

1. Watch for wildlife crossing signs – these indicate high risk locations where wildlife crossings are frequent.
2. Obey posted speed limit and pay attention to wildlife signs; driver complacency is dangerous.
3. Reduce speed, especially at dawn and dusk when wildlife may be more active.
4. Drive defensively.
5. Anticipate your own reaction to wildlife.
6. If there is wildlife on the road do not take unsafe evasive actions. Try to avoid swerving and reduce speed.
The only time to consider swerving is if a moose is in your path, as hitting a moose may cause significant damage to the vehicle harm the driver and passengers. If you must hit the moose advise all passengers to get low in the vehicle.

If a collision is inevitable:

1. Steer for where the animal is coming from, not where it is going
2. Look where you are driving and not at the animal
3. If you must hit something, try for a glancing blow rather than a head-on hit.
4. Brake firmly and quickly, look, and steer the car to hit animal at an angle
5. Let up on the brake just before collision, this causes the front of the vehicle to rise and reduces the risk of the animal coming through the windshield.



SAFE JOB PROCEDURES

Following Collision:

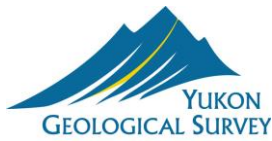
1. Pull over in a safe location and turn on hazard lights.
2. Try to determine if the animal is alive or injured from a distance; if it is injured, do not approach it.
3. Call a conservation officer to report the dead or injured animal.

Yukon Conservation Officer Phone Numbers:

Regional Offices	Conservation Officers
Southern Lakes (Whitehorse)	667-8005
Northern Region (Dawson)	993-5492
Liard Region (Watson Lake)	536-7363
Kluane Region (Haines Junction)	634-2247
Northern Tutchone Region (Mayo)	996-2202
Old Crow	966-3040
Ross River	969-2202
Faro	994-2862
Teslin	390-2685

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- Wildlife Collision Prevention Program “How Can Drivers Reduce the Chances of Having a Wildlife Vehicle Collision?”
<http://www.wildlifeaccidents.ca/hints.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-V03
Version:	2014-1
Name	Date
Developed By:	C. Welsh 2009/01/29
Last Reviewed By:	R. Cobbett 2016/04/01

TASK: Vehicle Use – collision

HAZARD ASSESSMENT ISSUE NO: V-03
RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
vehicle		seat belt

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation.
- Ensure vehicle is well-maintained.
- Wear your seatbelt and ensure other passengers are wearing theirs.
- Do not drive at excessive speeds.
- Watch for hazards along roadways.
- Do not use a cell phone while driving.
- Carry an emergency kit with a communications device, tools, survival gear, and food.
- Ensure you have a check-in so someone knows where you are.
- Do not drive under the influence of alcohol, drugs, fatigue, or aggression.
- Ensure the vehicle is capable of the load to be carried or towed.

TRAINING REQUIREMENTS:

- Driver's license

TASK STEPS:

To reduce the risk of a vehicle collision:

1. Always check blind spot while driving.
2. Be aware of traffic and wildlife around you and keep a safe distance from other vehicles.
3. Slow down for less than perfect road conditions.
4. Don't crowd your driving space within the vehicle.
5. Slow down at intersections and watch pedestrians and other drivers carefully.
6. When backing up, have someone guide you if possible.
7. Don't allow eating, talking, or adjusting the stereo to distract you from the road.

In the event of a vehicle collision:

1. If the scene is safe, administer first aid if necessary.
2. Call for help by flagging down another vehicle or using your satellite phone or VHF radio.
3. Contact the YGS Operations Manager or Director as soon as possible to inform them of the incident.
4. Contact the Yukon Government Transportation Manager as soon as possible to inform them of any fleet vehicle damage.
5. Fill out a Loss and Damage report and WCB report if necessary.
6. Never admit fault at the scene.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- ICBC Road Safety: <http://www.icbc.com/road-safety>



SAFE JOB PROCEDURES

Reference No:	SJP-V04
Version:	2015-1
Developed By:	Name C. Welsh
Last Reviewed By:	R. Cobbett
	Date 2009/01/29 2016/04/01

TASK: Vehicle Use – transportation of dangerous goods (TDG)

HAZARD ASSESSMENT ISSUE NO: V13-15

RISK CLASS: HIGH to VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
vehicle	MSDS Emergency Response Guidebook, placards, shipping documentation	gloves, eye protection where necessary, spill kit

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation.
- Make sure all hazardous substances are marked accordingly.
- Know the location of the Material Safety Data Sheets (MSDS) and WHMIS binders.
- Do not carry propane, gasoline, bear spray or other dangerous goods in the cab of a vehicle.

TRAINING REQUIREMENTS:

- Transportation of Dangerous Goods
- WHMIS
- Driver's license
- Aircraft emergency training

TASK STEPS:

Refer specifically to TDG manual for specific substances: IATA for air transportation and TDG Handbook for ground transportation.

In general, when transporting dangerous goods, the following procedures should be adhered to:

1. All hazardous materials should be classified, stored and packaged in containers that comply with all applicable safety standards. The shipping label must:
 - a. be affixed to the container
 - b. have the proper shipping name
 - c. have required safety marks
2. All transport of dangerous goods shall be documented and completed to Federal Regulation standards and include:
 - a. Identification of commodities by shipping name
 - b. Classification numbers
 - c. Compatibility Group
 - d. UN/ PIN numbers
 - e. Packing Group
 - f. Net Quantity
3. Display all applicable prescribed safety marks on shipping containers with predefined placard requirements. Placards must be:
 - a. retro-reflective
 - b. show class, division and compatibility group
 - c. show UN/ PIN number
4. Ensure all dangerous goods and compressed gases (*i.e.*, bear spray) are kept outside the vehicle in a trunk or in the box of a truck.
5. Only handle dangerous goods when safety standards have been complied with.
6. Every shipment of dangerous goods **MUST** be accompanied by a shipping document with information pertaining to steps 1 and 2 above. Information may be used by emergency response personnel in the event of an emergency (*i.e.*, car/plane/helicopter accident).

Ensure the vehicle operator (*i.e.*, driver or pilot) is made aware of the fact that there are dangerous goods in the cargo being transported.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Transport Canada – TDG Information: <http://www.tc.gc.ca/eng/tdg/safety-menu.htm>
- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 102-105.
- Douma, John, 1990. Transportation of Dangerous Goods in Canada, a Practical Guide to the Law. Buttersworth Canada Ltd, pages 26 – 69.
- A Guide to the Transportation of Dangerous Goods (TDG) – Handbook, Danatec



SAFE JOB PROCEDURES

Reference No:	SJP-V05	
Version:	1	
Name	Date	
Developed By: C. Roots	2010/03/22	
Last Reviewed By: R. Cobbett	2016/04/01	

TASK: Jump-starting a dead battery

HAZARD ASSESSMENT ISSUE NO: V-05
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
A second vehicle with well charged battery and jumper cables.	Rag or wire brush to clean battery terminals	Safety glasses, thick gloves

ROLES AND RESPONSIBILITIES:

- This procedure is used when a vehicle battery has insufficient charge to start the engine. This is a stop-gap alternative used until the battery is recharged or replaced.
- Before starting, determine why the battery is flat. If the headlights have been left on, the fan-belt is slipping or broken, the engine has not run for many months, these deficiencies can be addressed.
- Never attempt to jump-start a battery that is frozen (it may explode), or from which all the electrolyte has evaporated (very hot).
- Never jump start with a voltage source greater than 15 volts. For example, dump trucks and large trucks have higher voltage systems.
- Make sure vehicles do not touch, and that there are no flammable sources nearby (such as open gas-tanks, spilled camp stove fuel).
- The operator of the vehicles should decide who will direct the process (typically the more experienced). Ideally a person is in the driver seat of each car, able to hear instructions from the person attaching the jumper cables. The drivers can observe the battery warning lights during the operation.
- You must understand the principles of electric circuits of the two vehicles. The vehicle operator's manual is the best source. Note that some vehicles have "reverse polarity" – it is the positive terminal that is grounded. Incorrect hook-up with such a vehicle will damage the alternator.

TRAINING REQUIREMENTS:

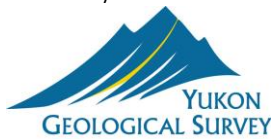
- On-line instruction videos are available (see links provided below). The procedure may be demonstrated in short courses provided by government departments to familiarize employees with government-owned vehicles.

TASK STEPS:

1. Position the vehicle with the strong battery close to the engine of the disabled vehicle, close enough that the jumper cables can reach between the two batteries, but far enough apart that a person can manoeuvre between them. The vehicles must not be touching.
2. Clean the terminals of both batteries so that you can clearly see the "+" and "-" marks. It is critical that the cables are not cross-connected.
3. Keep the clamps of the jumper cables from touching each other at all times when hooking up the cables (big sparks can result!)
4. Connect a jumper cable (usually the red wire) between the positive posts of the two batteries (first clamp to the dead battery, then to the live battery). Double check that there is a "+" sign near these terminals.
5. Connect one end of the black cable to the negative post of the good battery (has a "-" mark near it).
6. Lastly, connect the other end of this cable to an unpainted metal part of the engine (ground) in the vehicle with the discharged battery.
7. Start the engine of the vehicle with the charged battery.
8. Start the engine of the vehicle with the discharged battery.
9. Remove the cables in the reverse order: First disconnect the black cable from its attachment to the bare metal of the discharged vehicle, then from the negative terminal of the other battery. Then remove the cable from the positive terminals.
10. Allow the discharged battery to be re-charged by the engine for at least 10 minutes before switching it off – otherwise you may have to jump it again!

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- AutoBatteries.com, How to jumpstart a battery: <http://www.autobatteries.com/basics/jumpstart.asp>



SAFE JOB PROCEDURES

Reference No:	SJP-V06	
Version:	2015-1	
Developed by:	Name	Date
Last Reviewed By:	C. Roots	2010/05/15
	R. Cobbett	2016/04/01

TASK: Winching

HAZARD ASSESSMENT ISSUE NO: V07

RISK CLASS: LOW

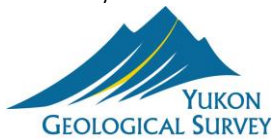
EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Vehicle with winch attached	thick webbing strap with hooks at each end (~5 m long); pulley with flanges that split apart to accept the winch cable ("snatch block"); shackle. A chain with hooks at both ends is also recommended	Gloves, rugged clothing and sturdy footwear, safety glasses

ROLES AND RESPONSIBILITIES:

- Know the capabilities of your vehicle (it's turning radius, clearance and handling on slopes) before venturing onto uneven terrain. If the condition of the track is doubtful, it's probably quicker to walk if your objective is nearby; stuck vehicles are distracting and take time to remove. You can avoid many situations where the winch would be needed. It should be your last resort.
- Before leaving headquarters for rough country, check operation of the winch. A new cable should be pre-stretched and wound on the drum under tension. If the winch has been used, check that the motor runs smoothly (the gears and the brushes of the electric motor are easily damaged by inexperienced users).
- If one vehicle is stuck and a second vehicle is available, a winch is more effective than towing. It is also a more controlled situation.
- When a winch cable is under strain it is incumbent upon everyone present to constantly assess and anticipate the hazard.
- Never stand next to a cable under strain – and don't even think of stepping over it. A snapped cable can be lethal.
- Always use appropriately rated strap to pull a stuck vehicle.
- Sometimes after use, it is necessary to feed the winch cable into the housing by hand so that the cable wraps evenly on the drum. Although a simple operation, it is better to do this with a partner. One operates the remote while the other uses gloves to guide the cable. A hazard is that broken cable strands can snag the gloves and pull them into the rollers. Also watch for the hook at the end of the cable as it can catch on clothing.
- Do not attempt to use the winch unless you are properly trained and comfortable with the operation.

TRAINING REQUIREMENTS:

- Off-road or 4x4 driving course.
- Refer to the winch user manual. It will explain the power ratio: the winch is most powerful when only six windings of cable remain on the drum, and loses about 10% with each successive winding (layer of wraps on the drum).
- Many websites provide how-to instructions in using a winch. See links provided below.
- The cooperation of a partner makes winching more efficient. Verbal communication will be difficult due to engine and winch noise, therefore hand signals should be practiced. These four are commonly used:
 - hand raised with fist clenched: "Take up the slack"
 - hand raised and rotated: "Start winching"
 - hand lowered and rotated: "Pay out the cable"
 - raised arm, palm facing the operator: "Stop"



SAFE JOB PROCEDURES

TASK STEPS:

1. Study the stuck situation. Could it be that the differential lock, or locking hubs are disengaged? Which wheels are spinning? Is it more effective to jack up that wheel and add material for better traction beneath it? Is the vehicle high-centered? Winching is typically a last resort, since it is more complex and takes time to set up the cable and anchor(s).
2. Winches are most powerful when most of the cable is unwound from the drum (leave about 6 turns of the cable on the drum – the screw at the end of the cable won't support the strain without several wraps). If you do not need the full length of the cable, use the snatch block (pulley) attached to an anchor, so that the cable passes around the pulley and hooks back to vehicle near the winch. A doubled cable provides twice the pull at half the speed.
3. There are two typical situations: pulling a stuck vehicle using a winch attached to another vehicle, or using the winch of the stuck vehicle to pull itself out. Both situations are similar in that the object away from the stuck vehicle (anchor or second vehicle with winch) must be solid, and the direction of pull must be perpendicular to the axis of the winch drum. A second chain can be used to redirect the angle of pull, if a second anchor point is present near the outstretched cable. Make sure the anchor point is as low as possible (base of the tree, for example).
4. If the anchor is large (tree or large boulder) wrap the strap around it and connect with a shackle. If the shackle pin is screw-type, back it off half a turn so the pin doesn't jam under strain.
5. Place a coat or other heavy cloth over the middle of the cable. If the cable breaks or comes loose, the weight will help to keep the end from becoming a slingshot.
6. Return to the stuck vehicle and take up the slack, making sure the windings are even and tight on the drum.
7. If poor traction is the problem, have the motor running at fast idle and the transmission in neutral, letting the winch do the work. If the winch motor is labouring, shift to second gear and gently apply power to the drive wheels (2nd gear has less torque so the wheels are less likely to spin and lose traction).
8. Be careful that, if the transmission is engaged and the wheels do obtain traction, the vehicle does not over-run the cable – causing it to wind loosely or kink.
9. Never let the winch stall – the electric motor will quickly develop dead spots on the armature (this is the most common cause of death to winches).
10. After winching, do not turn off the engine. Allow the alternator to recharge the battery first.

ADDITIONAL INFORMATION OR REFERENCES

- 4 Wheel Parts, How to winch video: <http://www.youtube.com/watch?v=GCyTyiOZIPs>
- WARN Basic Guide to Winching Techniques: http://www.pirate4x4.com/tech/billavista/PDFs/Warn_guide_to_winching.pdf



SAFE JOB PROCEDURES

Reference No:	SJP-V07
Version:	2014-1
Name	Date
Developed By:	C. Roots 2010/04/26
Last Reviewed By:	R. Cobbett 2016/04/01

TASK: Using a jack to get unstuck

HAZARD ASSESSMENT ISSUE NO: V08

RISK CLASS: MODERATE

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
"jack-all" or similar high-lift jack	"traction aids" or 2"x8' or thicker planks, shovel, pick, axe; alloy chain with hooks, webbing strap (for trees), chocks	Gloves, rugged clothing covering arms and legs, sturdy footwear, safety glasses

ROLES AND RESPONSIBILITIES:

- Operator should know the capabilities of the vehicle and their own limits operating the jack. Do not attempt to free a vehicle with a jack unless you are comfortable with the equipment and training you have.
- Operator must know where jack and other equipment are stored in vehicle – it may be needed during inclement weather or as darkness approaches.
- Before leaving headquarters, make sure that the jack is clean and has been used (new jacks commonly have steel burrs in the mechanism that need filing). Add chains, planks and hand tools according to anticipated challenges.
- Operator must be familiar with use of the jack. Cycle through all the jack positions used to raise and lower the jack before putting it under the vehicle. For example, if the reversing lever is in the down position and the jack handle is accidentally lowered, the weight will be suddenly released, or the handle will fly up and down violently (has caused broken heads and death).
- Many modern trucks have molded bumpers that do not accept the short toe of a jack without damage. It may be possible to wrap a short chain around the frame behind the bumper and use this as the lifting point; this is best tested before leaving headquarters.
- A second person should be present in case of mishap, or to signal to driver which way to turn wheels or clear obstacles.
- Operator is responsible for ensuring that passengers are away from the vehicle while it is being jacked. Raising a vehicle from a single point makes it unstable. If the jack is not vertical or the vehicle is unbalanced, the resulting fall is extremely dangerous. Every precaution should be taken to use the jack correctly. Do not let people or pets remain in the raised vehicle.
- Releasing a stuck vehicle is commonly an uncontrolled situation which can unpredictably become dangerous if the vehicle is unstable, or if traction is suddenly obtained under power. It is incumbent upon everyone present to constantly assess and anticipate dangerous situations.

TRAINING REQUIREMENTS:

- 4x4 off road training course.
- Previous experience is the best teacher, particularly using similar vehicles and equipment to understand its capabilities. Each 'stuck' situation is unique, thus it is difficult to demonstrate in short courses.
- Several websites provide how-to instructions in use of jacks and getting unstuck (see links provided below).



SAFE JOB PROCEDURES

TASK STEPS:

11. Wear leather gloves, sturdy footwear and eye protection at all times when handling jack.
12. Keep head and body clear of the jack handle at all times
13. Never position your body beneath the vehicle at any time.
14. When forward progress ceases (wheels are spinning or the engine stalls), shut off the engine, get outside and thoroughly assess the problem. Is the vehicle 'high-centered', or just one or more wheels lacking traction? Assess possible remedies in terms of exposure to damage and likelihood of success.
15. Thoroughly try the most likely/safest remedy before switching to another. For example, a few shovelfuls of gravel may improve traction beneath one drive wheel, but unless traction is excellent beneath the opposite drive wheel, a vehicle without limited slip differential will not easily escape the bog. Seek the simplest and surest solution, but follow through completely.
16. Typically the fastest solution is to jack each wheel up and place firm substrate beneath. Make sure you have a firm pad for the base of the jack to avoid slippage or sinking (a wedged or sunk jack beneath a stuck vehicle is very difficult to extricate!) Make sure the lifting post is vertical, and is lifting a solid part of the vehicle.
17. A jack can be used as a short range come-a-long to tug the vehicle laterally if you have a solid anchor point, two chains and a tow strap secured around a tree. Remember to work from the uphill side and in a position from which you can escape easily.

ADDITIONAL INFORMATION OR REFERENCES:

- Hi-Lift Jack instruction manual: <http://www.hi-lift.com/hi-lift-jacks/instruction-manual.html>
- Hi-Lift Jack operating instructions video: <http://www.youtube.com/watch?v=MrfbR4REV-s>



SAFE JOB PROCEDURES

Reference No:	SJP-V08
Version:	2014-1
Name	Date
Developed By:	C. Roots 2010/03/22
Last Reviewed By:	R. Cobbett 2016/04/01

TASK: Changing a tire

HAZARD ASSESSMENT ISSUE NO: V10-12

RISK CLASS: MODERATE

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Properly pressurized tire, jack, correct lug wrench	Reflective triangles (traffic hazard) if on an active roadway; planks, chocks, tire repair kit	Gloves, rugged clothing covering arms and legs, sturdy footwear

ROLES AND RESPONSIBILITIES:

- Each vehicle operator should know the location of the tire-changing equipment and how to use it.
- Before leaving headquarters, operator must make sure that the tire wrench fits the wheel nuts, that the spare tire if locked to the vehicle has the appropriate key, and that the jack is present. Rental vehicles and cars typically contain small jacks that are only suitable for lifting the vehicle a short distance on flat, hard surfaces – they are useless in mud-holes and on slopes. For off-road, two planks, each 12x2” by about 3’ long, can sometimes be used as a firm base for the supplied jack. For older model pickup trucks, a 3’ long “Jack-all” can be used on the truck bumpers. For vehicles with plastic bumpers and newer models, placing a “scissors-type” jack beneath an axle may be appropriate.
- Operator must make sure that the vehicle has an appropriate spare tire and/or a tire repair kit that they know how to use. Many cars carry only a temporary-use spare tire, which has less clearance, less traction, and less load-carrying capability than tires appropriate for the vehicle. If flat tires are anticipated, or for off-highway use, replace the temporary-use spare with a tire equivalent to the others on the vehicle.
- Operator is responsible for ensuring that passengers are away from the vehicle when tire is being changed. Raising a vehicle from a single point makes it unstable. If the jack is not vertical or the vehicle is unbalanced, the resulting fall is extremely dangerous. Furthermore the rim or brake housing is usually damaged by the impact with the ground, rendering the vehicle unusable. Every precaution should be taken to use the jack correctly. Do not let people or pets remain in the raised vehicle.

TRAINING REQUIREMENTS:

- On-line instruction videos are available (see links below). Tire-changing procedures may be demonstrated in 4x4 off road driving courses provided by government departments.
- The vehicle operating manual explains the location and use of the tire-changing equipment. These instructions supersede all others because they are specific to the vehicle.

TASK STEPS:

- While the vehicle is still mobile, pull to the side of the road in a place where oncoming traffic can see you with sufficient time to react and slow down. Seek level, hard, dry ground to make the job easier.
- If the roadway is travelled, display reflective triangles 50 m in front of, and behind the vehicle. Raising the hood provides another indication to oncoming traffic that the vehicle is disabled.
- Apply the handbrake which immobilizes the rear wheels only. Leave the car in “Park” or reverse gear with the engine off. Place a chock, stone or log on either side of the wheel diametrically opposite the one to be changed.
- Wear leather gloves and sturdy footwear at all times when handling a jack.
- Keep head and body clear of the jack handle at all times.



SAFE JOB PROCEDURES

23. Never position your body beneath the vehicle at any time while it is raised by a jack.
24. Remove the hubcap of the flat-tire and loosen the wheel nuts (it is safer to apply force to the nuts before the wheel is lifted off the ground).
25. Position the jack beneath a solid portion of the under-carriage (many vehicles have specific marked points) and raise it until it begins to take the weight of the vehicle. At this point check that the jack has a solid base, is exactly vertical (check from two angles at 90°) and that the vehicle can be raised to the extent of the suspension without difficulty.
26. Continue to raise the vehicle using the jack until the wheel is off the ground and there is sufficient clearance to install the inflated tire.
27. Remove the wheel nuts and place them in the hubcap or other receptacle where they won't be lost. Carefully lift the tire free of the hub (it may be rusted on). Be careful not to expose any body part beneath the suspended vehicle. Be especially careful that the loose tire does not bump into the jack.
28. Position the inflated tire on the hub. This tire is heavier and positioning the bolt with the hole is sometimes the hardest part. A flashlight or an assistant helps.
29. Attach the first nut, ideally at the top – it will keep the tire from tilting outward. Spin all nuts to finger-tight.
30. Use the tire wrench to moderately tighten the wheel nuts in an alternate pattern. If the uppermost nut is tightened first, the second tightened should be near the bottom, then one side, then the other. The procedure is important so that the wheel is properly flat on the hub, and so that the nuts seat properly in their conical holes.
31. Lower the vehicle using the jack until the tire has taken the full weight. Fully tighten each wheel nut, again in an alternating sequence to 75 foot-pounds (102 N-m).
32. Remove the jack and store with the tire-wrench. Remove chocks or stones from behind other wheels. Collect road-hazard signs and planks or other materials and store in vehicle. You are on your way.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Edmonds.com - How to change a flat tire: <http://www.edmunds.com/ownership/howto/articles/43783/article.html>
- E-how – Tools for changing a flat tire: http://www.ehow.com/video_2326774_tools-changing-flat-tire.html

Vehicle Inspection

Date: _____ Shift: _____ Vehicle #: _____

Driver's Name: (PRINT) _____

Mileage beginning of shift: _____ End of shift: _____

Drivers must complete the vehicle inspection before using any assigned vehicles. The driver must check that every item on this checklist is present in the vehicle and is in serviceable condition.

Front	Right Side	Rear	Left Side
☐ Headlights	☐ Front Fender	☐ Back Bumper	☐ Rear Fender
☐ Right Signals	☐ Tires & Rims	☐ Tail Lights	☐ Tires & Rims
☐ Grill	☐ Mirror	☐ Trunk	☐ Doors
☐ Bumper	☐ Doors	☐ Rear Window	☐ Windows
☐ Extension Cord	☐ Windows		☐ Mirror
☐ Hood	☐ Rear Fender		☐ Front Fender
☐ Windshield			☐ Left Signal Lights
☐ Wipers			
☐ Roof			

Equipment & Tools	Interior Condition	Pre- Trip
☐ Note Pad & Pen	☐ Clean Y N	☐ Adjust Mirrors
☐ Flash light	☐ Smoke Free Y N	☐ Adjust Seat
☐ First Aid Kit	☐ Console	☐ Check Gas
☐ Road Triangles	☐ Upholstery	☐ Clear
☐ Booster Cables	☐ Dash	☐ Windshield
☐ Shovel	☐ Windows	
☐ Windshield Wiper Fluid		
☐ Ice Scraper		
☐ Cell Phone		
☐ MRS Radio		
☐ Gas Card		

Comments:

Driver's signature: _____

Booklet to stay with Vehicle

Booklet to be reviewed as part of routine inspections by the Safety Officer

Copy to Supervisor of Work Area

Copy to Fleet Vehicles if there is any deficiencies

5/17/2013

Deputy Minister

Approved

Page 1 of 1

Note: All printed copies of this document are uncontrolled.

VEHICLE ROAD KITS - CHECKLIST

5.11 VEHICLE ROAD KITS - CHECKLIST

RECOMMENDED ITEMS – ALL SEASONS

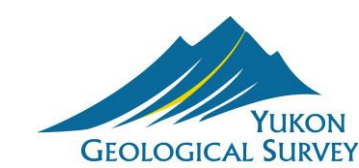
First-aid kit (see section 5.8 for recommended items)	Fire Extinguisher
Emergency Contact Numbers	Extra fluids (Oil, washer fluid, coolant, etc.)
Small Tool kit	Matches/lighter, fire starter
Tow rope	Water bottle(s)
Booster Cables	Non-perishable high-energy foods
Tire Jack	Spare Tire
Extra Windshield Wipers	Axe and Shovel
Ratchet straps / bungees	Tire Iron
WD40, extra oil, washer fluid	12V Compressor

ADDITIONAL ITEMS – WINTER

Ice scraper/ Snowbrush	Road flares or warning lights
Gas line antifreeze	Flashlight & batteries
Sand	sleeping bag
Tire Chains*	

**If winter off-roading is necessary.*

Drafted by: L.R. Blackburn
Last Reviewed by: M. Nordling 2015/04/27



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-A
Version: 2014-1

General Activity or Task: Use of ATVs
Worksite: Gravel Roads, trails

Date Completed: May 2008
Completed By: Lara Lewis
Last Reviewed By: R Cobbett
Date Reviewed: 4/1/2016

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General operation of ATV										all safe work practices and procedures reviewed annually; training courses offered annually
A01	loss of control, falling off, collision or rollover	head/ back injury	3	3	50	450	H	n/a	Education and training, safe work practices and safe job procedures	helmet	SWP-010, SJP-A02, ATV course
A02	loss of control, falling off, collision or rollover	ATV rolling onto rider	3	3	50	450	H	n/a	Education and training, safe work practices and safe job procedures	helmet	SWP-010, SJP-A02, ATV course
A03	dust and impact with branches	damage to eyes	10	6	10	600	H	n/a	Education and training, and safe work practices	eye protection / helmet visor	SWP-010, ATV course
A04	dust and impact with branches	damage to skin	10	6	2	120	M	n/a	Education and training, and safe work practices	long sleeve shirts, long pants	SWP-010, ATV course
A05	extended use / long days	fatigue	6	6	1	36	L	n/a	Education and training, and safe work practices	adequate food and water	SWP-010, ATV course
A06	handling / maneuvering	muscle strain	3	6	2	36	L	n/a	Education and training, and safe work practices		SWP-010, ATV course
A07	impact with obstacle or bystander	striking leg, arm, hand, shoulder	2	6	10	120	M	n/a	Education and training, and safe work practices	long sleeve shirts, long pants	SWP-010, ATV course
A08	exposure to engine noise	damage to ears	6	10	10	600	H	n/a	Education and training, and safe work practices	ear protection	SWP-010, ATV course
A09	exposure to exhaust/hot engine parts	burns to legs	2	3	2	12	VL	n/a	Education and training, and safe work practices	long pants	SWP-010, ATV course
A10	maintaining engine	burning hand	2	6	2	24	L	n/a	Education and training, and safe work practices	leather gloves	SWP-010, ATV course
A11	unexpected handling when towing ATV trailer	ATV rolling onto rider	1	3	50	150	M	n/a	Education and training, and safe work practices	helmet	SWP-010, ATV course
	Loading/unloading ATV into/from trailer or back of truck										
A12	accidental acceleration or shifting	pinned between trailer/truck and ATV	6	5	30	900	VH	n/a	Education and training, safe work practices and safe job procedures	helmet	SWP-010, SJP-A01, ATV course
A13	maneuvering misjudgement	falling off ramp or trailer while loading/unloading ATV	6	3	50	900	VH	n/a	Education and training, safe work practices and safe job procedures	helmet	SWP-010, SJP-A01, ATV course
A14	maneuvering/repositioning on trailer	muscle strain	6	6	2	72	L	n/a	Education and training, safe work practices and safe job procedures		SWP-010, SJP-A01, ATV course
	Automotive fluids (motor oil, gas, battery acid)										
A15	spill	body contact/ ingestion	2	6	10	120	M	n/a	Education and training, safe work practices and safe job procedures		SWP-014, SJP-M01, WHMIS course, first aid course, ATV course
A16	spill	fire	1	1	10	10	VL	fire extinguisher	Education and training, safe work practices and safe job procedures		SWP-014, SJP-M01, WHMIS course, first aid course, ATV course
	Winching										
A17	handling cable	cable burrs in hands	3	3	10	90	M	n/a	Education and training, and safe job procedures	leather gloves	SWP-010, ATV course
A18	winching load	cable breaks and strikes rider or bystander	1	1	30	30	L	n/a	Education and training, and safe job procedures	helmet, eye protection	SWP-010, ATV course

Safe Work Practices: SWP-010 (ATV use), SWP-014 (WHMIS)
Safe Job Procedures: SJP-A01 (ATV loading and unloading), SJP-A02 (Riding), SJP-M01 (WHMIS)



SAFE WORK PRACTICES

Reference No:	SWP-010	
Version:	2014-1	
Developed By:	Name	Date
Last:	L. Lewis R. Cobbett	2008/04/09 2016/04/01

TASK: ALL-TERRAIN VEHICLE (ATV) USE

PURPOSE: The purpose for this procedure is to outline the Safe Work Procedure for ATV's and to ensure all employees have a clear understanding of their roles and responsibilities.

All-terrain vehicles are used by some geologists to access camps or mapping areas, or when visiting exploration properties. Following these guidelines minimizes the possibility of ATV accidents and incidents. Take an ATV course to improve your driving proficiency.

Responsibilities

- The Supervisor is responsible for ensuring that the requirements of this procedure are adhered to by all employees.
- Operations Manager shall work with employees and contractors/subcontractors to ensure implementation and training.
- Employees are responsible for ensuring they are in compliance with requirements of this procedure.
- Contractors/subcontractors are responsible to ensure their employees are adhering to the procedure and training.

GUIDELINES:

ALWAYS:

1. Know and adhere to federal and territorial legislation.
2. Ensure you have a check-in so someone knows where you are.
3. Carry safety and repair gear with your ATV at all times (spark plugs, wire, tape, tow rope, first aid, etc.)
4. Make sure the foot shifter is positioned according to your leg length, for safe operation.
5. Ensure you have enough gas for your planned ride.
6. Wear protective equipment at all times while riding – long sleeves, long pants, gloves, eye protection, ear protection, appropriate footwear and a helmet. Put on warm clothing in advance of riding – you won't warm up by driving.
7. Ensure ATV is mechanically sound and suitably equipped - periodically check fuel, oil and fluid levels, tire condition (uneven tread, cuts, cracks and bulges) and tire pressure.
8. Perform safety checks regularly, especially if the ATV has been driven by someone else and/or through harsh conditions.
9. Drive in a safe and controlled manner that is suitable for the terrain and weather conditions.
10. Use the recommended straight line riding posture. This style allows you to easily operate the controls and will help you react more quickly when shifting your body weight.
11. Ride with both hands on the handlebars and both feet on the footrests.
12. Secure cargo properly and consider their potential to injure if they become loose.
13. Check any water on foot before driving into it. Avoid fast-flowing places and determine water depth does not exceed that specified in your owner's manual. Use established fords or where the stream banks are gentle inclines of solid foundation. Watch for submerged obstacles and apply brakes several times to dry them after leaving water.
14. Watch for hazards along trails and roadways.
15. Keep your hands on the bars, your eyes on the trail, and your mind on driving.
16. Avoid fatigue and remember that ATVs are more tiring to drive than a truck. Protect yourself from the elements: wind, cold, rain, and heat make you tire quickly. Whenever possible, limit your distance and riding time. Take frequent rest breaks.
17. Do not drive under the influence of drugs, alcohol, fatigue or aggression.
18. Use parking brake when parked on a slope.
19. Assess the steepness of hills before you begin to climb. Some hills will be too steep for your ATV.
20. Ride within the limits of your visibility; if you cannot see what is on or over the crest of a hill or around a corner, slow down and stay right until you have a clear view.



SAFE WORK PRACTICES

21. Use extreme care when loading an ATV onto a trailer or truck.
22. Make sure that loading ramp has a non-slip surface.
23. If you must cross a road, before crossing, bring your ATV to a complete stop on the shoulder of the road. Yield the right of way. Look both ways and then ride cautiously. Your ATV will handle differently on pavement and may be difficult to maneuver, increasing the danger of collision. Cross the road at a 90-degree angle where there are no obstructions and your visibility is good.
24. When climbing hills, keep your weight uphill at all times and avoid stopping part way up the hill as it may be difficult to restart without rolling backwards
25. When riding downhill, always check the terrain carefully before you start. Choose a straight downhill path with a minimum of obstacles, use a lower gear and keep your speed low, use gradual braking and shift your weight to the rear.
26. Wear leather gloves and eye protection when handling winch cables, and stand clear of tensioned cable while winching.
27. Avoid touching hot engine parts or exhaust components when riding or performing maintenance.
28. Promptly report any accident to your supervisor and file a safety incident report.
29. Ensure you have taken ATV safety certification training before using ATVs.
30. Be sure that the engine is sufficiently warmed up before you start riding.

NEVER:

31. Never operate an ATV when fatigued, while impaired by drugs or alcohol.
32. Never overload an ATV or carry passengers if user manual says it is a single-rider ATV.
33. Never attempt maneuvers for which you are untrained, or you feel uncomfortable performing.
34. Never drive at excessive speeds.
35. Never drive an ATV on paved or public roads. ATVs are not designed to be driven on pavement.
36. Never ride backwards down a hill. If you begin rolling backward, apply the front brake only. Using the rear brake only or abruptly could cause the ATV to roll over backward.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006, Association for Mineral Exploration British Columbia, pages 105-106.



SAFE WORK PRACTICES

Reference No:	SWP-014	
Version:	2016-1	
	Name	Date
Developed By:	R. Dufour	2009/05/14
Last Reviewed By:	J. Bond	2016/04/12

TASK: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

PURPOSE: You must be properly informed of all hazardous materials that you may come in contact with on site. Recognizing labels, being able to access Material Safety Data Sheets (MSDS) and learning about proper handling and precautions and first-aid procedures is the only way to protect yourself and your coworkers.

WHMIS CONTROLLED MATERIALS:

YGS has a number of WHMIS controlled materials, stored in various locations.

The following materials are stored in a locked cabinet at the core library on the Alaska Highway:

- Hydrochloric Acid
The MSDS binder for these materials is located by the first aid station outside the saw room at the core library. For access please ask Tiffani Fraser or Craig Nicholson.

Employees are also occasionally exposed to the following materials, which are stored in designated locations at the Core Library when not being used in the field:

- Sulphuric acid (car batteries, stored in battery room at Core Library)
- Propane (stored in the hazardous materials shed in the locked compound behind the core library)
- Gasoline (stored in the hazardous materials shed in the locked compound behind the core library)
- Diesel and jet fuel (stored in the hazardous materials shed in the locked compound behind the core library)
- White Gas (Naphtha, stored in the hazardous materials shed in the locked compound behind the core library)
The MSDS binders for these materials are located by the first aid station outside the saw room at the core library as well as in the hazardous materials sheds.

GUIDELINES:

ALWAYS:

- Look at supplier label information for risks, precautionary measures and first aid.
- Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
- Refer to MSDS for in-depth product information.
- Use appropriate personal protective equipment/clothing when recommended for certain products.
- Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
- Inform employer of hazards and damaged or missing labels.
- Add acid to water (never water to acid) if diluting chemicals.
- Store WHMIS-controlled substances in appropriate locations at the Core Library.

NEVER:

- Never use any of the listed products without referring to supplier labels.
- Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures as well as a statement confirming MSDS is available.
- Never store any flammable substance (propane, gasoline, diesel, white gas) inside the office or Core Library

ADDITIONAL INFORMATION AND REFERENCES

- Poison Control Center: 867-393-8700 (Whitehorse Hospital, ask for Poison Control)
- Northern Safety Network Yukon (867-633-6673) - WHMIS train the trainer program
- Ralph Shopland (867-667-5963) – Yukon Government Public Service Commission, Corporate Health and Safety, WHMIS trainer
- Tiffani Fraser (867-667-3228) – YGS WHMIS trainer
- Work Safe BC: <http://www2.worksafebc.com/Topics/WHMIS/Home.asp>



SAFE JOB PROCEDURES

Reference No:	SJP-A01
Version:	2014-1
Name	Date
Developed By:	C. Welsh 2009/01/23
Last Reviewed By:	R Cobbett 2016/04/01

TASK: ALL-TERRAIN VEHICLE (ATV) – loading and unloading

HAZARD ASSESSMENT ISSUE NO: A12-14

RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
ATV	n/a	Hearing protection, long pants, long-sleeve shirt, helmet, eye protection, closed-toe shoes or boots

Purpose

The purpose is to standardize the operational safety requirements linked to the overall proper use and maintenance of departmental trailers.

Responsibilities

- The Supervisor is responsible for ensuring that the requirements of this procedure are adhered to by all employees.
- Safety Officer shall work with employees and Contractors/subcontractors to ensure implementation and training.
- Employees are responsible for ensuring they are in compliance with requirements of this procedure.
- Contractors/subcontractors are responsible to ensure their employees are adhering to the procedure and training.

Procedure

DISCLAIMER: - The “Canada Safety Council” Safe Riding Training has been endorsed and adopted by YG for the use of both Departmental Snowmobiles and ATVs. Though this procedure does attempt to identify common safe riding and handling protocols, it is not meant to replace the actual classroom nor field training components.

The two primary methods of transporting snowmobiles and ATV's are on trailers and in the back of a pickup. Either is effective if appropriate safety measures are used.

Always wear the required personal protective equipment, including an approved helmet, safety glasses, appropriate footwear, clothing and gloves while loading and unloading any all-terrain vehicle and snowmobile.

- Trailers are generally hauled using a standard (1 7/8 or 2 inch) ball hitch and must meet regulations for use on public roads. Proper maintenance of the trailer should also ensure that the wiring for taillights and brake lights are functioning and that you maintain the manufacture tire pressure. Most new models of trailers are now designed with a built in ramp system to ease the loading and unloading of all-terrain vehicles. These ramps are designed to latch to the trailer preventing them from sliding off while loading and unloading a unit.
- Because of the safety implications and operating protocols associated with the use of trailers and varying levels of staff proficiency, it is often recommended that field staff have the support of a spotter during the loading /unloading of machinery and the parking of the trailer into confined areas.

Trailer procedures:

- Adhere to truck and trailer load / towing capacities (refer to truck operating manual).
- Conduct a safety inspection of the trailer prior to every use.
- Inspect the ball clamp and coupler prior to use.
- Ensure all brake, turn and running lights are functioning
- Ensure trailer tires are in good condition and properly inflated.
- Ensure access to the proper sized and maintained spare tire.
- Ensure access to the required tools and jack.



SAFE JOB PROCEDURES

- j) Ensure the trailer is securely hitched to the towing vehicle. Ensure the coupler is in proper working order and is of the same size as the vehicle's hitch ball.
- k) Tighten the coupler onto the hitch ball immediately. The trailer tongue should be snug on the ball when locked.
- l) Install a coupler safety pin or locking mechanism to the coupler immediately after placing the coupler to the hitch ball.
- m) Fasten the safety chain. The chains should be crossed under the tongue to prevent the tongue from dropping to the road should the primary hitch accidentally disconnect.
- n) Never load a trailer before it is properly hitched to the truck.
- o) Ensure the proper tie-down hooks are installed on the trailer.
- p) Secure both front and back of all units prior to transporting (all four corners of an ATV must be properly secured).
- q) Many trailers sit significantly lower than the box of a truck, making loading and unloading generally much safer.
- r) Whether a pickup or a trailer is used, the all-terrain vehicle must be securely tied down on all 4 corners. Ratchet-type nylon straps are recommended. Brakes should be locked during transportation, and the transmission should either be in first gear or in the park mode if so equipped.
- s) The tilt feature on certain older trailers is not recommended for the loading or unloading of snowmobiles nor ATV because of the risk level associated with their use.
- t) Overloading or poor load distribution can cause serious swaying and separation when driving. Tire, wheel bearing and axle failure can also occur as a result of improper load distribution. Be aware that towing a trailer can cause changes in vehicle handling.
- u) Before towing a trailer do ensure that the truck mirrors are adequately adjusted to give ample visibility to both sides of the trailer.

Transporting the unit in the back of a pickup provides added flexibility as areas inaccessible to a trailer can be reached. Problems can occur with loading and unloading the unit. Occasionally, an earth berm, ditch or snow bank may be located to facilitate the loading and unloading. Though this method can be practical and safely performed when applying due diligence, it is however recommended that a ramp system be deployed for both the loading and unloading of all-terrain vehicles.

Steep inclines, unstable ramps, excessive or lack of power, a short stopping area and an inexperienced operator makes loading and unloading ATV's and snowmobiles challenging. The goal is to reduce the element of risk associated with these operational activities.

NEVER USE AN UNSECURED RAMP SYSTEM.

Manufactured ramps are available in both tri – fold aluminum designs and can also be fabricated to be bolted to the box of a vehicle. Adopting the longest ramp which the truck will accommodate will decrease the approach angle and provide for a safer loading and unloading platform. Design and load bearing capacity must be considered prior to purchase.

Ramp Procedures:

- a) Park the truck and trailer on a flat, firm surface that is ideally free of obstacles in order to minimize the ramp angle, therefore providing a gentler grade and stable ramp to load and unload all-terrain vehicles.
- b) Ensure that no one is either in front of or behind the all-terrain vehicle, snowmobile or the trailer during loading or unloading procedure.
- c) Ensure the ramps are clear of mud, grease and debris before using.
- d) It is essential that a mechanism be devised to secure the ramps to the truck tailgate. A combination of ratchet straps secured on both sides of the tri-fold ramps to the underneath of the truck bumper must be used to prevent the ramps from sliding off the tailgate while loading and unloading all-terrain vehicles.



SAFE JOB PROCEDURES

- e) Use caution when loading and unloading ATVs from trailers to prevent strains or crush injuries.
- f) Use tie-down straps and or rods to secure the ATV, and periodically check them to ensure they are still intact and the ATV has not shifted.
- g) Ensure the ATV or snowmobile is properly aligned with the ramps prior to attempting any loading or unloading.
- h) As with a trailer, ride straight up or down the loading ramps. Do not attempt to turn the all-terrain vehicle while it is on the ramp.
- i) As with riding on any slope, keep your weight uphill. Stand on the foot pegs or running boards while loading in order to keep your weight forward of the ATV's /snowmobile's center of gravity. This will increase your visibility of the ramps and therefore of the trajectory and simplify and expedite your response to any unlikely failure of the ramp.
- j) If the loading ramps are on a gentle slope, or if you are a very experienced rider and are comfortable unloading, you may choose to ride the ATV down the ramps. Though riding an ATV down ramps can be performed safely, it is generally not recommended. Be absolutely sure you can safely ride down before you start.

ONLY AN EXPERIENCED RIDER SHOULD EVER ATTEMPT TO UNLOAD AN ATV BY RIDING.

- a) As with unloading from a trailer, it is recommended (while taking the same precautions mentioned above) not to sit on the ATV while unloading but to ease the ATV down the ramp by pushing it in a controlled fashion and allowing it to come to a stop at the base of the ramp. At which time the operator, while wearing the appropriate personal protective equipment, can then drive the ATV to a safe / designated area.
- b) The consistent application or feathering of both the brakes and throttle will greatly minimize the probability of mishaps while loading and unloading.

Required Training and General Information

- a) Know and adhere to federal and territorial legislation
- b) Ensure ATV is well-maintained
- c) Watch for hazards along trails and roadways
- d) Carry an emergency kit with first aid kit, survival gear, tools and food
- e) Ensure you have a check-in so someone knows where you are
- f) Do not drive under the influence of drugs, alcohol, fatigue or aggression
- g) Make sure that loading ramp has a non-slip surface
- h) All Terrain Vehicle Training

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 105-106.
- Farm Safety Association (December 2006) "ATV Safety for Agricultural Workers": <http://www.farmsafety.ca/manuals/manual-atv.pdf>



SAFE JOB PROCEDURES

SAFE JOB PROCEDURES

Reference No:	SJP-A02
Version:	2014-1
Name	Date
Developed By:	C. Welsh 2009/01/23
Last Reviewed By:	R. Cobbett 2016/04/01

TASK: ALL-TERRAIN VEHICLE (ATV) – riding

HAZARD ASSESSMENT ISSUE NO: A1-6
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
ATV	n/a	Helmet, ear and eye protection, long pants, long-sleeve shirt, gloves, closed toe footwear

Purpose

The purpose for this procedure is to outline the Safe Work Procedure for Riding ATV's and to ensure all employees have a clear understanding of their roles and responsibilities.

Responsibilities

- e) The Supervisor is responsible for ensuring that the requirements of this procedure are adhered to by all employees.
- f) Safety Officer shall work with employees and Contractors/subcontractors to ensure implementation and training.
- g) Employees are responsible for ensuring they are in compliance with requirements of this procedure.
- h) Contractors/subcontractors are responsible to ensure their employees are adhering to the procedure and training.

ROLES AND RESPONSIBILITIES:

- i) Know and adhere to federal and territorial legislation
- j) Ensure ATV is well-maintained
- k) Watch for hazards along trails and roadways
- l) Carry an emergency kit with first aid kit, survival gear, tools and food
- m) Make sure you have adequate gas for your trip.
- n) Ensure you have a check-in so someone knows where you are
- o) Do not drive under the influence of drugs, alcohol, fatigue or aggression
- p) Make sure that loading ramp has a non-slip surface

TRAINING REQUIREMENTS:

All-Terrain Vehicle Training

TASK STEPS:

1. Perform a pre-ride inspection and don full PPE before riding ATV.
2. Walk tricky routes first looking for ground stability, loose rocks, holes, low-hanging branches and a place to turn around.
3. When driving, look ahead to anticipate changes. Choose your speed according to your ability and the terrain.
4. When driving uphill, redistribute weight to the front of the ATV by standing or sit and lean forward and downward. Climb in a low gear.



SAFE JOB PROCEDURES

5. If the ATV stalls out on a hill do not slam on the brakes, instead first apply the front brakes and then the rear. If the ATV continues to slip, get off and control the brake from uphill of the ATV.
6. If reversing on a slope is required, stand uphill of ATV to maneuver it. Be consistent with the throttle so there are no surprises.
7. Watch for changes in traction between the tires. Avoid popping the clutch, turning the wheels or revving the throttle.
8. When traveling down steep hills, gear down and do not use neutral. If the brakes must be applied traveling downhill, apply the back brakes first.
9. Avoid going across slopes, the ATV will be unstable. Never cross a slope with a loose surface or big bumps. If you must cross a slope, lean upslope to counter the sideways pull of the ATV. If the ATV starts to roll over, turn the front wheels downhill.
10. When cornering, lean inside the curve to counteract the force pulling the ATV outward.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Farm Safety Association (Dec 2006) "ATV Safety for Agricultural Workers": <http://www.farmsafety.ca/public/manuals/manual-atv.pdf>



SAFE JOB PROCEDURES

Reference No:	SJP-M01
Version:	2016-1
Developed By:	Name: Rachelle Dufour
Last Reviewed By:	Date: 2009/05/14
	J. Bond
	2016/04/12

TASK: Workplace Hazardous Materials Information System

HAZARD ASSESSMENT ISSUE NO: M01-M13, C21

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Refer to supplier labels and MSDS sheets for each hazardous product.

ROLES AND RESPONSIBILITIES:

- Ensure safe use, handling, storage and disposal of on-site hazardous materials and know what to do in an emergency/spill situation.

TRAINING REQUIREMENTS:

- All staff must review the WHMIS program self-study workbook and complete the test.
- Each project chief must inform team members of site-specific hazardous materials used and provide procedures for safe use, storage and handling as well as reviewing what to do in an emergency (found in Material Safety Data Sheets/MSDS).

Poison Control Phone Number: 867-393-8700. This number is for the Whitehorse Hospital – ask for Poison Control.

TASK STEPS:

The following are general procedures for use/handling, storage and disposal as well as emergency procedures for each product used by YGS.

Refer to MSDS sheets for further details.

MSDS binders can be found in two locations:

1. In the hazardous material sheds in the compound behind the core library.
2. Outside the rock saw room by the first aid station in the basement of the core library.



SAFE JOB PROCEDURES

HYDROCHLORIC ACID (field + core library)

Handling: Do not breathe gas/fumes/vapor/spray. Do not use pressure to dispense. Do not get in eyes, on skin, or on clothing. Wash well after use. Always pour acid into water; never pour water into acid.

Storage: Store in a cool place away from heated areas, sparks, and flame. Keep container tightly closed and dry.

Disposal: According to all applicable regulations.

Emergency/Spill: Ventilate the area. Cover with soda ash or lime. This will release carbon dioxide, so use caution. Place in a suitable container and mark for disposal. Wash spill site after material pick up is complete. DO NOT empty into drains.

First Aid:

Eye contact: Immediate first aid is needed to prevent eye damage. Immediately flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Speed is essential. Seek immediate medical attention. Do not use chemical antidotes.

Skin contact: Immediately flush skin with plenty of water for at least 30 minutes while removing contaminated clothing and shoes. Do not use chemical antidotes. Speed is essential. Seek immediate medical attention. Wash contaminated clothing before reusing. Discard contaminated leather articles such as shoes and belt.

Inhalation: Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.

Ingestion: If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk, repeating if vomiting. DO NOT induce vomiting. Aim to dilute acid 100 times approximately. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

SULPHURIC ACID (car batteries) (field + vehicles)

Handling: Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

Storage: Store in a cool, dry, well-ventilated area away from combustible substances. Do not store near alkaline substances.

Disposal: According to all applicable regulations

Emergency/Spill: Clean up spills immediately and ensure appropriate protective clothing to prevent skin exposure. Cover with sand, dry lime or soda, ash, and place in a closed container for disposal.

First Aid:

Eyes: Immediately flush eyes and skin with copious amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Do NOT allow victim to rub eyes or keep eyes closed. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with copious quantities of soap and water for at least 15 minutes while removing contaminated clothing and shoes. SPEEDY ACTION IS CRITICAL! Call a physician.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Consult a physician immediately. Never give anything by mouth to an unconscious person.

Inhalation: Get medical aid immediately. Remove patient from exposure to fresh air immediately. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.



SAFE JOB PROCEDURES

PROPANE (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. Inspect tanks frequently for damage (e.g., rust)

Disposal: Dispose of in an approved environmental fashion.

Emergency/Spill: Eliminate all ignition sources. Evacuate area and isolate/restrict hazard area.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If frostbite or burn occurs get medical attention.

Skin: If victim has received cold burns, treat by immersing in lukewarm water (32 to 43 °C) for 30-45 minutes. Remove contaminated clothing unless stuck to a burn area in which case cut around it. Obtain medical attention as soon as possible after first aid has been initiated and completed.

Ingestion: Not applicable.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

GASOLINE (field + Core Library)

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers. Material will accumulate static charges, which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapours. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with the ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning "Flammable". Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

DIESEL AND JET FUEL (field + Core Library)

Handling: Do not cut, drill, grind, weld or perform similar operations on or near containers. Avoid excessive heat, sparks, open flames and all other sources of ignition. Extinguish pilot lights, cigarettes. Turn off other sources of ignition prior to use and until all vapors are gone. Vapors are heavier than air and will settle and collect in low areas and pits.

Storage: Empty containers are hazardous and may contain flammable/explosive dusts, residues or vapors. Store in a cool, dry, well ventilated area, away from heat and ignition sources and with ventilation cap closed.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Combustible”. Eliminate ignition sources. Isolate area and restrict access.

Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

WHITE GAS (also known as Naphtha), Coleman stove fuel; field and Core Library

Handling: Avoid breathing vapors and prolonged or repeated contact with skin. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Storage: Sealed or tightly closed metal or plastic containers, in a cool, dry, well ventilated area, away from heat and ignition sources.

Disposal: Dispose of at a licensed waste disposal facility. Do not attempt to combust waste on-site.

Emergency/Spill: Issue warning “Flammable”. Eliminate ignition sources. Isolate area and restrict access. Absorb residue or small spills with absorbent material. Flush area with water to remove trace residue.

First Aid:

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Ingestion: DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

Inhalation: Remove victim from further exposure and restore breathing, if required. Obtain medical attention.



SAFE JOB PROCEDURES

VARATHANE (Core Library)

Handling: Avoid breathing vapor or mist. Avoid contact with eyes.

Storage: Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Isolate from heat, electrical equipment, sparks and open flame.

Disposal: Dispose of in a manner consistent with federal, state, and local regulations.

Emergency/Spill: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust.

First Aid:

Eye Contact: Hold eyelids apart and flush with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

BLEACH

Handling: Do not get in eyes, on skin or on clothing.

Storage: Store upright in original closed container.

Disposal: Dispose of in accordance with applicable regulations.

Emergency/Spill: Sweep up to suitable containers for disposal.

First Aid:

Skin Contact: Wash with soap & water for 15 minutes. See physician if burning persists.

Eye Contact: Flush with flowing water for 15 minutes & see physician.

Inhalation: Remove to fresh air. If breathing has stopped, apply suitable artificial respiration. Get medical help.

Ingestion: Give milk or water to dilute material; DO NOT induce vomiting. Avoid alcohol. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-H

Version: 2016-1

Date Completed: 2007/05/27

Completed By: Roderic P. Hill

Reviewed By: D. Moynihan

Date Reviewed: 2016/04/15

General Activity or Task: Use of Helicopters

Worksite: Helicopter Bases, Landing Strips and Remote Field Sites

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General										all safe work practices and procedures reviewed annually; training courses offered annually
H01	Loading equipment into helicopter	Unbalanced or loose load may cause instability, with possibility of pilot loss of control and upset of helicopter.	6	0.5	50	150	M	n/a	helicopter safety training and pilot briefings		SWP-001, SJP-H04
H02	Boarding or leaving helicopter.	Stumble and hit head or shins on door frame, or fall from machine.	6	1	2	12	VL	n/a	helicopter safety training and pilot briefings	appropriate footwear	SWP-001, SJP-H03, SJP-H04
H03	Boarding or leaving helicopter which is under power on level ground.	Main rotor or tail rotor strikes passenger.	6	0.5	50	150	M	n/a	helicopter safety training and pilot briefings		SWP-001, SJP-H03, SJP-H04
H04	Boarding or leaving helicopter which is under power on sloping ground where helicopter is only in partial contact with the ground ("toe-in landing")	Main rotor or tail rotor strikes passenger; possibility of pilot loss of control and upset of helicopter owing to wind gusts or sudden unexpected movements by passengers.	6	1	75	450	H	n/a	helicopter safety training and pilot briefings		SWP-001, SJP-H03, SJP-H04
H05	Leaving helicopter which is under power but not in contact with the ground ("hover exit")	Main rotor or tail rotor strikes passenger; fall from machine; possibility of pilot loss of control and upset of helicopter owing to wind gusts or sudden unexpected movements by passengers.	3	1	75	225	M	n/a	safe job procedures (Yukon Wildland Fire hover exit guidelines), helicopter safety training and pilot briefings		SWP-001, SJP-H03
H06	During flights	Hearing loss owing to prolonged exposure to loud engine noise	6	0.5	2	6	VL	n/a	helicopter safety training and pilot briefings	hearing protection and/or headsets	SWP-001, SJP-H04
H07	During flights	Pilot distracted by passengers and possible loss of control of helicopter.	6	0.5	50	150	M	n/a	helicopter safety training and pilot briefings		SWP-001, SJP-H01
H08	Helicopter landing/taking off in camps and remote areas.	Brush, debris or rotor blades may strike passengers; unsecured equipment blown away by downdraft may become unserviceable or lost.	6	3	10	180	M	n/a	helicopter safety training and pilot briefings		SWP-001, SJP-H03, SJP-H04
H09	Refuelling of helicopter while under power.	Bodily contact with main rotor or tail rotor; potential for fire and/or explosion.	3	1	50	150	M	n/a	helicopter safety training and pilot briefings	fire resistant clothing or natural fibers next to skin	SWP-001, SJP-H03, SJP-H04
H10	Slinging cargo beneath helicopter	Moving helicopter may strike person attaching load; load may strike person if it unexpectedly swings or becomes detached from helicopter.	3	1	75	225	M	n/a	helicopter safety training and pilot briefings	work gloves	SWP-001, SJP-H02
H11	Unscheduled landing or crash landing in remote areas owing to mechanical failure or pilot incapacitation	High potential for serious injury or death sustained during crash; possibility of prolonged exposure of survivors to the elements while awaiting rescue	6	1	75	450	H	protective canisters for bear spray	helicopter safety training and pilot briefings,	work gloves, fire resistant clothing or natural fibers next to skin, survival gear carried on person	SWP-001, SJP-H01
H12	Crash landing into a body of water owing to mechanical failure or pilot incapacitation	High potential for serious injury or death sustained during crash; possibility of drowning if passengers become trapped inside submerged wreckage or are unable to swim to shore; possibility of prolonged exposure of survivors to the elements while awaiting rescue	6	1	75	450	H	n/a	helicopter safety training and pilot briefings	work gloves, fire resistant clothing or natural fibers next to skin, survival gear carried on person	SWP-001, SJP-H01

Safe Work Practices: SWP-001 (Use of helicopters)

Safe Job Procedures: SJP-H01 (unscheduled landing of crash landing), SJP-H02 (slinging cargo), SJP-H03 (helicopter drop off/exit), SJP-H04 (helicopter pick up/entry)

USE OF HELICOPTERS

Yukon Workers' Compensation Health and Safety Board issued an order (March 29, 2007) that YGS develop, implement and maintain comprehensive written safe work procedures for helicopter landings, including full hovers and toe-in landings.

- This order has been complied with by creating both the Safe Work Practices and Safe Job Procedures for all hazardous aspects of work with helicopters, as presented in this section. These documents are reviewed and updated annually.
- Appendix 5 provides more detailed guidelines for working around helicopters (AMEBC helicopter safe work procedures).
- Appendix 6 contains further "Hover Exit Guidelines" provided by Yukon Wildland Fire Management.

On June 9, 2011, this order was amended as follows:

"The employer must ensure employees who work in the field participate in practical initial helicopter hover entry/exit training in accordance with the Occupational Health and Safety Act 3 (1)(c). Only those workers who receive certification through this training shall be permitted to perform hover entry/exit maneuvers.

Employees working in the field shall re-certify in hover entry/exit every three years."

Inspection report No. 09953.



SAFE WORK PRACTICES

Reference No:		SWP-001
Version:		2016-1
Name		Date
Developed By:	P. Lipovsky/ C. Welsh	2007/02/20
Last Reviewed By:	D. Moynihan	2016/04/15

TASK: USE OF HELICOPTERS

PURPOSE: Helicopter accidents are always serious, and those causing damage or injury are always investigated. The potential for a catastrophic accident is high because fast moving parts are not shielded, high speeds may be involved, and the machine is commonly used in steep or forested terrain. Helicopters are unfamiliar to many new YGS employees, and because of their loud noise, verbal communication among the crew and with the pilot is often impossible. Careful instruction, advance planning of the work, and appropriate behavior in and around the helicopter will minimize the chance of injury. These guidelines also promote a safe and positive working relationship with your pilot.

GUIDELINES:

ALWAYS:

1. Establish a crew chief each day who will communicate with the pilot and direct loading and unloading of gear and people in cooperation with the pilot.
2. Get a safety briefing whenever you fly in new terrain or with a new helicopter, pilot, co-worker or guest so that everyone is aware of specific preferences the pilot may have for communicating, loading/unloading, and landing sites. The pilot should describe to the crew the on-board survival gear, how to operate the satellite phone and flight-tracking equipment if applicable. The crew chief must record safety briefings in the project's safety log book and/or signed copies of the briefing checklist.
3. Estimate the total weight of your crew and gear, and communicate this information to your pilot.
4. Note locations of emergency exits and how they open.
5. Wear hearing protection and glasses. Shield your eyes from flying debris when a helicopter takes off or lands near you.
6. When cargo is placed inside the helicopter, it must not interfere with passenger's access to all exits (DOT regulation).
7. Secure loose equipment and avoid heavy or sharp objects in the passenger compartment.
8. Remove and secure your hat so it won't fly away when loading or unloading.
9. Crouch and watch the main rotor when beneath or when approaching or leaving the space beneath the main rotor disk.
10. During pick-up, wait for the pilot signal to approach (usually a head-nod).
11. During toe-ins, approach the helicopter one-at-a-time, and wait for the pilot to signal the next passenger to approach.
12. On uneven ground, always **approach the helicopter by walking uphill** in full view of the pilot. Approach from the lowest point of ground near the front of the helicopter, ideally from a 10:00 or 2:00 position with respect to the pilot's field of view.
13. After entering the helicopter, close the door and put on your headset before putting on your seatbelt.
14. Before unloading, wait until directed by the pilot to remove your seatbelt and disembark. Make sure the seat belt and headphones are properly secured inside prior to closing the door.
15. Make sure that loose clothing or equipment does not catch on the controls when disembarking.
16. When disembarking the helicopter, **move away from the helicopter in a downhill direction** or on level ground. Walk away from the helicopter in full view of the pilot, ideally in the 10:00 or 2:00 direction with respect to the pilot's field of view.
17. During toe-ins, transfer your weight between the ground and the helicopter skid slowly and carefully.
18. Ensure landing areas are sufficiently large and free of tall or loose objects.
19. Do a radio check with the pilot when you are dropped off.
20. When the helicopter is approaching from a distance, attempt to communicate with the pilot on your radio. You can advise on your location, conditions at the proposed landing site, including wind strength and direction.
21. Stand on the upwind side of the landing site and use your helicopter flag to signal your location and the wind direction for the pilot. Once the pilot has seen you, wait with the rest of your group as the helicopter approaches to land.
22. When getting picked up, group your team and gear together so that the helicopter will have room to land and take off facing the wind. If the landing site is sufficiently large, wait well outside the expected clearance of the rotor disk. At smaller landing sites, crouch where you anticipate the helicopter will land, and if the pilot approves the machine will touch down beside you.
23. Ensure that all equipment is secured and cannot fly into the rotors when the helicopter lands.
24. Carry shovels, augers, picks etc. parallel to the ground below waist level.
25. If told to abort while loading or unloading from the helicopter, get back in immediately if you can; or else lie face down on the ground immediately beside and parallel to the skids.
26. Some pilots prefer rain-soaked jackets to be removed before entering the helicopter (excess moisture fogs the bubble), and that high-visibility cloth should be stowed securely before pick-up (may be snagged and fly loose into rotors).

NEVER:

27. Never approach a helicopter until directed to do so by the pilot.
28. Never approach a helicopter walking downhill and never walk away from a helicopter uphill.
29. Never go near the tail rotor when it is turning, and never go past the rear cargo door.
30. Never bring loaded firearms or bear spray into the passenger compartment.
31. Never throw objects, or carry them above waist-level near a running helicopter.
32. Never smoke inside or within 15 m of a helicopter, and never remain inside during re-fuelling.
33. Never run or hurry when working around a running helicopter.
34. Never pressure a pilot to fly against their judgment or against regulations.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133 (Appendix 5 of this manual)
- Hover Exit Guidelines, 2004. Protective Services, Wildland Fire Management, Yukon Government (Appendix 6 of this manual)
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada.
- Safe Practices for Helicopter Operations in the Forest Industry, 2005. Work Safe BC.



SAFE WORK PRACTICES

HELICOPTER PILOT BRIEFING CHECKLIST

Crew chief must ensure all crew are briefed by the pilot on each of the following items each time they:

- (a) fly with a new pilot, new crew, or new aircraft; or**
 - (b) anytime a non-YGS employee with no formal helicopter safety training will be flying with YGS personnel.**
- General safety:
 - Aircraft type and range
 - location and operation of ELT and flight-tracking equipment (how to connect/disconnect)
 - Radio equipment, frequencies and operation, radio checks
 - Pilot's satellite phone (how to operate it)
 - Battery location and disconnection
 - Fire extinguisher location and operation
 - Doors and emergency egress
 - Seat belts
 - Intercom and headsets
 - Flotation equipment
 - First aid and survival equipment
 - External features:
 - Cargo storage
 - Skids (height and where to stand)
 - Main rotor
 - Tail rotor
 - Exhaust
 - Controls and panel:
 - Fuel switch and tank location
 - Master power
 - Collective, throttle, cyclic, pedals
 - Warning lights (chips, hot battery, low fuel, transmission pressure/temperature, low RPM, engine out)
 - Emergency procedures and pilot actions:
 - Engine failure
 - Rotor strikes
 - Fire (electrical or otherwise)
 - Crash landings
 - Other malfunctions (hot battery, chips, hydraulic failure, servo failure)
 - Landing sites and approaching the helicopter:
 - Clearances for tail and main rotor
 - Wind and weather considerations (thunder heads, fog, whiteouts)
 - Air-ground communications
 - Pilot's preferences for crew approach/retreat directions
 - Where to wait for pick up (site considerations)
 - Selecting landing sites on snow and ice (pad strength and stability considerations)
 - Toe-in procedures
 - Pilot's preferences for loading crew and gear

Aircraft: _____

Date: _____

Pilot name and signature: _____

Field crew names and signatures: _____



SAFE JOB PROCEDURE

Reference No:	SJP-H01
Version:	2016-1
Developed By:	Name: C. Welsh
Last Reviewed By:	Date: 2007/12/20
	D. Moynihan
	Date: 2016/04/15

TASK: Unscheduled landing or crash landing

HAZARD ASSESSMENT ISSUE NO:
H07,11,12, W04&05, X08&09

RISK CLASS: HIGH EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		natural fiber and/or fireproof clothing, leather gloves, appropriate (closed-toe) footwear, eye protection

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open-toed footwear.
- Whenever possible, carry basic survival gear (*i.e.*, satellite phone, food, knife and matches), leather gloves and eye protection on your person or keep them within easy reach in the cabin.
- Crew-chief must ensure pilot provides a pre-flight briefing so all passengers know where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Minimize loose objects in the cabin and ensure all potentially dangerous equipment (*i.e.*, heavy or pointed objects, bear spray, gasoline, propane, *etc.*) is securely packed in an appropriate location in the aircraft.
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- Be alert throughout the flight and report any nearby birds, aircraft or abnormalities to the pilot which they may not have noticed.

TRAINING REQUIREMENTS:

- Helicopter safety training, including underwater egress.

TASK STEPS:

In the event of an unscheduled landing or crash landing, the following procedure is recommended. Exact steps will depend on pilot instructions and circumstances.

1. If a "pre-crash" alert sounds, a warning is given by the pilot, or a crash-landing appears imminent, follow pilot instructions and remain calm. Avoid distracting the pilot unnecessarily, as they already have a great deal to think about. If there is time and you are able, call for help on your radio or phone.
2. Prepare for a crash landing:
 - a. pull your visor down if you are wearing a flight helmet, or put on eye protection if accessible;
 - b. put on leather gloves to protect your hands;
 - c. unplug the communications cable; crack open the door; and
 - d. landmark your hand on an emergency exit.
3. If wearing a shoulder belt, ensure seatbelt is tight and sit upright with your back straight. If wearing a lap belt only, place head between the knees and lock your arms under your legs. Keep both feet flat on the floor and clear of the underside of your seat.
4. Once the aircraft has come to a stop, remain in the fuselage until the rotors or propellers stop spinning and/or break off (approximately 3 seconds in water; longer on land).
5. Exit the aircraft, moving away as far as possible, and only return to help others and retrieve survival and emergency equipment if it is safe to do so.



SAFE JOB PROCEDURE

6. If you can return to the aircraft safely, switch the ELT on manually. If possible, remove it from the aircraft and place in a clearing or on a high point near the aircraft with an unobstructed view of the sky. If the aircraft radio or phone works, call for help.
7. If you crash on land and you can do so safely, switch off the main power to the aircraft and/or unplug the battery, unless you are able to use the aircraft radio.
8. While awaiting rescue, do not leave the accident site unless you are in adequate physical condition to quickly and easily reach nearby help.
9. If you crash into water and you are too far to make it to shore, stay with any floating debris and if possible climb up on to any floating debris to get out of the water.
10. Administer first aid if necessary, light a signal fire if possible, and stay warm and dry.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada



SAFE JOB PROCEDURES

Reference No:	SJP-H02
Version:	2016-1
Developed By:	Name: C. Welsh Date: 2009/02/13
Last Reviewed By:	D. Moynihan 2016/04/15

TASK: Slinging cargo

HAZARD ASSESSMENT ISSUE NO: H10
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Ear and eye protection, gloves, long shirt, long pants, appropriate (closed-toe) footwear

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open footwear.
- Crew-chief must ensure pilot provides a pre-flight briefing so all crew involved with the slinging operation know the slinging procedures and where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Ensure the pilot is aware of any potentially dangerous goods that are to be transported (*i.e.*, gasoline, propane, *etc.*).
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- No passengers are to be carried inside the helicopter when slinging.

TRAINING REQUIREMENTS:

- Helicopter safety training
- Specific instructions given by pilot

TASK STEPS:

1. Wear all PPE for protection from dust, static shock and noise.
2. Get a full slinging briefing from the pilot. Understand aircraft hook components and function as well as extended line function and practice with pilot supervision.
3. Plan carefully to ensure balance and safety of sling loads and inspect cargo net.
4. Understand hand signals and ensure line of sight with pilot.
5. Ensure there is no loose debris or other hazards near the sling load, including objects the sling load could catch on.
6. If possible, dry-run the procedure and the communication signals you will use before the pilot starts the helicopter.
7. Load cargo net and attach to helicopter while it is on the ground if possible. This will ensure the helicopter is grounded. Ensure no part of the cable or cargo net is over the skids or your feet.
8. All items must be securely surrounded by the cargo net as loss during flight could cause net and remaining items to be sucked into blades or tail rotor.
9. As the helicopter raises the load, pull the sides of the net up so that objects inside remain in the bottom of the net. Never assist helicopter in lifting a load.
10. When the load is fully lifted by the helicopter, smoothly back away, keeping the load in sight at all times (in case it swings toward you) until well clear of the departure route.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Layne Christensen Helicopter Safety. Safety Practice Compliance Procedure T11 "Slinging Operations": <https://www.laynesafety.com/dmdocuments/manuals/us/practices0409/English/T11LSafePrac.pdf>



SAFE JOB PROCEDURE

Reference No:	SJP-H03	
Version:	2016-1	
Developed By:	Name	Date
Last Reviewed By:	C. Welsh	2009/01/23
	D. Moynihan	2016/04/15

TASK: helicopter drop off/exit

HAZARD ASSESSMENT ISSUE NO:

H-02-05,08,09

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
helicopter		Ear and eye protection, leather gloves, appropriate footwear

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open-toed footwear.
- Whenever possible, carry basic survival gear (*i.e.*, satellite phone, food, knife and matches), leather gloves and eye protection on your person or within easy reach in the cabin.
- Crew-chief must ensure pilot provides a pre-flight briefing so all passengers know where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Minimize loose objects in the cabin and ensure all potentially dangerous equipment (*i.e.*, heavy or pointed objects, bear spray, gasoline, propane, etc.) is securely packed in an appropriate location in the aircraft.
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- Be alert throughout the flight and report any airborne birds, aircraft or abnormalities to the pilot which they may not have noticed.

TRAINING REQUIREMENTS:

- Helicopter safety training (how to safely enter and exit a helicopter, hover exits, refueling procedures)

TASK STEPS:

Note: pilots may perform a "hover exit" or "toe-in" landing when the full length of the skids can not come into contact with solid ground. This may occur on slopes, or where the site is uneven or too soft to support the full weight of the machine (*e.g.*, steep slopes, crests of narrow ridges and swampy or muddy ground). The crew must exit the helicopter while it is under power, which creates considerable noise and turbulence, and the pilot will wish to lift off as quickly as possible. The following procedures are recommended when exiting a helicopter in a toe-in and/or regular landing. The actual steps may vary slightly depending on pilot preference and circumstances.

1. As the helicopter approaches the landing site selected by the pilot, anticipate the landing location and potential hazards.
2. Before landing, all crew and the pilot should agree on the safe area where the crew will regroup after exiting the helicopter and unloading their gear. Whenever possible, assemble outside the rotor disk, staying within view of the pilot at all times. In some situations, it may be safest to group adjacent to the helicopter skids beside the front passenger door and beneath the rotor disk. Always regroup toward the front of the helicopter where the pilot can see you; never to the rear of the fuselage.
3. The pilot will determine the passenger exiting order and give the signal to begin disembarking.
4. During a toe-in or hover exit landing, exit one person at a time. Ensure that all movements inside the helicopter and weight transfers from the helicopter to the ground are smooth and unhurried so that the pilot can compensate with the controls.
5. Before leaving your seat, remove your headset and re-buckle your seat belt behind you to ensure that it does not hang outside the aircraft when the door is closed and the helicopter takes off.



SAFE JOB PROCEDURE

6. If you are exiting from the front seat, make sure your clothing or gear do not snag the helicopter controls before you make a move to exit.
7. During a hover exit or toe-in landing, the passenger in the front seat generally exits last and keeps their headset until ready to do so. They should inform the pilot of progress (e.g. who is disembarking from the back seat, gear movement from the back seat or in the cargo hold, when passengers are stepping on the skid and the ground, etc).
8. The last passenger to exit the helicopter ensures that the seatbelts are not hanging outside the doors and that the doors are closed securely.
9. Ensure all gear is kept low to the ground and that long-handled equipment (such as shovels, augers and picks) is carried low and parallel to the ground. Never throw objects near a helicopter.
10. Remove equipment from cargo bays carefully and smoothly. If possible, have one crew member hold the cargo door while another carefully lifts the items out. If terrain is steep, the rear cargo compartment may be difficult to access, and it may be necessary to land elsewhere to bring any gear/equipment into cabin before toe-in landing is attempted. Accept the pilot's recommendations.
11. Once all equipment is secured, all passengers crouch in the safe area, and the crew leader signals to the pilot that the helicopter is clear for take off (using "thumbs up" hand signal).
12. Shield your face and eyes from flying dust and debris generated by the rotors.
13. If an "abort" command or signal is given or it is apparent the helicopter is losing control while you are outside the helicopter, try to get into the helicopter if possible. If this is not possible, lie face down on the ground parallel to the skids, just beside the body of the machine.
14. Perform a radio check from the ground with the pilot as the helicopter resumes level flight.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada.



SAFE JOB PROCEDURE

Reference No:	SJP-H04
Version:	2016-1
Developed By:	Name C. Welsh
Last Reviewed By:	Date D. Moynihan 2009/01/23 2016/04/15

TASK: Helicopter pick up/entry

HAZARD ASSESSMENT ISSUE NO:
H01-04,06,08,09
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
helicopter		Ear and eye protection, leather gloves, appropriate (closed-toe) footwear

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open-toed footwear.
- Whenever possible, carry basic survival gear (*i.e.*, satellite phone, food, knife and matches), leather gloves and eye protection on your person or within easy reach in the cabin.
- Crew-chief must ensure pilot provides a pre-flight briefing so all passengers know where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Minimize loose objects in the cabin and ensure all potentially dangerous equipment (*i.e.*, heavy or pointed objects, bear spray, gasoline, propane, etc.) is securely packed in an appropriate location in the aircraft.
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- Be alert throughout the flight and report any airborne birds, aircraft or abnormalities to the pilot which they may not have noticed.

TRAINING REQUIREMENTS:

- Helicopter safety training (how to safely enter and exit a helicopter, hover exits, refueling procedures)

TASK STEPS:

Note: pilots may perform a "hover exit" or "toe-in" landing when the full length of the skids can not come into contact with solid ground. This may occur on slopes, or where the site is uneven or too soft to support the full weight of the machine (*e.g.*, steep slopes, crests of narrow ridges and swampy or muddy ground). The crew must enter the helicopter while it is under power, which creates considerable noise and turbulence, and the pilot will wish to lift off as quickly as possible. The following procedures are recommended when entering a helicopter in a toe-in and/or regular landing. The actual steps may vary slightly depending on pilot preference and circumstances.

1. Although the actual landing site will be selected by the pilot, you can anticipate its location by considering wind direction and obstacles. Clear potential hazards such as near-toppling trees, loose brush and bushes that are beneath the tail-rotor area (*e.g.* a Bell 206 generally requires a clearing of minimum 30 m diameter to land in).
2. Ideally secure gear and position crew to the front side of the helicopter opposite the pilot so you do not have to come around the front of the helicopter after it has landed. Predetermine loading order and position from safety area outside rotor disc.
3. When the helicopter is within radio communication, advise the pilot of your position. As the helicopter approaches, stand at the upwind end of the suggested landing site with your back to the wind and dangle a bright signaling cloth or strip of orange flagging so the pilot can determine the strength of the wind. Then retreat to the safe area while the pilot lands.
4. Remove hats and shield your face and eyes from flying dust and debris as the helicopter lands. Secure any light gear items that may be picked up in the rotor wash.
5. Wait for pilot signal to board (usually a head nod).



SAFE JOB PROCEDURE

6. During a toe-in landing, load one person at a time. The first to load takes the front seat, and puts on their seatbelt and headset, taking care to not grab or catch any of the controls. The front seat passenger verbally informs the pilot of all subsequent movements around the helicopter (*i.e.*, passengers approaching and stepping on the skids and loading gear or themselves into the back seat or cargo hold).
7. Upon OK by the pilot, the first person signals to the second person to approach the helicopter and load gear into the cargo hold if required.
8. Ensure all gear is kept low to the ground and that long-handled equipment (*e.g.*, shovels, augers and picks) are carried low and parallel to the ground. Place all equipment in the cargo hold slowly and smoothly and make sure the cargo door is properly closed. Have a crew member hold the door while you load the cargo hold if possible.
9. If equipment is stored in the passenger compartment, make sure that it does not block passenger's access to both rear exits.
10. During a toe-in landing make sure you enter the helicopter smoothly, taking care to transfer your weight to the helicopter slowly as the pilot compensates the controls.
11. Once you are seated, put on your headset first in case the pilot needs to give you further instructions, then fasten your seatbelt and close the door.
12. Once all passengers are safely aboard, the front seat passenger looks behind to see that the back seat passengers are ready. They then tell the pilot that the crew is ready to take off.
13. If an "abort" command or signal is given or it is apparent the helicopter is losing control while you are outside the helicopter, try to get into the helicopter if possible. If this is not possible, lie face down on the ground parallel to the skids, just beside the body of the machine. In this position you won't be crushed by the machine if it rolls over.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada.



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-X

Version: 2016-1

General Activity or Task: Use of Fixed Wing Aircraft
Worksite: Runways, landing strips, lakes and large rivers

Date Completed: 2008/02/12

Completed By: T. Allen

Last Reviewed By: D. Moynihan

Date Reviewed: 2016/04/15

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General										all safe work practices and procedures reviewed annually; training courses offered annually
X01	Loading equipment into plane improperly	Muscle strain. Overloading of aircraft, improper weight distribution, or shifting load during flight may cause loss of control or crash and chance of serious injury or death.	3	3	75	675	H	n/a	Education and training, safe work practices, safe job procedures	n/a	SWP-005 & 018; SJP-B02; pilot briefings
X02	Boarding or leaving plane on ground or dock	Stumble and hit head or shins on door frame or wing; slip off dock or float into water; crushing injury between dock and float.	3	3	40	360	H	n/a	Education and training, safe work practices	life jacket	SWP-005; pilot briefings
X03	Contact with propellor while boarding or disembarking plane which is under power.	Chance of serious injury or death.	3	1	50	150	M	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X04	Exposure to loud engine noise during flights	Potential for hearing damage from prolonged noise exposure.	3	1	10	30	L	n/a	Education and training, safe work practices	ear protection/headsets	SWP-005; pilot briefings
X05	Pilot distraction or bird strike during flights	May cause loss of control or crash; chance of serious injury or death in crash;	3	0.5	75	112.5	M	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X06	Loose debris or obstructions on runway/air strip when plane landing/taking off.	Brush or debris thrown up by aircraft may strike onlookers; unsecured equipment adjacent to air strip may become unserviceable or lost if blown away by propellor wash, or may cause loss of control or crash and chance of serious injury or death.	3	3	75	675	H	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X07	Adverse wind or water conditions (rough or glassy water conditions, strong cross wind or sudden change in wind direction or intensity) when plane landing/taking off on water.	May cause loss of control or crash; chance of serious injury or death in crash; possibility of drowning if passengers become trapped inside submerged wreckage or are unable to swim to shore or floating wreckage; possibility of prolonged survivor exposure while awaiting rescue	3	3	75	675	H	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X08	Crash landing in remote areas due to mechanical failure, pilot incapacitation, shifting of load, or bird strike.	Chance of serious injury or death in crash; possibility of prolonged survivor exposure while awaiting rescue	3	2	75	450	H	n/a	Education and training, safe work practices, safe job procedures	leather gloves, survival gear, flame-retardant fabrics	SWP-005; SJP-H01; pilot briefings, aircraft egress training
X09	Crash landing into a body of water due to mechanical failure, pilot incapacitation, shifting of load or bird strike.	Chance of serious injury or death in crash; possibility of drowning if passengers become trapped inside submerged wreckage or are unable to swim to shore or floating wreckage; possibility of prolonged survivor exposure while awaiting rescue	3	2	75	450	H	n/a	Education and training, safe work practices, safe job procedures	leather gloves, survival gear, life jacket	SWP-005; SJP-H01; pilot briefings, aircraft egress training

Safe Work Practices: SWP-005 (Use of fixed-wing aircraft)

Safe Job Procedures: SJP-B02 (boat loading, unloading and carrying), SJP-H01 (unscheduled landing or crash)



SAFE WORK PRACTICES

Reference No:	SWP-005	
Version:	2015-1	
Developed By:	Name	Date
Last Reviewed By:	T. Allen D. Moynihan	2008/02/12 2016/04/15

TASK: USE OF FIXED-WING AIRCRAFT

PURPOSE: Appropriate behaviour when working with fixed-wing aircraft is of utmost importance. By following these general guidelines, you can minimize the chance of fixed-wing aircraft-related accidents and develop an effective and safe working relationship with your pilot.

GUIDELINES:

ALWAYS:

1. The pilot has a responsibility to care for the aircraft and ensure safety of passengers. All reasonable directions should be obeyed.
2. Arrange a safety briefing whenever you fly in new terrain or with a new aircraft or pilot. This is an opportunity for passengers to air concerns and become aware of the pilot's preferences for communication, take-off/landing and loading/unloading.
3. The safety briefing familiarizes passengers with the location and operation of safety features on the aircraft, including seat belts, exits, fire extinguishers, Emergency Locator Transmitter (ELT), radios and survival equipment.
4. The pilot directs loading and anchoring cargo. Make sure the pilot is aware of heavy and dangerous items. The payload must be accurately estimated and balanced. Some aircraft have an external compartment (e.g., in the floats) for storage of hazardous material (bear spray, small propane bottles). Assist the pilot by securing loose items, particularly straps which may be caught in doors.
5. Remember your PPE before taking your seat. If no headsets are provided, wear alternative hearing protection (ear plugs). Some cockpits are exceedingly sunny - bring glasses.
6. Allow the pilot to concentrate on flying. Do not talk during take-off, except to point out potential hazards if the pilot appears unaware of them (birds or other moving objects in your flight path).
7. When aboard, wait until directed by the pilot to remove your seatbelt and disembark. Make sure the seat belt and headphones are properly secured inside prior to closing the door.
8. Avoid approaching, embarking or disembarking from a fixed-wing aircraft with propeller(s) turning, and avoid the exhaust.
9. Wear clothing and closed-toe footwear appropriate for weather conditions; this will enhance survival prospects in the event of an emergency landing or crash.

Near the airstrip or float base:

10. Aircraft may be low-flying or arrive with little sound, so never assume these areas are safe for other activities.
11. When aircraft are taxiing or docking, treat propellers and other moving parts with great respect. The pilot will give the signal to move toward the arriving aircraft, usually after propellers have stopped turning.
12. Protect your eyes from prop-driven debris, secure loose items (hats, lightweight equipment) and wear hearing protection whenever nearby aircraft are under power.
13. Stay quiet and allow the pilot to concentrate during rough take-offs or landings.

Unprepared landing sites:

14. If landing on snow or frozen lakes, take all measures to determine the condition and strength of the landing surface. Landings on unprepared surfaces always carry extra risk, and precautions with cargo and passengers are best discussed before takeoff.
15. If you are required to embark/disembark from a floatplane into the water because of obstacles, unsuitable wind conditions or water depth, use extreme care to avoid falling or tripping on submerged boulders. If wearing a backpack ensure that straps are unbuckled in case you fall and need to remove it quickly.
16. If you are required to disembark from an aircraft that is under power, exit according to the pilot's instruction, traveling in a direction away from the propeller(s) and the tail. Once a safe distance from the aircraft, move into the pilot's line of sight to signal that you're a safe distance away and ready for them to take off.
17. If embarking under power, wait for the pilot's signal to approach the aircraft, follow an approach that keeps you away from the propeller(s) and tail, and communicate with the pilot once on board.
18. Tell the pilot if you have any hazardous materials (bear spray, propane, gasoline) that you need to transport; they may have to do a separate trip with no passengers to transport these materials.
19. Report inappropriate or unsafe pilot behaviour to your supervisor. Do not allow stunt, trick or extreme flying

NEVER:

20. Never smoke inside or within 15 metres of an aircraft.
21. Never remain on an aircraft that is being refueled.
22. Never pressure a pilot to fly against their judgment or against regulations.
23. Never approach a fixed wing until directed to do so by the pilot
24. Never put or leave gear in the cargo hold without notifying the pilot.
25. Never carry loaded firearms in the cabin.
26. Never throw any equipment around or out of an aircraft unless permitted/instructed to do so by the pilot.
27. Never run or move too quickly when working around a running aircraft.
28. Never step past the red line painted on a float which marks the danger zone near the propeller.



SAFE JOB PROCEDURES

Reference No:	SJP-B02	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	C. Welsh E. Bordet	27/01/2009 2016/03/08

TASK: Boat loading, unloading and carrying

HAZARD ASSESSMENT ISSUE NO: B-13, 16-20, T-19 RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Gloves, back belt

ROLES AND RESPONSIBILITIES:

- Do not lift any object causing strain
- Wear gloves to protect your hands
- Know and adhere to pilot's instructions (if loading boat onto aircraft or slinging canoe)

TRAINING REQUIREMENTS:

- Familiarization with proper lifting techniques and knots.

TASK STEPS:

1. Consider what force or workload will be required to move an object. Assess the size, shape and weight of object to move – will it be awkward? How far and to what height will the object be moved? Plan your movements to avoid awkward bending and/ or twisting repeatedly.
2. Prior to lifting, discuss your lifting plan and communication strategy with all involved.
3. Wisely judge your ability to do the work and ensure anyone knows how to lift properly (lift close to your body, have feet shoulder-width apart, bend knees, keep your back straight, tighten stomach muscles, and lift with your legs). Practice or use a back belt to help maintain proper lifting posture if you lift often repeatedly.
4. If the straining is excessive: put the boat down; change your tactic or get additional help.
5. When carrying or portaging a boat, ensure you are able to see obstructions in your path and pay extra attention when tired or walking on uneven ground. When carrying or lifting with a partner, communicate obstacles to each other.
6. Load boat onto rack or trailer and secure tightly with straps or ropes before driving away. Use appropriate knots when tying ropes.
7. Periodically stop and check that ropes or straps remain secure, especially if driving on bumpy roads.
8. If loading boats onto aircraft, sling or nest canoes as instructed by the pilot.

Motor up or down when traveling

- a) There are varying recommendations with regards to the position of the outboard when traveling. The more common opinion is that the motor should be stored at a position where it will not be damaged by any road hazards. If the motor is trimmed up for travel it should be situated so that the main weight of the powerhead is centered above the transom. Also when in the up position, it is important to take the weight and pressure off the hydraulic rams. Lift the motor to the appropriate height and then use pvc pipe or a wood block to hold the weight of the motor, relieving the pressure on the hydraulic rams. Use a strap or bungee cord to hold the motor down and to one side during travel.



SAFE JOB PROCEDURES

- b) Do not rely solely on the trim locking mechanism or the hydraulic rams themselves to support the motor when trailering. Extended use can cause damage to the rams and costly replacement will be required.
- c) For heavy outboards a “transom saver” can be used to take the weight of the motor and prevent it from bouncing and jerking during travel on rough roads. See picture below. This type of support bar does not always fit on any style of trailer so you must determine the best option for the set up that you have.



ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Cluett, Jonathan M.D. "How To Lift" About.com: Orthopedics. Available: <http://orthopedics.about.com/cs/backpain/ht/lift.htm> (checked March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-H01
Version:	2016-1
Developed By:	Name: C. Welsh
Last Reviewed By:	Date: 2007/12/20
	D. Moynihan
	2016/04/15

TASK: Unscheduled landing or crash landing

HAZARD ASSESSMENT ISSUE NO:
H07,11,12, W04&05, X08&09
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		natural fiber and/or fireproof clothing, leather gloves, appropriate (closed-toe) footwear, eye protection

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open-toed footwear.
- Whenever possible, carry basic survival gear (*i.e.*, satellite phone, food, knife and matches), leather gloves and eye protection on your person or keep them within easy reach in the cabin.
- Crew-chief must ensure pilot provides a pre-flight briefing so all passengers know where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Minimize loose objects in the cabin and ensure all potentially dangerous equipment (*i.e.*, heavy or pointed objects, bear spray, gasoline, propane, *etc.*) is securely packed in an appropriate location in the aircraft.
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- Be alert throughout the flight and report any nearby birds, aircraft or abnormalities to the pilot which they may not have noticed.

TRAINING REQUIREMENTS:

- Helicopter safety training, including underwater egress.

TASK STEPS:

In the event of an unscheduled landing or crash landing, the following procedure is recommended. Exact steps will depend on pilot instructions and circumstances.

1. If a "pre-crash" alert sounds, a warning is given by the pilot, or a crash-landing appears imminent, follow pilot instructions and remain calm. Avoid distracting the pilot unnecessarily, as they already have a great deal to think about. If there is time and you are able, call for help on your radio or phone.
2. Prepare for a crash landing:
 - a. pull your visor down if you are wearing a flight helmet, or put on eye protection if accessible;
 - b. put on leather gloves to protect your hands;
 - c. unplug the communications cable; crack open the door; and
 - d. landmark your hand on an emergency exit.
3. If wearing a shoulder belt, ensure seatbelt is tight and sit upright with your back straight. If wearing a lap belt only, place head between the knees and lock your arms under your legs. Keep both feet flat on the floor and clear of the underside of your seat.
4. Once the aircraft has come to a stop, remain in the fuselage until the rotors or propellers stop spinning and/or break off (approximately 3 seconds in water; longer on land).
5. Exit the aircraft, moving away as far as possible, and only return to help others and retrieve survival and emergency equipment if it is safe to do so.



SAFE JOB PROCEDURES

6. If you can return to the aircraft safely, switch the ELT on manually. If possible, remove it from the aircraft and place in a clearing or on a high point near the aircraft with an unobstructed view of the sky. If the aircraft radio or phone works, call for help.
7. If you crash on land and you can do so safely, switch off the main power to the aircraft and/or unplug the battery, unless you are able to use the aircraft radio.
8. While awaiting rescue, do not leave the accident site unless you are in adequate physical condition to quickly and easily reach nearby help.
9. If you crash into water and you are too far to make it to shore, stay with any floating debris and if possible climb up on to any floating debris to get out of the water.
10. Administer first aid if necessary, light a signal fire if possible, and stay warm and dry.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada.



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-X
Version: 2016-1

General Activity or Task: Use of Fixed Wing Aircrafts
Worksite: Runways, landing strips, lakes and large rivers

Date Completed: 2008/02/12
Completed By: T. Allen
Last Reviewed By: D. Moynihan
Date Reviewed: 2016/04/15

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General										all safe work practices and procedures reviewed annually; training courses offered annually
X01	Loading equipment into plane improperly	Muscle strain. Overloading of aircraft, improper weight distribution, or shifting load during flight may cause loss of control or crash and chance of serious injury or death.	3	3	75	675	H	n/a	Education and training, safe work practices, safe job procedures	n/a	SWP-005 & 018; SJP-B02; pilot briefings
X02	Boarding or leaving plane on ground or dock	Stumble and hit head or shins on door frame or wing; slip off dock or float into water; crushing injury between dock and float.	3	3	40	360	H	n/a	Education and training, safe work practices	life jacket	SWP-005; pilot briefings
X03	Contact with propellor while boarding or disembarking plane which is under power.	Chance of serious injury or death.	3	1	50	150	M	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X04	Exposure to loud engine noise during flights	Potential for hearing damage from prolonged noise exposure.	3	1	10	30	L	n/a	Education and training, safe work practices	ear protection/headsets	SWP-005; pilot briefings
X05	Pilot distraction or bird strike during flights	May cause loss of control or crash; chance of serious injury or death in crash;	3	0.5	75	112.5	M	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X06	Loose debris or obstructions on runway/air strip when plane landing/taking off.	Brush or debris thrown up by aircraft may strike onlookers; unsecured equipment adjacent to air strip may become unserviceable or lost if blown away by propellor wash, or may cause loss of control or crash and chance of serious injury or death.	3	3	75	675	H	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X07	Adverse wind or water conditions (rough or glassy water conditions, strong cross wind or sudden change in wind direction or intensity) when plane landing/taking off on water.	May cause loss of control or crash; chance of serious injury or death in crash; possibility of drowning if passengers become trapped inside submerged wreckage or are unable to swim to shore or floating wreckage; possibility of prolonged survivor exposure while awaiting rescue	3	3	75	675	H	n/a	Education and training, safe work practices	n/a	SWP-005; pilot briefings
X08	Crash landing in remote areas due to mechanical failure, pilot incapacitation, shifting of load, or bird strike.	Chance of serious injury or death in crash; possibility of prolonged survivor exposure while awaiting rescue	3	2	75	450	H	n/a	Education and training, safe work practices, safe job procedures	leather gloves, survival gear, flame-retardant fabrics	SWP-005; SJP-H01; pilot briefings, aircraft egress training
X09	Crash landing into a body of water due to mechanical failure, pilot incapacitation, shifting of load or bird strike.	Chance of serious injury or death in crash; possibility of drowning if passengers become trapped inside submerged wreckage or are unable to swim to shore or floating wreckage; possibility of prolonged survivor exposure while awaiting rescue	3	2	75	450	H	n/a	Education and training, safe work practices, safe job procedures	leather gloves, survival gear, life jacket	SWP-005; SJP-H01; pilot briefings, aircraft egress training

Safe Work Practices: SWP-005 (Use of fixed-wing aircraft)
Safe Job Procedures: SJP-B02 (boat loading, unloading and carrying), SJP-H01 (unscheduled landing or crash)



SAFE WORK PRACTICES

Reference No: SWP-003	
Version: 2015-1	
Developed by:	Name P. Lipovsky
Last Updated:	E. Bordet
Date 2008/01/04 2016/04/02	

TASK: USE OF SMALL BOATS

PURPOSE: Handling boats in lakes and rivers can be physically challenging and requires good judgment and experience. Northern waters are particularly cold, and immersion almost always causes hypothermia. Winds typically increase in the afternoon and can quickly build dangerous waves in large water bodies.

In the western Canadian mineral exploration industry, five people drowned between 1982 and 2004 in canoe capsizing accidents (AMEBC, 2006). According to Transport Canada, 100 people die and many more get seriously injured every year in boating incidents in Canada. By following these guidelines, you will help ensure your safety when working with boats.

GUIDELINES:

ALWAYS:

Preparation:

1. The boat operator must possess a valid Pleasure Craft Operator's card, and be adequately trained (MED3/SVOP) and comfortable in handling the particular craft and motor they are operating.
2. While on or near the water, you must at all times wear a properly fitting approved life-jacket (or equivalent such as floater suit) that is rated for your size and weight.
3. Protective clothing such as floater jackets and rain pants, floater suits, wetsuits and/or dry suits are recommended at all times, especially if working with boats for extended periods of time.
4. Wear clothing appropriate for the activity and weather. Bring additional layers of clothing in a waterproof bag.
5. Protect yourself from sunburn by wearing sunscreen, sunglasses and a hat, even if it is cloudy.
6. Use the most stable craft available (such as inflatable boats or zodiacs) in preference to canoes and kayaks.
7. Assign a boat captain who will brief crew members on hazards, emergency situations and rescue procedures.
8. The captain is responsible that the passengers will have the best chance of survival in case of upset; the captain must ensure that everyone is adequately prepared if they end up in the water.
9. Make sure a responsible person knows your travel route and estimated time. Remember to inform them upon return.
10. Monitor weather conditions and forecasts. Talk to local residents about local conditions and hazards.

Inspect the equipment:

11. Follow load and passenger limits as stamped on the boat capacity plate.
12. Check the fuel tank before leaving shore and calculate your fuel requirements. Ensure boat has adequate fuel.
13. Carry spare fuel and oil, spare paddles or oars that are appropriate for your craft, a bailing device, a sounding device, a floating rope at least 15 m long, a suitable rope for towing and/or tying the boat to shore, and three marine flares or a waterproof flashlight.
14. For boats with inboard engines, carry a Class 5BC fire extinguisher.
15. Carry a map or chart, compass and GPS, as well as a copy of proof of competency (e.g. Pleasure Craft Operator Card).
16. Carry a patch kit and/or tools to make minor repairs.

ADDITIONAL INFORMATION AND REFERENCES

- [Safety Guidelines for Mineral Exploration in Western Canada](#), 5th Edition, 2013. Association for Mineral Exploration British Columbia, pages 69-74
- Transport Canada minimum boating safety equipment: (<https://www.tc.gc.ca/eng/marinesafety/debs-obs-equipment-menu-1790.htm>)
- Practical boat handling courses: Transport Canada Marine Emergency Duties (MED) courses; Canadian Power and Sail Squadrons (www.cps-ecp.ca); Raven Rescue – Rescue and Safety Services (<http://www.ravenrescue.com/>)



SAFE WORK PRACTICES

Reference No:	SWP-003
Version:	2015-1
Name	Date
Developed by: P. Lipovsky	2008/01/04
Last Updated: E. Bordet	2016/04/02

17. Carry a communication device (satellite phone or radio) in an accessible, waterproof container.
18. Carry an overnight survival kit (fire-starter, extra food, extra clothes, first aid kit) and have a contingency plan in case you can't reach your final destination due to deteriorating weather conditions.

Underway:

19. Ensure equipment is properly loaded and secured to the boat so that it will not be lost if you capsize.
20. Carry essential survival gear (waterproof matches, food, knife and whistle) on your person in the event you become separated from your boat or gear.
21. Ensure no ropes are dangling loose in the water before departure. Carry a sharp knife, readily accessible, to cut tangled ropes in the event of an emergency. Stay close to shore whenever possible when traveling on lakes. A rope tied at the front and back of a boat which loops into the water is useful as a foot support when climbing into a boat from the water.
22. While driving a boat, constantly watch for logs, rocks, sand bars and obstacles. When approaching an unknown shore, be cautious and alert. Stay clear of log jams and sweepers on rivers.
23. Wear the kill switch bracelet for outboard motors so that you can't come into contact with a running propeller if you fall out of the boat.
24. If caught in rough conditions, steer at a 45° angle into waves – never travel broadside to large waves!
25. Choose to portage or line your boat from shore rather than running rapids. Wear appropriate footwear.
26. When leaving a boat make sure it is secure. If water conditions or level may change, ensure that it won't be swamped or battered. Remove or secure loose equipment.
27. If paddling, don't over-exert yourself and take nutrition and rest breaks.
28. When moving boats, gear or motors, practice proper lifting and portaging technique. Take breaks when you need them, communicate with your carrying partner(s) and slow down on uneven or slippery ground.
29. If the boat is upset, stay with your boat and conserve your energy.
30. Know who has right of way when working near other boats and guide your boat appropriately.

NEVER:

31. Never go out in conditions beyond your level of comfort or experience, or when weather is significantly deteriorating.
32. Never overload your boat with gear or people.
33. Never attempt to carry or move a boat without adequate assistance.
34. Never refuel your fuel tank offshore.
35. Never remain on the downstream side of your overturned boat – you could be trapped against an obstacle in the current.
36. Never wear heavy traversing equipment in a boat (traversing backpack, rock hammer).

Hazard Assessment matrix: section 4.4.3

ADDITIONAL INFORMATION AND REFERENCES

- [Safety Guidelines for Mineral Exploration in Western Canada](#), 5th Edition, 2013. Association for Mineral Exploration British Columbia, pages 69-74
- Transport Canada minimum boating safety equipment: (<https://www.tc.gc.ca/eng/marinesafety/debs-obs-equipment-menu-1790.htm>)
- Practical boat handling courses: Transport Canada Marine Emergency Duties (MED) courses; Canadian Power and Sail Squadrons (www.cps-ecp.ca); Raven Rescue – Rescue and Safety Services (<http://www.ravenrescue.com/>)



SAFE JOB PROCEDURES

Reference No:	SJP-B01	
Version:	2015-1	
	Name	Date
Developed by:	C. Welsh	2009/01/28
Last Updated:	E. Bordet	2016/03/26

TASK: Flat-water boat use and cold-water exposure

HAZARD ASSESSMENT ISSUE NO: B-01-07
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Transport Canada required boat safety equipment		Life jacket or PFD, dry suit

ROLES AND RESPONSIBILITIES:

- Wear a properly-fitting life jacket or personal flotation device (PFD) of appropriate size (some PFDs also provide insulation against cold water immersion).
- Wear a whistle attached to your PFD or clothing.
- Do not wear heavy equipment in the boat (like a rock hammer or traverse backpack).
- Pay attention to weather before starting trip and watch for changes throughout the day. Adjust your plans if the weather is worsening.
- Carry an emergency kit on board with an overnight kit (repair kit extra food), first aid kit and mandatory Transport Canada safety equipment (buoyant throw rope at least 15 m long, waterproof flashlight or flares, sound signaling device, bailer or pump, and oars or paddles).
- Carry survival gear (knife, energy bars, lighter, matches, satellite phone or radio) in waterproof bags or containers, ideally attached to you or to the boat.
- Wear multiple layers of dry clothing and a wind/waterproof outer layer or dry suit under your PFD.
- Make sure you have alternative steering/power options with you (bring 1 or more spare paddles/oars)

TRAINING REQUIREMENTS:

- Pleasure Craft Operator Card and boating proficiency course

TASK STEPS:

1. Steer at a 45° angle into large waves. Do not cross large bodies of water perpendicular to the direction large waves are traveling.
2. If upset or immersed, try to get out of the water and back into or onto your boat as quickly as possible. Only attempt swimming to shore if it is very close.
3. Do not expend excess energy trying to right a flipped boat on your own.
4. If you cannot get out of the water, conserve energy by practicing HELP (**H**eat **E**scape **L**essening **P**osition) by crossing your arms across your chest and drawing your knees up.
5. If multiple people are in the water everyone should huddle by putting chests together and intertwining legs.
6. Remain calm and positive. Do not tread water unnecessarily.
7. Raise the alarm with your satellite phone, radio or flares if you are able. Constantly review the situation and consider alternative strategies to reduce the danger of the situation.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 5th Edition, 2013. Association for Mineral Exploration British Columbia, pages 69-74
- Transport Canada, Office of Boating Safety, Safe Boating Guide: <http://www.tc.gc.ca/media/documents/marinesafety/TP-511e.pdf>
- Canadian Red Cross "Hypothermia and Cold Water" (<http://www.redcross.ca/what-we-do/swimming-and-water-safety/swimming-boating-and-water-safety-tips/hypothermia-and-cold-water>) (accessed March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-B02
Version:	2015-1
Developed by:	Name: C. Welsh
Last Updated:	Date: 27/01/2009
	E. Bordet
	2016/03/08

TASK: Boat loading, unloading and carrying

HAZARD ASSESSMENT ISSUE NO: B-13, 16-20, T-19 RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Gloves, back belt

ROLES AND RESPONSIBILITIES:

- Do not lift any object causing strain
- Wear gloves to protect your hands
- Know and adhere to pilot's instructions (if loading boat onto aircraft or slinging canoe)

TRAINING REQUIREMENTS:

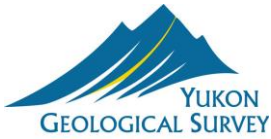
- Familiarization with proper lifting techniques and knots.

TASK STEPS:

1. Consider what force or workload will be required to move an object. Assess the size, shape and weight of object to move – will it be awkward? How far and to what height will the object be moved? Plan your movements to avoid awkward bending and/ or twisting repeatedly.
2. Prior to lifting, discuss your lifting plan and communication strategy with all involved.
3. Wisely judge your ability to do the work and ensure anyone knows how to lift properly (lift close to your body, have feet shoulder-width apart, bend knees, keep your back straight, tighten stomach muscles, and lift with your legs). Practice or use a back belt to help maintain proper lifting posture if you lift often repeatedly.
4. If the straining is excessive: put the boat down; change your tactic or get additional help.
5. When carrying or portaging a boat, ensure you are able to see obstructions in your path and pay extra attention when tired or walking on uneven ground. When carrying or lifting with a partner, communicate obstacles to each other.
6. Load boat onto rack or trailer and secure tightly with straps or ropes before driving away. Use appropriate knots when tying ropes.
7. Periodically stop and check that ropes or straps remain secure, especially if driving on bumpy roads.
8. If loading boats onto aircraft, sling or nest canoes as instructed by the pilot.

Motor up or down when traveling

- a) There are varying recommendations with regards to the position of the outboard when traveling. The more common opinion is that the motor should be stored at a position where it will not be damaged by any road hazards. If the motor is trimmed up for travel it should be situated so that the main weight of the powerhead is centered above the transom. Also when in the up position, it is important to take the weight and pressure off the hydraulic rams. Lift the motor to the appropriate height and then use pvc pipe or a wood block to hold the weight of the motor, relieving the pressure on the hydraulic rams. Use a strap or bungee cord to hold the motor down and to one side during travel.



SAFE JOB PROCEDURES

- b) Do not rely solely on the trim locking mechanism or the hydraulic rams themselves to support the motor when trailering. Extended use can cause damage to the rams and costly replacement will be required.
- c) For heavy outboards a “transom saver” can be used to take the weight of the motor and prevent it from bouncing and jerking during travel on rough roads. See picture below. This type of support bar does not always fit on any style of trailer so you must determine the best option for the set up that you have.



ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Cluett, Jonathan M.D. “How To Lift” About.com: Orthopedics. Available: <http://orthopedics.about.com/cs/backpain/ht/lift.htm> (checked March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-B03	
Version:	2015-1	
	Name	Date
Developed by:	C. Roots	2010/03/22
Last Updated:	E. Bordet	2016/3/08

TASK: Paddling and portaging a canoe

HAZARD ASSESSMENT ISSUE NO: B10-12 & B-20

RISK CLASS: LOW- MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Canoe, paddles, warm dry clothing, footwear for bush	Waterproof gear bags, survival essentials	Personal flotation devices

ROLES AND RESPONSIBILITIES:

- If possible, use an inflatable craft rather than a canoe.
- Before departing base: ensure that the canoe is in good condition: the hull is free of holes and cracks; seats are in good repair and center thwart is strong and securely anchored. Bring padded yoke for portaging if available. Ensure that paddles are appropriate for size of crew and a spare is included. Check flotation devices for damage and ensure zips and buckles are functional.
- Before leaving camp: test the canoe for flotation and pack equipment in water-tight bags. If portage is anticipated, plan the loads to minimize loose items and reduce corners that are fragile or could snag.
- Make sure that basic survival items (e.g. matches and tinder, small axe or knife) are included in several individual packs (or attached to each person): this ensures that members separated by boat upset or weather have access to them.
- Before setting out discuss with all crew the plans for the day including landings and portages, anticipating hazards and opportunities. Also explain the contingency – a time or place to meet if plans go awry. Check that each crew member has clothing and food available in the same craft as he/she will travel in, packed so that these items are readily available without unpacking the load. Most craft are fragile out of the water. They will puncture or break if fully loaded or boarded while resting on hard ground.

RECOMMENDED TRAINING:

- Flat or moving water boating courses.
- Manuals and websites on canoe paddling and portaging technique, although these do not substitute for real-time experience.
- Start with short, less-committing trips to become familiar with the equipment and what works. Discuss partnerships and signals to use in fast water.



SAFE JOB PROCEDURES

TASK STEPS:

Paddling

1. Before loading canoe, make a short practice run with partner to become familiar with equipment. If you differ in weight or experience, it is generally preferable for the most experience or the heaviest person to take the stern position. Practice different paddling strokes (forward, reverse, draw, pry and j-stroke) and agree on spoken signals to manoeuvre the boat.
2. Load the canoe with heavy items low and balanced. Each item should be clipped to the boat (gunwale loop or thwart) – make sure these can be unclipped with one hand during a rescue. Essential and survival items have priority; minimize the remainder to allow as much freeboard as possible.
3. Secure lightweight, loose items (jackets, maps) that will be dislodged by gusts (elastic cords suitable).
4. Before embarking, dress for anticipated weather and secure PFD. The stern person should climb aboard first; the bow person carefully pushing off from shore when both are ready.
5. Paddle on opposite sides of the canoe, preferably in unison. Special techniques are used when encountering wind or strong currents. In these situations, the canoe is typically angled into the wind or current, so that the craft 'ferries' toward its intended destination. Watch for hazards above and below the waterline.
6. When approaching the shore bow-first, the forward paddler disembarks first and steadies the craft while the stern person crawls forward. With both on shore the craft is pulled onto shore beyond the reach of tide or changing current, and tied securely. Paddles are best left in the boat (so they don't float or blow away).

Portaging

1. Approaching a portage: use all available information to locate the best entrance. Extra time checking for the correct trail will save considerable effort later. If the portage circumvents rapids or falls, watch closely for an obscured entrance if the water level is higher or lower than normal.
2. Unless the portage route is familiar, plan your first trip loaded with easily carried, non-essential equipment, and items for clearing or improving the route. Unexpected obstacles can be reduced and the effort required for subsequent loads will be determined.
3. Portage the canoe on the second trip, especially if rain or darkness is imminent. Prepare the canoe by removing loose items and tying all ropes inside hull. Prepare yourself with appropriate clothing (long pants and sleeves – you can't fend off bugs or bushes while portaging) and sturdy footwear. Have other members of the crew assist in placing the canoe on your shoulders; make sure that all is comfortable before setting off on the trail – it is always less convenient to adjust the load enroute.
4. Use partners or sturdy objects to rest the raised tip of the canoe when taking a break from the load. Step out from under the canoe and move away. Uncontrolled falling canoes can hurt heads and break limbs. Ground the canoe gently. After resting, shoulder the load with care – strains often occur at this stage.
5. At the end of the portage, cache equipment securely before returning for remaining loads. Prowling wildlife and humans always investigate unattended objects.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- [Safety Guidelines for Mineral Exploration in Western Canada](#), 5th Edition, 2013. Association for Mineral Exploration British Columbia, pages 69-74
- Canoeing and camping: Beyond the Basics, by Cliff Jacobson (1992), ICS Books, Inc. ISBN 0-934802-80-7
- The pain of portaging: <http://www.paddling.net/guidelines/showArticle.html?159> (accessed March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-B04	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	C. Roots	2010/03/22
	E. Bordet	2016/03/08

TASK: Use of outboard motor

HAZARD ASSESSMENT ISSUE NO: B14
RISK CLASS: VERY LOW- MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
watercraft, appropriate motor, paddles, warm dry clothing and footwear	Appropriate fuel, oil, servicing tools, spare propeller	Personal flotation devices, waterproof gear bags, survival essentials

ROLES AND RESPONSIBILITIES:

- You must have a "Pleasure Craft Operator Card". The Canadian Safe Boating course material is on-line (<http://www.boaterexam.com/canada/education>; <http://www.boaterexam.com/navigationrules/>) and the Coast-Guard online exam is 50 multiple choice questions. You must have this license with you when operating any power boat.
- Before leaving, check: the weather forecast, local hazards, local maps and charts, PFD for all crew, first-aid kit, tools and spare parts for motor, repair kit, sufficient fuel for trip, safety equipment, and that someone is aware of where you are going and when overdue.
- You are required to render assistance to those in distress, and must stop if involved in an accident with another craft.
- You must have appropriate safety equipment on board – the type and amount is determined by the size of boat. All required equipment must be in working order.
- You must ensure the watercraft is properly licensed (if above 10 HP), and follows regulations according to engine size and craft capacity.
- You are responsible to operate a seaworthy boat, in a safe manner, observing all nautical regulations.
- Never refuel from inside your boat. Remove the tank from the boat and refuel on shore.

TRAINING REQUIREMENTS:

- Pleasure Craft Operator Card and boating proficiency course

TASK STEPS:

- Make sure that the fuel matches the motor: 2-cycle = gas mixed with oil (check ratio); 4-cycle = straight gas.
- Ensure that motor is securely fixed to transom (tightening clamps) and that safety chain is attached at both the motor and boat ends. Area around fuel tank, motor and operator should be clear so that quick movements are unimpeded.
- Load the boat appropriately and secure gear so that the bow is slightly higher than the stern.
- Tilt motor out of water to check that propeller is present and not fouled up. Return prop to water and engage the tilt-lock (if planning to use the reverse gear), or leave disengaged (if the skeg may strike objects while moving forward).
- Locate the dead-man switch and secure.
- Open fuel vent on gas tank, place transmission in neutral, use squeeze bulb to prime with gas, set throttle to start, apply choke (if required), and pull the starter cord.
- If motor will not start, check: fuel level in tank, fuel line disconnected or kinked, gear selector or throttle mis-set, loose spark plug, choke valve not operating, air-inlets (to engine or tank) blocked.



SAFE JOB PROCEDURES

8. Before leaving shore, always check for the tell tale stream of water out the back of the motor to make sure the cooling system is functioning properly.
9. To get underway, slow engine rpm to idle before engaging gear. Accelerate slowly, away from obstacles.
10. Do not make sharp turns at high speed. Proceed into strong winds at an angle to reduce pounding and avoid engine damage when the powered prop is lifted from the water.
11. Slow down well in advance of anticipated landings, to allow the wake to dissipate before making contact. Approach at 30° where possible. In rough weather, approaching in reverse allows more control. When docking, approach with the dock on the port (left) side of the boat so that the stern swings around the right way when you reverse.
12. After the boating season, have the motor cleaned and overhauled. While the engine is running unplug the fuel line and let it keep running until it dies to remove all the fuel from the system. Do not leave oil in the crankcase over winter if stored in an unheated area as the expansion of cold oil will split the housing. Include a prominent notice that oil has been drained, so that oil is added before next year's use.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- [Safety Guidelines for Mineral Exploration in Western Canada](#), 5th Edition, 2013. Association for Mineral Exploration British Columbia, pages 69-74
- Transport Canada, Office of Boating Safety, Safe Boating Guide: <http://www.tc.gc.ca/eng/marinesafety/debs-obs-menu-1362.htm>
- BoaterExam.com: Canadian Safe Boating Course. Chapter 2: Operating a Motor Boat: <http://www.boaterexam.com/canada/education/c2-motorboatOperation-en.aspx> (accessed March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-C02
Version:	2016-1
Developed by:	Name: C. Welsh
Last Updated:	Date: 28/01/2009
	J. Bond 2016/04/12

TASK: Lifting heavy or awkward objects

HAZARD ASSESSMENT ISSUE NO: C-03,04
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Gloves, back belt, eye protection

ROLES AND RESPONSIBILITIES:

- Weigh your ability to do the work and ensure anyone helping you lift an object lifts properly.
- Do not lift any object causing strain.
- Wear gloves to protect your hands if necessary.
- Wear eye protection when applying/removing strapping (*i.e.*, core boxes)

TRAINING REQUIREMENTS:

- Familiarization with proper lifting techniques.

TASK STEPS:

1. Prior to lifting, discuss your lifting plan and communication strategy with all parties involved.
2. Consider what force or workload will be required to move an object. Assess the size, shape and weight of object to move – will it be awkward? Will you be bending and/ or twisting repeatedly? How far and to what height will the object be moved? Plan your movements to avoid awkward bending and/ or twisting repeatedly.
3. Lift close to your body, with feet shoulder-width apart. Bend your knees and keep your back straight, tighten stomach muscles, and lift with your legs. If you lift often or will be lifting repeatedly, a back belt may help maintain proper lifting posture.
4. If you are straining, stop. Put the object down and change your tactic, or get additional help.
5. Ensure you are able to see obstructions in your path and be careful on uneven ground. When carrying or lifting with a partner, communicate obstacles to each other.
6. Pay extra attention when tired or in uneven/ hilly terrain.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATIO

Cluett, Jonathan M.D. "How To Lift" About.com: Orthopedics. Available: <http://orthopedics.about.com/cs/backpain/ht/lift.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-M02	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	S. Israel	2009/11/09
	J. Bondi	2016/04/12

TASK: Fuel caching and spill contingency plan

HAZARD ASSESSMENT ISSUE NO: V14
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
4 x 20L buckets with lids shovel poly tarp - 2 x (20 x 24 ft)	MSDS	PVC oil resistant gloves, eye protection

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation
- Make sure all hazardous substances are marked accordingly
- Know the location of the Material Safety Data Sheets (MSDS) and WHMIS binders
- Ensure extreme care is taken during transfer of fuel from drums.
- Ensure all drums are properly sealed and in good shape (*i.e.*, no leaks or rusted surfaces) prior to caching.
- Report all spills, regardless of size.
- Take all reasonable measures to confine and clean up spills immediately.
- Restore the site to the same condition it was in before the spill.

TRAINING REQUIREMENTS:

- Transportation of Dangerous Goods
- WHMIS

PURPOSE:

The purpose of this fuel caching and spill contingency plan is to establish a set of guidelines for Yukon Geological Survey employees involved in field work within the Yukon Territory. This plan deals mainly with small fuel caches consisting of less than 20 x 200 L (40 gallon) barrels (*i.e.*, <4000 L total) of Jet A/B aviation fuel. This plan incorporates existing Government of Yukon policy regarding fuel caching and spill reporting, and specific sections from various branches and regulations are cited where appropriate.

TASK STEPS:

Caches are subject to different policies and practices based on volume of fuel stored.

A) Large fuel cache storage procedures

1. A fuel cache consisting of twenty (20) or more 200 L barrels or one container with a volume equal to or greater than 4000 L capacity is considered a large fuel cache.
2. Both a land use permit and YESAB assessment may be required for large fuel caches. Contact EMR Lands directly for advice on permitting requirements.
 - a. For land use permit applications, visit EMR Land Management branch website:
http://www.emr.gov.yk.ca/lands/application_forms.html
 - b. For YESAB applications, go to: <http://www.yesab.ca/submit-a-project/do-i-need-an-assessment.html>
 - c. Note that YESAB applications can take up to 2 months to process, so the application should be submitted well in advance.
3. A secondary containment facility must be installed for large fuel caches and must accommodate at least 110 % of the fuel being stored.



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B) Small fuel cache: storage procedures

1. A fuel cache of >2 and <20 barrels (>400 and <4000 litres) is considered a small fuel cache.
2. All drums must be marked with proper labels that identify the owner and the date the drums were purchased (e.g., EMR-YGS 07/15). It is recommended that YGS be part of the label as EMR has numerous fuel caches throughout the territory.
3. Notification of fuel cache establishment for between 3 and 19 drums (>400 and <4000 L) must be submitted in writing (email) to the Manager of Land Use, Energy Mines and Resources, within 30 days of establishing the fuel cache. This must include GPS coordinates of cache, amount of fuel, method of storage, and plans for decommissioning of cache (i.e., date of removal of drums).
4. All fuel drums should be stored on their sides with the bung hole horizontal to reduce the risk of fuel contamination.
5. Fuel containers must be situated on elevated, level and stable ground at least 30 m horizontal distance away from the high water mark of any watercourse.
6. Fuel containers must be situated well away from moving machinery.
7. Each fuel cache must have a spill kit stored on-site (see suggested items listed below in Part E).
8. A secondary containment system is not necessary for small caches but use of such a system is recommended where practical. Containment is required at large caches when transferring fuel from drums to an aircraft. The use of such a system should be discussed with the aircraft contractor prior to the field program.

C) Fuel spill prevention

Always minimize the chances of fuel spills during handling and transfer of fuel drums by:

- Taking extreme care during transfer of fuel from drums.
- Ensuring all drums are properly sealed and in good shape (i.e., no leaks or rusted surfaces) prior to caching.
- A secondary containment system should be considered if practical.

D) Fuel spill response procedures

1. All fuel spills, regardless of size, must be reported immediately to the Yukon Geological Survey Operations Manager (see Reporting Procedure section). All spills greater than 200 L must also be reported immediately to the Yukon Spills Reporting Centre.
2. Identify the source of leak or spill and if safe to do so, take all reasonable measures to stop and confine the leak or spill. Measures may include:
 - stopping the release of any more of the spilled substance by turning off valves, picking up fallen containers, etc.;
 - putting down absorbent material;
 - building berms or ditches to stop spilled material from spreading.
3. Immediate action should include removal of contaminated soil or snow into a sealable container (for small volume spills) or onto an impermeable surface which is then covered from the elements (for large volume spills) until proper disposal can take place. Do this only if it is safe to do so.
4. In the case of small volume spills (less than 200 L), the fuel-dirt or fuel-snow mixture must be cleaned up by immediate removal and storage in sealable containers (buckets or fuel drums). The contaminated material warrants proper disposal.



SAFE JOB PROCEDURES

5. In the case of large volume spills (in excess of 200 L), a plan will be developed with the Yukon Spills Reporting Centre following the Contaminated Sites Regulations of the Yukon Environment Act (http://www.gov.yk.ca/legislation/regs/oic2002_171.pdf).
6. Ensure that the site is restored to the same condition that it was in before the spill. Yukon Environmental Protection Officers may provide direction regarding actions to be taken to restore the site, including sampling to show that no contamination remains.

For more information on spill reporting, clean up and waste disposal, contact Yukon Environment, Environmental Programs Branch (867-667-5683) or visit their website:

<http://environmentyukon.gov.yk.ca/monitoringenvironment/spills.php>

E) Spill Kits

Each fuel cache must have a spill kit stored on site. It is recommended that the kit include a minimum of the following items:

- 4 x 20L buckets with sealable lids.
- 1 x shovel for removal of fuel-dirt/snow mixture.
- 2 x (20 x 24 ft) poly tarp
- absorbent pads or granules
- Personal Protective Equipment (2 x PVC Oil resistant gloves, splash protection eyewear).
- List of contacts and MSDS for all fuels.

Commercial spill kits can be purchased in Whitehorse from Yukon Pump for around \$290 (includes 20 gallon UN rated screw top container with absorbent pads, absorbent socks, 42 lb bag of oil sponge remedial granular absorbent, disposable bags and plug n' dike).

In some jurisdictions, a bag of compressed peat moss, that can be spread to absorb the fuel and then burned, is considered appropriate.

F) Personal Protective Equipment

Commercial spill kits may include PPE for removal of material after a spill. Protective gloves and eyewear (see attached MSDS for Jet A/B for more details) are suitable in well ventilated areas; spills in confined spaces may require increased ventilation or breathing apparatus. Any individual involved in cleanup will have PPE made available to them.

G) Reporting Procedure

1. The Project Leader must report all fuel spills immediately regardless of volume, to the YGS Operations Manager or Director. A spill report outlining the date, time, location, type and volume of the spill, and details of any clean up action taken must also be submitted in writing to the YGS Operations Manager.
2. Fuel spills greater than 200L must be reported immediately to the Yukon Spill Report Centre.

Reporting contacts:

1) Yukon Geological Survey (YGS):

YGS Operations Manager		867-667-8508
YGS Director		867-667-8892

2) Yukon Spills Report Centre (24 hrs, EMO):		867-667-7244

3. Notify the owner or person in charge of the spilled substance and any person who may be adversely affected by the spill.



SAFE JOB PROCEDURES

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Yukon Environmental and Socio-economic Assessment Board: <http://www.yesab.ca/>

- YESAB assessment applications: <http://www.yesab.ca/submit-a-project/do-i-need-an-assessment/>

Yukon Energy Mines & Resources, Land Management Branch (land use permits):

- Land Use Manager, Land Management Branch, Yukon Energy Mines and Resources: Marg White, 867-667-3173
- Yukon Lands legislation and policies: http://www.emr.gov.yk.ca/lands/legislation_policies.html
- Territorial Lands (Yukon) Act, O.I.C. 2003/51 - Land Use Regulation (http://www.gov.yk.ca/legislation/regs/oic2003_051.pdf)
- Land use permit application: http://www.emr.gov.yk.ca/lands/application_forms.html

Yukon Environment, Environmental Programs Branch (spill response, clean up and waste disposal):

- Yukon Environment, Monitoring & Inspections Manager (Spill Reporting): Bryan Levia, 867-667-3436
- Yukon Environment Act, Part 11: Spills: <http://www.gov.yk.ca/legislation/acts/environment.pdf>
- Yukon Environment Spill Reporting: <http://environmentyukon.gov.yk.ca/monitoringenvironment/spills.php>
- Yukon Environment, Cleaning up Hazardous Spills:
 - Yukon Environment Act, Part 11: Spills Regulations: http://www.gov.yk.ca/legislation/regs/oic1996_193.pdf
- Yukon Environment, Cleaning up Contaminated Sites:
http://www.env.gov.yk.ca/air-water-waste/contaminated_sites_regs.php#cleanup
 - Yukon Environment Act, Contaminated Sites Regulations: http://www.gov.yk.ca/legislation/regs/oic2002_171.pdf



SAFE JOB PROCEDURES

Reference No:	SJP-T05
Version:	2015-1
Name	Date
Developed by:	C. Welsh 2009/01/30
Last Updated:	S. Israel 2016/04/12

TASK: Use of hand tools (axes, knives, rock hammers, shovels)

HAZARD ASSESSMENT RISK ISSUE NO: T15-18

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Axe, knife, hammer or shovel		safety glasses, gloves, proper boots

ROLES AND RESPONSIBILITIES:

- Check and maintain equipment regularly
- Ensure area is clear before using axe, hammer, knife or shovel
- Use equipment within ability
- Use proper posture to avoid injuries (e.g., striking toe or leg)
- Carry equipment with appropriate sheaths
- Wear PPE when using equipment

TRAINING REQUIREMENTS:

- Practice with each piece of equipment

TASK STEPS:

Axe Use:

1. Put on all PPE
2. Assess wood before chopping – looking for nails, rocks or other embedded material.
3. Remove any distractions from the area.
4. Separate your legs and bend your knees with each swing of the axe to prevent injuries to feet or legs.

Knife Use:

1. Keep knives sharp. Dull knives require extra force and are more likely to slip.
2. Cut away from you, slowly and carefully.

Rock hammer Use:

1. Ensure you and anyone near you is wearing PPE (safety glasses).
2. Keep fingers away from striking surface.
3. Be aware of people around you as shards may fly a long way.

Shovel Use:

1. Put on all PPE.
2. Avoid bending at the waist to reduce back strain.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 53-56.
- http://www.ehow.com/how_4457018_chop-wood-felling-ax.html (accessed 12 April 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-T11	
Version:	2016-1	
	Name	Date
Developed by:	C. Welsh	2009/02/04
Last Updated:	D. Moynihan	2016/04/15

TASK: Hypothermia and frostbite

HAZARD ASSESSMENT ISSUE NO: T-03

RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Survival equipment (matches/lighter, emergency shelter, satellite phone)	n/a	Warm dry clothes, gloves, hat, emergency blanket

ROLES AND RESPONSIBILITIES:

- Know the symptoms of hypothermia and be able to recognize frostbite.
- Be prepared to spend a night out and carry extra clothing for all potential weather conditions.
- Carry fire-starting and emergency survival equipment when traversing.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

Hypothermia prevention and treatment:

1. Check the temperature and wind chill before heading out in the field.
2. Postpone or shorten time outdoors in cold winter conditions.
3. Keep active and moving when working outdoors to increase circulation.
4. Dress in layers and wear a hat.
5. Stay hydrated and eat high energy snacks frequently when working in cold weather.
6. Be alert to changing weather conditions and dress accordingly.
7. Do not over exert yourself. Remove wet or sweaty clothes and replace with dry layers.
8. As soon as you stop exerting yourself, put on more clothes before you get chilled. If you feel chilled or start shivering, put on more clothes, get out of the cold and/or start a warming fire.
9. Take immediate action to prevent heat loss if a previously shivering crew member starts acting irrational, clumsy, confused, fatigued or weak, or has slurred speech.
10. Shelter the victim and insulate them from the ground. Remove wet clothes, and insulate the body with dry clothing, blankets or sleeping bags. Focus on warming the head, neck, arm pits, chest, and groin areas, not the extremities. Administer warm sweet drinks and high energy food.

Frostbite prevention and treatment:

1. In extreme cold, postpone field day(s).
2. Be particularly cautious on wet windy days. Know the temperature and the wind chill.
3. Dress for the weather and take care to cover the head, face, and hands adequately. Wear properly-fitting gloves when working with your hands in cold weather – avoid using bare hands in sub zero temperatures.
4. Layer clothing and carry extra warm dry layers and a warm hat.
5. As soon as you feel chilled, put on more clothes, get out of the cold and/or start a warming fire.
6. Check your own skin and that of crew members regularly for frostbite. Look for waxy, pale and/or discoloured skin.
7. Remove any jewelry and warm any affected areas gradually – do not rub.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 30-34.

4.5 FIELDWORK

4.5.1 Field Research and Traversing

4.5.2 Firearms

- 4.5.3.1 *Yukon EMR Firearms Directive*

4.5.4 Camp Management

4.5.5 Forest fires



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: **HA-T**Version: **2015-1**General Activity or Task: **Field Research and Traversing**Worksite: **Wilderness**Date Completed: **2007/05/17**Completed By: **Steve Israel, Panya Lipovsky, Charlie Roots**Last Reviewed By: **J. Bond**Date Reviewed: **2016/04/12**

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	Remote wilderness exposure in mountainous terrain										all safe work practices and procedures reviewed annually; training courses offered annually
T-01		Slips/trips/falls	10	6	10	600	H	support device as required (ski pole, hammer, ice axe, etc)	Education and training, safe work practices and safe job procedures	appropriate footwear	SWP-004, SJP-T18, first aid course
T-02		Rockfall and landslides	2	0.5	50	50	L	n/a	Education, safe work practices and safe job procedures	helmet	SWP-004, SJP-T14,T17
T-03		Hypothermia	2	1	10	20	L	high quality equipment	Education and training, safe work practices and safe job procedures	appropriate clothing	SWP-004, SJP-T11, first aid course
T-04		Heat exhaustion, sunstroke	2	3	10	60	L	n/a	Education and training, safe work practices and safe job procedures	appropriate clothing, hat, sunscreen	SWP-004, SJP-T10, first aid course
T-05		Dehydration	8	6	10	480	H		water containers	Education and training, safe work practices and safe job procedures	adequate water
T-06		Fatigue	6	6	10	360	H	n/a	Education, safe work practices and safe job procedures	adequate food	SWP-004, SJP-T03
T-07		Damage to eyes	10	6	2	120	M	n/a	Education, safe work practices	protective eyewear	
T-08		Lightning	2	1	50	100	M	n/a	Education, safe work practices and safe job procedures		SWP-004, SJP-T15
T-09		Foot problems	10	6	10	600	H	first aid kit	Education and training, safe work practices and safe job procedures	appropriate footwear	SWP-004, SJP-T16, first aid course
T-10		Working over head	2	6	10	120	M	n/a	Education, safe work practices and safe job procedures		SWP-004
T-11		Disoriented or lost	1	1	2	2	VL	n/a	Education and training, safe work practices and safe job procedures	survival equipment	SWP-004, SJP-T07,T19, wilderness readiness course
	Stream crossings										
T-12		Slips/falls	5	3	2	30	L	n/a	Education and training, safe work practices and safe job procedures	appropriate footwear	SWP-004, SJP-T04,T18, first aid course
T-13		Drowning	2	0.5	50	50	L	n/a	Education and training, safe work practices and safe job procedures		SWP-004, SJP-T04, first aid course
T-14		Hypothermia	2	6	2	24	L	n/a	Education and training, safe work practices and safe job procedures	survival equipment	SWP-004, SJP-T11, first aid course
	Use of rock hammers, shovels, axes										
T-15		Flying rock chips in eyes	10	3	10	300	H	high quality tools	Education and training, safe work practices and safe job procedures	eye protection	SWP-004, SJP-T05, first aid course

4.5.1 YGS Safety Manual - Field Research and Traversing

T-16		Hitting finger	10	3	2	60	L	high quality tools	Education and training, safe work practices and safe job procedures	gloves	SWP-004, SJP-T05, first aid course
T-17		Repetitive strain	5	1	2	10	VL	non-slip, contoured handles	Education and training, safe work practices and safe job procedures		SWP-004, SJP-T05, first aid course
T-18		Striking toe or leg	6	3	10	180	M	n/a	Education and training, safe work practices and safe job procedures	appropriate footwear, chaps if situation warrents	SWP-004, SJP-T05, first aid course
	Carrying heavy loads										
T-19		Muscle strain	6	3	10	180	M	n/a	Education and training, safe work practices and safe job procedures	high quality backpack	SWP-004, SJP-B02, first aid course
T-20		Slips/falls	6	3	10	180	M	n/a	Education and training, safe work practices and safe job procedures	appropriate footwear	SWP-004, SJP-T18, first aid course

Safe Work Practices: SWP-002 (Firearms use, handling and transportation), SWP-004 (Fieldwork and traversing)

Safe Job Procedures: SJP-B02 (Boat loading, unlodaing and carrying), SJP-C01 (Campfires), SJP-F01 (Defensive use of a firearm), SJP-F02 (Firearm transportation), SJP-T03 (Fatigue), SJP-T05 (Use of tools), SJP-T06 (Dehydration), SJP-T07 (Disoriented or lost), SJP-T08 (Building signal fires), SJP-T10 (Hyperthermia and sunburn), SJP-T11 (Hypothermia and frostbite), SJP-T12 (Illness prevetion and basic hygiene), SJP-T13 (Insect or wasp stings), SJP-T14 (Landslide), SJP-T15 (Lighting strikes), SJP-T16 (Properly fitted footwear), SJP-T17 (Rockfall), SJP-T18 (Slips, trips and falls), SJP-T19 (Unable to return to camp/stranded)



SAFE WORK PRACTICES

Reference No:	SWP-002	
Version:	2016-1	
	Name	Date
Developed by:	L. Lewis	04/08/2008
Last updated:	D. Moynihan	2016/04/15

TASK: FIREARMS USE, HANDLING AND TRANSPORTATION

PURPOSE: Firearms are used in the field to provide protection against aggressive wildlife. Handling, transportation and storage of firearms are regulated by the Firearms Act and by part III of the Criminal Code of Canada. Field personnel do not always traverse with firearms, but firearms are often kept in camp because camp activities (cooking, grey water disposal, food storage, etc.) are more likely to attract bears than traversing activities. Although firearms are rarely discharged due to actual bear encounters, employees must be properly trained to handle, use and transport firearms to ensure their own safety and the safety of others.

GUIDELINES:

ALWAYS:

1. **You must** have a valid Firearms Acquisition Certificate, Possession and Acquisition License, or Possession-Only License, or be under the direct supervision of someone who carries one of these certificates to legally handle any firearm.
Note: Special Handling permits are required for the use of handguns or other restricted firearms in the field.
2. You must be familiar with the Energy, Mines and Resources firearms directive if handling firearms is part of your job duties.
3. Firearm proficiency training **is required** for all YGS field personnel.
4. Handle every firearm as if it were loaded at all times.
5. Keep the muzzle pointed in a safe direction at all times, regardless of whether the gun is loaded or unloaded.
6. Crew chief or camp safety officer is responsible for defining and communicating field firearm storage and use practices and emergency firing protocols to all field crew.
7. Ensure the firearm is in optimal working condition by inspecting before each season, cleaning after each use and ensuring it is serviced regularly.
8. Use approved hearing protection and eye protection when practicing with firearms.
9. Be sure of target and what's beyond it before firing.
10. Account for each crew member's whereabouts and ensure they are out of range before firing.
11. Know the location of each crew member in your party before firing a weapon.
12. Keep your finger off the trigger until ready to fire.
13. After each use, ensure that firearms are cleaned with an appropriate cleaning kit that matches the type/caliber of the firearm. Ensure adequate ventilation when cleaning a firearm.
14. Avoid firing in a defensive situation unless life/limb is at risk - use a firearm only as a last resort.
15. If you kill an animal with your firearm, **you must** report it as soon as possible to a Yukon Conservation Officer.
16. When the firearm does not have to be ready for use in an emergency, store ammunition properly in a separate container away from firearm.

SHOTGUNS

17. Practice shooting your shotgun regularly to stay proficient and be familiar with its range, accuracy and feel
18. In camp settings choose a suitable and safe site for firearms practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. Beware of any other individuals, i.e. hikers, trappers etc. that might be in the area.
19. Check that your shotgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all shells, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
20. When transporting, keep the shotgun unloaded and out-of-sight, with safety mechanism on and trigger lock in place. Protect shotgun during transport by carrying it in a padded case to minimize damage. If shotgun is left unattended in a vehicle, it must be out-of-sight and the vehicle must be locked.
21. When traversing with a firearm, protect the sights from damage and check regularly to ensure that the barrel and breech are clear. Masking tape can be used to cover the end of the barrel and prevent grit from entering without compromising shooting accuracy.
22. Use approved hearing protection and eye protection and use reduced powder ammunition when practicing with the shotgun.
23. **Recommended ammunition for shotguns is 12 gauge, 2 ¾ inch magnum slugs.** This ammunition contains enough stopping power to kill a grizzly bear. **Crew Chiefs may authorize the use of 3 inch magnum slugs but all members of their camp must prove proficiency in rapid fire use of this ammunition.** This is to ensure anyone firing a 3 inch shell is aware of the higher recoil associated with this shell.

HANDGUNS

24. Practice shooting your handgun regularly to stay proficient and be familiar with its range, accuracy and feel (Note: handgun practice can only be done at the shooting range in Whitehorse).
25. In camp settings choose a suitable and safe site for handgun practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. **Ricochets can kill.** Be certain that others, i.e., hikers, trappers etc. are out of range and aware of your intentions.
26. Check that your handgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all cartridges, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
27. When transporting a handgun it must be unloaded and transported in an approved locked case. When a hand gun is left in a vehicle they must be out of sight and the vehicle must be locked.



SAFE WORK PRACTICES

28. Use properly fitted holster with retention strap designed for your handgun.
29. Use approved hearing protection and eye protection, when practicing with a handgun.
30. When not in the field, handguns must be stored, clean, unloaded and with the trigger immobilized by a trigger lock. Handguns must also be stored in their individual locked cases within the handgun safe.
31. Other than returning to or from the field after work hours do not store your government issued handgun at home as you may be violating your possession permit.
32. Only use ammunition of the specific caliber for which the handgun is designed. Double check to make sure the ammunition matches the handgun.

NEVER:

33. Never point a firearm at another person or at anything you do not want to kill, even if it is unloaded.
34. Never rely on a firearm's safety mechanism when transporting
35. Never assume a gun is unloaded - do your own check to make sure.
36. Never store or transport a firearm with ammunition loaded in the chamber.
37. Never leave a firearm unattended with ammunition loaded in the magazine or chamber.
38. Never run, climb a tree, ford a stream, climb steep terrain, or cross a fence with a loaded firearm.
39. Never shoot at a hard surface or the surface of water.
40. Never shoot an animal unless it is posing a significant threat to a person or property.
41. Never handle a firearm while under the influence of drugs and/or alcohol.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- Yukon EMR Firearm Directive: ([G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf](G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf))



SAFE WORK PRACTICES

Reference No:	SWP-004	
Version:	2015-1	
	Name	Date
Developed by:	P. Lipovsky	2008/01/09
Last updated:	R. Cobbett	2016/04/01

TASK: FIELDWORK AND TRAVERSING

PURPOSE: You must be properly prepared to work in remote wilderness areas, where adverse weather, terrain and wildlife may be encountered. Slips, trips, and falls are the most common mechanism of injury in fieldwork, but by following these general guidelines each day you work in the field you can reduce the risk of incident or injury to yourself and your coworkers.

GUIDELINES:

ALWAYS:

1. Plan a realistic travel route and allow enough time to complete your traverse by the end of the day and return to your camp or vehicle. Have an alternate route as a backup if your intended traverse cannot be completed.
2. For each field party, establish a crew chief for the day who will brief the crew on the traverse route and plan, and run through the daily field safety checklist to make sure you have all necessary gear.
3. Inform someone of your travel route and estimated time of return. If you can't inform anyone, leave a map or note in your vehicle or camp describing your route and estimated date and time of return.
4. Find out if the people you are traveling with have allergies or medical conditions, and make sure they are carrying 3 days' worth of required medications or antidotes while on traverse (in case you get stuck out overnight).
5. One member of your party must carry a satellite phone and/or radio with spare batteries and emergency phone numbers either preprogrammed or stored on paper with the communications device. Ensure all crew members know how to use this equipment and where it is stored.
6. If returning to a vehicle at the end of the day, ensure all members of the party know where the key is.
7. Wear appropriate footwear with laces properly tied. Ensure boots have been broken in before attempting long traverses. It is recommended to carry a spare lace.
8. Ensure clothing and footwear are in good condition and suitable for the terrain and potential changes in weather. Always carry a waterproof jacket and pants, and extra clothing (including hat, sunglasses and gloves).
9. Be prepared to spend a night outside in case you are unable to make it back to your camp or vehicle by the end of the day. If being dropped off by helicopter where you can't walk back to camp or civilization, bring or cache an emergency pack with overnight supplies (tent, stove, sleeping bags, etc).
10. Carry a knife, lighter or waterproof matches, first-aid kit (with EpiPens), sunscreen, compass, map, GPS, mosquito repellent and/or head net, and bear repellent.
11. Carry a bright-coloured light-weight waterproof tarp and cord. This is normally used as a helicopter flag, but also doubles as an emergency overnight shelter and aircraft signaling device.
12. Ensure you have ample food and water to combat fatigue and allow for emergency provisions.
13. On hot days, carry at least 2 litres of water or liquid per person.
14. Carry a small wood saw for clearing a helicopter pad, starting a fire, or making a shelter or splint.
15. Traverse with at least one other person, traveling at the speed and comfort of the slowest member of the group. If you need to split up at any point, stay within sight or earshot of each other.
16. Move carefully to avoid slips, trips, or falls, especially toward the end of the day when you are more tired. Where possible, avoid (or take extra care around) terrain features such as mud, logs, unstable rocks, talus, lichen-covered rocks and smooth wet surfaces.
17. Avoid crossing streams whenever possible. If you must wade across a stream, ensure that it is not deeper than mid-thigh. Cross one at a time, carry a rope or use a hiking pole for support, wear appropriate footwear, unbuckle your backpack so you can quickly get it off if you fall in, lean upstream and point your toes upstream as you cross. Make sure you have a change of clothes in a waterproof bag inside your pack in case you fall in.
18. Avoid working at the top or bottom of potentially unstable slopes or cliffs. Wear a helmet if you must work in such places for extended periods.
19. If you are feeling disoriented or lost, stop, stay where you are and reconsider your options.
20. If you feel unsafe while traversing, stop your party, discuss the situation and change your plans if necessary.
21. Be aware of wildlife signs and quickly leave areas where fresh bear activity is apparent.
22. Make noise frequently (by talking, whistling, singing, yelling, clapping or blasting an air horn) to warn wild animals of your presence.
23. If traversing with a dog, be aware of any behaviour that may indicate a bear is nearby, and maintain control of the dog at all times.
24. Wear eye protection at all times when using a rock hammer or traveling through dense bush.
25. Take breaks as necessary to catch your breath, or have a drink or snack. Eat and drink regularly to maintain your energy.
26. Stop and treat hotspots and blisters when traversing to prevent them from getting worse.
27. At the end of the day, check in with the party chief or safety coordinate so they know you have completed your traverse safely.
28. A land use permit is required for any activities requiring a drill, mechanized earth moving, heavy vehicle use (>5 tons) used off road, clearing forested areas > 4 ha, and cutting trails >1.5 m wide.
(contact EMR Lands Management Branch: http://www.emr.gov.yk.ca/lands/application_forms.html).

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-94.



SAFE WORK PRACTICES

NEVER:

29. Never continue your traverse if you feel uncomfortable with the terrain or conditions around you - be prepared to turn back or take an alternate route if necessary.
30. Never follow too closely behind the person in front of you - this prevents branches from swinging back into your face.
31. Never travel or stand directly above or below someone on a steep slope - this prevents rocks or debris from being dislodged onto someone below. Never intentionally push or roll rocks down a slope.
32. Never carry pointed or sharp items in your front or hip pockets (in order to avoid injury if you fall).
33. Never travel without a pack and essential items listed in items 7-14 above (e.g. communications device, extra food and clothing, raingear, bear repellent, survival gear and first-aid kit).
34. Never work alone (unless you are within sight or earshot of another person, or you are working next to a highway or road, and your vehicle is close by).
35. Never overload your pack or carry more weight than appropriate for your personal physical ability – remember your pack will likely be heavier at the end of the day if you plan to collect any samples.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-94.



SAFE JOB PROCEDURES

Reference No:	SJP-B02
Version:	2015-1
Developed by:	Name: C. Welsh
Last Updated:	Date: 27/01/2009
	Name: E. Bordet
	Date: 2016/03/08

TASK: Boat loading, unloading and carrying

HAZARD ASSESSMENT ISSUE NO: B-13, 16-20, T-19 RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Gloves, back belt

ROLES AND RESPONSIBILITIES:

- Do not lift any object causing strain
- Wear gloves to protect your hands
- Know and adhere to pilot's instructions (if loading boat onto aircraft or slinging canoe)

TRAINING REQUIREMENTS:

- Familiarization with proper lifting techniques and knots.

TASK STEPS:

1. Consider what force or workload will be required to move an object. Assess the size, shape and weight of object to move – will it be awkward? How far and to what height will the object be moved? Plan your movements to avoid awkward bending and/ or twisting repeatedly.
2. Prior to lifting, discuss your lifting plan and communication strategy with all involved.
3. Wisely judge your ability to do the work and ensure anyone knows how to lift properly (lift close to your body, have feet shoulder-width apart, bend knees, keep your back straight, tighten stomach muscles, and lift with your legs). Practice or use a back belt to help maintain proper lifting posture if you lift often repeatedly.
4. If the straining is excessive: put the boat down; change your tactic or get additional help.
5. When carrying or portaging a boat, ensure you are able to see obstructions in your path and pay extra attention when tired or walking on uneven ground. When carrying or lifting with a partner, communicate obstacles to each other.
6. Load boat onto rack or trailer and secure tightly with straps or ropes before driving away. Use appropriate knots when tying ropes.
7. Periodically stop and check that ropes or straps remain secure, especially if driving on bumpy roads.
8. If loading boats onto aircraft, sling or nest canoes as instructed by the pilot.

Motor up or down when traveling

- a) There are varying recommendations with regards to the position of the outboard when traveling. The more common opinion is that the motor should be stored at a position where it will not be damaged by any road hazards. If the motor is trimmed up for travel it should be situated so that the main weight of the powerhead is centered above the transom. Also when in the up position, it is important to take the weight and pressure off the hydraulic rams. Lift the motor to the appropriate height and then use pvc pipe or a wood block to hold the weight of the motor, relieving the pressure on the hydraulic rams. Use a strap or bungee cord to hold the motor down and to one side during travel.



SAFE JOB PROCEDURES

- b) Do not rely solely on the trim locking mechanism or the hydraulic rams themselves to support the motor when trailering. Extended use can cause damage to the rams and costly replacement will be required.
- c) For heavy outboards a “transom saver” can be used to take the weight of the motor and prevent it from bouncing and jerking during travel on rough roads. See picture below. This type of support bar does not always fit on any style of trailer so you must determine the best option for the set up that you have.



ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Cluett, Jonathan M.D. “How To Lift” About.com: Orthopedics. Available: <http://orthopedics.about.com/cs/backpain/ht/lift.htm> (checked March 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-C01	
Version:	2016-1	
Developed by:	Name	Date
Last Updated:	C.Welsh	2009/02/02
	J. Bond	2016/04/12

TASK: Campfires

HAZARD ASSESSMENT ISSUE NO: C-20
RISK CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Matches, container for extinguishing fire		

ROLES AND RESPONSIBILITIES:

- In case a forest fire starts, have an emergency preparedness plan and ensure available emergency communications are available.
- Carefully choose the location of a campfire so that it does not spread.
- Keep the fire in control - and do not let the fire get too large.
- Always ensure the fire is completely extinguished when you leave or go to bed.
- Try to leave no trace. Fill in your fire pit when you leave, avoid cutting live trees for wood, and avoid making a fire ring with rocks that will only get charred.
- Do not build campfires when the fire hazard is extreme or there is a fire ban (check with Wildland Fire Management: <http://www.community.gov.yk.ca/firemanagement/>).

TRAINING REQUIREMENTS:

- Wilderness readiness/survival training

TASK STEPS:

1. Clear the fire area down to mineral soil in an open area and dig a small pit or depression. Use only a small area (up to 1 m in diameter maximum).
2. Do not line your fire pit or make a fire ring with rocks. Rocks can sometimes explode when heated and send small sharp shards flying.
3. Keep the fire in control and do not let the fire get too large.
4. Try to avoid cutting or damaging live trees for wood - only burn dead, dry wood.
5. Be extremely careful if cutting wood with axes or saws.
6. If burning garbage, burn it in small batches in a hot fire so that it burns completely. Pack out any metallic refuse or unburned residue.
7. Fully extinguish the fire before leaving or going to bed.
8. Check that the fire is fully extinguished by feeling the ashes for any hot spots with your bare hands.
9. Do not scatter ashes.
10. Fill in the fire pit with soil or before leave your camp and try to minimize your trace.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, page 66-67.



SAFE JOB RPOCEDURES

Reference No:	SJP-F01	
Version:	2016-1	
Developed by:	Name	Date
	C. Welsh	23/01/2009
Last Updated:	D. Moynihan	2016/04/15

TASK: Defensive use of a firearm

HAZARD ASSESSMENT ISSUE NO: C-19
F-01a,b, F02, F05- 07a,b, WL08
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Firearm, ammunition	n/a	Hearing and eye protection

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure firearm is cleaned after each use.
- Practice with your firearm for competency (Note: firearm practice can only be done at the shooting range in Whitehorse).
- Know the effective range of your firearm and give every animal an opportunity to leave unharmed.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL)
- Firearms awareness and/or proficiency training
- Bear awareness training

TASK STEPS:

1. Ensure all crew members are behind the rifle barrel.
2. Know your target and what lies beyond it.
3. Do not shoot at water or hard surfaces.
4. Wait until an attacking bear (predatory) is within 20m if using a shot-gun. The closer the range, the more likely the first shot will be effective.
5. Aim for the chest. The top and front of the head are not effective targets.
6. Kill the animal, never just injure it. More than one shot will be necessary.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2015), Government of Canada, Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-F02
Version:	2016-1
Developed by:	Name: C. Welsh Date: 23/01/2009
Last Updated:	D. Moynihan 2016/04/15

TASK: Firearm transportation and storage
(restricted and unrestricted firearms)

HAZARD ASSESSMENT ISSUE NO: F-08-10

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Pelican case, pad lock, trigger lock and key, ammunition storage box	n/a	

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure driver, pilot or coworkers are aware of firearm and its location for transport.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL) training
- Firearms awareness and/or proficiency training

TASK STEPS:

When transporting in aircraft/field/traversing and storing in remote field camps:

1. Remove all ammunition from magazine when transporting firearms in aircraft.
2. Protect barrel of firearm from anything entering it (cover with masking or electrical tape).
3. Carry securely in a holster, sling or your pack (Note: handguns must not be carried in your pack, i.e., they must be 'visible' at all times).
4. Ensure sights and components are safe from being damaged at all times.
5. Never keep ammunition in chamber while transporting or storing – only load chamber when ready to fire.
6. Keep safety on at all times until ready to fire.
7. Upon return from traverse, unload firearm, attach trigger lock, and store in locked vehicle, room or storage container. Store ammunition separately. Keep firearm out of sight unless required for camp safety.
8. An unloaded non-restricted firearm may be kept unlocked with readily accessible ammunition if you are located in a remote wilderness area.
9. Clean firearm as necessary after using for target practice or if subjected to wet or dusty conditions (Note: handgun practice can only be done at the shooting range in Whitehorse).

When transporting in vehicle:

10. Unload firearm.
11. Attach a trigger lock to the firearm.
12. Place non-restricted firearms in a padded or hard case and store in locked vehicle or container where it won't get damaged in transport.
13. Lock all restricted firearms in a pelican case (or similar non-transparent hard case) with a pad lock.
14. Lock the case in a lockable compartment of the vehicle or out of sight in a locked vehicle.
15. Lock restricted ammunition in a separate location from firearm.
16. If transporting a restricted firearm, obtain an Authorization to Transport from the Canadian Firearms Program (1-800-731-4000)

When returning to office:

17. Lock all firearms in corporate safe immediately upon return and complete sign out sheet to show you have returned the firearm – do not store firearms in individual offices or in lockers in Core Library.
18. Ensure firearm is clean before storing long term, and tag for service if required.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2014), Government of Canada, "Storing, Transporting and Displaying Firearms" Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-T03
Version:	2015-1
Developed by:	Name C. Welsh
Last Updated:	Date 2009/02/05 J. Bond 2016/04/12

TASK: Fatigue

HAZARD ASSESSMENT ISSUE NO: C-05, T-06
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Plan a realistic traverse.
- Allow yourself enough time to accomplish your goals for the day.
- Do not travel faster than your slowest crew member.

TRAINING REQUIREMENTS:

- First-aid

TASK STEPS:

Take the following measures to prevent fatigue:

1. Proper nutrition – means carrying additional food with you on field days.
2. Regular exercise.
3. Adequate sleep.
4. Drink plenty of water.
5. Take regular breaks.
6. Dress for the elements.

What to do if fatigued:

1. Take a break.
2. Eat a high energy snack and have some water.



SAFE JOB PROCEDURES

Reference No:	Version:	SJP-T05 2015-1
Developed by:	Name	Date
Last Updated:	C. Welsh S. Israel	2009/01/30 2016/04/12

TASK: Use of hand tools (axes, knives, rock hammers, shovels)

HAZARD ASSESSMENT RISK ISSUE NO: T15-18
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Axe, knife, hammer or shovel		safety glasses, gloves, proper boots

ROLES AND RESPONSIBILITIES:

- Check and maintain equipment regularly
- Ensure area is clear before using axe, hammer, knife or shovel
- Use equipment within ability
- Use proper posture to avoid injuries (e.g., striking toe or leg)
- Carry equipment with appropriate sheaths
- Wear PPE when using equipment

TRAINING REQUIREMENTS:

- Practice with each piece of equipment

TASK STEPS:

Axe Use:

1. Put on all PPE
2. Assess wood before chopping – looking for nails, rocks or other embedded material.
3. Remove any distractions from the area.
4. Separate your legs and bend your knees with each swing of the axe to prevent injuries to feet or legs.

Knife Use:

1. Keep knives sharp. Dull knives require extra force and are more likely to slip.
2. Cut away from you, slowly and carefully.

Rock hammer Use:

1. Ensure you and anyone near you is wearing PPE (safety glasses).
2. Keep fingers away from striking surface.
3. Be aware of people around you as shards may fly a long way.

Shovel Use:

1. Put on all PPE.
2. Avoid bending at the waist to reduce back strain.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 53-56.
- http://www.ehow.com/how_4457018_chop-wood-felling-ax.html (accessed 12 April 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-T06
Version:	2015-1
Name	Date
Developed by: C. Welsh	2009/02/04
Last Updated: S. Israel	2016/04/12

TASK: Dehydration

HAZARD ASSESSMENT ISSUE NO: T-05
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available.
- Have extra food, clothes, water (or water treatment), a knife and a lighter every day in the field.

TRAINING REQUIREMENTS:

- First-aid

TASK STEPS:

Prevention:

1. Drink plenty of fluids and increase intake as activity level increases.
2. Drink until you are no longer thirsty and drink consistently through-out the day.
3. Limit the number of sports drinks, energy drinks and carbonated and caffeinated beverages consumed.
4. Wear light-coloured loose fitting clothes.
5. Eat lots of fruit and vegetables to maintain electrolyte levels.

If dehydrated:

1. Stop activity and rest.
2. Get out of the sun and lie down in a cool place with feet raised.
3. Take off any unnecessary clothes.
4. Drink several glasses of fluid (up to ten) to rehydrate (*i.e.*, sports drink, juice or water) and replace lost fluids.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133. Brouhard, Rod (2011) Dehydration Symptoms Available: http://firstaid.about.com/od/heatcoldexposur1/qt/06_dehydration.htm (accessed 12 April 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-T07	
Version:	2015-1	
	Name	Date
Developed by:	C. Welsh	2009/02/02
Last Updated:	S. Israel	2016/04/12

TASK: Disorientated or lost

HAZARD ASSESSMENT ISSUE NO: T-11
RISK CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
First Aid kit, map, compass, GPS, radio or sat phone		Survival equipment (emergency shelter, extra food and clothing)

ROLES AND RESPONSIBILITIES:

- Consider your plans before heading into the field, anticipate where there is potential for things to go wrong, and prepare accordingly.
- Take enough gear with you to safely spend a night out if you have to.
- Double check gear before leaving.
- Check weather and forest fire conditions for your field area before departure.
- Inform the YGS field coordinator of your travel plans each day and provide them with an estimated time of return.
- Communicate any changes in your plans with the YGS field coordinator.

TRAINING REQUIREMENTS:

- First aid
- Wilderness readiness/survival

TASK STEPS:

If lost or disoriented:

- Stay calm.
- Treat any injuries you or your crew members may have and protect yourself from immediate danger.
- Do not wander, stay where you are.
- Refer to map and GPS, if available, to help orient yourself.
- Use sat phone to contact YGS safety officer, if have SPOT, send message so they can see your location.
- DO NOT use emergency response on SPOT unless necessary.
- Be certain you know where you are before you decide to travel. If you move, mark your trail well.
- If uncertain remain in the same place and improve your comfort.
- Provide clues to assist searchers such as smoky fires, yelling, safety whistle, and SOS signs in clearings.
- Ration food and water.
- If no response by twilight set-up to spend the night.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-85 and 141-145.
- Lillywhite, Hal. "What to do if Lost" 1st Special Response Group (January 1999) Available (accessed April 2015): <http://www.1srg.org/Contributed-Materials/WhatToDofLost.htm>



SAFE JOB PROCEDURES

Reference No:		SJP-T08
Version:		2015-1
	Name	Date
Developed by:	C. Welsh	02/02/2009
Last updated:	S. Israel	2016/04/12

TASK: Building signal fires

HAZARD ASSESSMENT ISSUE NO:
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Matches, container for extinguishing fire		

ROLES AND RESPONSIBILITIES:

- Carry a knife, hand saw and matches or lighter (in waterproof container) when traversing.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Carefully choose the location of the fire so that it does not spread.
- Keep the fire in control - and do not let the fire get too large.
- Always ensure the fire is completely extinguished when you leave.

TRAINING REQUIREMENTS:

- Wilderness readiness/survival

TASK STEPS:

1. If possible, build three fires, in a triangle position, as an international distress signal. Otherwise just build one large fire.
2. Keep the fire(s) burning hot continuously and maintain a large supply of fire wood.
3. If you can't keep the fires going continuously because you are running out of wood or need to rest, keep the fires prepared. Find a way to cover them so they will stay dry. Keep tinder and wood ready to light at any given moment to get the attention of planes flying over head.
4. Collect a large pile of green wood to throw on the fire if you hear a plane flying nearby. The green wood will generate more smoke.
5. Several options exist for building a signal fire depending on the surrounding terrain. Some of these may include:
 - a. Try to find a large clearing to build your signal fires. If you build them in dense forest, the trees may block or obscure the view from aircraft.
 - b. If you are by a river or lake, you can make log rafts and build fires on them. Secure the rafts together, in a triangle position, and anchor them to the bank.
 - c. Light small isolated trees as your signal fires **only if you can be sure they won't catch other trees or vegetation on fire and start a forest fire**. Place dry timber and bark in the boughs of a living tree and light it up for massive smoke and a tall signal fire.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 141-144.



SAFE JOB PROCEDURES

Reference No:	SJP-T10
Version:	2016-1
Name	Date
Developed by: C. Welsh	2009/02/04
Last Updated : D. Moynihan	2016/04/15

TASK: Hyperthermia (heat stress) and sunburn

HAZARD ASSESSMENT ISSUE NO: T-04
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Sunscreen, hat, water

ROLES AND RESPONSIBILITIES:

- Know the signs and symptoms of hyperthermia (heat stress)

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

Hyperthermia (heat stress) prevention and treatment:

1. Wear a sun hat and sunscreen, even on cloudy days.
2. Dress in light layers and remove layers if you get too hot.
3. Stay well-hydrated. Drink often and regularly, before you get thirsty (at least 2 L of fluids on hot days).
4. Have frequent snack and drink breaks - eat and drink products with lots of electrolytes or salts and sugar.
5. Do not over exert yourself – take frequent rests in cool or shaded areas and slow down your activities as it gets hotter.
6. If a person shows signs of heat exhaustion (red or pale moist skin, dizzy or weak, nausea, and exhaustion) or heat stroke (red, hot, dry skin, and irritable or irrational behaviour) take immediate action to cool their body temperature.
7. Have the person rest in a cool place, administer water and electrolytes, apply water to skin (especially head, chest, armpits, and groin) and fan them.
8. Avoid further exertion in the heat.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 34-36.



SAFE JOB PROCEDURES

Reference No:	SJP-T11	
Version:	2016-1	
	Name	Date
Developed by:	C. Welsh	2009/02/04
Last Updated:	D. Moynihan	2016/04/15

TASK: Hypothermia and frostbite

HAZARD ASSESSMENT ISSUE NO: T-03
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Survival equipment (matches/lighter, emergency shelter, satellite phone)	n/a	Warm dry clothes, gloves, hat, emergency blanket

ROLES AND RESPONSIBILITIES:

- Know the symptoms of hypothermia and be able to recognize frostbite.
- Be prepared to spend a night out and carry extra clothing for all potential weather conditions.
- Carry fire-starting and emergency survival equipment when traversing.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

Hypothermia prevention and treatment:

1. Check the temperature and wind chill before heading out in the field.
2. Postpone or shorten time outdoors in cold winter conditions.
3. Keep active and moving when working outdoors to increase circulation.
4. Dress in layers and wear a hat.
5. Stay hydrated and eat high energy snacks frequently when working in cold weather.
6. Be alert to changing weather conditions and dress accordingly.
7. Do not over exert yourself. Remove wet or sweaty clothes and replace with dry layers.
8. As soon as you stop exerting yourself, put on more clothes before you get chilled. If you feel chilled or start shivering, put on more clothes, get out of the cold and/or start a warming fire.
9. Take immediate action to prevent heat loss if a previously shivering crew member starts acting irrational, clumsy, confused, fatigued or weak, or has slurred speech.
10. Shelter the victim and insulate them from the ground. Remove wet clothes, and insulate the body with dry clothing, blankets or sleeping bags. Focus on warming the head, neck, arm pits, chest, and groin areas, not the extremities. Administer warm sweet drinks and high energy food.

Frostbite prevention and treatment:

1. In extreme cold, postpone field day(s).
2. Be particularly cautious on wet windy days. Know the temperature and the wind chill.
3. Dress for the weather and take care to cover the head, face, and hands adequately. Wear properly-fitting gloves when working with your hands in cold weather – avoid using bare hands in sub zero temperatures.
4. Layer clothing and carry extra warm dry layers and a warm hat.
5. As soon as you feel chilled, put on more clothes, get out of the cold and/or start a warming fire.
6. Check your own skin and that of crew members regularly for frostbite. Look for waxy, pale and/or discoloured skin.
7. Remove any jewelry and warm any affected areas gradually – do not rub.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 30-34..



SAFE JOB PROCEDURES

Reference No:	SJP-T12
Version:	2016-1
Name	Date
Developed by: C. Welsh	2009/02/02
Last Updated: D. Moynihan	2016/04/15

TASK: Illness prevention and basic hygiene

HAZARD ASSESSMENT ISSUE NO:
RISK CLASS:

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
First aid kit		

ROLES AND RESPONSIBILITIES:

- Maintain sanitary practices in camp and field environments

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

1. Make all camp crew members aware of medical conditions of other crew members.
2. Clean and disinfect all minor cuts and scrapes properly and use disposable gloves if treating someone else.
3. Ensure ample liquids are consumed while working in the field.
4. Wear flip-flops in showers to prevent the spread of athlete's foot.
5. Wear sunscreen and a sunhat even on cloudy days.
6. Wear proper footwear.
7. If there is any uncertainty about the safety of water or food - do not consume it.
8. If possible avoid others if you have a cold. Sneeze into elbows, not hands.
9. Wash hands after using a bathroom and before handling food (carry hand sanitizer in the field).
10. Do not allow dogs to enter kitchen tent or cooking areas.
11. Ensure you have washed your hands and are wearing reasonably clean clothes before entering kitchen tent or cooking area.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- WorkSafeBC (2009) "Controlling Exposure: Protecting Workers from Infectious Disease". http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/bk129.pdf or G:\1275 Occupational Health & Safety\Safety\other_docs



SAFE JOB PROCEDURES

Reference No:		SJP-T13
Version:		2016-1
Name		Date
Developed by:	C. Welsh	2009/01/23
Last Updated:	D. Moynihan	2016/04/15

TASK: Insect or wasp stings

HAZARD ASSESSMENT ISSUE NO: WL07
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
First aid kit with Epinephrine kit, antihistamine tablets, bug repellent and anti-itch treatment	n/a	Long-sleeve shirts and long pants

ROLES AND RESPONSIBILITIES:

- Those with a known allergy to bee stings should make camp first aid attendant and crew members aware of reaction and appropriate actions in the event of a sting (*MedicAlert bracelet*).
- Carry first aid kit with epinephrine pen, antihistamine tablets (ensure these have not expired).
- Have an emergency preparedness plan and ensure emergency communications are available.
- To reduce the likelihood of getting stung, avoid wearing flowery colognes or lotions, and avoid bright clothing which attracts insects. Wear long sleeves and long pants.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

- Try to avoid situations in which there is potential to get stung, give nests a wide berth. Bee nesting preferences are as follows:
 - Yellow jackets – nest in the ground or old logs and walls
 - Honeybees – nest in beehives
 - Hornets and wasps – nest in bushes, trees and on buildings
- If a bee comes near, do not swat at it.
- Remove nests around camp environments if safe to do so.
- If stung by bee remove stinger as soon as possible to reduce venom in person by gently scraping with a stiff-edged object. Do not squeeze or more venom will be released
- Recognize reaction symptoms and treat appropriately.

Normal symptoms	Anaphylactic symptoms
Pain	Difficulty breathing
Redness	Red, itchy hives around sting and then spreading
Pimple-like spots	Swelling of face, throat and mouth
Mild to moderate swelling	Wheezing and difficulty swallowing
Warmth at the sting site	Restlessness and anxiety
Itching	Rapid pulse
	Dizziness or a sharp drop in blood pressure
TREATMENT	
If stung on the hands, remove any rings immediately	Keep crew member calm
Wash the area and apply antiseptic	If stung on the hands, remove any rings immediately
Give antihistamine	Inject with epinephrine to mitigate reaction
Apply a soothing ointment and cover with a sterile bandage	Give antihistamine
If available use an ice pack and/or ibuprofen to reduce swelling	Monitor crew member and arrange transportation to medical assistance

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 160-163.
- WebMD (accessed April 2015). "Allergies: Allergic reaction to Insect stings" <http://www.webmd.com/allergies/guide/insect-stings>



SAFE JOB PROCEDURES

Reference No:		SJP-T14
Version:		2016-1
Name		Date
Developed by:	C. Welsh	03/02/2009
Last Updated:	D. Moynihan	2016/04/15

TASK: Landslide

HAZARD ASSESSMENT ISSUE NO: T-02

RISK CLASS: Low

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available.
- Do not work alone.
- Do not work above or below someone else on a slope – stagger your positions across the slope.
- Turn back if anyone in the crew is not comfortable handling the terrain.
- Consider the consequences of an accidental fall and do not work anywhere that consequences would be serious.

TRAINING REQUIREMENTS:

TASK STEPS:

Recognize landslide potential in an area

1. Identify unstable slopes where possible - look for slope cracks, slope bulges, unusual seepage of water on the slope and small rocks or fine sediment.
2. Avoid working immediately on, above or below areas that look or are known to be hazardous.
3. If you have any uncertainty about the stability of a slope, do not work on, above or below it.

What to do if caught in a landslide:

1. If you have time, find cover in an area furthest away from the approaching landslide
2. Move away quickly keeping clear of embankments, trees and obstacles.
3. Move toward the edge of the slide and seek higher ground if time.
4. Hold on firmly until all movement has ceased.
5. Stay away from the landslide as the slope may continue to fail for hours to days afterwards.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 89-90.
- Landslides Natural Resources Canada (2015: <https://www.nrcan.gc.ca/hazards/landslides>)



SAFE JOB PROCEDURES

Reference No:	SJP-T15
Version:	2016-1
Name	Date
Developed by: C. Welsh	2009/02/02
Last Updated: D. Moynihan	2016/04/15

TASK: Lightning strikes

HAZARD ASSESSMENT ISSUE NO: T-08, C22
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available
- Be alert for any forest fire starts and report any immediately.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

If lightning is in the vicinity of field work area:

1. Use a "flash to bang" (lightning to thunder) count of five seconds equals one mile (10s = 2 miles; 20s = 4 miles; 30s = 6 miles). Suspend activities if lightning gets closer than 6 miles.
2. Get away from unsafe areas including: large open areas, areas near metal or water, under trees, on high hills or mountain ridges, or near electrical/electronics equipment.
3. Move to low ground before the storm arrives.
4. If power lines come down through a storm do not move if possible.
5. If on water, go to the closest shore.
6. Disconnect all wires from geological equipment.
7. Camp where possibility of a lightning strike is small.
8. Stay alert following last observed lightning or thunder for half an hour.

If lightning strikes nearby, minimize your contact with the ground:

1. Crouch down, on insulating material if possible, with knees up and feet close together.
2. Do not let your hands, shoulders or head touch the ground as any current passing through them will pass through vital organs.
3. Crew members should split up (20 metres apart) so they do not provide multiple paths for the current.

If struck by lightning:

1. Begin first aid immediately and call for emergency assistance.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 75-77.
- National Lightning Safety Institute (accessed April 2015): <http://www.lightningsafety.com/>



SAFE JOB PROCEDURES

Reference No:		SJP-T16
Version:		2016-1
Developed by:	Name	Date
	C. Welsh	2009/02/04
Last Updated:		D. Moynihan 2016/04/15

TASK: Properly fitted footwear

HAZARD ASSESSMENT ISSUE NO: T-09

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Hiking boots

ROLES AND RESPONSIBILITIES:

- Ensuring hiking boots are appropriate for the terrain you'll be working in and that they fit well and are broken-in prior to field season
- Include foot care materials in your first aid kit (e.g., blister patches, moleskin, duct tape, a safety pin for popping blisters, and powder and/or lubricant to prevent further foot damage).

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

To find a good fit:

- Walk around the block before trying on new footwear because your foot shape changes throughout the day.
- Wear the socks you plan on wearing in the boots.
- Look for a snug fit with support all around your feet and ankles.
- Walk around in the new boots in the store and try a variety of stances and slopes.
- Ensure that toes do not come in contact with the front of the boot. If they do try a size larger.
- Ensure that toes are not in contact with the top of the boot. If they do you may require a different boot shape.
- Make sure your heel does not slide in the boot while walking.
- Purchase special insoles (e.g., Superfeet) for extra support, cushioning and comfort.
- Choose medium to heavy duty backpacking or mountaineering boots (not light day hiking boots).
- Ensure boots have a rugged tread (e.g., Vibram sole) and waterproof construction (ideally leather or plastic).

What to do about a bad fit:

- If "hot spots" are noticed in boots, deal with these immediately by taping the area with mole skin, duct tape, or blister tape.
- If feet are generally uncomfortable in boots, try adding or taking away foot-bed liner and changing sock type and thickness. Carry extra dry socks and change socks if they get wet.
- Try using foot powder to prevent blisters in boots.
- Try to avoid getting wet feet. Make sure leather boots are regularly waterproofed (e.g., using Snowseal or other waterproofing materials).

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 22, 53, 58, 79, 86.
- Hiking Boots Buying Guide – Buy the Best Hiking Shoes (accessed April, 2015) ABC-of-Hiking: <http://www.abc-of-hiking.com/hiking-boots/hiking-boots-buying-guide.asp>
- MEC boot fitting information: http://www.mec.ca/Main/content_text.jsp?FOLDER%3C%3Efolder_id=2534374302887262&bmUID=1272053077357



SAFE JOB PROCEDURES

Reference No:		SJP-T17
Version:		2016-1
Name		Date
Developed by:	C. Welsh	2009/01/26
Last Updated:	D. Moynihan	2016/04/15

TASK: Rockfall

HAZARD ASSESSMENT ISSUE NO: T-02, 10
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Helmet

ROLES AND RESPONSIBILITIES:

- Assess the slope for stability and only complete work if determined to be safe.
- Watch any unstable slopes/ parts of slope and warn crew members of rockfall or falling debris.
- If you have any uncertainty about the stability of a slope, do not camp or work on, above or below it.
- Consider the consequences of an accidental fall and do not work anywhere that consequences would be serious.

TRAINING REQUIREMENTS:

TASK STEPS:

1. Approach slope in a cautious manner and look for debris from previous releases.
2. Assess where required work can be completed safely before traveling onto, under or above potential rockfall slope.
3. Crew members should walk staggered across slopes so one person is not below another. If that is not possible, move one at time past potential rockfall areas.
4. Work in teams with one person standing in a safe place to watch for releasing rocks or debris.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 86-89.



SAFE JOB PROCEDURES

Reference No:		SJP-T18
Version:		2016-1
Name		Date
Developed by:	C. Welsh	2009/01/26
Last Updated:	D. Moynihan	2016/04/15

TASK: Slips, trips and falls

HAZARD ASSESSMENT ISSUE NO: T-01, 20
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Appropriate hiking boots

ROLES AND RESPONSIBILITIES:

- Wear appropriate footwear and clothing for field work.
- Pay attention to weather and ground conditions.
- Turn back if anyone in the crew is not comfortable handling the terrain.
- If unsure about a traverse, do not attempt.
- Consider the consequences of an accidental fall and do not work in any terrain where those consequences would be serious.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

1. Pay attention at all times to where you are walking. Look for changes in the walking surface, uneven surfaces and obstructions.
2. When on challenging terrain concentrate on passing an obstruction and not becoming distracted.
3. If you slip, trip or fall, relax and don't attempt to break the fall with hands, knees or elbows.
4. Tuck your chin in, turn the head and throw up an arm.
5. Turn into the fall.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 86-90.



SAFE JOB PROCEDURES

Reference No:	SJP-T19
Version:	2016-1
Name	Date
Developed by: C. Welsh	2009/02/04
Last Updated: J. Bond	2016/04/12

TASK: Unable to return to camp/stranded

HAZARD ASSESSMENT ISSUE NO: W-02,3,6
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
SPOT, Satellite phone	n/a	

ROLES AND RESPONSIBILITIES:

- Plan a realistic traverse. Allow yourself enough time to accomplish your goals for the day.
- Know the area(s) you will be traveling through.
- Anticipate problems and plan accordingly.
- Carry bear spray or a firearm.
- Maintain a clean field camp location and do not feed wildlife.
- Do not harass or inflict stress on wildlife.
- Ensure all people are made aware of wildlife sightings in or around work environments.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Always carry enough gear to spend a night out in case you can't make it back to camp or to a community (e.g., extra food, clothes, water, a knife and a lighter, tarp).

TRAINING REQUIREMENTS:

- First Aid

TASK STEPS:

1. Recognize that return to base camp or vehicle is not an option – this could be due to weather, a mechanical breakdown, physical condition, or wildlife circumstance.
2. Make every effort possible to communicate circumstance to base camp or YGS safety officer.

If communication to base camp or headquarters is available:

1. Before it gets dark, locate a suitable location for a shelter and begin gathering firewood.
2. Stay calm, and take all measures to stay warm and dry.
3. Establish a place that you and/or your crew members will be comfortable for the night.
4. Remove all food from shelter area and suspend from a tree if possible.
5. Send SPOT HELP message to YGS safety officer, unless absolutely necessary, DO NOT activate SOS function (this notifies rescue agencies outside of Yukon and is only for emergency purposes).

If communication to base camp or headquarters is not available:

1. Before it gets dark, set up shelter near a clearing not far from expected traverse area, as this is where a search will begin.
2. Stay calm, begin gathering firewood and take all measures to stay warm and dry.
3. Secure a bright flag in clearing and create a smoke signal or mark with something that will signal your position to aircraft.
4. Do not leave the area if you anticipate a search party has been sent to look for you.
5. Make all decisions as a team.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 141-144.
- For more information on SPOT device and services: <http://www.findmespot.ca/en/index.php> (accessed April, 2015)



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-WL
Version: 1

General Activity or Task: Wildlife encounters
Worksite: Wilderness

Date Completed: 5/21/2013
Completed By: Charlie Roots
Last Reviewed By: R. Cobbett
Date Reviewed: 4/1/2016

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General										all safe work practices and procedures reviewed annually; training courses offered annually
WL01		Bear encounter	10	3	50	1500	VH	wildlife repellants	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W01, bear awareness course
WL02		Moose encounter	1	1	30	30	L	wildlife repellants	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W02, bear awareness course
WL03		Cougar encounter	0.5	1	30	15	VL	wildlife repellants	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W03, bear awareness course
WL04		Wolverine, lynx or wolf encounter	1	0.5	2	1	VL	wildlife repellants	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W03, bear awareness course
WL05		Use of pepper spray	2	3	2	12	VL	n/a	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W04, bear awareness course
WL06		Use of bear bangers	2	3	2	12	VL	n/a	Education and training, safe work practices and safe job procedures		SWP-004, SJP-W05, bear awareness course
WL07		Insect bites and stings	3	3	50	300	M	epinephrine kit	Education and training, safe work practices and safe job procedures		SWP-004, SJP-T13, first aid course
WL08		Use of firearms	1	1	50	50	L	appropriate firearms	Education and training, safe work practices and safe job procedures		SWP-002,004, SJP-F01, firearms safety/proficiency courses

Safe Work Practices: SWP-002 (Firearms use, handling and transportation), SWP-004 (Fieldwork and transversing)
Safe Job Procedures: SJP-001 (Defensive use of a firearm), SJP-W01 (Bear encounter), SJP-W02 (Moose encounter), SJP-W03 (Cougar, wolf, lynx wolverine encounters), SJP-W04 (Use of bear spray), SJP-W05 (Use of bear bangers)
See Appendix 8 - Bear aware movie script



SAFE WORK PRACTICES

Reference No:	SWP-002	
Version:	2016-1	
Name	Date	
Developed by: L. Lewis	04/08/2008	
Last updated: D. Moynihan	2016/04/15	

TASK: FIREARMS USE, HANDLING AND TRANSPORTATION

PURPOSE: Firearms are used in the field to provide protection against aggressive wildlife. Handling, transportation and storage of firearms are regulated by the Firearms Act and by part III of the Criminal Code of Canada. Field personnel do not always traverse with firearms, but firearms are often kept in camp because camp activities (cooking, grey water disposal, food storage, etc.) are more likely to attract bears than traversing activities. Although firearms are rarely discharged due to actual bear encounters, employees must be properly trained to handle, use and transport firearms to ensure their own safety and the safety of others.

GUIDELINES:

ALWAYS:

1. **You must** have a valid Firearms Acquisition Certificate, Possession and Acquisition License, or Possession-Only License, or be under the direct supervision of someone who carries one of these certificates to legally handle any firearm.
Note: Special Handling permits are required for the use of handguns or other restricted firearms in the field.
2. You must be familiar with the Energy, Mines and Resources firearms directive if handling firearms is part of your job duties.
3. Firearm proficiency training **is required** for all YGS field personnel.
4. Handle every firearm as if it were loaded at all times.
5. Keep the muzzle pointed in a safe direction at all times, regardless of whether the gun is loaded or unloaded.
6. Crew chief or camp safety officer is responsible for defining and communicating field firearm storage and use practices and emergency firing protocols to all field crew.
7. Ensure the firearm is in optimal working condition by inspecting before each season, cleaning after each use and ensuring it is serviced regularly.
8. Use approved hearing protection and eye protection when practicing with firearms.
9. Be sure of target and what's beyond it before firing.
10. Account for each crew member's whereabouts and ensure they are out of range before firing.
11. Know the location of each crew member in your party before firing a weapon.
12. Keep your finger off the trigger until ready to fire.
13. After each use, ensure that firearms are cleaned with an appropriate cleaning kit that matches the type/caliber of the firearm. Ensure adequate ventilation when cleaning a firearm.
14. Avoid firing in a defensive situation unless life/limb is at risk - use a firearm only as a last resort.
15. If you kill an animal with your firearm, **you must** report it as soon as possible to a Yukon Conservation Officer.
16. When the firearm does not have to be ready for use in an emergency, store ammunition properly in a separate container away from firearm.

SHOTGUNS

17. Practice shooting your shotgun regularly to stay proficient and be familiar with its range, accuracy and feel
18. In camp settings choose a suitable and safe site for firearms practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. Beware of any other individuals, i.e. hikers, trappers etc. that might be in the area.
19. Check that your shotgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all shells, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
20. When transporting, keep the shotgun unloaded and out-of-sight, with safety mechanism on and trigger lock in place. Protect shotgun during transport by carrying it in a padded case to minimize damage. If shotgun is left unattended in a vehicle, it must be out-of-sight and the vehicle must be locked.
21. When traversing with a firearm, protect the sights from damage and check regularly to ensure that the barrel and breech are clear. Masking tape can be used to cover the end of the barrel and prevent grit from entering without compromising shooting accuracy.
22. Use approved hearing protection and eye protection and use reduced powder ammunition when practicing with the shotgun.
23. **Recommended ammunition for shotguns is 12 gauge, 2 ¾ inch magnum slugs.** This ammunition contains enough stopping power to kill a grizzly bear. **Crew Chiefs may authorize the use of 3 inch magnum slugs but all members of their camp must prove proficiency in rapid fire use of this ammunition.** This is to ensure anyone firing a 3 inch shell is aware of the higher recoil associated with this shell.

HANDGUNS

24. Practice shooting your handgun regularly to stay proficient and be familiar with its range, accuracy and feel (Note: handgun practice can only be done at the shooting range in Whitehorse).
25. In camp settings choose a suitable and safe site for handgun practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. **Ricochets can kill.** Be certain that others, i.e., hikers, trappers etc. are out of range and aware of your intentions.
26. Check that your handgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all cartridges, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
27. When transporting a handgun it must be unloaded and transported in an approved locked case. When a hand gun is left in a vehicle they must be out of sight and the vehicle must be locked.



SAFE WORK PRACTICES

28. Use properly fitted holster with retention strap designed for your handgun.
29. Use approved hearing protection and eye protection, when practicing with a handgun.
30. When not in the field, handguns must be stored, clean, unloaded and with the trigger immobilized by a trigger lock. Handguns must also be stored in their individual locked cases within the handgun safe.
31. Other than returning to or from the field after work hours do not store your government issued handgun at home as you may be violating your possession permit.
32. Only use ammunition of the specific caliber for which the handgun is designed. Double check to make sure the ammunition matches the handgun.

NEVER:

33. Never point a firearm at another person or at anything you do not want to kill, even if it is unloaded.
34. Never rely on a firearm's safety mechanism when transporting
35. Never assume a gun is unloaded - do your own check to make sure.
36. Never store or transport a firearm with ammunition loaded in the chamber.
37. Never leave a firearm unattended with ammunition loaded in the magazine or chamber.
38. Never run, climb a tree, ford a stream, climb steep terrain, or cross a fence with a loaded firearm.
39. Never shoot at a hard surface or the surface of water.
40. Never shoot an animal unless it is posing a significant threat to a person or property.
41. Never handle a firearm while under the influence of drugs and/or alcohol.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- Yukon EMR Firearm Directive: ([G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf](G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf))



SAFE WORK PRACTICES

Reference No: SWP-004	
Version: 2015-1	
Name	Date
Developed by: P. Lipovsky	2008/01/09
Last updated: R. Cobbett	2016/04/01

TASK: **FIELDWORK AND TRAVERSING**

PURPOSE: You must be properly prepared to work in remote wilderness areas, where adverse weather, terrain and wildlife may be encountered. Slips, trips, and falls are the most common mechanism of injury in fieldwork, but by following these general guidelines each day you work in the field you can reduce the risk of incident or injury to yourself and your coworkers.

GUIDELINES:

ALWAYS:

1. Plan a realistic travel route and allow enough time to complete your traverse by the end of the day and return to your camp or vehicle. Have an alternate route as a backup if your intended traverse cannot be completed.
2. For each field party, establish a crew chief for the day who will brief the crew on the traverse route and plan, and run through the daily field safety checklist to make sure you have all necessary gear.
3. Inform someone of your travel route and estimated time of return. If you can't inform anyone, leave a map or note in your vehicle or camp describing your route and estimated date and time of return.
4. Find out if the people you are traveling with have allergies or medical conditions, and make sure they are carrying 3 days' worth of required medications or antidotes while on traverse (in case you get stuck out overnight).
5. One member of your party must carry a satellite phone and/or radio with spare batteries and emergency phone numbers either preprogrammed or stored on paper with the communications device. Ensure all crew members know how to use this equipment and where it is stored.
6. If returning to a vehicle at the end of the day, ensure all members of the party know where the key is.
7. Wear appropriate footwear with laces properly tied. Ensure boots have been broken in before attempting long traverses. It is recommended to carry a spare lace.
8. Ensure clothing and footwear are in good condition and suitable for the terrain and potential changes in weather. Always carry a waterproof jacket and pants, and extra clothing (including hat, sunglasses and gloves).
9. Be prepared to spend a night outside in case you are unable to make it back to your camp or vehicle by the end of the day. If being dropped off by helicopter where you can't walk back to camp or civilization, bring or cache an emergency pack with overnight supplies (tent, stove, sleeping bags, etc).
10. Carry a knife, lighter or waterproof matches, first-aid kit (with EpiPens), sunscreen, compass, map, GPS, mosquito repellent and/or head net, and bear repellent.
11. Carry a bright-coloured light-weight waterproof tarp and cord. This is normally used as a helicopter flag, but also doubles as an emergency overnight shelter and aircraft signaling device.
12. Ensure you have ample food and water to combat fatigue and allow for emergency provisions.
13. On hot days, carry at least 2 litres of water or liquid per person.
14. Carry a small wood saw for clearing a helicopter pad, starting a fire, or making a shelter or splint.
15. Traverse with at least one other person, traveling at the speed and comfort of the slowest member of the group. If you need to split up at any point, stay within sight or earshot of each other.
16. Move carefully to avoid slips, trips, or falls, especially toward the end of the day when you are more tired. Where possible, avoid (or take extra care around) terrain features such as mud, logs, unstable rocks, talus, lichen-covered rocks and smooth wet surfaces.
17. Avoid crossing streams whenever possible. If you must wade across a stream, ensure that it is not deeper than mid-thigh. Cross one at a time, carry a rope or use a hiking pole for support, wear appropriate footwear, unbuckle your backpack so you can quickly get it off if you fall in, lean upstream and point your toes upstream as you cross. Make sure you have a change of clothes in a waterproof bag inside your pack in case you fall in.
18. Avoid working at the top or bottom of potentially unstable slopes or cliffs. Wear a helmet if you must work in such places for extended periods.
19. If you are feeling disoriented or lost, stop, stay where you are and reconsider your options.
20. If you feel unsafe while traversing, stop your party, discuss the situation and change your plans if necessary.
21. Be aware of wildlife signs and quickly leave areas where fresh bear activity is apparent.
22. Make noise frequently (by talking, whistling, singing, yelling, clapping or blasting an air horn) to warn wild animals of your presence.
23. If traversing with a dog, be aware of any behaviour that may indicate a bear is nearby, and maintain control of the dog at all times.
24. Wear eye protection at all times when using a rock hammer or traveling through dense bush.
25. Take breaks as necessary to catch your breath, or have a drink or snack. Eat and drink regularly to maintain your energy.
26. Stop and treat hotspots and blisters when traversing to prevent them from getting worse.
27. At the end of the day, check in with the party chief or safety coordinate so they know you have completed your traverse safely.
28. A land use permit is required for any activities requiring a drill, mechanized earth moving, heavy vehicle use (>5 tons) used off road, clearing forested areas > 4 ha, and cutting trails >1.5 m wide.
(contact EMR Lands Management Branch: http://www.emr.gov.yk.ca/lands/application_forms.html).

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-94.



SAFE WORK PRACTICES

NEVER:

29. Never continue your traverse if you feel uncomfortable with the terrain or conditions around you - be prepared to turn back or take an alternate route if necessary.
30. Never follow too closely behind the person in front of you - this prevents branches from swinging back into your face.
31. Never travel or stand directly above or below someone on a steep slope - this prevents rocks or debris from being dislodged onto someone below. Never intentionally push or roll rocks down a slope.
32. Never carry pointed or sharp items in your front or hip pockets (in order to avoid injury if you fall).
33. Never travel without a pack and essential items listed in items 7-14 above (e.g. communications device, extra food and clothing, raingear, bear repellent, survival gear and first-aid kit).
34. Never work alone (unless you are within sight or earshot of another person, or you are working next to a highway or road, and your vehicle is close by).
35. Never overload your pack or carry more weight than appropriate for your personal physical ability – remember your pack will likely be heavier at the end of the day if you plan to collect any samples.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-94.



SAFE JOB PROCEDURES

Reference No:		SJP-F01
Version:		2016-1
Name		Date
Developed by:	C. Welsh	23/01/2009
Last Updated:	D. Moynihan	2016/04/15

TASK: Defensive use of a firearm

HAZARD ASSESSMENT ISSUE NO: C-19
F-01a,b, F02, F05- 07a,b, WL08
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Firearm, ammunition	n/a	Hearing and eye protection

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure firearm is cleaned after each use.
- Practice with your firearm for competency (Note: firearm practice can only be done at the shooting range in Whitehorse).
- Know the effective range of your firearm and give every animal an opportunity to leave unharmed.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL)
- Firearms awareness and/or proficiency training
- Bear awareness training

TASK STEPS:

7. Ensure all crew members are behind the rifle barrel.
8. Know your target and what lies beyond it.
9. Do not shoot at water or hard surfaces.
10. Wait until an attacking bear (predatory) is within 20m if using a shot-gun. The closer the range, the more likely the first shot will be effective.
11. Aim for the chest. The top and front of the head are not effective targets.
12. Kill the animal, never just injure it. More than one shot will be necessary.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2015), Government of Canada, Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-W01
Version:	2015-1
Name:	
Developed by:	C. Welsh
Last Updated:	R. Cobbett
Date:	2009/01/23
	2016/03/30

TASK: Bear encounter

HAZARD ASSESSMENT ISSUE NO: WL01,
C-06,10

RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Noise maker, binoculars	n/a	Bear spray, firearm

ROLES AND RESPONSIBILITIES:

- Wilderness first aid training will help you take stock of the situation if a bear mauling occurs and teach you the proper response to this medical emergency. Read about bear behavior before going into the field and learn about working safely in bear country (see 'Additional information', below).
- Keep eyes/ears open for signs of bears when traversing/working: 'bear scat', recent digging, claw marks and fur on trees, tracks in mud, snow or moss; twigs snapping, grunting or huffing, bushes shaking
- If recent signs are evident or you sense danger, identify 'safe havens', such as climbable trees or large boulders, or places that give you a strategic advantage, such as the base of a cliff or cutbank
- Be aware of potentially high-animal-traffic areas while traversing such as animal paths, eskers, roads, and areas with a potential food source (e.g., salmon-bearing streams, presence of carrion, etc.)
- Make noise as frequently as possible when traversing to avoid surprising animals
- Carry bear spray and pen-flare launcher with 'banger' cartridges on your person at all times so that they are readily available (*i.e.*, not inside pack)
- Maintain a clean field camp location and do not feed wildlife
- Do not harass or intentionally stress wildlife
- Work in pairs or groups, remaining within earshot of one another
- Draw the attention of coworkers to wildlife presence in or around work environments
- Have an emergency preparedness plan and ensure available emergency communications are available (e.g., satellite phone, 2-way radio, if helicopter-supported)
- Before descending in to valleys or areas of limited visibility, observe route with binoculars for 10-20 minutes; make adjustments to route based on observations.

TRAINING REQUIREMENTS:

- bear awareness course (including handling of bear spray and flares with a pen-launcher)
- firearms proficiency training

TASK STEPS:

In the event that you encounter a bear in the field the proper procedure is as follows in the table below:

Situation	Black bear	Grizzly bear
At a distance	Avoid if possible; Alert bear of your presence; Back away or detour; Scare away with noise.	Avoid if possible; Alert bear of your presence; Back away or detour; Scare away with noise. If the bear is not aware of you avoid using noise to scare it away.
Close encounter (20m)	Back away slowly; Talk to the bear in low tones and slowly wave your arms; Have bear spray ready.	Back away slowly; Talk to the bear in low tones; Climb a tree; Have bear spray ready.
Very close encounter (10m)	Back away slowly; Talk to the bear in low tones; Have bear spray out (consider wind direction).	Back away slowly; Talk to the bear in low tones; Have bear spray out (consider wind direction).
If the bear charges (defensive behaviour)	Stand your ground; Discharge bear spray (<3m); Shoot; Play dead.	Stand your ground; Discharge bear spray (<3m); Shoot; Play dead.
Bear treats you as prey (predatory behaviour)	Discharge bear spray (<3m); Use firearm, if ready Fight with whatever you have at hand.	Discharge bear spray (<3m); Use firearm, if ready Fight with whatever you have at hand.



SAFE JOB PROCEDURES

To play dead:

Do not play dead before the bear contacts you, you may actually encourage an attack

Drop to the ground, face down with knees tucked to chest and hands clasped tightly over the back of your neck.

Spread legs out so to resist the bear's attempt to roll you over. Do not scream.

The bear may sniff you then leave when convinced that you are not dangerous or tasty. Do not get up until the bear has departed. However, if it continues to show interest or takes a trial bite, immediately come alive and fight back! It is your only chance.

SPECIES IDENTIFICATION

In profile, muzzle is straight and long

Black Bear

Highest point of back is over the hind legs

Front claws are dark-coloured, relatively short and well curved



In profile, brow gives face a dished or concave look

Grizzly Bear

Highest point of back is over the shoulders

Front claws are light-coloured, 10 cm long or longer and slightly curved



ADDITIONAL INFORMATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 147-155.
- "Staying Safe in Bear Country" (2001). Included in this manual
- Environment Yukon bear publications: <http://environmentyukon.gov.yk.ca/mapspublications/brochures.php#bear>



SAFE JOB PROCEDURES

Reference No:	SJP-W02
Version:	2015-1
Name	Date
Developed by: C. Welsh	2009/01/23
Last Updated: R. Cobbett	2016/04/01

TASK: Moose encounter

HAZARD ASSESSMENT ISSUE NO: WL02
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Bear spray, firearm

ROLES AND RESPONSIBILITIES:

- Read on the natural history and behavior of moose, the chance of being charged by a moose during June-August is extremely low. Give them a wide berth if possible and most encounters will be positive.
- Identify recent signs of moose in area
- Your wilderness first aid training will help you respond to a medical emergency
- Make noise when traversing to avoid surprising animals
- Do not feed, harass or intentionally stress wildlife
- Work in pairs or groups, remaining within earshot of one another
- Draw the attention of coworkers to wildlife presence in or around work environments
- Have an emergency preparedness plan and ensure available emergency communications are available (e.g., satellite phone, 2-way radio, if helicopter-supported)

TRAINING REQUIREMENTS:

- Bear awareness course (including handling of bear spray and flares with a pen-launcher)
- Firearms proficiency training

TASK STEPS:

In the event that you encounter a moose in the field the proper procedure is as follows:

If the **moose is unaware of you**:

1. If you see a moose at a distance, avoid if possible. Quietly walk back the way you came, make wide detour around the moose or wait until it leaves the area. Keep the moose in sight as much as possible. Do not come between a moose and its calf.
2. If you are traversing with a dog, give the moose an extra wide berth and do not let your dog chase the moose.
3. If the moose becomes aware of you, help it identify you as a person. Staying upwind will help it to smell you and back away.

If a moose raises the hairs on its hump and its ears are pinned back, it is likely afraid or angry.

If the **moose approaches you**:

1. Back off and look for the nearest tree or obstruction to get behind

If the **moose charges**:

1. Run, a moose won't chase you very far
2. Get behind something solid.

If you get **knocked down by a moose**:

1. The moose may continue running or start stomping and kicking with all four feet
2. Curl up in a ball, protect your head with your hands and hold still
3. Do not try to get up until the moose moves away or it may renew its attack

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, page 155.
- Living in harmony with moose (accessed April 2015): <http://www.xyz.net/~khltkbr/projects/moose/coexist.html>



SAFE JOB PROCEDURES

Reference No:	SJP-W03	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	C. Welsh R. Cobbett	2009/01/29 2016/04/01

TASK: Cougar, wolf, lynx or wolverine encounters

HAZARD ASSESSMENT RISK ISSUE NO: WL03,04

RISK CLASS: VERY LOWEQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Bear spray, firearms

ROLES AND RESPONSIBILITIES:

- Read on the natural history and behavior of wild animals (cougars, wolves, lynx and wolverine).
- Learn how to identify recent signs of wild animals.
- Wilderness first aid training will help you take stock of the situation and teach you the proper response to a medical emergency.
- Know the area(s) you will be traveling through.
- Make noise when traversing to avoid surprising animals.
- Anticipate problems.
- Carry bear spray.
- Maintain a clean field camp location and do not feed wildlife.
- Do not harass or inflict stress on wildlife.
- Work in pairs or groups, remaining within earshot of one another
- Draw the attention of coworkers to wildlife presence in or around work environments
- Have an emergency preparedness plan and ensure available emergency communications are available (e.g., satellite phone, 2-way radio, if helicopter-supported)

TASK STEPS:

In the event that you encounter a wild animal (*i.e.*, cougar, wolf, lynx or wolverine) in the field, the proper procedure is as follows:

1. If you encounter immature wild animals, leave the area immediately because the mother may be aggressive.
2. Seek to minimize stress to the animals.
3. Always leave an obvious escape route for the animal.
4. Stay calm and talk to the animal in a calm voice.
5. Sudden movement may provoke an attack. Back away slowly.
6. If the animal is not behaving defensively, enlarge your image by picking up sticks and branches and slowly wave them around.

If the animal becomes aggressive:

1. Arm yourself with a stick, throw rocks, speak loudly and firmly convince the animal that you are not prey.
2. If the animal attacks, fight back with anything available.

Cougar track Identification:



ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 156-157.
- "Safety Guide to Cougars" (February, 1996) Government of British Columbia, Ministry of Environment. Available: <http://www.env.gov.bc.ca/wld/documents/cougars.htm> (accessed April, 2015)



SAFE JOB PROCEDURES

Reference No:	Version:	SJP-W04 2015-1
Developed By:	Name	Date
Last Reviewed By:	C. Welsh R. Cobbett	2009/01/29 2016/04/01

TASK: Use of bear spray

HAZARD ASSESSMENT RISK ISSUE NO: WL05
CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Bear spray		

ROLES AND RESPONSIBILITIES:

- The spray is a concentrated powdered pepper which irritates mucus linings. Do not spray it on anything that you might touch because if your hand transfers it to your lips or eyes you will regret it. Also, some animals are attracted to old spray; perhaps they think it spicy!
- Check the expiry date on the spray can; old ones may have reduced charge, leaky gaskets, and may not work if previously frozen.
- Carry bear spray clipped on your belt or shoulder sling, not in your pack. It won't be useful if not immediately accessible.
- Draw the attention of coworkers to wildlife presence in or around the area of work.
- Pepper spray is a weapon. Do not use it to harass wildlife or threaten people.
- Wilderness first aid training will teach you the proper response to a medical emergency.
- Have an emergency preparedness plan and ensure emergency communications are accessible to everyone (satellite phone and 2-way radio, if helicopter supported)

TRAINING REQUIREMENTS:

- Bear awareness course (including handling of bear spray and flares with a pen-launcher).
- Dry-run practice removing it from its holster and holding it in position, ready to fire.

TASK STEPS:

If you determine the use of bear spray is necessary in a wildlife encounter, adhere to the following procedures:

1. If a bear is approaching within 15 m, remove the safety clip and fire a short burst. This will let you know that the can is working, and possibly the bear, sniffing deeply and still approaching, will enter this orange fog. The spray travels less than 5 m, so by continuing to back away the bear may encounter the lingering fog.
2. If a bear is charging, hold fire until the bear is within 5 m range, then spray the bear directly in the face. The effect will likely be immediate and the bear will likely back off. Stand your ground unless sanctuary is very close.
3. Depending on size and age, the spray in the can will last 5 to 11 seconds. The bear may return if the attractant is nearby (such as a habitual food source); although a dose of spray continues to irritate for at least 10 minutes.
4. Attempt to maneuver so that you can discharge the spray downwind. If the fog of your first burst wafts toward you, seek a breath of uncontaminated air, and move to avoid the cloud. The orange color quickly dissipates, but your hot, dry throat will discourage you from further inhaling it.
5. Take care not to let the spray residue on the nozzle, vegetation or clothing get on your hands — it is easily transferred to your lips or eyes, even hours after skin contact and washing.
6. If skin or eye contact occurs, flush the affected area with water (discomfort may last up to an hour).

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 147-155.
- "Carry bear spray and know how to use it": <http://www.wildsmart.ca/bearspray.htm>: accessed (April 2015)
- <http://www.bearsmart.com/becoming-bear-smart/home/bear-deterrents/bear-spray>: accessed (April 2015)



SAFE JOB PROCEDURES

Reference No:	SJP-W05	
Version:	2	
Developed by:	Name	Date
Last Updated:	C. Welsh	2009/01/29
	R. Cobbett	2016/04/01

TASK: Use of bear bangers

HAZARD ASSESSMENT RISK ISSUE NO: WL06

CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Projector pen, 'banger' cartridges		Leather gloves, hearing protection (practicing)

ROLES AND RESPONSIBILITIES:

- Although assorted flares and launchers are available, the YGS typically uses a lightweight metal pen-sized projector that accepts screw-on cartridges, one at a time. To fire it, a spring trigger is drawn back by the thumb and released. Several types of cartridges are available (red and green housings contain magnesium flares; orange and gray housings contain smoke flares); for bear deterrent the "banger" or "cracker" — a 2 cm long, cylindrical beige cartridge is common. When the trigger pin impacts the primer, the housing ejects a small charge which travels about 25 m before exploding with a loud noise (about half as loud as 12-gauge discharge).
- This equipment is appropriate when the wildlife threat is 25-75 m away. At a greater distance the animal may not alter its behavior. Closer than 25 m, you risk sending the projectile past the animal and the detonation may cause it to run toward you.
- Know whether the pen projector is center- or rim-fire, and make sure the cartridges are compatible. (The two types are identical; only the box indicates this). Rim-fire projectors rarely detonate center-fire cartridges. As a precaution do not store the cartridges loose in a Ziploc bag that may become mixed with supplies used by others.
- Take care of the equipment. The pen holder is easily lost if clipped to an open pocket. The end of the pen holder may come unscrewed so that the trigger spring escapes. Cartridges flares will not work if they have been wet.
- Carry the equipment in a readily accessible location (outside pocket of your pack, or traverse vest). Do not carry the projector pen with a cartridge screwed in and trigger cocked in an inside pocket, such as in a shirt or pants; if it accidentally discharges a burn or serious wound will result.
- Practice using the equipment in a safe, open area. Be particularly careful that the projectile does not contact the ground while hot; it will readily ignite dry vegetation (If you do not anticipate this you may find that the landing area is difficult to access, such as down a slope or across a water body).
- Do not harass wildlife with the equipment. Use only when your camp or person is threatened.
- If you discharge a banger flare when co-workers might hear it, alert them before or call immediately afterwards to explain the reason. It may be misconstrued as a signal of distress.
- Wilderness first aid training will teach you to respond to medical emergencies.
- Have an emergency preparedness plan in place, should a banger flare be discharged inappropriately,

TRAINING REQUIREMENTS:

- Simulate emergency situations by reaching for the projector pen and attaching the cartridge without cross threading— it takes practice! Also understand the capabilities and range of the banger projectile.

TASK STEPS:

Use only for practice or when seriously threatened by aggressive wildlife.

- Point the bear banger away, with a fully extended arm before firing.
- Keep your fingers away from the cartridge housing (the plastic may split, discharging the projectile sideways).
- Aim the bear banger between yourself and the wildlife threat. If the animal is closer than about 20 m, aim upward because an explosion behind it may drive it toward you. Ideally the shot should be slightly in front of and to the side of the animal.
- Be alert for smoke if the projectile contacts the ground. It easily causes wildfires.

ADDITIONAL INFORMATION

Ursus International Conservation Institute (accessed April, 2015) "Bear Bangers": <http://www.ursusinternational.org/en/bangers.html>



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-F
Version: 2016-1

Date Completed: 04/23/2007; revised 05/17/2007
Completed By: Steve Traynor
Reviewed By: D. Moynihan
Date Reviewed: 2016/04/15

General Activity or Task: Firearms use, handling and transportation
Worksite: Remote wilderness locations

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	General use of firearms										all safe work practices and job procedures reviewed annually; training courses offered annually
F01a		Accidental discharge - rifle/shotgun	6	1	30	180	M	Safety on gun	Safe work practices, safe job procedures and training (use safety)		SWP-002, SJP-F01, SJP-F02
F01b		Accidental discharge - handgun	6	1	30	180	M	n/a	Safe work practices, safe job procedures and training (don't carry with hammer cocked)		SWP-002, SJP-F01, SJP-F02
F02		Damaged sights/fouled breach	6	3	10	180	M	n/a	Safe work practices, safe job procedures and training (adequately protect firearm, check and clean regularly)	Cleaning kit matched to type/caliber of firearm	SWP-002, SJP-F02
F03		Damage/injury due to use of unmatched ammunition	6	1	10	60	L	n/a	Safe work practices, safe job procedures and training (do not store mixed ammunition together)	Use ammunition for which the firearm was originally chambered	SWP-002, SJP-F01
F04		Loss in field	10	3	2	60	L	n/a	Safe work practices, safe job procedures and training (use properly fitted holster with retention strap)	Appropriate holster with retention strap	SWP-002, SJP-F02
	Defensive use of firearm due to threat from wild animal										
F05		Injury/death to personnel	2	3	50	300	H	n/a	Safe work practices, safe job procedures and training (be sure of target before firing)		SWP-002, SJP-F01
F06		Damage to equipment in camp	2	3	30	180	M	n/a	Safe work practices, safe job procedures and training (avoid firing unless life/limb at risk)		SWP-002, SJP-F01
F07a		Wounded animal - poor shot	2	3	30	180	M	n/a	Safe work practices, safe job procedures and training (know effective range of firearm)		SWP-002, SJP-F01
F07b		Wounded animal - due to reduced light conditions	2	3	10	60	L	Flashlight/laser pointer	Safe work practices, safe job procedures and training (use flashlight/laser pointer for targeting)		SWP-002, SJP-F01
	Transportation of firearms										
F08		Accidental discharge	3	3	30	270	H	n/a	Safe work practices, safe job procedures, training (firearms should never be transported while loaded), and EMR directive		SWP-002, SJP-F01, SJP-F02
F09		Lost/stolen firearm	3	3	10	90	M	Locked case and trigger lock	Safe work practices, safe job procedures, training (transport out of sight in approved locked case with trigger lock in place), and EMR directive		SWP-002, SJP-F01, SJP-F02
F10		Damage to sights or other components	3	3	10	90	M	Pelican case - handguns; padded gun bag/case - rifles and/or shotguns	Safe work practices, safe job procedures, training (adequately protect firearm), and EMR directive		SWP-002, SJP-F01, SJP-F02
	Field training - live ammuniton fire										
F11a		Noise from firearms	10	10	2	200	M	n/a	Safe work practices, safe job procedures and training (use of hearing protection and safe range technique)	Hearing protection	SWP-002
F11b		Contact with hot parts/casings	10	6	2	120	M	n/a	Safe work practices, safe job procedures and training (care in handling, safe range technique)		SWP-002
F11c		Discharge of particles	10	3	2	60	L	n/a	Safe work practices, safe job procedures and training (use of eye protection, safe range technique)	Eye protection	SWP-002
F12		Expoure to lead and other substances	2	1	30	60	L	Adequate ventilation	Safe work practices, safe job procedures and training (ensure adequate ventilation, wash hands after firing session)		SWP-002

Safe Work Practices: SWP-002 (Firearms use, handling and transportation)
Safe Job Procedures: SJP-F01 (Defensive use of a firearm), SJP-F02 (Firearm transportation and storage)
Forms: Protocols for Firearms Storage, Practice and Emergency use in the Field; Yukon Energy, Mines and Resources Firearms Directive



SAFE WORK PRACTICES

Reference No:	SWP-002	
Version:	2016-1	
Name	L. Lewis	
Developed by:	D. Moynihan	
Date	04/08/2008	
Last updated:	2016/04/15	

TASK: FIREARMS USE, HANDLING AND TRANSPORTATION

PURPOSE: Firearms are used in the field to provide protection against aggressive wildlife. Handling, transportation and storage of firearms are regulated by the Firearms Act and by part III of the Criminal Code of Canada. Field personnel do not always traverse with firearms, but firearms are often kept in camp because camp activities (cooking, grey water disposal, food storage, etc.) are more likely to attract bears than traversing activities. Although firearms are rarely discharged due to actual bear encounters, employees must be properly trained to handle, use and transport firearms to ensure their own safety and the safety of others.

GUIDELINES:

ALWAYS:

1. **You must** have a valid Firearms Acquisition Certificate, Possession and Acquisition License, or Possession-Only License, or be under the direct supervision of someone who carries one of these certificates to legally handle any firearm.
Note: Special Handling permits are required for the use of handguns or other restricted firearms in the field.
2. You must be familiar with the Energy, Mines and Resources firearms directive if handling firearms is part of your job duties.
3. Firearm proficiency training is **required** for all YGS field personnel.
4. Handle every firearm as if it were loaded at all times.
5. Keep the muzzle pointed in a safe direction at all times, regardless of whether the gun is loaded or unloaded.
6. Crew chief or camp safety officer is responsible for defining and communicating field firearm storage and use practices and emergency firing protocols to all field crew.
7. Ensure the firearm is in optimal working condition by inspecting before each season, cleaning after each use and ensuring it is serviced regularly.
8. Use approved hearing protection and eye protection when practicing with firearms.
9. Be sure of target and what's beyond it before firing.
10. Account for each crew member's whereabouts and ensure they are out of range before firing.
11. Know the location of each crew member in your party before firing a weapon.
12. Keep your finger off the trigger until ready to fire.
13. After each use, ensure that firearms are cleaned with an appropriate cleaning kit that matches the type/caliber of the firearm. Ensure adequate ventilation when cleaning a firearm.
14. Avoid firing in a defensive situation unless life/limb is at risk - use a firearm only as a last resort.
15. If you kill an animal with your firearm, **you must** report it as soon as possible to a Yukon Conservation Officer.
16. When the firearm does not have to be ready for use in an emergency, store ammunition properly in a separate container away from firearm.

SHOTGUNS

17. Practice shooting your shotgun regularly to stay proficient and be familiar with its range, accuracy and feel
18. In camp settings choose a suitable and safe site for firearms practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. Beware of any other individuals, i.e. hikers, trappers etc. that might be in the area.
19. Check that your shotgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all shells, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
20. When transporting, keep the shotgun unloaded and out-of-sight, with safety mechanism on and trigger lock in place. Protect shotgun during transport by carrying it in a padded case to minimize damage. If shotgun is left unattended in a vehicle, it must be out-of-sight and the vehicle must be locked.
21. When traversing with a firearm, protect the sights from damage and check regularly to ensure that the barrel and breech are clear. Masking tape can be used to cover the end of the barrel and prevent grit from entering without compromising shooting accuracy.
22. Use approved hearing protection and eye protection and use reduced powder ammunition when practicing with the shotgun.
23. **Recommended ammunition for shotguns is 12 gauge, 2 ¾ inch magnum slugs.** This ammunition contains enough stopping power to kill a grizzly bear. **Crew Chiefs may authorize the use of 3 inch magnum slugs but all members of their camp must prove proficiency in rapid fire use of this ammunition.** This is to ensure anyone firing a 3 inch shell is aware of the higher recoil associated with this shell.

HANDGUNS

24. Practice shooting your handgun regularly to stay proficient and be familiar with its range, accuracy and feel (Note: handgun practice can only be done at the shooting range in Whitehorse).
25. In camp settings choose a suitable and safe site for handgun practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. **Ricochets can kill.** Be certain that others, i.e., hikers, trappers etc. are out of range and aware of your intentions.
26. Check that your handgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all cartridges, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
27. When transporting a handgun it must be unloaded and transported in an approved locked case. When a hand gun is left in a vehicle they must be out of sight and the vehicle must be locked.
28. Use properly fitted holster with retention strap designed for your handgun.



SAFE WORK PRACTICES

29. Use approved hearing protection and eye protection, when practicing with a handgun.
30. When not in the field, handguns must be stored, clean, unloaded and with the trigger immobilized by a trigger lock. Handguns must also be stored in their individual locked cases within the handgun safe.
31. Other than returning to or from the field after work hours do not store your government issued handgun at home as you may be violating your possession permit.
32. Only use ammunition of the specific caliber for which the handgun is designed. Double check to make sure the ammunition matches the handgun.

NEVER:

33. Never point a firearm at another person or at anything you do not want to kill, even if it is unloaded.
34. Never rely on a firearm's safety mechanism when transporting
35. Never assume a gun is unloaded - do your own check to make sure.
36. Never store or transport a firearm with ammunition loaded in the chamber.
37. Never leave a firearm unattended with ammunition loaded in the magazine or chamber.
38. Never run, climb a tree, ford a stream, climb steep terrain, or cross a fence with a loaded firearm.
39. Never shoot at a hard surface or the surface of water.
40. Never shoot an animal unless it is posing a significant threat to a person or property.
41. Never handle a firearm while under the influence of drugs and/or alcohol.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- Yukon EMR Firearm Directive: ([G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf](G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf))



SAFE JOB PROCEDURES

Reference No:	SJP-F01	
Version:	2016-1	
	Name	Date
Developed by:	C. Welsh	23/01/2009
Last Updated:	D. Moynihan	2016/04/15

TASK: Defensive use of a firearm

HAZARD ASSESSMENT ISSUE NO: C-19
F-01a,b, F02, F05- 07a,b, WL08
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Firearm, ammunition	n/a	Hearing and eye protection

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure firearm is cleaned after each use.
- Practice with your firearm for competency (Note: firearm practice can only be done at the shooting range in Whitehorse).
- Know the effective range of your firearm and give every animal an opportunity to leave unharmed.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL)
- Firearms awareness and/or proficiency training
- Bear awareness training

TASK STEPS:

1. Ensure all crew members are behind the rifle barrel.
2. Know your target and what lies beyond it.
3. Do not shoot at water or hard surfaces.
4. Wait until an attacking bear (predatory) is within 20m if using a shot-gun. The closer the range, the more likely the first shot will be effective.
5. Aim for the chest. The top and front of the head are not effective targets.
6. Kill the animal, never just injure it. More than one shot will be necessary.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2015), Government of Canada, Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-F02	
Version:	2016-1	
	Name	Date
Developed by:	C. Welsh	23/01/2009
Last Updated:	D. Moynihan	2016/04/15

TASK: Firearm transportation and storage
(restricted and unrestricted firearms)

HAZARD ASSESSMENT ISSUE NO: F-08-10
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Pelican case, pad lock, trigger lock and key, ammunition storage box	n/a	

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure driver, pilot or coworkers are aware of firearm and its location for transport.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL) training
- Firearms awareness and/or proficiency training

TASK STEPS:

When transporting in aircraft/field/traversing and storing in remote field camps:

1. Remove all ammunition from magazine when transporting firearms in aircraft.
2. Protect barrel of firearm from anything entering it (cover with masking or electrical tape).
3. Carry securely in a holster, sling or your pack (Note: handguns must not be carried in your pack, i.e., they must be 'visible' at all times).
4. Ensure sights and components are safe from being damaged at all times.
5. Never keep ammunition in chamber while transporting or storing – only load chamber when ready to fire.
6. Keep safety on at all times until ready to fire.
7. Upon return from traverse, unload firearm, attach trigger lock, and store in locked vehicle, room or storage container. Store ammunition separately. Keep firearm out of sight unless required for camp safety.
8. An unloaded non-restricted firearm may be kept unlocked with readily accessible ammunition if you are located in a remote wilderness area.
9. Clean firearm as necessary after using for target practice or if subjected to wet or dusty conditions (Note: handgun practice can only be done at the shooting range in Whitehorse).

When transporting in vehicle:

10. Unload firearm.
11. Attach a trigger lock to the firearm.
12. Place non-restricted firearms in a padded or hard case and store in locked vehicle or container where it won't get damaged in transport.
13. Lock all restricted firearms in a pelican case (or similar non-transparent hard case) with a pad lock.
14. Lock the case in a lockable compartment of the vehicle or out of sight in a locked vehicle.
15. Lock restricted ammunition in a separate location from firearm.
16. If transporting a restricted firearm, obtain an Authorization to Transport from the Canadian Firearms Program (1-800-731-4000)

When returning to office:

17. Lock all firearms in corporate safe immediately upon return and complete sign out sheet to show you have returned the firearm – do not store firearms in individual offices or in lockers in Core Library.
18. Ensure firearm is clean before storing long term, and tag for service if required.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2014), Government of Canada, "Storing, Transporting and Displaying Firearms" Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

PROTOCOLS FOR FIREARMS STORAGE, PRACTICE AND EMERGENCY USE IN THE FIELD

Each crew chief must ensure they define and communicate with all crew members specific protocols for storage, practice and emergency use of firearms carried in the field or stored in camp. While the exact protocols may vary depending on the camp or field situation, the following items should be addressed when briefing crews on firearms protocols:

General rules, such as

- Never point at another person
- Treat all firearms as loaded
- Never shoot unless practicing or life and limb are at risk
- Never shoot until sure of target and what's beyond
- Cleaning after each use
- Store and transport unloaded

Firearm and ammunition storage

- Location of firearms and ammunition when in camp
- Never store ammunition for different types of firearms together
- All firearms locked out of sight in vehicle or secure location if camp is vacant and firearms are left behind.
- Use of trigger locks and safety mechanism.

Practice sessions

- Review parts and use of firearm model being used
- Suitable location (no hard surfaces or water bodies in direction of fire; Note: handgun practice can only be done at the shooting range in Whitehorse).
- Establish location of firing line
- Firearms unloaded and placed on ground if anyone crosses firing line
- Use of hearing and eye protection

Emergency warning signals

- Use of flares, noise-maker shotgun cartridges and bear-bangers
- Sequence of warning shots

Emergency use procedures

- Location of firearm to use
- Define marshalling area where people must gather before any shots are fired
- Ensure no person, hard surface, water body or flammable item is in direction of fire

Documentation

- Report killed or injured animals to conservation officers
- Record date of use (for practice or emergency use) and cleaning
- File incident report if firearm used in an emergency

Date: _____

Camp or Crew Chief: _____

Crew Members initials _____



	EMR Firearms Directive
	3.61
	Rev 00
	07/06/2016

Background

Energy, Mines and Resources has a variety of firearms in its inventory (under Public Agency Identification Number 41429) for issuance to employees on an ongoing or intermittent basis.

This directive ensures that departmental employees are able to obtain firearms when they have a legitimate need for them, and outlines responsibilities and procedures dealing with acquisition, handling, use, transportation, storage and disposal of firearms and ammunition.

Application

This directive reflects the ongoing need for personal safety and safe handling of firearms by employees in compliance with existing Canadian firearms legislation. It applies to all departmental employees who are approved to carry firearms for personal protection from wildlife while fulfilling the responsibilities of their positions.

As per the General Administration Manual, Volume 2, Policy 2.11: Government Fleet Vehicles, Section 2.2.9, compliance with this directive will provide the approval of the Deputy Minister for the following categories of employees to transport firearms in departmental vehicles while undertaking their duties in the field on an annual basis:

- a) Client Services & Inspections (CS&I) – all field staff including the Senior Natural Resource Officers, Natural Resource Officers, Area Managers, the Placer Sediment Technician, and other staff with field responsibilities;
- b) Forest Management – all field staff including the Manager, Forest Planning and Development, District Forester, Forest Management Technician, Planning Forester, Silviculture Forester, Inventory Analyst and other staff with field responsibilities;
- c) Yukon Geological Survey - all geology field staff.
- d) Agriculture – Grazing Management Coordinator

Administration

This directive will be administered by EMR managers with employees who have legitimate requirements to carry firearms for personal protection while fulfilling the responsibilities of their positions.

- a) Departmental managers are responsible for ensuring that:
 - a. firearms and ammunition are issued only for the authorized purpose of providing personal protection from wildlife while conducting field work;
 - b. employees who are issued departmental firearms have completed appropriate training for the type of firearm they choose to carry – see “Education and Training”;



EMR Firearms Directive

3.61

Rev 00

07/06/2016

- c. appropriate safeguards and procedures are implemented for the storage, handling and use of firearms within the branch and the protection of departmental firearms against loss, theft or damage;
- d. the loss, theft or suspected misuse of departmental firearms is immediately reported to the manager, RCMP and the Director of Corporate Services;
- e. purchase of new firearms is approved by the employee's manager and filed with Corporate Services to be included in the firearms inventory list.

b) Employees who carry firearms are responsible for:

- a. obtaining authorized firearms from their manager, and using them in a safe and legal manner;
- b. completing the appropriate training for the type of firearm they carry;
- c. obtaining a laminated card from Corporate Services which provides the EMR PAIN number, employee's branch, and verifies the manager's approval for the employee to carry a firearm;
- d. obtaining a laminated card from the manager when taking a firearm from stock. Information on this card will include the departmental ID number (and Firearms Agency Number when provided), make, model and serial number of the firearm;
- e. protecting departmental firearms against loss, theft and misuse;
- f. ensuring that firearms are not openly displayed when dealing with clients or the public;
- g. immediately reporting to their manager the loss, defect, theft or misuse of departmental firearms and any damage to them; and
- h. advising their manager of firearms in poor condition and returning firearms which are no longer serviceable to the Director of Corporate Services for disposal.

Procedures

- a) Departmental managers will approve the use of firearms by their employees providing they have:
 - a. a requirement to carry firearms for protection against wildlife in fulfilling their duties; and
 - b. successfully completed appropriate training for the type of firearm they carry.
- b) Any employee who signs out a firearm assumes full responsibility for the firearm including keeping the firearm clean, well maintained and fully operational. Servicing of departmental firearms will be controlled by the responsible manager. Costs for servicing will be paid for by the Department.
- c) EMR employees are not allowed to carry personal firearms when fulfilling the responsibilities of their positions.
- d) Ammunition for departmental firearms will be issued on an "as required" basis by the responsible manager. A report on the usage of ammunition must be completed if a firearm is discharged for any reason other than training or certification.



EMR Firearms Directive

3.61

Rev 00

07/06/2016

- e) Firearms should not be left unattended in field camps.
- f) Firearms may not be loaned to employees in other branches or departments.
- g) Managers responsible for employees having access to firearms shall:
 - a. maintain a complete list of firearms supplied to the branch and allocate firearms to employees who require them to carry out the responsibilities of their positions;
 - b. ensure that employees update their training in the proper use of firearms on a regular basis;
 - c. consult with the Director of Corporate Services when additional firearms are required by the branch.

Education & Training Requirements

- a) All personnel in possession of departmental firearms shall ensure they understand and comply with the *Firearms Act* and Regulations.
- b) Employees who choose to carry firearms while fulfilling the responsibilities of their positions will be required to successfully complete the Canadian Firearms Safety Training Course.
- c) As it could take some time to schedule training, personnel who want to carry firearms should ensure that they avail themselves of these courses in a timely manner.
- d) Employees will be required to successfully complete proficiency training for the type of firearm they want to carry. Proficiency testing will be repeated every two years for employees using shotguns and/or handguns.
- e) Course costs for employees who carry firearms will be paid for by the Department.

Use of Handguns by Departmental Staff

- a) Only Yukon Geological Survey staffs are authorized to carry a handgun. This is in recognition of the particular kind of field work carried out by field staff and is in keeping with similar policies in other jurisdictions that have geological field staff.
- b) Employees carrying handguns must successfully complete the Restricted Weapons component of the Canadian Firearms Safety Course.
- c) Employees who carry handguns in their vehicles must store them for travel in a tamper-proof, locked receptacle. Firearms must have a trigger lock and be unloaded when carried in the vehicle.
- d) Employees with enforcement responsibilities are not allowed to carry handguns.



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Security

- a) All employees in possession of departmental firearms shall ensure that they are maintained and secured in a manner which complies with the safe storage, transportation and handling requirements set out in the *Firearms Act* and Regulations.
- b) Any manager with responsibility for firearms may withdraw permission for an employee to carry a firearm upon indication that the employee using the firearm is not acting in a responsible manner, or for any other compelling reason.

Theft or Loss of Firearms

- a) Personnel shall report the theft or loss of a government firearm immediately to their manager.
- b) Departmental managers shall confirm the report of the theft or loss of all firearms to the RCMP and the Director of Corporate Services.
- c) Departmental managers shall conduct an internal inquiry into the theft or loss of any departmental firearm. A Incident report must be completed and a written incident report on the matter must be submitted to the Director of Corporate Services.



EMR Firearms Directive

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Reports

- a) Any employee who has cause to discharge a firearm for any reason other than training or certification must provide a written report detailing the circumstances of the incident. The report must be submitted to the employee's manager within thirty (30) days of the incident.
- b) Within thirty (30) days of the fiscal year end, all managers must complete a written report to file on the disposition of firearms within their units, all training activities undertaken by their staff, and the expenditure of ammunition.

6/7/2016

Deputy Minister

Approved

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Note: All printed copies of this document are uncontrolled.



HAZARD ASSESSMENT & CONTROL REPORT

Reference No: HA-C
Version: 2

General Activity or Task: Camp Management
Worksite: Wilderness

Date Completed: 2007/05/17
Completed By: Charlie Roots & Panya Lipovsky
Last Reviewed By: S. Israel
Date Reviewed: 2016/04/12

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards		B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1)	Incident Probability (See Note 2)	Potential Consequence (See Note 3)	Risk Score (A x B x C)	Risk Class (See Note 4)				
			(0.5 to 10)	(0.1 to 10)	(1 to 100)	(0.05 to 10 000)	(VH, H, M, L, VL)				
	Camp siting and set-up										all safe work practices and procedures reviewed annually; training courses offered annually
C01		falling objects (trees, unloading equipment)	6	6	10	360	H	n/a	Education, safe work practices, safe job procedures	appropriate footwear, gloves	SWP-008,009, SJP-C02
C02		equipment malfunction (tent, sleeping bag, stove, etc)	2	1	30	60	L	Suitable and maintained equipment	Education, safe work practices, preventative maintenance, tagging system		SWP-008,009
C03		muscle strain	3	3	10	90	M	n/a	Education, safe job procedures		SJP-C02
C04		repetitive strain	1	1	2	2	VL	n/a	Education, safe job procedures		SJP-C02
C05		fatigue	2	3	2	12	VL	n/a	Education, safe job procedures	available food and work breaks	SJP-T03
C06		wildlife intrusion	8	1	50	400	H	electric fence, firearms	Education, safe work practices, safe job procedures, training	gloves and protective covering	SWP-008,009, SJP-W01, bear awareness & firearm proficiency courses
C07		forest fire	0.5	0.5	30	7.5	VL	communication equipment	Education, safe work practices, camp safety plan		SWP-008,009
C08		building fire	1	1	30	30	L	fire suppression system	Education, safe work practices, camp safety plan		SWP-008,009
C09	use of electrical equipment	electrocution	0.5	1	10	5	VL	proper equipment, dry shelter	Education, safe work practices, training		SWP-008,009, first aid course
	Garbage disposal										
C10	storage	wildlife intrusion	6	6	10	360	H	Suitable garbage containment	Education, safe work practices, safe job procedures, training		SWP-008,009, SJP-W01, bear awareness & firearm proficiency courses
C11	burning garbage	burns	3	6	10	180	M	Suitable burning system	Education, safe work practices, training		SWP-008, first aid course
C12	handling garbage	exposure to sharp objects and toxins, etc	3	1	2	6	VL	Suitable garbage containment	Education, safe work practices		SWP-008
	Food delivery and preparation										
C13		falling objects (stacked supplies)	1	3	2	6	VL	n/a	Education, safe work practices		SWP-008
C14		contaminated water	1	3	30	90	M	Appropriate and maintained equipment	Education, safe work practices, safe job procedures	good personal hygiene	SWP-008,009, SJP-T01
C15		spoiled food	0.5	1	10	5	VL	suitable food storage containers	Education, safe work practices, safe job procedures		SWP-008,009, SJP-T02
C16		burns	3	6	10	180	M	Well designed equipment	Education, safe work practices, proper kitchen setup, training	gloves	SWP-008,009, first aid course
C17		propane leaks	1	0.5	30	15	VL	Maintained equipment	Education, safe work practices, turn off valves when not in use		SWP-008,009
	Human Factors										
C18	use of drugs and alcohol	Intoxication, overdose	2	0.5	2	2	VL	n/a	Defined camp policies	Self-discipline	SWP-008,009
C19		discharge of firearm	0.5	0.5	50	12.5	L	n/a	Education, safe work practises, safe job procedures, training	Open communication	SWP-002, SJP-F01, firearm proficiency course
	Camp fires										
C20		escape of campfire into wildfire	3	0.5	10	15	VL	Fire pit, dousing with water			SWP-008,009, SJP-C01
	Hazardous Materials										
C21	proper handling of chemicals	chemical burns/ injuries	3	1	2	6	VL	proper storage, handling	Education, safe work practices, safe job procedures, training		SWP-014, SJP-M01, first aid course
	Other										
C22		lightning strikes	1	0.5	50	25	VL	n/a	Education, safe work practices, safe job procedures, training		SJP-T15, first aid course
C23		late pick-up, stuck in camp longer than expected	1	1	10	10	VL	n/a	Education, safe work practices		SWP-009

Safe Work Practices: SWP-002 (Firearms use, handling and transportation), SWP-008 (Lareg camp management), SWP-009 (Small camp management), SWP-014 (WHMIS)
Safe Job Procedures: SJP-C01 (Campfires), SJP-C02 (Lifting heavy or awkward objects), SJP-F01 (Defensive use of a firearm) , SJP-M02 (Fueling caching and spill contingency plan), SJP-T01 (Water purification), SJP-T02 (Avoiding food contamination), SJP-T03 (Fatigue), SJP-T04 (Corssing a stream), SJP-T05 (Use of hand tools), SJP-T14 (Landslide), SJP-T15 (Lightning strikes), SJP-W01 (Bear encounter)



SAFE WORK PRACTICES

Reference No:	SWP-002	
Version:	2016-1	
Name	Date	
Developed by:	L. Lewis	04/08/2008
Last updated:	D. Moynihan	2016/04/15

TASK: FIREARMS USE, HANDLING AND TRANSPORTATION

PURPOSE: Firearms are used in the field to provide protection against aggressive wildlife. Handling, transportation and storage of firearms are regulated by the Firearms Act and by part III of the Criminal Code of Canada. Field personnel do not always traverse with firearms, but firearms are often kept in camp because camp activities (cooking, grey water disposal, food storage, etc.) are more likely to attract bears than traversing activities. Although firearms are rarely discharged due to actual bear encounters, employees must be properly trained to handle, use and transport firearms to ensure their own safety and the safety of others.

GUIDELINES:

ALWAYS:

1. **You must** have a valid Firearms Acquisition Certificate, Possession and Acquisition License, or Possession-Only License, or be under the direct supervision of someone who carries one of these certificates to legally handle any firearm.
Note: Special Handling permits are required for the use of handguns or other restricted firearms in the field.
2. You must be familiar with the Energy, Mines and Resources firearms directive if handling firearms is part of your job duties.
3. Firearm proficiency training **is required** for all YGS field personnel.
4. Handle every firearm as if it were loaded at all times.
5. Keep the muzzle pointed in a safe direction at all times, regardless of whether the gun is loaded or unloaded.
6. Crew chief or camp safety officer is responsible for defining and communicating field firearm storage and use practices and emergency firing protocols to all field crew.
7. Ensure the firearm is in optimal working condition by inspecting before each season, cleaning after each use and ensuring it is serviced regularly.
8. Use approved hearing protection and eye protection when practicing with firearms.
9. Be sure of target and what's beyond it before firing.
10. Account for each crew member's whereabouts and ensure they are out of range before firing.
11. Know the location of each crew member in your party before firing a weapon.
12. Keep your finger off the trigger until ready to fire.
13. After each use, ensure that firearms are cleaned with an appropriate cleaning kit that matches the type/caliber of the firearm. Ensure adequate ventilation when cleaning a firearm.
14. Avoid firing in a defensive situation unless life/limb is at risk - use a firearm only as a last resort.
15. If you kill an animal with your firearm, **you must** report it as soon as possible to a Yukon Conservation Officer.
16. When the firearm does not have to be ready for use in an emergency, store ammunition properly in a separate container away from firearm.

SHOTGUNS

17. Practice shooting your shotgun regularly to stay proficient and be familiar with its range, accuracy and feel
18. In camp settings choose a suitable and safe site for firearms practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. Beware of any other individuals, i.e. hikers, trappers etc. that might be in the area.
19. Check that your shotgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all shells, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).
20. When transporting, keep the shotgun unloaded and out-of-sight, with safety mechanism on and trigger lock in place. Protect shotgun during transport by carrying it in a padded case to minimize damage. If shotgun is left unattended in a vehicle, it must be out-of-sight and the vehicle must be locked.
21. When traversing with a firearm, protect the sights from damage and check regularly to ensure that the barrel and breech are clear. Masking tape can be used to cover the end of the barrel and prevent grit from entering without compromising shooting accuracy.
22. Use approved hearing protection and eye protection and use reduced powder ammunition when practicing with the shotgun.
23. **Recommended ammunition for shotguns is 12 gauge, 2 ¾ inch magnum slugs.** This ammunition contains enough stopping power to kill a grizzly bear. **Crew Chiefs may authorize the use of 3 inch magnum slugs but all members of their camp must prove proficiency in rapid fire use of this ammunition.** This is to ensure anyone firing a 3 inch shell is aware of the higher recoil associated with this shell.

HANDGUNS

24. Practice shooting your handgun regularly to stay proficient and be familiar with its range, accuracy and feel (Note: handgun practice can only be done at the shooting range in Whitehorse).
25. In camp settings choose a suitable and safe site for handgun practice that is a reasonable distance away from camp. The target area should be backed by a sand hill to avoid shooting at a hard surface. **Ricochets can kill.** Be certain that others, i.e., hikers, trappers etc. are out of range and aware of your intentions.
26. Check that your handgun is unloaded each time you pick it up or pass it to someone else. **PROVE** it is safe (**P**oint in the safest direction, **R**emove all cartridges, **O**bserve the chamber, **V**erify the feeding path, **E**xamine the bore).



SAFE WORK PRACTICES

27. When transporting a handgun it must be unloaded and transported in an approved locked case. When a hand gun is left in a vehicle they must be out of sight and the vehicle must be locked.
28. Use properly fitted holster with retention strap designed for your handgun.
29. Use approved hearing protection and eye protection, when practicing with a handgun.
30. When not in the field, handguns must be stored, clean, unloaded and with the trigger immobilized by a trigger lock. Handguns must also be stored in their individual locked cases within the handgun safe.
31. Other than returning to or from the field after work hours do not store your government issued handgun at home as you may be violating your possession permit.
32. Only use ammunition of the specific caliber for which the handgun is designed. Double check to make sure the ammunition matches the handgun.

NEVER:

33. Never point a firearm at another person or at anything you do not want to kill, even if it is unloaded.
34. Never rely on a firearm's safety mechanism when transporting
35. Never assume a gun is unloaded - do your own check to make sure.
36. Never store or transport a firearm with ammunition loaded in the chamber.
37. Never leave a firearm unattended with ammunition loaded in the magazine or chamber.
38. Never run, climb a tree, ford a stream, climb steep terrain, or cross a fence with a loaded firearm.
39. Never shoot at a hard surface or the surface of water.
40. Never shoot an animal unless it is posing a significant threat to a person or property.
41. Never handle a firearm while under the influence of drugs and/or alcohol.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- Yukon EMR Firearm Directive: ([G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf](G:\1275 Occupational Health & Safety\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013.pdf))



SAFE WORK PRACTICES

Reference No:	SWP-008	
Version:	2	
Developed by:	Name	Date
	P. Lipovsky	2008/04/14
Last updated:	S. Israel	2016/04/12

TASK: LARGE CAMP MANAGEMENT

PURPOSE: Large camps support remote field operations for 5 or more workers for extended periods. Appropriately locating, designing and operating the camp minimizes environmental and physical hazards (wildlife intrusions, use of heating and mechanical devices, storage of food and waste, personal hygiene, etc.). All users, from manager to brief visitor, have a duty to be alert and anticipate dangerous situations.

GUIDELINES:

Planning:

1. At least 2 months in advance, a land use permit is applied for (required for >100 person-nights). The application requires consideration of many hazards and environmental liabilities.
2. Avoid siting the camp near natural hazards such as steep slopes, avalanche run-out zones, flood plains and animal corridors.
3. Locate human and kitchen waste areas, and fuel caches beyond the minimum set-back from water bodies (see regulations).
4. Plan the garbage stream: where organics will be burned and how inorganic waste will be stored until it can be removed. Burial is not recommended.
5. Site the camp structures in consideration of potential wildlife encounters: Kitchen and food storage away from sleeping areas; predict sight lines and exit avenues; also minimize hazards to aircraft landing and take-off.

Set-up

6. Designate a camp manager to organize construction. This person should be familiar with tools for the job, and what camp systems (plumbing, electrical, communication, etc) are required.
7. Personal protective equipment (hearing and eye protection and gloves) are required.
8. Obtain instruction before using any hazardous tool you are unfamiliar with.
9. Think before lifting and moving materials when mobilizing/demobilizing camps and packing/unpacking gear and equipment. Work as a team, not as a hero.
10. Avoid small scale natural hazards in placing structures: depressions which may fill after rainy spells, ant and wasp colonies, away from mature trees which may blow over. If animal trails are present, seek locations where you won't be disturbed.
11. Erect structures soundly. If floors are called for, build them solid and level. For tents, clean the footprint thoroughly (it is more difficult to do later) and pitch them properly, with all guy ropes secured. Weather damage to camp structures most commonly occurs when they are unoccupied.
12. Even if blessed with sunshine, the set-up is not finished until structures are 'weather-resistant'. Erect flies over tents securely and patch/sew up holes.
13. Inside the door of every sleeping structure, attach a fire-extinguisher, air horn and bear spray.
14. For wilderness camps YESAB will stipulate an electric fence to reduce bear encounters. Enclose the kitchen and garbage storage areas, as these are the main attractants.
15. Dig a deep pit for the outhouse (>50 m from surface water - Yukon Environmental Health regs). In bear prone areas the outhouse should be within sight of camp. A lid should cover the hole. If possible, separate used toilet paper and burn it.
16. Consider camp closure: you want to minimize environmental impact when all structures and waste are removed.

Safety protocols and communications:

17. Devise protocols for firearms storage and emergency use. Communicate these to all crew members.
18. The party chief will set up check-in and emergency protocols. (see camp safety checklist below). All members of camp should be familiar with use of the prime communication device (satellite phone and/or radio) and its charge-up schedule.
19. An industrial first aid certificate is required of at least one person in a large camp (usually camp cook or camp manager). This person will designate a first aid station. This person must be aware of pre-existing conditions (including medications) of members of the camp.
20. This person calls a camp meeting at least weekly to discuss incidents and hazards. This meeting must include new arrivals to the camp.
21. Safety briefings and checklists should be part of the morning routine. These are an opportunity to review anticipated hazards and previous incidents.

Food and waste:

22. Treat any water taken from a stream or lake for drinking purposes.
23. Food preparation and eating areas should be frequently cleaned and not used for other work or recreation.
24. Store all food except during preparation and meal times.
25. Stack and handle supplies appropriately so boxes or cans will tip or injure people.
26. Rinse all dishes in a disinfectant bath after washing.
27. Never leave sharp knives in a sink full of dish water, do not position the pointed end facing up in a drying rack.
28. Never dispose of sharp or jagged objects in a garbage bag where an unaware handler may be cut. Place inside stiff-walled containers first.



SAFE WORK PRACTICES

29. Dispose of kitchen and bathroom grey water appropriately, following Yukon Environmental Health regulations. Wash hands with soap or use hand sanitizer after using the latrine, handling garbage, and before eating or preparing meals.
30. Never eat or keep any food or odour attractants in your sleeping tent or office tent (*including fuel, dog food, soap, shampoo, deodorant, used feminine hygienic products, perfume, toothpaste, lotions, bug repellent, drinks or packaged snacks*).
31. Never leave dirty dishes, garbage or food out in the kitchen tent overnight or while away during the day.
32. Never feed wild animals.
33. Never leave fish-cleaning remnants in or near camp.

Heating devices:

34. Never use a propane oven for heating a tent or building.
35. Keep fire extinguishers in every building or tent containing a heat source.
36. Keep flammable materials a safe distance from heaters and stoves in kitchen, office or wash tents.
37. Do not hang anything above heaters and stoves that might fall.
38. Install and operate the heater following the manufacturer's specifications for safe lighting practices.
39. Make sure the floor around the heater is kept clear to avoid trips or falls.
40. Never light a diesel stove if you have spilled fuel on your hands.
41. Turn off propane tanks when propane heaters and stoves are not in use.
42. Use extreme caution when using an axe to chop wood for wood stoves and campfires.
43. Ensure that campfires are an adequate distance from tents and flammable objects, and keep campfires small. Fully extinguish campfires before going to bed or leaving camp.
44. Never smoke in your sleeping tent, in the kitchen area or in other communal areas.
45. Ensure that cigarette butts are fully extinguished and disposed of so that a forest fire is not accidentally started, and no butts are littered.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 39-52.
- Yukon Energy Mines & Resources, Land Management Branch (land use permits): http://www.emr.gov.yk.ca/lands/application_forms.html
- Yukon Health & Social Services - Environmental Health guidelines: <http://www.hss.gov.yk.ca/environmental.php>
- Standards for Construction, Installation and Maintenance of a Pit Privy: <http://www.hss.gov.yk.ca/environmentalsewage.php>
 - Guidelines for the Operation of a Temporary Food Premises: http://www.hss.gov.yk.ca/pdf/foodpremises_app_temp.pdf
 - Drinking Water Regulations: <http://www.hss.gov.yk.ca/environmentaldrinkingwater.php>



SAFE WORK PRACTICES

CAMP SAFETY CHECKLIST

Each camp or crew chief is responsible for establishing and communicating protocols to all crew members for first aid, daily check-in procedures, emergency protocols and camp safety. Although the exact protocols will vary depending on the camp or field situation, the following items should be addressed when briefing crews on camp safety:

- First aid
 - Location of first aid kit in pack and/or in camp
 - Location of first aid attendant in camp
 - Review first aid qualifications of all crew members
 - Review special medical conditions of crew members
- Communications
 - Location of satellite phone or radio, spare batteries and emergency phone numbers (medivac, nursing stations, RCMP, helicopter company) while on traverse and/or in camp
 - Review how communications device works
 - Daily check-in procedure
- Accident response
 - Treat victims with first aid
 - Call for help or medevac if necessary
 - Phone Field Coordinator or Carolyn once situation is under control
 - Location of emergency contact numbers for each crew member
 - Fire safety
 - Location of fire extinguishers
 - Outline proper use of stoves and heaters
 - Smoking policy
 - Campfires
- Camp safety procedures
 - Firearms – designated users, storage
 - Garbage storage
 - Food storage
 - Kitchen hygiene
 - Personal hygiene
 - Latrine
 - No food or fragrant items in sleeping tents
- Documentation
 - Daily notation in camp safety logbook
 - Record and report all injuries
 - Record and report all near-miss incidents
- Other
 -
 -
 -

Date: _____
 Camp or Crew Chief: _____
 Crew Members: _____



SAFE WORK PRACTICES

Reference No:	SWP-009	
Version:	3	
Name		Date
Developed by:	P. Lipovsky	2008/04/14
Last Updated:	S. Israel	2016/04/12

5

TASK: SMALL CAMP MANAGEMENT

PURPOSE: Small camps are typically used by two to four-person field crews in remote locations for short periods. Appropriately locating, designing and operating the camp will minimize incidents and injury from wildlife and other natural hazards, personal and camp hygiene, food storage and heating devices.

GUIDELINES:

ALWAYS:

Planning

1. Locate camp to avoid potential natural hazards such as landslides, avalanches, floods, falling trees and animal traffic.
2. Locate camp away from aircraft movement and fueling areas. Tents, tarps and loose items won't be disturbed.
3. Avoid camping close to streams or near a well-used game trail.
4. Designate a food storage and preparation area, away from sleeping tents if possible
5. Consider the layout of tents in the event that a firearm might be used to defend your camp (a straight-line is better than a circle).

Camp set-up:

6. Secure tents with all guy ropes. Ensure your tent fly is effective and holes are patched.
7. Organize loose equipment so they will not get wet or blow away, and can be found quickly in an emergency.
8. Bring adequate drinking water and/or treat any water taken from a stream or lake for drinking purposes.
9. Ensure all crew members know how to use the camp stove properly.
10. Be especially cautious when using knives to prepare meals.
11. Wash dirty dishes and clean up food spills promptly and particularly before going to bed or on traverse.
12. Turn off propane canisters at night and when not in camp.

Operation:

13. Determine who is in charge (the task may be rotated). This person is responsible for:
 - a. firearms storage, practice and emergency use and its communication to all crew members.
 - b. first aid, check-ins and emergency communications, understood by all crew members. Know critical medical conditions
 - c. daily communication with the base (satellite phone and/or radio). Everyone should be familiar with its use it and how to re-charge.
14. Hold quick safety briefings with all crew members each morning. Plans and anticipated trouble should be discussed.
15. Keep all food securely stored in rock pails, metal boxes, bear-proof canisters, dry bags or coolers. Ensure you have a few days extra food.
16. Keep all garbage secure. Burn organics as soon as possible, and package the residue to be removed at first opportunity. Never bury it. If traversing from camp, take the packaged garbage to a distant prominent spot and hang it out of reach of rodents.
17. Dispose of grey water in a distant pit, above the water table.
18. Open fires should not be essential to camp operation, but some consider them a part of camp life. Remember they create new hazards, including use of cutting tools, dragging brush, and out-of-control fire. If a fire-ban is in effect, or you lack the means to control an escaped blaze, don't allow open fires.
19. Fully extinguish campfires before going to bed or leaving camp.
20. Be aware of the increased fire hazard with smoking. Fully extinguish cigarettes and matches. Don't litter cigarette butts.
21. If you choose not to traverse with your firearm, leave it outside of camp so you can access it upon return. Make sure it is in a water- and rodent-proof case.

Hygiene:

22. Bury solid human waste away from streams or water bodies. Pack out or burn toilet paper if possible, being careful not to start an uncontrolled fire.
23. Wash hands with soap or use a hand sanitizer after using the latrine, handling garbage and before eating or preparing meals.
24. Keep bear repellent with you if bears frequent the area. A nearby knife in your tent may be a last resort for defense, and to escape if the bear enters the tent door.
25. Ensure any crew member on medication has an adequate supply for the length of time they'll be in camp, plus a few extra days.
26. Bring an extra set of glasses or corrective lenses in case you lose or break a pair.
27. Minimize environmental impacts and attempt to leave no trace when you leave your camp. Pack out all garbage and recyclables.

NEVER:

28. Never eat or store any food or fragrant items in your sleeping tent or office tent (*including fuel, dog food, soap, shampoo, deodorant, used feminine hygienic products, perfume, toothpaste, lotions, bug repellent, drinks or packaged snacks*).
29. Never cook inside a tent without sufficient ventilation - restricted ventilation can lead to carbon monoxide poisoning.
30. Never leave dirty dishes, garbage or food out overnight or while you are away from camp during the day.
31. Never feed wildlife. Never clean fish anywhere near your camp.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 39-52.



SAFE WORK PRACTICES

Reference No:	SWP-014	
Version:	2016-1	
Developed By:	Name	Date
Last Reviewed By:	R. Dufour	2009/05/14
	J. Bond	2016/04/12

TASK: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

PURPOSE: You must be properly informed of all hazardous materials that you may come in contact with on site. Recognizing labels, being able to access Material Safety Data Sheets (MSDS) and learning about proper handling and precautions and first-aid procedures is the only way to protect yourself and your coworkers.

WHMIS CONTROLLED MATERIALS:

YGS has a number of WHMIS controlled materials, stored in various locations.

The following materials are stored in a locked cabinet at the core library on the Alaska Highway:

- Hydrochloric Acid
The MSDS binder for these materials is located by the first aid station outside the saw room at the core library. For access please ask Tiffani Fraser or Craig Nicholson.

Employees are also occasionally exposed to the following materials, which are stored in designated locations at the Core Library when not being used in the field:

- Sulphuric acid (car batteries, stored in battery room at Core Library)
- Propane (stored in the hazardous materials shed in the locked compound behind the core library)
- Gasoline (stored in the hazardous materials shed in the locked compound behind the core library)
- Diesel and jet fuel (stored in the hazardous materials shed in the locked compound behind the core library)
- White Gas (Naphtha, stored in the hazardous materials shed in the locked compound behind the core library)
The MSDS binders for these materials are located by the first aid station outside the saw room at the core library as well as in the hazardous materials sheds.

GUIDELINES:

ALWAYS:

- Look at supplier label information for risks, precautionary measures and first aid.
- Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
- Refer to MSDS for in-depth product information.
- Use appropriate personal protective equipment/clothing when recommended for certain products.
- Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
- Inform employer of hazards and damaged or missing labels.
- Add acid to water (never water to acid) if diluting chemicals.
- Store WHMIS-controlled substances in appropriate locations at the Core Library.

NEVER:

- Never use any of the listed products without referring to supplier labels.
- Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures as well as a statement confirming MSDS is available.
- Never store any flammable substance (propane, gasoline, diesel, white gas) inside the office or Core Library.

ADDITIONAL INFORMATION AND REFERENCES

- Poison Control Center: 867-393-8700 (Whitehorse Hospital, ask for Poison Control)
- Northern Safety Network Yukon (867-633-6673) - WHMIS train the trainer program
- Ralph Shopland (867-667-5963) – Yukon Government Public Service Commission, Corporate Health and Safety, WHMIS trainer
- Tiffani Fraser (867-667-3228) – YGS WHMIS trainer
- Work Safe BC: <http://www2.worksafebc.com/Topics/WHMIS/Home.asp>



SAFE JOB PROCEDURES

Reference No:	SJP-C01	
Version:	2016-1	
	Name	Date
Developed by:	C.Welsh	2009/02/02
Last Updated:	J. Bond	2016/04/12

TASK: Campfires

HAZARD ASSESSMENT ISSUE NO: C-20
RISK CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Matches, container for extinguishing fire		

ROLES AND RESPONSIBILITIES:

- In case a forest fire starts, have an emergency preparedness plan and ensure available emergency communications are available.
- Carefully choose the location of a campfire so that it does not spread.
- Keep the fire in control - and do not let the fire get too large.
- Always ensure the fire is completely extinguished when you leave or go to bed.
- Try to leave no trace. Fill in your fire pit when you leave, avoid cutting live trees for wood, and avoid making a fire ring with rocks that will only get charred.
- Do not build campfires when the fire hazard is extreme or there is a fire ban (check with Wildland Fire Management: <http://www.community.gov.yk.ca/firemanagement/>).

TRAINING REQUIREMENTS:

- Wilderness readiness/survival training

TASK STEPS:

1. Clear the fire area down to mineral soil in an open area and dig a small pit or depression. Use only a small area (up to 1 m in diameter maximum).
2. Do not line your fire pit or make a fire ring with rocks. Rocks can sometimes explode when heated and send small sharp shards flying.
3. Keep the fire in control and do not let the fire get too large.
4. Try to avoid cutting or damaging live trees for wood - only burn dead, dry wood.
5. Be extremely careful if cutting wood with axes or saws.
6. If burning garbage, burn it in small batches in a hot fire so that it burns completely. Pack out any metallic refuse or unburned residue.
7. Fully extinguish the fire before leaving or going to bed.
8. Check that the fire is fully extinguished by feeling the ashes for any hot spots with your bare hands.
9. Do not scatter ashes.
10. Fill in the fire pit with soil or before leave your camp and try to minimize your trace.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, page 66-67.



SAFE JOB PROCEDURES

Reference No:	SJP-C02
Version:	2016-1
Developed by:	Name: C. Welsh
Last Updated:	Date: 28/01/2009
	J. Bond
	2016/04/12

TASK: Lifting heavy or awkward objects

HAZARD ASSESSMENT ISSUE NO: C-03,04
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		Gloves, back belt, eye protection

ROLES AND RESPONSIBILITIES:

- Weigh your ability to do the work and ensure anyone helping you lift an object lifts properly.
- Do not lift any object causing strain.
- Wear gloves to protect your hands if necessary.
- Wear eye protection when applying/removing strapping (*i.e.*, core boxes)

TRAINING REQUIREMENTS:

- Familiarization with proper lifting techniques.

TASK STEPS:

9. Prior to lifting, discuss your lifting plan and communication strategy with all parties involved.
10. Consider what force or workload will be required to move an object. Assess the size, shape and weight of object to move – will it be awkward? Will you be bending and/ or twisting repeatedly? How far and to what height will the object be moved? Plan your movements to avoid awkward bending and/ or twisting repeatedly.
11. Lift close to your body, with feet shoulder-width apart. Bend your knees and keep your back straight, tighten stomach muscles, and lift with your legs. If you lift often or will be lifting repeatedly, a back belt may help maintain proper lifting posture.
12. If you are straining, stop. Put the object down and change your tactic, or get additional help.
13. Ensure you are able to see obstructions in your path and be careful on uneven ground. When carrying or lifting with a partner, communicate obstacles to each other.
14. Pay extra attention when tired or in uneven/ hilly terrain.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Cluett, Jonathan M.D. "How To Lift" About.com: Orthopedics. Available: <http://orthopedics.about.com/cs/backpain/ht/lift.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-F01
Version:	2016-1
Name	Date
Developed by:	C. Welsh 23/01/2009
Last Updated:	D. Moynihan 2016/04/15

TASK: Defensive use of a firearm

HAZARD ASSESSMENT ISSUE NO: C-19
F-01a,b, F02, F05- 07a,b, WL08
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Firearm, ammunition	n/a	Hearing and eye protection

ROLES AND RESPONSIBILITIES:

- Be aware of and adhere to both federal and territorial firearm legislation.
- Ensure firearm is cleaned after each use.
- Practice with your firearm for competency (Note: firearm practice can only be done at the shooting range in Whitehorse).
- Know the effective range of your firearm and give every animal an opportunity to leave unharmed.

TRAINING REQUIREMENTS:

- Possession and Acquisition License (PAL)
- Firearms awareness and/or proficiency training
- Bear awareness training

TASK STEPS:

1. Ensure all crew members are behind the rifle barrel.
2. Know your target and what lies beyond it.
3. Do not shoot at water or hard surfaces.
4. Wait until an attacking bear (predatory) is within 20m if using a shot-gun. The closer the range, the more likely the first shot will be effective.
5. Aim for the chest. The top and front of the head are not effective targets.
6. Kill the animal, never just injure it. More than one shot will be necessary.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 68-71.
- RCMP (April, 2015), Government of Canada, Available: <http://www.rcmp-grc.gc.ca/cfp-pcaf/fs-fd/storage-entrepotage-eng.htm>



SAFE JOB PROCEDURES

Reference No:	SJP-M02	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	S. Israel	2009/11/09
	J. Bondi	2016/04/12

TASK: Fuel caching and spill contingency plan

HAZARD ASSESSMENT ISSUE NO: V14
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
4 x 20L buckets with lids shovel poly tarp - 2 x (20 x 24 ft)	MSDS	PVC oil resistant gloves, eye protection

ROLES AND RESPONSIBILITIES:

- Know and adhere to federal and territorial legislation
- Make sure all hazardous substances are marked accordingly
- Know the location of the Material Safety Data Sheets (MSDS) and WHMIS binders
- Ensure extreme care is taken during transfer of fuel from drums.
- Ensure all drums are properly sealed and in good shape (*i.e.*, no leaks or rusted surfaces) prior to caching.
- Report all spills, regardless of size.
- Take all reasonable measures to confine and clean up spills immediately.
- Restore the site to the same condition it was in before the spill.

TRAINING REQUIREMENTS:

- Transportation of Dangerous Goods
- WHMIS

PURPOSE:

The purpose of this fuel caching and spill contingency plan is to establish a set of guidelines for Yukon Geological Survey employees involved in field work within the Yukon Territory. This plan deals mainly with small fuel caches consisting of less than 20 x 200 L (40 gallon) barrels (*i.e.*, <4000 L total) of Jet A/B aviation fuel. This plan incorporates existing Government of Yukon policy regarding fuel caching and spill reporting, and specific sections from various branches and regulations are cited where appropriate.

TASK STEPS:

Caches are subject to different policies and practices based on volume of fuel stored.

A) Large fuel cache storage procedures

1. A fuel cache consisting of twenty (20) or more 200 L barrels or one container with a volume equal to or greater than 4000 L capacity is considered a large fuel cache.
2. Both a land use permit and YESAB assessment may be required for large fuel caches. Contact EMR Lands directly for advice on permitting requirements.
 - i. For land use permit applications, visit EMR Land Management branch website:
http://www.emr.gov.yk.ca/lands/application_forms.html
 - ii. For YESAB applications, go to: <http://www.yesab.ca/submit-a-project/do-i-need-an-assessment.html>
 - iii. Note that YESAB applications can take up to 2 months to process, so the application should be submitted well in advance.
3. A secondary containment facility must be installed for large fuel caches and must accommodate at least 110 % of the fuel being stored.



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B) Small fuel cache: storage procedures

1. A fuel cache of >2 and <20 barrels (>400 and <4000 litres) is considered a small fuel cache.
2. All drums must be marked with proper labels that identify the owner and the date the drums were purchased (e.g., EMR-YGS 07/15). It is recommended that YGS be part of the label as EMR has numerous fuel caches throughout the territory.
3. Notification of fuel cache establishment for between 3 and 19 drums (>400 and <4000 L) must be submitted in writing (email) to the Manager of Land Use, Energy Mines and Resources, within 30 days of establishing the fuel cache. This must include GPS coordinates of cache, amount of fuel, method of storage, and plans for decommissioning of cache (i.e., date of removal of drums).
4. All fuel drums should be stored on their sides with the bung hole horizontal to reduce the risk of fuel contamination.
5. Fuel containers must be situated on elevated, level and stable ground at least 30 m horizontal distance away from the high water mark of any watercourse.
6. Fuel containers must be situated well away from moving machinery.
7. Each fuel cache must have a spill kit stored on-site (see suggested items listed below in Part E).
8. A secondary containment system is not necessary for small caches but use of such a system is recommended where practical. Containment is required at large caches when transferring fuel from drums to an aircraft. The use of such a system should be discussed with the aircraft contractor prior to the field program.

C) Fuel spill prevention

Always minimize the chances of fuel spills during handling and transfer of fuel drums by:

- Taking extreme care during transfer of fuel from drums.
- Ensuring all drums are properly sealed and in good shape (i.e., no leaks or rusted surfaces) prior to caching.
- A secondary containment system should be considered if practical.

D) Fuel spill response procedures

1. All fuel spills, regardless of size, must be reported immediately to the Yukon Geological Survey Operations Manager (see Reporting Procedure section). All spills greater than 200 L must also be reported immediately to the Yukon Spills Reporting Centre.
2. Identify the source of leak or spill and if safe to do so, take all reasonable measures to stop and confine the leak or spill. Measures may include:
 - stopping the release of any more of the spilled substance by turning off valves, picking up fallen containers, etc.;
 - putting down absorbent material;
 - building berms or ditches to stop spilled material from spreading.
3. Immediate action should include removal of contaminated soil or snow into a sealable container (for small volume spills) or onto an impermeable surface which is then covered from the elements (for large volume spills) until proper disposal can take place. Do this only if it is safe to do so.
4. In the case of small volume spills (less than 200 L), the fuel-dirt or fuel-snow mixture must be cleaned up by immediate removal and storage in sealable containers (buckets or fuel drums). The contaminated material warrants proper disposal.



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5. In the case of large volume spills (in excess of 200 L), a plan will be developed with the Yukon Spills Reporting Centre following the Contaminated Sites Regulations of the Yukon Environment Act (http://www.gov.yk.ca/legislation/regs/oic2002_171.pdf).
6. Ensure that the site is restored to the same condition that it was in before the spill. Yukon Environmental Protection Officers may provide direction regarding actions to be taken to restore the site, including sampling to show that no contamination remains.

For more information on spill reporting, clean up and waste disposal, contact Yukon Environment, Environmental Programs Branch (867-667-5683) or visit their website:

<http://environmentyukon.gov.yk.ca/monitoringenvironment/spills.php>

E) Spill Kits

Each fuel cache must have a spill kit stored on site. It is recommended that the kit include a minimum of the following items:

- 4 x 20L buckets with sealable lids.
- 1 x shovel for removal of fuel-dirt/snow mixture.
- 2 x (20 x 24 ft) poly tarp
- absorbent pads or granules
- Personal Protective Equipment (2 x PVC Oil resistant gloves, splash protection eyewear).
- List of contacts and MSDS for all fuels.

Commercial spill kits can be purchased in Whitehorse from Yukon Pump for around \$290 (includes 20 gallon UN rated screw top container with absorbent pads, absorbent socks, 42 lb bag of oil sponge remedial granular absorbent, disposable bags and plug n' dike).

In some jurisdictions, a bag of compressed peat moss, that can be spread to absorb the fuel and then burned, is considered appropriate.

F) Personal Protective Equipment

Commercial spill kits may include PPE for removal of material after a spill. Protective gloves and eyewear (see attached MSDS for Jet A/B for more details) are suitable in well ventilated areas; spills in confined spaces may require increased ventilation or breathing apparatus. Any individual involved in cleanup will have PPE made available to them.

G) Reporting Procedure

1. The Project Leader must report all fuel spills immediately regardless of volume, to the YGS Operations Manager or Director. A spill report outlining the date, time, location, type and volume of the spill, and details of any clean up action taken must also be submitted in writing to the YGS Operations Manager.
2. Fuel spills greater than 200L must be reported immediately to the Yukon Spill Report Centre.

Reporting contacts:

1) Yukon Geological Survey (YGS):

YGS Operations Manager	867-667-8508
YGS Director	867-667-8892

2) Yukon Spills Report Centre (24 hrs, EMO):..... 867-667-7244

3. Notify the owner or person in charge of the spilled substance and any person who may be adversely affected by the spill.



SAFE JOB PROCEDURES

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Yukon Environmental and Socio-economic Assessment Board: <http://www.yesab.ca/>

- YESAB assessment applications: <http://www.yesab.ca/submit-a-project/do-i-need-an-assessment/>

Yukon Energy Mines & Resources, Land Management Branch (land use permits):

- Land Use Manager, Land Management Branch, Yukon Energy Mines and Resources: Marg White, 867-667-3173
- Yukon Lands legislation and policies: http://www.emr.gov.yk.ca/lands/legislation_policies.html
- Territorial Lands (Yukon) Act, O.I.C. 2003/51 - Land Use Regulation (http://www.gov.yk.ca/legislation/regs/oic2003_051.pdf)
- Land use permit application: http://www.emr.gov.yk.ca/lands/application_forms.html

Yukon Environment, Environmental Programs Branch (spill response, clean up and waste disposal):

- Yukon Environment, Monitoring & Inspections Manager (Spill Reporting): Bryan Levia, 867-667-3436
- Yukon Environment Act, Part 11: Spills: <http://www.gov.yk.ca/legislation/acts/environment.pdf>
- Yukon Environment Spill Reporting: <http://environmentyukon.gov.yk.ca/monitoringenvironment/spills.php>
- Yukon Environment, Cleaning up Hazardous Spills:
 - Yukon Environment Act, Part 11: Spills Regulations: http://www.gov.yk.ca/legislation/regs/oic1996_193.pdf
- Yukon Environment, Cleaning up Contaminated Sites:
http://www.env.gov.yk.ca/air-water-waste/contaminated_sites_regs.php#cleanup
 - Yukon Environment Act, Contaminated Sites Regulations: http://www.gov.yk.ca/legislation/regs/oic2002_171.pdf



SAFE JOB PROCEDURES

Reference No:	SJP-T01
Version:	2
Name	Date
Developed by:	C. Welsh & T. Allen 2009/02/02
Last Updated:	J. Bond 2016/04/12

TASK: Water purification

HAZARD ASSESSMENT ISSUE NO: C-14
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Filter, tablets, chlorine and / or stove		

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available

TRAINING REQUIREMENTS:

- Familiarization with water treatment method used in field

TASK STEPS:

- Do not drink untreated water from open water supplies unless it has been deemed safe to drink.
- Store water jugs in a cool, shady location.

Water treatment methods (in order of general effectiveness (see Table 1 for break down):

- Boiling water – keep water at a boil for one minute and up to 5 minutes at high altitudes to destroy Giardia
- Chlorine treatment – 4 drops of bleach per quart of water and let stand 30 minutes before drinking.
- Iodine tablets – take 20 minutes or longer and the effectiveness diminishes in cold or murky water. Iodine may also have health consequences.
- Water filters – consist of a pump and filter material that traps Giardia parasites

Recommendations for traversing – boiling water is not a practical option when traversing, therefore other methods should be employed. Some recommendations for water purification when traversing include the use of:

- Purifier water bottle
- UV water purifier
- iodine tablets (or similar) – in limited quantity due to health related issues
- hand pump water filtration system
- Aquatabs (chlorine-based tablets) or “Pristine” chlorine drops

Recommendations for small camp management

- Hand pump water filtration system plus extra ceramic cartridge
- iodine tablets or chlorine
- fuel for boiling water
- UV water purifier

Recommendations for large camp management

- Katadyn Base camp filter
- Katadyn Pocket water filter (550g, 1 L/minute, 0.2 micron ceramic filter)
- Katadyn XR purifier bottle – iodine resin cartridge, carbon post-filter.

Information on treatment options is provided in the following pages.



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Further Information:

from Health Canada (http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/outdoor-plein_air-eng.php)

Water purification is the process of removing undesirable chemicals, materials, and biological contaminants from raw water.

-Untreated water from the great outdoors might contain bacteria, parasites, and viruses that can become harmful once ingested. Symptoms can include nausea, diarrhea, and vomiting.

-It is not possible to tell whether water is of an appropriate quality by visual examination.

Drinking water purification methods include:

1. filters
2. chemicals (iodine, chlorine)
3. boiling

E=effective

M=may be effective (see text)

N=not effective

Table 1: Summary of Water Purification Methods

	Boiling	Chlorine	Iodine	Filters
Bacteria	E	E	E	M
Viruses	E	E	E	N
Protozoa	E	M	M	M
Chemicals	M	N	N	N

1. Filters:

Filtration

Water filters for use in the wilderness are available but be wary when making your choice. Avoid filters that allow particles larger than 0.5 microns to pass. Filters with a pore size of 0.1 to 0.3 micron can remove protozoa (Giardia and Cryptosporidium), parasitic eggs and larvae, and bacteria, but may not remove viruses. (If the filter also has an iodine system built-in, it will kill viruses too). Filtration alone is insufficient to purify water; hence it should be combined with disinfection to remove viruses (chemicals or UV light). Effective chemical additives to address shortcomings in pump filters include chlorine, chlorine dioxide, iodine, and sodium hypochlorite (bleach). Follow the operating and maintenance instructions carefully.

Filter units that effectively remove suspended materials and associated contaminants employ a hand pump and special filter (if water is full of suspended material, pre-filtering with a coffee filter is recommended). The pump forces water through the filter leaving an array of debris trapped behind. One litre of water can be produced in about 90 seconds.

One type of purifier has a replaceable glass fibre filter that should be changed frequently if it is used in heavily contaminated water. Another type has a ceramic cartridge that is cleaned with a brush. If the ceramic filter cracks, the unit should not be used until the ceramic filter is replaced.

Hand pump water filters operate by dipping an intake tube into a stream or pond, and pushing the water through a filtration system using a hand pump. Fibers strain out dirt, impurities, and bacteria without leaving an aftertaste. Some systems use a pre-filter to strain out larger impurities, as well as a special attachment which allow the user to attach a water bottle directly to the outtake tube. Also, some bottles come with a filtration system built into the bottle, allowing for greater convenience.



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2. Chemical tablets:

Chemical Purification

When boiling is not practical because of time and lack of a heat source, disinfection with chlorine or iodine compounds may be effective.

Use two water containers: one for treating water and the other for carrying purified water. After disinfection, shake the container vigorously. Wait five minutes. Shake it again with the lid loose so some water leaks out to cleanse the mouth of the container.

Disinfection alone may not kill some protozoa. Pass the water first through a filter with a pore size of 0.5 micron (absolute) or less to remove protozoa then disinfect it to kill viruses and bacteria.

Disinfection will give the water a peculiar taste. If you find it unpleasant, try using flavoured drink crystals or concentrated citrus juice to mask the taste of the disinfectant. Add drink powders or juice only after the treatment time has elapsed.

Chlorine

Under most conditions, chlorine is a suitable disinfectant for raw water. However, it may not be as effective under certain conditions such as water that is extremely cold, alkaline or full of organic matter.

Chlorine loses its effectiveness with age, exposure to air and extreme heat. If the odour of chlorine (swimming pool smell) is not noticeable in the water, increase the dosage. Chlorine and iodine are effective against most protozoa, with exception of *Cryptosporidium*.

Chlorine bleach

Household bleach (4 or 5% sodium hypochlorite) is effective. Carry the bleach in a small bottle sealed inside a plastic bag to guard against leaks. For maximum effectiveness, use a new vial of bleach every few months.

Add two drops (0.1 mL) of household bleach to 1L of water, shake with the cap loose, and allow the mixture to stand for 30 minutes. Double the amount of bleach and the time if the water is cold, cloudy or odourous.

Chlorine tablets

Chlorine tablets are inexpensive and readily available in stores. After adding the chlorine tablets, let the water stand for 30 minutes before use. Consider dosages listed on the instruction sheet as the minimum recommended. For maximum effectiveness, store the tablets as directed and replace them every few months.

Aqua Mira is a chlorine-based treatment. For some people who have a nauseous reaction to iodine this is a far better choice. It works the same way as iodine. It also does not kill *Cryptosporidium*, so the risk is still present wherever these protozoans live.

Aquatabs water purification tablets – effective against giardia, bacteria and viruses (not *Cryptosporidium*).

Iodine

With the proper iodine concentration and a 30-minute contact time in moderately turbid water that is maintained at 20°C or higher, all harmful bacteria and most viruses will be destroyed. In cold or cloudy water (5 to 15°C), the contact time should be increased up to several hours before drinking. In very cold, cloudy water, iodine will be more effective if you warm the water first.

Follow these contact times with all the methods listed below.

Because of potential health concerns (thyroid problems or iodine sensitivity), iodine use is recommended for no more than three weeks per season. Caution must be exercised with the use of crystalline iodine, which is readily available at outdoor equipment shops.

Both the iodine crystals and the iodine solution are toxic and should be kept out of the reach of children. Children and pregnant women are particularly sensitive to iodine so they should avoid it.



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Tincture of iodine

Six drops (0.3 ml) of 2% tincture of iodine, the kind commonly sold at pharmacies, will purify 1 L of clear untreated water. Let stand for at least 30 minutes before drinking. For cloudy or cold water add 10 drops iodine per litre of water and increase the contact time up to several hours before drinking.

Iodine tablets

One iodine tablet will purify 1L of water. Let stand for at least 15 minutes before drinking. For cold or cloudy water use two tablets per litre of water and let stand for 20 minutes. A bottle of tablets should be discarded every few (6) months after being opened.

Iodine tablets include Potable Aqua. The tablets are easy, inexpensive and quick, but can leave the water slightly tinted, smelling of chemical and having a strong, metallic taste.

Iodine crystals

To use this method, place 4 to 8 g of iodine crystals in a 35 mL glass bottle with a leak-proof cap. Add 30 mL of water and shake for one minute to produce a saturated solution. Allow the remaining crystals to settle. From the saturated iodine solution, use 15 ml/L of untreated water and let stand for 15-20 minutes.

For cloudy or cold water add 20 ml/L of water and let stand for 20 minutes. Because the iodine crystals are toxic, **do not** allow the solid crystal iodine remaining in the bottom of the bottle to be transferred to your drinking container.

The crystals remaining in the bottle can be re-used. Top up the 35mL bottle with water, shake and use it again as described earlier. As long as crystals are still visible at the bottom of the bottle, there will be enough iodine to act as a disinfectant. Keep the bottle warm, at body temperature, to ensure optimum effectiveness of the iodine.

3. Boiling:

Boiling

Heat is the oldest, safest and most effective method of purifying water. Bring the water to a boil for at least one minute (adding one more minute for each 300 m (1000 ft.) above sea level. If the water is cloudy, filter it before boiling. Boiling will give your water a flat taste that can be remedied by pouring the water quickly back and forth from one clean container to another, by letting the water cool, or by adding a pinch of salt per litre of water. Boiling water will kill bacteria as well as other disease-causing microorganisms like *Giardia lamblia* and *Cryptosporidium parvum* which are commonly found in rivers and lakes. Boiling also kills pathogens so water doesn't need to be treated when cooking.

Boiling has no effect on taste. But it has drawbacks as well. Boiling water is time-consuming, must be done in small batches, requires pouring hot water into containers and then waiting for it to cool, and uses up fuel. Water that has been boiled and then stored for any length of time may have acquired new pathogens.

4. UV Light:

Ultra violet (UV) water purifiers such as the SteriPEN are a more recent method for purifying drinking water. These handheld water purifiers are held in the container of water in need of purification and within several seconds its Ultra Violet rays kill waterborne microbes including Cryptosporidium. These are lightweight and are powered by a solar-powered rechargeable battery.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 43.
- Health Canada, Drinking Water in the Great Canadian Outdoors: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/outdoor-plein_air-eng.php



SAFE JOB PROCEDURES

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	Name	Date
Developed by:	C. Welsh	2009/02/02
Last Updated:	J. Bond	2016/04/12

TASK: Avoiding food contamination

HAZARD ASSESSMENT ISSUE NO: C-15
RISK CLASS: VERY LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available.
- Remove old food from backpack at the end of each day.
- Keep a clean camp kitchen and store food securely in a cool location.

TRAINING REQUIREMENTS:

TASK STEPS:

1. If in any doubt about food quality, do not eat it, especially if it contains meat.
2. Store food in a cool location and in clean containers.
3. Pay attention to best before dates and throw away expired food.
4. Always wash hands before handling or eating food.
5. Eat with clean hands and if that isn't possible use hand sanitizer and/or use food wrapper to protect food from hands.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, page 43.



SAFE JOB PROCEDURES

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	Name	Date
Developed by:	C. Welsh	2009/02/05
Last Updated:	J. Bond	2016/04/12

TASK: Fatigue

HAZARD ASSESSMENT ISSUE NO: C-05, T-06

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Plan a realistic traverse.
- Allow yourself enough time to accomplish your goals for the day.
- Do not travel faster than your slowest crew member.

TRAINING REQUIREMENTS:

- First-aid

TASK STEPS:

Take the following measures to prevent fatigue:

7. Proper nutrition – means carrying additional food with you on field days.
8. Regular exercise.
9. Adequate sleep.
10. Drink plenty of water.
11. Take regular breaks.
12. Dress for the elements.

What to do if fatigued:

3. Take a break.
4. Eat a high energy snack and have some water.



SAFE JOB PROCEDURES

Reference No:	SJP-T04	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	C. Welsh S. Israel	2009/02/02 2016/04/12

TASK: Crossing a stream

HAZARD ASSESSMENT ISSUE NO: T12-14
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Rope	Walking stick	

ROLES AND RESPONSIBILITIES:

- Carry a knife and matches in a waterproof container.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Be alert and carefully consider the crossing location.
- Do not cross streams unless the entire party is comfortable doing so and you are sure the water depth and velocity is manageable.
- Do not cross streams barefoot unless the substrate consists of soft mud or sand. It is recommended to carry light water shoes that cover your toes and provide grip if you anticipate having to wade streams.
- Ensure there are no hazards immediately downstream that you would be swept into if you fall.
- Unfasten backpack hip belt and chest strap so that you can easily drop the bag if you fall.
- Secure hand tools to your pack so that you have both hands free.
- Use extreme caution if considering using fallen trees to cross streams as they may be very slippery, the bark may peel off beneath your feet or they may break.
- Ensure all members have crossed the creek safely before continuing your traverse.

TRAINING REQUIREMENTS: n/a

TASK STEPS:

Fast-moving mountain streams

1. Do not wade fast flowing streams that are deeper than the mid-thigh of the shortest person in the group.
2. Remove socks and put boots or water shoes back on.
3. Unfasten backpack so that you may drop the bag if you fall.
4. Use a strong walking stick to assist footing and probe in front of you to gauge changes in stream depth in front of you.
5. Take your time, move slowly, be extremely cautious of slippery rocks and lean upstream into the current to minimize chances of losing your balance.
6. Consider using a rope to cross. Secure one side and then the second side to trees to avoid pulling crew members into creek.
7. Anticipate changes in stream volume relating to spring snow-melt and time of day. Stream volume and velocity of glacial or snowmelt fed streams often increase significantly from morning to afternoon.
8. Ensure all members have crossed the creek safely

Slow-flowing meandering streams

1. Anticipate a sudden change in depth at the edge of the main channel flow.
2. Use a strong walking stick to assist footing and probe in front of you to gauge stream depth.
3. Take your time, move slowly, be extremely cautious of slippery rocks and lean upstream into the current to minimize chances of losing your balance.
4. If the crew is set-down by helicopter on a gravel bar, the pilot must wait until all members have safely reached the bank.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 84-85.



SAFE JOB PROCEDURES

Reference No:	SJP-T05
Version:	2015-1
Name	Date
Developed by:	C. Welsh 2009/01/30
Last Updated:	S. Israel 2016/04/12

TASK: Use of hand tools (axes, knives, rock hammers, shovels)

HAZARD ASSESSMENT RISK ISSUE NO: T15-18

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Axe, knife, hammer or shovel		safety glasses, gloves, proper boots

ROLES AND RESPONSIBILITIES:

- Check and maintain equipment regularly
- Ensure area is clear before using axe, hammer, knife or shovel
- Use equipment within ability
- Use proper posture to avoid injuries (e.g., striking toe or leg)
- Carry equipment with appropriate sheaths
- Wear PPE when using equipment

TRAINING REQUIREMENTS:

- Practice with each piece of equipment

TASK STEPS:

Axe Use:

1. Put on all PPE
2. Assess wood before chopping – looking for nails, rocks or other embedded material.
3. Remove any distractions from the area.
4. Separate your legs and bend your knees with each swing of the axe to prevent injuries to feet or legs.

Knife Use:

1. Keep knives sharp. Dull knives require extra force and are more likely to slip.
2. Cut away from you, slowly and carefully.

Rock hammer Use:

1. Ensure you and anyone near you is wearing PPE (safety glasses).
2. Keep fingers away from striking surface.
3. Be aware of people around you as shards may fly a long way.

Shovel Use:

1. Put on all PPE.
2. Avoid bending at the waist to reduce back strain.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 53-56.
- http://www.ehow.com/how_4457018_chop-wood-felling-ax.html (accessed 12 April 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-T14
Version:	2016-1
Developed by:	Name C. Welsh
Last Updated:	Date 03/02/2009 D. Moynihan 2016/04/15

TASK: Landslide

HAZARD ASSESSMENT ISSUE NO: T-02
RISK CLASS: Low

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available.
- Do not work alone.
- Do not work above or below someone else on a slope – stagger your positions across the slope.
- Turn back if anyone in the crew is not comfortable handling the terrain.
- Consider the consequences of an accidental fall and do not work anywhere that consequences would be serious.

TRAINING REQUIREMENTS:

TASK STEPS:

Recognize landslide potential in an area

4. Identify unstable slopes where possible - look for slope cracks, slope bulges, unusual seepage of water on the slope and small rocks or fine sediment.
5. Avoid working immediately on, above or below areas that look or are known to be hazardous.
6. If you have any uncertainty about the stability of a slope, do not work on, above or below it.

What to do if caught in a landslide:

6. If you have time, find cover in an area furthest away from the approaching landslide
7. Move away quickly keeping clear of embankments, trees and obstacles.
8. Move toward the edge of the slide and seek higher ground if time.
9. Hold on firmly until all movement has ceased.
10. Stay away from the landslide as the slope may continue to fail for hours to days afterwards.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 89-90.
- Landslides Natural Resources Canada (2015: <https://www.nrcan.gc.ca/hazards/landslides>)



SAFE JOB PROCEDURES

Reference No:	SJP-T15
Version:	2016-1
Name	Date
Developed by:	C. Welsh 2009/02/02
Last Updated:	D. Moynihan 2016/04/15

TASK: Lightning strikes

HAZARD ASSESSMENT ISSUE NO: T-08, C22

RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available
- Be alert for any forest fire starts and report any immediately.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

If lightning is in the vicinity of field work area:

1. Use a "flash to bang" (lightning to thunder) count of five seconds equals one mile (10s = 2 miles; 20s = 4 miles; 30s = 6 miles). Suspend activities if lightning gets closer than 6 miles.
2. Get away from unsafe areas including: large open areas, areas near metal or water, under trees, on high hills or mountain ridges, or near electrical/electronics equipment.
3. Move to low ground before the storm arrives.
4. If power lines come down through a storm do not move if possible.
5. If on water, go to the closest shore.
6. Disconnect all wires from geological equipment.
7. Camp where possibility of a lightning strike is small.
8. Stay alert following last observed lightning or thunder for half an hour.

If lightning strikes nearby, minimize your contact with the ground:

1. Crouch down, on insulating material if possible, with knees up and feet close together.
2. Do not let your hands, shoulders or head touch the ground as any current passing through them will pass through vital organs.
3. Crew members should split up (20 metres apart) so they do not provide multiple paths for the current.

If struck by lightning:

1. Begin first aid immediately and call for emergency assistance.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 75-77.
- National Lightning Safety Institute (accessed April 2015): <http://www.lightningsafety.com/>



SAFE JOB PROCEDURES

Reference No:	SJP-W01	
Version:	2015-1	
Name	Date	
Developed by:	C. Welsh	2009/01/23
Last Updated:	R. Cobbett	2016/03/30

TASK: Bear encounter

HAZARD ASSESSMENT ISSUE NO: WL01, C-06,10
RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Noise maker, binoculars	n/a	Bear spray, firearm

ROLES AND RESPONSIBILITIES:

- Wilderness first aid training will help you take stock of the situation if a bear mauling occurs and teach you the proper response to this medical emergency. Read about bear behavior before going into the field and learn about working safely in bear country (see 'Additional information', below).
- Keep eyes/ears open for signs of bears when traversing/working: 'bear scat', recent digging, claw marks and fur on trees, tracks in mud, snow or moss; twigs snapping, grunting or huffing, bushes shaking
- If recent signs are evident or you sense danger, identify 'safe havens', such as climbable trees or large boulders, or places that give you a strategic advantage, such as the base of a cliff or cutbank
- Be aware of potentially high-animal-traffic areas while traversing such as animal paths, eskers, roads, and areas with a potential food source (e.g., salmon-bearing streams, presence of carrion, etc.)
- Make noise as frequently as possible when traversing to avoid surprising animals
- Carry bear spray and pen-flare launcher with 'banger' cartridges on your person at all times so that they are readily available (*i.e.*, not inside pack)
- Maintain a clean field camp location and do not feed wildlife
- Do not harass or intentionally stress wildlife
- Work in pairs or groups, remaining within earshot of one another
- Draw the attention of coworkers to wildlife presence in or around work environments
- Have an emergency preparedness plan and ensure available emergency communications are available (e.g., satellite phone, 2-way radio, if helicopter-supported)
- Before descending in to valleys or areas of limited visibility, observe route with binoculars for 10-20 minutes; make adjustments to route based on observations.

TRAINING REQUIREMENTS:

- bear awareness course (including handling of bear spray and flares with a pen-launcher)
- firearms proficiency training

TASK STEPS:

In the event that you encounter a bear in the field the proper procedure is as follows in the table below:

Situation	Black bear	Grizzly bear
At a distance	Avoid if possible; Alert bear of your presence; Back away or detour; Scare away with noise.	Avoid if possible; Alert bear of your presence; Back away or detour; Scare away with noise. If the bear is not aware of you avoid using noise to scare it away.
Close encounter (20m)	Back away slowly; Talk to the bear in low tones and slowly wave your arms; Have bear spray ready.	Back away slowly; Talk to the bear in low tones; Climb a tree; Have bear spray ready.
Very close encounter (10m)	Back away slowly; Talk to the bear in low tones; Have bear spray out (consider wind direction).	Back away slowly; Talk to the bear in low tones; Have bear spray out (consider wind direction).
If the bear charges (defensive behaviour)	Stand your ground; Discharge bear spray (<3m); Shoot; Play dead.	Stand your ground; Discharge bear spray (<3m); Shoot; Play dead.
Bear treats you as prey (predatory behaviour)	Discharge bear spray (<3m); Use firearm, if ready Fight with whatever you have at hand.	Discharge bear spray (<3m); Use firearm, if ready Fight with whatever you have at hand.



SAFE JOB PROCEDURES

To play dead:

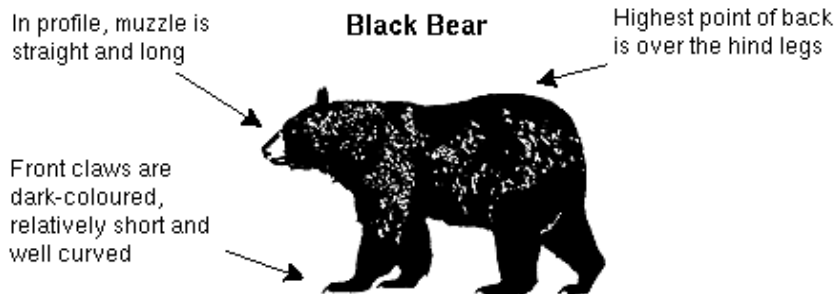
Do not play dead before the bear contacts you, you may actually encourage an attack

Drop to the ground, face down with knees tucked to chest and hands clasped tightly over the back of your neck.

Spread legs out so to resist the bear's attempt to roll you over. Do not scream.

The bear may sniff you then leave when convinced that you are not dangerous or tasty. Do not get up until the bear has departed. However, if it continues to show interest or takes a trial bite, immediately come alive and fight back! It is your only chance.

SPECIES IDENTIFICATION



ADDITIONAL INFORMATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 147-155.
- "Staying Safe in Bear Country" (2001). Included in this manual
- Environment Yukon bear publications: <http://environmentyukon.gov.yk.ca/mapspublications/brochures.php#bear>



Reference No: SWP-015	
Version: 2016-1	
Developed By: T. Allen	Name: T. Allen
Last Reviewed By: D. Moynihan	Date: 2009/10/14
	2016/04/15

TASK: TRANSPORTATION OF DANGEROUS GOODS

PURPOSE: Everyone who handles dangerous goods, including the person who loads or unloads the goods, is responsible for making sure the goods are transported safely to their final destination. The following items used by personnel at YGS are designated as 'dangerous goods' under the TDG Act and Regulations and have restrictions on transport in vehicles and aircraft. Individuals who handle, prepare for transport, or carry dangerous goods must be trained and certified in Transportation of Dangerous Goods.

DANGEROUS GOODS:

- Note that dangerous goods in small quantities (refer to Column 6 of the dangerous goods list) may be exempt from the regulations (look up individual items by following the link provided in note ⁽²⁾ below).
- Some items listed below have restrictions or may be forbidden ⁽⁵⁾ from transporting in passenger vehicles or aircraft – refer to Columns 8 & 9 in Schedule 1 by following the link provided in note ⁽²⁾ below.

Shipping Name ²	UN Number ²	Col. 5 Special Provisions ³	Col. 6 Explosive Limit and Limited Quantity Index ⁴
Sulphuric acid (battery fluid)	UN2796	none	1 litre
• Batteries, wet, non-spillable	UN2800	39	5
• Batteries, wet, filled with acid	UN2794		5
• Lithium batteries	UN3090/3091	34	0
• Propane ⁵	UN1978	88	0.125 (exceptions see below)
• Gasoline	UN1203	17, 82, 88	30 litres (exceptions see below)
• Diesel	UN1202	82, 88	30 litres (exceptions see below)
• Jet A/A-1	UN1863	17, 82	60 litres (exceptions see below)
• Jet B	UN1863	17, 82	1 (no exceptions)
• White gas (stove fuel) ⁵	UN1268	none	0.5, 1.5 litres
• Aerosols (incl. bear spray) ¹	UN1950	80	0.125, 1
• Paint (lacquer, varnish)	UN1263/3066	59, 83	
• Matches (strike anywhere) ⁵	UN1331	none	5 kg
• Ammunition ⁵	various	none	0
• Hydrochloric acid	UN1789	none	1, 5 litres

¹ There is no reference to either bleach (sodium hypochlorite) or bear spray in the DG list, so bear spray is provisionally included under aerosols.

² Shipping Name/UN numbers: <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

³ Column 5 Special Provisions: see end of this document or <https://www.tc.gc.ca/eng/tdg/clear-download-372.htm>

⁴ Quantity limits are in units of kg for solids, litres for liquids and for gases as the capacity of the means of containment.

⁵ Forbidden on board passenger carrying vehicles or ships. A person may apply for a permit for equivalent level of safety to transport these dangerous goods (see Part 14, Permit for Equivalent Level of Safety).

- Any dangerous goods over 500 kilograms or 500 litres must have appropriate placards as listed in the table below. If transporting less than this amount ensure that the dangerous goods are labeled on their container.
- Only for special situations with quantities under 500 kg or 500 litres will you need placards on your vehicle. The shipper would then inform you, these items are usually very dangerous.

Dangerous Good	UN # and Placard Needed
Diesel	1202
Gasoline	1203
Propane	1978
Jet Fuel	1863



Reference No:		SWP-015
Version:		2016-1
Name		Date
Developed By:	T. Allen	2009/10/14
Last Reviewed By:	D. Moynihan	2016/04/15

- Pilots need to be informed if any dangerous goods are being brought on board aircraft. Such goods include but are not limited to:
 - Lead-acid batteries
 - Ammunition/firearms
 - Bear spray
 - Camp fuel
 - Matches
 - Lighters

GUIDELINES:

ALWAYS:

1. Inform your pilot if you have to transport any of the goods listed above in an aircraft. Hazardous items should be listed on the flight ticket.
2. Familiarize yourself with the hazards of dangerous goods (*i.e.*, flammable, toxic, corrosive, etc.).
3. Make sure that the classification details are complete, so the information will be available to emergency responders if there is an accident or incident during transport.
4. Refer to Material Safety Data Sheet (MSDS) for in-depth product information.
5. Familiarize yourself with the safe job procedures for storing, handling and emergency response for individual products.
6. Look at supplier label information for risks, precautionary measures and first aid.
7. Use appropriate personal protective equipment/clothing when recommended for certain products.
8. Immediately clean up any spills that may pose a hazard, and report them to your supervisor.
9. Inform employer of hazards and damaged or missing labels.
10. In the case of a spill or leak of dangerous goods while in your care, you need to protect yourself, keep other people away and try to keep the danger from spreading.

NEVER:

11. Never use any of the listed products without referring to supplier labels.
12. Never replace the hazardous material from its original labeled container into another container without ensuring the new container has a **workplace label** which identifies the product, indicates precautionary measures and contains a statement confirming that MSDS is available for the product.

Air Transportation of TDG:

- Transportation of dangerous goods by aircraft is covered under the Transportation of Dangerous Goods Regulations, Part 12 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm>)
- Transportation of dangerous goods within an aircraft can only occur by an air charter company that is certified to transport dangerous goods. It is the responsibility of the project manager to make sure any company that the YGS flies with is certified.

TRAINING CERTIFICATE REQUIREMENTS (Section 6.1, TDG Regulations, <https://www.tc.gc.ca/eng/tdg/clear-part6-121.htm#sec61>):

- (1) A person who handles, offers for transport or transports dangerous goods must:
 - (a) be adequately trained and hold a training certificate in accordance with this Part; or
 - (b) perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.
- (2) An employer must not direct or allow an employee to handle, offer for transport or transport dangerous goods unless the employee:
 - (a) is adequately trained and holds a training certificate in accordance with this Part; or
 - (b) performs those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part.



Reference No:		SWP-015
Version:		2016-1
Developed By:	Name	Date
	T. Allen	2009/10/14
Last Reviewed By:	D. Moynihan	2016/04/15

Exceptions:

- No TDG certificate or training is needed to transport up to 2000 L of diesel, gasoline or Jet A/A-1, or 500 kg or less of propane, provided:
 - the diesel, gasoline or Jet A/A-1 is in separate drums (*i.e.*, in containers with a capacity of 450 L or less)
 - the propane is contained in no more than 5 small containers (*i.e.*, containers cannot exceed 100 kg in capacity)
 - the containers meet TDG standards
 - the shipper (*i.e.*, the driver of the vehicle) is aware of the hazards associated with the material being shipped (*i.e.*, MSDS)
 - placards detailing the dangerous goods being transported are required on vehicle if the labels on individual drums/containers are not visible from outside the vehicle
 - For more details see TDG Regulations 1.32.3, 1.33 and 1.35
 - propane is ok for air transport provided the propane is in a certified container under 100 L in capacity and the air charter company is certified to transport dangerous goods: TDG Regulations 12.9 (<http://www.tc.gc.ca/eng/tdg/clear-part12-466.htm#sec129>)
 - **There is no exception for Jet B, this material must be transported by someone that is certified to transport dangerous goods.**

TRAINING PROVIDERS:

- Transportation of Dangerous Goods training is available online through www.Danatec.com or www.Solocks.com
- Yukon College also offers the following course: “TDG 001: Transportation of Dangerous Goods” which is taught in the classroom.

ADDITIONAL INFORMATION AND REFERENCES

Important Contacts/Information:

- Transport Canada – TDG Information <http://www.tc.gc.ca/eng/tdg/safety-menu.htm>
- Transport Canada – CANUTEC (Canadian Transport Emergency Centre) <http://www.tc.gc.ca/eng/canutec/menu.htm>
 - Dangerous goods emergency 613-996-6666 or *666 (from a cell)
 - Dangerous goods information 613-996-4624
- Dangerous goods emergency – Yukon HPW (carrier compliance) 867-667-5920 (John Warkentin)
- Publications/training: DANATEC Educational Services, www.Danatec.com (800-465-3366) or Solocks.com (877-977-8339)

Relevant Regulations:

- Transportation of Dangerous Goods Act <http://www.tc.gc.ca/eng/tdg/act-menu-130.htm>
- Transportation of Dangerous Goods Regulations <http://www.tc.gc.ca/eng/tdg/clear-menu-497.htm>



Reference No:		SWP-015
Version:		2016-1
Developed By:	Name	Date
	T. Allen	2009/10/14
Last Reviewed By:	D. Moynihan	2016/04/15

Col. 5 Special Provisions:

17 These dangerous goods may be handled, offered for transport or transported under the UN number and shipping name UN1268, PETROLEUM DISTILLATES, N.O.S., PETROLEUM PRODUCTS N.O.S., DISTILLATS DE PÉTROLE, N.S.A. or PRODUITS PÉTROLIERS, N.S.A. **34**

34 (1) Lithium cells and batteries may be transported under this shipping name, if

- (a) each cell or battery is included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 12 g of lithium or lithium alloy;
- (c) each battery contains not more than 500 g of lithium or lithium alloy;
- (d) each cell or battery has a safety venting device or is designed to prevent a violent rupture under normal conditions of transport;
- (e) each cell or battery is equipped with an effective means of preventing external short circuits;
- (f) each battery containing cells or a series of cells connected in parallel is equipped with diodes to prevent reverse current flow; and
- (g) the cells and batteries are packed in a means of containment to prevent short circuits and movement that could lead to short circuits.

34 (2) These Regulations do not apply to lithium cells and batteries if

- (a) each cell with a liquid cathode contains not more than 0.5 g of lithium or lithium alloy;
- (b) each battery with a liquid cathode contains a total quantity of not more than 1 g of lithium or lithium alloy;
- (c) each cell or battery with a liquid cathode is hermetically sealed;
- (d) each cell with a solid cathode contains not more than 1 g of lithium or lithium alloy;
- (e) each battery with a solid cathode contains a total quantity of not more than 2 g of lithium or lithium alloy;
- (f) each lithium-ion cell contains a total quantity of not more than 1.5 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the cell in ampere-hours;
- (g) each lithium-ion battery contains a total quantity of not more than 8 g of equivalent lithium content, where the equivalent lithium content in grams is 0.3 times the rated capacity of the battery in ampere-hours;
- (h) for a liquid cathode battery that contains more than 0.5 g of lithium or lithium alloy or a solid cathode battery that contains more than 1 g of lithium or lithium alloy, the battery does not contain a liquid or gas that is dangerous goods unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery;
- (i) the cells are separated to prevent short circuits; and
- (j) the batteries are separated to prevent short circuits and, except when they are installed in electronic devices, are packed in strong means of containment.

34 (3) These Regulations do not apply to lithium cells or batteries if

- (a) the cells or batteries are not included in Class 9 in accordance with section 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell contains not more than 5 g of lithium or lithium alloy;
- (c) each battery contains not more than 25 g of lithium or lithium alloy; and
- (d) the cells and batteries are packed or are designed to prevent short circuits under normal conditions of transport.

59 Substances that are listed by name in Schedule 1 must not be transported under this shipping name. Substances transported under this shipping name may contain not more than 20 per cent nitrocellulose if the nitrocellulose contains not more than 12.6 per cent nitrogen (by dry mass).

80 Despite section 1.17 of Part 1, Coming into Force, Repeal, Interpretation, General Provisions and Special Cases, a person must not offer for transport or transport these dangerous goods unless they are in a means of containment that is in compliance with Part 5, Means of Containment.

82 These dangerous goods require an emergency response assistance plan in accordance with subsection 7.1(5) of Part 7, Emergency Response Assistance Plan.



Reference No:		SWP-015
Version:		2016-1
Name		
Developed By:	T. Allen	2009/10/14
Last Reviewed By:	D. Moynihan	2016/04/15

83 Section 5.12 of Part 5, Means of Containment, does not apply to these dangerous goods if:

- (a) the dangerous goods are included in Packing Group II or III;
- (b) the dangerous goods are in quantities less than or equal to 5 L and are in a metal or plastic means of containment;
- (c) the metal or plastic means of containment is inside an outer means of containment and the gross mass of the outer means of containment is less than or equal to 40 kg;
- (d) the means of containment are designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- (e) the dangerous goods are transported in palletized loads, a pallet box or unit load device so that individual means of containment are placed or stacked and secured to the pallet by strapping, shrink- or stretch-wrapping or other suitable means; and
- (f) when the dangerous goods are on a road vehicle or a railway vehicle that is to be transported by ship, the pallets, pallet boxes or unit load devices are secured inside the vehicle and the vehicle is closed.

88 Despite the quantity limits in column 9 of Schedule 1 for these dangerous goods, a road vehicle is not a passenger carrying road vehicle unless the passengers in it are transported for hire or reward.



SAFE WORK PRACTICES

Reference No:	SWP-018
Version:	2016-1
Name	Date
Developed By: E. Long	2010/12/20
Last Reviewed By: J. Bond	2016/04/12

TASK: LIFTING HEAVY OBJECTS

PURPOSE: In the office and in the field, the need to lift and move heavy objects will often arise. Potentially serious hazards associated with this task include: placing undue strain on back, leg and arm muscles and unintentionally crushing your extremities or those of a co-worker.

GUIDELINES:

ALWAYS:

When lifting heavy objects, follow the standard lifting technique:

1. Check that the path to be travelled is clear.
2. Approach the load and size it up (weight, size and shape). Consider your ability to handle the load. If in doubt, get assistance.
3. When lifting with another person(s), establish clear communication protocols before you start lifting.
4. Wear adequate foot protection.
5. Place feet close to object to be lifted. Adopt a balanced position, one foot beside the load pointing in the direction of travel, the other behind the load.
6. Bend knees to comfortable degree and get a good handhold. Maintain normal upright spinal curves. **Always bend your knees not your back.**
7. Tighten stomach muscles. Commence to lift the load keeping it close to the body.
8. Lift the load using leg muscles and allow the load to rest in fully extended arms.
9. With the load comfortably supported by the hands and arms, move off in the direction of travel.
10. Setting the load down is just as important as picking it up. Using leg muscles, lower the load by bending your knees, keeping back upright.
11. When lifting objects that are difficult to grasp (*i.e.*, too large or awkward in shape) utilize a mechanical aid such as a trolley, or ask someone for assistance. **Note:** A greater number of individuals assisting with a set task does not mean increased lifting capacity.
12. Always use a step-stool or ladder to avoid over reaching.
13. Always remember to bend the knees when lifting objects that are below waist level.
14. Always slide an object to bring it close to you before lifting.
15. Always test the weight of an object before removing the item from a shelf.

Always hold an object close to the body as you descend.

When using a trolley to move heavy objects:

17. Hold the trolley as low as possible and use your leg muscles to push the load.
18. Pushing is easier than pulling.
19. IF YOU MUST PULL A TROLLEY - Face the object squarely, with feet shoulder width apart (one foot in front of the other; keep your back straight, bend your knees slightly and pull in a smooth motion.
20. When loading and unloading the trolley ensure that you move your feet to turn. Do not twist your back.
21. Make sure the load is as close as possible before lifting.

NEVER:

22. Never lift a heavy load with your back.
23. Never twist your back to turn, move your feet instead.
24. Never bend forward, backwards or sideways while carrying a heavy load.
25. Never attempt to lift heavy or awkward items by yourself.
26. Never walk with items stacked so high that your vision is obstructed.
27. Never stack items so that they are precarious and unstable.
28. Never lift heavy objects without adequate foot protection (*i.e.* closed toed shoes or boots); never lift in bare feet or sandals.



SAFE WORK PRACTICES

Reference No:	SWP-004		
Version:	2015-1		
	Name	Date	
Developed by:	P. Lipovsky	2008/01/09	
Last updated:	R. Cobbett	2016/04/01	

TASK: FIELDWORK AND TRAVERSING

PURPOSE: You must be properly prepared to work in remote wilderness areas, where adverse weather, terrain and wildlife may be encountered. Slips, trips, and falls are the most common mechanism of injury in fieldwork, but by following these general guidelines each day you work in the field you can reduce the risk of incident or injury to yourself and your coworkers.

GUIDELINES:

ALWAYS:

1. Plan a realistic travel route and allow enough time to complete your traverse by the end of the day and return to your camp or vehicle. Have an alternate route as a backup if your intended traverse cannot be completed.
2. For each field party, establish a crew chief for the day who will brief the crew on the traverse route and plan, and run through the daily field safety checklist to make sure you have all necessary gear.
3. Inform someone of your travel route and estimated time of return. If you can't inform anyone, leave a map or note in your vehicle or camp describing your route and estimated date and time of return.
4. Find out if the people you are traveling with have allergies or medical conditions, and make sure they are carrying 3 days' worth of required medications or antidotes while on traverse (in case you get stuck out overnight).
5. One member of your party must carry a satellite phone and/or radio with spare batteries and emergency phone numbers either preprogrammed or stored on paper with the communications device. Ensure all crew members know how to use this equipment and where it is stored.
6. If returning to a vehicle at the end of the day, ensure all members of the party know where the key is.
7. Wear appropriate footwear with laces properly tied. Ensure boots have been broken in before attempting long traverses. It is recommended to carry a spare lace.
8. Ensure clothing and footwear are in good condition and suitable for the terrain and potential changes in weather. Always carry a waterproof jacket and pants, and extra clothing (including hat, sunglasses and gloves).
9. Be prepared to spend a night outside in case you are unable to make it back to your camp or vehicle by the end of the day. If being dropped off by helicopter where you can't walk back to camp or civilization, bring or cache an emergency pack with overnight supplies (tent, stove, sleeping bags, etc).
10. Carry a knife, lighter or waterproof matches, first-aid kit (with EpiPens), sunscreen, compass, map, GPS, mosquito repellent and/or head net, and bear repellent.
11. Carry a bright-coloured light-weight waterproof tarp and cord. This is normally used as a helicopter flag, but also doubles as an emergency overnight shelter and aircraft signaling device.
12. Ensure you have ample food and water to combat fatigue and allow for emergency provisions.
13. On hot days, carry at least 2 litres of water or liquid per person.
14. Carry a small wood saw for clearing a helicopter pad, starting a fire, or making a shelter or splint.
15. Traverse with at least one other person, traveling at the speed and comfort of the slowest member of the group. If you need to split up at any point, stay within sight or earshot of each other.
16. Move carefully to avoid slips, trips, or falls, especially toward the end of the day when you are more tired. Where possible, avoid (or take extra care around) terrain features such as mud, logs, unstable rocks, talus, lichen-covered rocks and smooth wet surfaces.
17. Avoid crossing streams whenever possible. If you must wade across a stream, ensure that it is not deeper than mid-thigh. Cross one at a time, carry a rope or use a hiking pole for support, wear appropriate footwear, unbuckle your backpack so you can quickly get it off if you fall in, lean upstream and point your toes upstream as you cross. Make sure you have a change of clothes in a waterproof bag inside your pack in case you fall in.
18. Avoid working at the top or bottom of potentially unstable slopes or cliffs. Wear a helmet if you must work in such places for extended periods.
19. If you are feeling disoriented or lost, stop, stay where you are and reconsider your options.
20. If you feel unsafe while traversing, stop your party, discuss the situation and change your plans if necessary.
21. Be aware of wildlife signs and quickly leave areas where fresh bear activity is apparent.
22. Make noise frequently (by talking, whistling, singing, yelling, clapping or blasting an air horn) to warn wild animals of your presence.
23. If traversing with a dog, be aware of any behaviour that may indicate a bear is nearby, and maintain control of the dog at all times.
24. Wear eye protection at all times when using a rock hammer or traveling through dense bush.
25. Take breaks as necessary to catch your breath, or have a drink or snack. Eat and drink regularly to maintain your energy.
26. Stop and treat hotspots and blisters when traversing to prevent them from getting worse.
27. At the end of the day, check in with the party chief or safety coordinate a so they know you have completed your traverse safely.
28. A land use permit is required for any activities requiring a drill, mechanized earth moving, heavy vehicle use (>5 tons) used off road, clearing forested areas > 4 ha, and cutting trails >1.5 m wide .
(contact EMR Lands Management Branch: http://www.emr.gov.yk.ca/lands/application_forms.html).

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 39-52.



SAFE WORK PRACTICES

NEVER:

29. Never continue your traverse if you feel uncomfortable with the terrain or conditions around you - be prepared to turn back or take an alternate route if necessary.
30. Never follow too closely behind the person in front of you - this prevents branches from swinging back into your face.
31. Never travel or stand directly above or below someone on a steep slope - this prevents rocks or debris from being dislodged onto someone below. Never intentionally push or roll rocks down a slope.
32. Never carry pointed or sharp items in your front or hip pockets (in order to avoid injury if you fall).
33. Never travel without a pack and essential items listed in items 7-14 above (e.g. communications device, extra food and clothing, raingear, bear repellent, survival gear and first-aid kit).
34. Never work alone (unless you are within sight or earshot of another person, or you are working next to a highway or road, and your vehicle is close by).
35. Never overload your pack or carry more weight than appropriate for your personal physical ability – remember your pack will likely be heavier at the end of the day if you plan to collect any samples.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 39-52.



SAFE WORK PRACTICES

Reference No:	SWP-009	
Version:	3	
Name		Date
Developed by:	P. Lipovsky	2008/04/14
Last Updated:	S. Israel	2016/04/12

TASK: SMALL CAMP MANAGEMENT

PURPOSE: Small camps are typically used by two to four-person field crews in remote locations for short periods. Appropriately locating, designing and operating the camp will minimize incidents and injury from wildlife and other natural hazards, personal and camp hygiene, food storage and heating devices.

GUIDELINES:

ALWAYS:

Planning

1. Locate camp to avoid potential natural hazards such as landslides, avalanches, floods, falling trees and animal traffic.
2. Locate camp away from aircraft movement and fueling areas. Tents, tarps and loose items won't be disturbed.
3. Avoid camping close to streams or near a well-used game trail.
4. Designate a food storage and preparation area, away from sleeping tents if possible
5. Consider the layout of tents in the event that a firearm might be used to defend your camp (a straight-line is better than a circle).

Camp set-up:

6. Secure tents with all guy ropes. Ensure your tent fly is effective and holes are patched.
7. Organize loose equipment so they will not get wet or blow away, and can be found quickly in an emergency.
8. Bring adequate drinking water and/or treat any water taken from a stream or lake for drinking purposes.
9. Ensure all crew members know how to use the camp stove properly.
10. Be especially cautious when using knives to prepare meals.
11. Wash dirty dishes and clean up food spills promptly and particularly before going to bed or on traverse.
12. Turn off propane canisters at night and when not in camp.

Operation:

13. Determine who is in charge (the task may be rotated). This person is responsible for:
 - a. firearms storage, practice and emergency use and its communication to all crew members.
 - b. first aid, check-ins and emergency communications, understood by all crew members. Know critical medical conditions
 - c. daily communication with the base (satellite phone and/or radio). Everyone should be familiar with its use it and how to re-charge.
14. Hold quick safety briefings with all crew members each morning. Plans and anticipated trouble should be discussed.
15. Keep all food securely stored in rock pails, metal boxes, bear-proof canisters, dry bags or coolers. Ensure you have a few days extra food.
16. Keep all garbage secure. Burn organics as soon as possible, and package the residue to be removed at first opportunity. Never bury it. If traversing from camp, take the packaged garbage to a distant prominent spot and hang it out of reach of rodents.
17. Dispose of grey water in a distant pit, above the water table.
18. Open fires should not be essential to camp operation, but some consider them a part of camp life. Remember they create new hazards, including use of cutting tools, dragging brush, and out-of-control fire. If a fire-ban is in effect, or you lack the means to control an escaped blaze, don't allow open fires.
19. Fully extinguish campfires before going to bed or leaving camp.
20. Be aware of the increased fire hazard with smoking. Fully extinguish cigarettes and matches. Don't litter cigarette butts.
21. If you choose not to traverse with your firearm, leave it outside of camp so you can access it upon return. Make sure it is in a water- and rodent-proof case.

Hygiene:

22. Bury solid human waste away from streams or water bodies. Pack out or burn toilet paper if possible, being careful not to start an uncontrolled fire.
23. Wash hands with soap or use a hand sanitizer after using the latrine, handling garbage and before eating or preparing meals.
24. Keep bear repellent with you if bears frequent the area. A nearby knife in your tent may be a last resort for defense, and to escape if the bear enters the tent door.
25. Ensure any crew member on medication has an adequate supply for the length of time they'll be in camp, plus a few extra days.
26. Bring an extra set of glasses or corrective lenses in case you lose or break a pair.
27. Minimize environmental impacts and attempt to leave no trace when you leave your camp. Pack out all garbage and recyclables.

NEVER:

28. Never eat or store any food or fragrant items in your sleeping tent or office tent (*including fuel, dog food, soap, shampoo, deodorant, used feminine hygienic products, perfume, toothpaste, lotions, bug repellent, drinks or packaged snacks*).
29. Never cook inside a tent without sufficient ventilation - restricted ventilation can lead to carbon monoxide poisoning.
30. Never leave dirty dishes, garbage or food out overnight or while you are away from camp during the day.
31. Never feed wildlife. Never clean fish anywhere near your camp.

ADDITIONAL INFORMATION AND REFERENCES

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 79-94.



SAFE WORK PRACTICES

Reference No:	SWP-017	
Version:	1	
Developed by:	Name	Date
	C. Welsh	2010/01/07
Last Updated:	J. Bond	2016/04/12

TASK: FOREST FIRE WITHIN AREA OF FIELD WORK

PURPOSE: Forest fires are a regular part of the life cycle of Yukon's boreal forests. Yukon has an average of 150 forest fires per year; half of these are caused by lightning and half are caused by human activity (campfires, smoking, logging, brush burning, construction, etc.) or arson. During extreme fire danger periods, fires can spread extremely fast and burn for extended periods, especially in areas with large amounts of fuel (standing dead trees and dry forest litter) and when fanned by strong winds. Thick smoke can travel far in advance of a fire and can be irritating to both eyes and throat and can make helicopter pick ups difficult or impossible. By taking the precautions outlined below, you will minimize your chances of being put at risk by a forest fire.

GUIDELINES:

ALWAYS:

- Before going in the field, consult the Yukon Wildland Fire website (<http://www.community.gov.yk.ca/firemanagement/index.html>) to see what the fire danger rating is in your field area. Read the wildfire bulletins and look at the active fires map (MODIS) to find out if there are any fires burning in your field area.
- While in the field, stay informed of local fire and weather reports to evaluate the risk of wildfire in your field area.
- Call the Yukon Fire Information hotline (**1-800-826-4750**) and/or the nearest regional wildfire zone protection office (see chart below) for updates on wildfire locations, advisories and burning bans.
- If the Fire Danger Rating is rated high or extreme, discuss an emergency preparedness plan and review the **LACES** mnemonic with your crew:
 - L** – Lookout – watch for any smoke, lightning or fires within the area.
 - A** – Alert crew members of any danger.
 - C** – Communications – discuss radio frequencies, check-in procedures and emergency communication protocols.
 - E** – Escape routes – Ensure that a route to safety is always available through daily traverses.
 - S** – Safety Zone – If a forest fire is approaching and there is no escape be able to recognize safety zones and use them in an emergency.
- Hold a crew briefing before going into the field each day to ensure all members are aware of the forest fire hazards and have prepared appropriately for the day (satellite phone, appropriate clothing, helicopter flag, hand saw, food, water, matches/lighter, etc).
- Try to identify some escape routes prior to entering the field for the day.
- Store GPS waypoint locations for your camp, vehicle location and/or safety zones you encounter throughout the day in case visibility deteriorates and visual landmarks are lost. Ensure you have adequate batteries to navigate with your GPS for the day if required.
- Practice situational awareness while working in the field and always pay attention to where the nearest safety zone is. A suitable safety zone could be any large open area containing little or no combustible fuel. It must be large enough to offer adequate protection from surrounding trees that could potentially fall. Examples include large rock outcrops, large lowland areas that have surface water, such as wetlands, creeks and lakes; and areas that have burned severely in the recent past and have little fuel remaining on the ground.
- Ensure that all crew members know where the nearest escape routes and safety zones are, in case you become separated.
- Monitor and assess changes in weather.
- Wear long pants and long sleeved shirts made of fire-resistant fabric (natural fibers or NOMEX) when traversing on days when the fire danger rating is high.
- Extinguish campfires, cigarettes and stoves completely when going to bed or leaving camp. Douse a campfire with water thoroughly until the ashes are cold to touch and no steam rises.
- Obey fire bans and highway closures - never build camp fires during fire bans.
- If a forest fire starts near your camp or traverse, monitor it closely, and communicate with the closest wildfire zone protection office. Make arrangements to evacuate the area immediately if you are uncomfortable with its proximity, or there is any uncertainty about its size or progress. It is better to leave the area before conditions escalate and your safety is compromised.
- Monitor fire tower radio communications if possible and act as a lookout for your area of field work.
- Report all wildfires (including fire size, location, fuel, smoke colour, topography) immediately to Yukon Wildland Fire Management: **1-888-798-FIRE(3473)**.
- Travel downhill or parallel along the slope away from a fire, never uphill or toward a fire.
- If local smoke causes eye or breathing irritation, cover your eyes with safety glasses and your mouth with a wet bandana or piece of clothing. Make evacuation arrangements if the irritation is serious.

ADDITIONAL INFORMATION AND REFERENCES

- Wild and Fire Management branch, Yukon Community Services. General Inquires and further information: 867-456-3854



SAFE WORK PRACTICES

NEVER:

19. Never flee uphill away from a fire.
20. Never move into a canyon or straddle a ridge at the saddle if attempting to escape a forest fire.
21. Never continue your traverse if you feel uncomfortable with the terrain or conditions around you. Be prepared to turn back or take an alternate route if necessary.
22. Never build a campfire or smoke in the field during a fire ban.
23. Never leave a campfire burning when you go to bed or leave your camp.

IMPORTANT PHONE NUMBERS:

Report a wildfire	1-888-798-3473
Fire information hotline	1-800-826-4750
Wildland Fire Management, general inquiries (Whitehorse)	867-456-3845
Fire Information	393-7415
Yukon Fire Management Offices:	
Dawson (Klondike Zone)	867-993-5992
Haines Junction (Kluane Zone)	867-634-7061
Carmacks (Tatchun / St. Cyr Zone)	867-863-2408
Ross River	867-969-2242
Mayo (Northern Tutchone Zone)	867-996-3200 or 3201
Teslin	867-390-2531
Watson Lake (Tintina Zone)	867-536-2005

ADDITIONAL INFORMATION AND REFERENCES

- Wild and Fire Management branch, Yukon Community Services. General Inquires and further information: 867-456-3854



SAFE JOB PROCEDURES

Reference No:	SJP-T06	
Version:	2015-1	
Developed by:	Name	Date
Last Updated:	C. Welsh	2009/02/04
	S. Israel	2016/04/12

TASK: Dehydration

HAZARD ASSESSMENT ISSUE NO: T-05

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT

ROLES AND RESPONSIBILITIES:

- Have an emergency preparedness plan and ensure available emergency communications are available.
- Have extra food, clothes, water (or water treatment), a knife and a lighter every day in the field.

TRAINING REQUIREMENTS:

- First-aid

TASK STEPS:

Prevention:

6. Drink plenty of fluids and increase intake as activity level increases.
7. Drink until you are no longer thirsty and drink consistently through-out the day.
8. Limit the number of sports drinks, energy drinks and carbonated and caffeinated beverages consumed.
9. Wear light-coloured loose fitting clothes.
10. Eat lots of fruit and vegetables to maintain electrolyte levels.

If dehydrated:

5. Stop activity and rest.
6. Get out of the sun and lie down in a cool place with feet raised.
7. Take off any unnecessary clothes.
8. Drink several glasses of fluid (up to ten) to rehydrate (*i.e.*, sports drink, juice or water) and replace lost fluids.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133. Brouhard, Rod (2011) Dehydration Symptoms Available: http://firstaid.about.com/od/heatcoldexposur1/qt/06_dehydration.htm (accessed 12 April 2016)



SAFE JOB PROCEDURES

Reference No:	SJP-T10
Version:	2016-1
Developed by:	Name C. Welsh
Last Updated :	Date 2009/02/04 D. Moynihan 2016/04/15

TASK: Hyperthermia (heat stress) and sunburn

HAZARD ASSESSMENT ISSUE NO: T-04
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Sunscreen, hat, water

ROLES AND RESPONSIBILITIES:

- Know the signs and symptoms of hyperthermia (heat stress)

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

Hyperthermia (heat stress) prevention and treatment:

1. Wear a sun hat and sunscreen, even on cloudy days.
2. Dress in light layers and remove layers if you get too hot.
3. Stay well-hydrated. Drink often and regularly, before you get thirsty (at least 2 L of fluids on hot days).
4. Have frequent snack and drink breaks - eat and drink products with lots of electrolytes or salts and sugar.
5. Do not over exert yourself – take frequent rests in cool or shaded areas and slow down your activities as it gets hotter.
6. If a person shows signs of heat exhaustion (red or pale moist skin, dizzy or weak, nausea, and exhaustion) or heat stroke (red, hot, dry skin, and irritable or irrational behaviour) take immediate action to cool their body temperature.
7. Have the person rest in a cool place, administer water and electrolytes, apply water to skin (especially head, chest, armpits, and groin) and fan them.
8. Avoid further exertion in the heat.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 34-36.



SAFE JOB PROCEDURES

Reference No:	SJP-T18
Version:	2016-1
Name	Date
Developed by:	C. Welsh 2009/01/26
Last Updated:	D. Moynihan 2016/04/15

TASK: Slips, trips and falls

HAZARD ASSESSMENT ISSUE NO: T-01, 20

RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Appropriate hiking boots

ROLES AND RESPONSIBILITIES:

- Wear appropriate footwear and clothing for field work.
- Pay attention to weather and ground conditions.
- Turn back if anyone in the crew is not comfortable handling the terrain.
- If unsure about a traverse, do not attempt.
- Consider the consequences of an accidental fall and do not work in any terrain where those consequences would be serious.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

1. Pay attention at all times to where you are walking. Look for changes in the walking surface, uneven surfaces and obstructions.
2. When on challenging terrain concentrate on passing an obstruction and not becoming distracted.
3. If you slip, trip or fall, relax and don't attempt to break the fall with hands, knees or elbows.
4. Tuck your chin in, turn the head and throw up an arm.
5. Turn into the fall.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 86-90.



SAFE JOB PROCEDURES

Reference No:	SJP-T19
Version:	2016-1
Name	Date
Developed by:	C. Welsh 2009/02/04
Last Updated:	J. Bond 2016/04/12

TASK: Unable to return to camp/stranded

HAZARD ASSESSMENT ISSUE NO: W-02,3,6
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
SPOT, Satellite phone	n/a	

ROLES AND RESPONSIBILITIES:

- Plan a realistic traverse. Allow yourself enough time to accomplish your goals for the day.
- Know the area(s) you will be traveling through.
- Anticipate problems and plan accordingly.
- Carry bear spray or a firearm.
- Maintain a clean field camp location and do not feed wildlife.
- Do not harass or inflict stress on wildlife.
- Ensure all people are made aware of wildlife sightings in or around work environments.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Always carry enough gear to spend a night out in case you can't make it back to camp or to a community (e.g., extra food, clothes, water, a knife and a lighter, tarp).

TRAINING REQUIREMENTS:

- First Aid

TASK STEPS:

1. Recognize that return to base camp or vehicle is not an option – this could be due to weather, a mechanical breakdown, physical condition, or wildlife circumstance.
2. Make every effort possible to communicate circumstance to base camp or YGS safety officer.

If communication to base camp or headquarters is available:

1. Before it gets dark, locate a suitable location for a shelter and begin gathering firewood.
2. Stay calm, and take all measures to stay warm and dry.
3. Establish a place that you and/or your crew members will be comfortable for the night.
4. Remove all food from shelter area and suspend from a tree if possible.
5. Send SPOT HELP message to YGS safety officer, unless absolutely necessary, DO NOT activate SOS function (this notifies rescue agencies outside of Yukon and is only for emergency purposes).

If communication to base camp or headquarters is not available:

1. Before it gets dark, set up shelter near a clearing not far from expected traverse area, as this is where a search will begin.
2. Stay calm, begin gathering firewood and take all measures to stay warm and dry.
3. Secure a bright flag in clearing and create a smoke signal or mark with something that will signal your position to aircraft.
4. Do not leave the area if you anticipate a search party has been sent to look for you.
5. Make all decisions as a team.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 141-144.
- For more information on SPOT device and services: <http://www.findmespot.ca/en/index.php> (accessed April, 2015)



SAFE JOB PROCEDURES

Reference No:	SJP-T20	
Version:	1	
Developed by:	Name	Date
	C. Welsh	2010/01/02
Last Updated:	J. Bond	2016/04/12

TASK: Forest fire entrapment, burnover, and/or retardant drop

HAZARD ASSESSMENT ISSUE NO: FF-07
RISK CLASS: MEDIUM

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
	n/a	Face protection – i.e., wet bandana

ROLES AND RESPONSIBILITIES:

- Be familiar with basic fire behavior.
- Acquire information on wildfire locations, local weather, smoke advisories, fire danger ratings and forest restrictions for area of field work. Call Wildfire Update Line 1-800-826-4750 to acquire information.
- Obey fire bans and highway closures.
- Do not smoke or build campfires when fire hazard is high.
- Monitor fire tower communications where possible and act as a lookout for your area of field work.
- Ensure all field crews and YGS field coordinator are made aware of wildfire starts that are sighted around work environments.
- Have an emergency preparedness plan and ensure emergency communication systems are available.
- Be aware of and able to communicate your location (latitude/ longitude) to those working outside of the immediate area.
- Report any new wildfires (including fire size, location, fuel, smoke colour, topography) to Wildland Fire Management at 1-888-798-FIRE(3473).

TRAINING REQUIREMENTS:

- n/a

TASK STEPS:

In the event you are **trapped in a forest fire**:

1. Rather than outrunning the fire, chances of surviving are better if you carefully consider the terrain around you and what your options are.
2. Travel by road or stream if either is available to you. These are free of burnable fuels and there is a better chance of being seen during a rescue.
3. Travel downhill or parallel along the slope away from a fire, never uphill or toward a fire. Do not move into a canyon or up to a ridge or saddle.
4. Head toward safety zones with little to no vegetation such as clear meadows, areas that have burned severely in the past, rocky areas, streams, lakes or ponds.
5. Try to find a clearing with a minimum diameter of 1.5 times the longest dimension of the flames. Look for an even larger clearing if the fire is being driven quickly by wind, or if it is burning extremely hot (i.e., the smoke is orange or red rather than grey or black).
6. If you must seek refuge in a forest, choose deciduous stands over coniferous if possible.
7. Stay out of falling distance of any trees if you can, as trees may fall in a fire.
8. If near a water body, submerge as much of your body as possible under water. If you can not submerge your body under water, cover it with soil or wet clothing.
9. If you cannot get to a safety zone, lighting the vegetation on fire between yourself and the approaching fire will create an area that cannot burn again.
10. Wear leather gloves, a hat and eye protection if available.
11. Protect your mouth and nose from smoke inhalation by covering them with a wet bandana.
12. Curl into a ball to further protect your body.
13. Stay as low as possible as smoke rises and you will get more air low to the ground.
14. Once the fire has passed, leave upwind through vegetation that has already burned.



SAFE JOB PROCEDURES

If local smoke causes **eye or breathing irritation**:

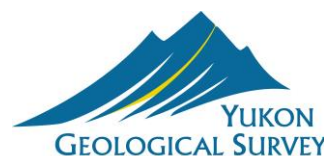
1. Cover your eyes with safety glasses and your mouth with a wet bandana or piece of clothing.
2. Wear a brimmed hat to further protect your eyes from falling ash particles.
3. If possible, move to lower ground, low to the ground, and/or upwind of the fire.
4. Make evacuation arrangements if the irritation is serious.

If you know you are about to be caught in a **retardant drop zone**:

1. Try to find a depression in which to lie or hide behind a large rock to protect yourself from the oncoming wash.
2. Lie face down with your head pointing towards the oncoming plane and your arms over your head.
3. If possible ensure there are no standing dead trees near you and that your equipment is thrown away from you and behind you.
4. Move laterally out of the zone when the drop is complete as there will likely be repeat passes over the same area.

In the event that you become engulfed in smoke **while driving**:

1. Turn on driving lights and hazard lights to ensure other traffic will see you on the road.
2. Drive slowly and use extreme caution.
3. Stay as far to the right side of the road as possible.
4. Close all windows to minimize smoke in vehicle.
5. Do not leave your vehicle to flee a fire. You are safer inside.
6. If visibility decreases further, find a safe place to pull well off the highway, away from trees or brush.
7. Contact YGS field coordinator if possible to inform them travel plans change.



HAZARD ASSESSMENT & CONTROL REPORT

General Activity or Task: Winter Travel and FieldworkWorksite: Across YukonReference No: HA-WVersion: 2Date Completed: 2009/04/17Completed By: P. LipovskyReviewed By: J. BondDate Reviewed: 4/12/2016

HAZARD IDENTIFICATION			RISK ANALYSIS					HAZARD CONTROL / PREVENTATIVE MEASURES			
Issue #	Specific Step or Hazardous Aspect of Activity/Task (environmental factor, equipment, tools, machinery, chemicals)	Potential Hazards	A	B	C	D	E	Engineering Controls	Administrative Controls	Personal Protective Equipment	Status
			Frequency of Exposure (See Note 1) (0.5 to 10)	Incident Probability (See Note 2) (0.1 to 10)	Potential Consequence (See Note 3) (1 to 100)	Risk Score (A x B x C) (0.05 to 10 000)	Risk Class (See Note 4) (VH, H, M, L, VL)				
	Winter driving										all safe work practices and procedures reviewed annually; training courses offered annually
W01	vehicle accident due to loss of control related to snow/ice	serious injury or death	2	6	50	600	H	winter tires	training, safe work practices and procedures	seat belt	winter driving course
W02	becoming stranded in vehicle due to mechanical breakdown	hypothermia	2	1	30	60	L	n/a	training, safe work practices and procedures	survival gear, winter footwear and clothing, sleeping bag	SJP-T19, wilderness survival course
	Winter flying										
W03	becoming stranded due to mechanical breakdown or poor weather	hypothermia	1	0.5	75	37.5	L	n/a	training, safe work practices and procedures	survival gear, winter footwear and clothing, sleeping bag	SJP-T19, first aid course
W04	crash landing due to whiteout/pilot's loss of ground reference	serious injury or death	1	0.5	75	37.5	L	n/a	training, safe work practices and procedures	seat belt, survival gear	SJP-H01, helicopter safety course
W05	accident landing on ice and/or snow (breaking through ice, or sinking in snow)	serious injury or death	1	0.5	75	37.5	L	n/a	training, safe work practices and procedures	seat belt, survival gear	SJP-H01, ice-rescue course
	Working on frozen lakes and rivers										
W05	falling through ice	hypothermia or drowning	1	0.5	50	25	L	n/a	training, safe work practices and procedures	PFD, dry suit, rope, ice-screws	ice-rescue course, first aid course
	Snowmobiles										
W06	becoming stranded due to mechanical breakdown, or getting stuck	hypothermia	1	0.5	50	25	L	n/a	training, safe work practices and procedures	survival gear, winter footwear and clothing, sleeping bag, snow shoes	SJP-T19, wilderness survival course
W07	rolling machine on slope	serious injury or death	1	3	50	150	M	n/a	training, safe work practices and procedures	helmet	snowmobile course
W08	collision with obstacle	serious injury or death	1	3	50	150	M	n/a	training, safe work practices and procedures	helmet	snowmobile course
W09	falling from machine on sudden stop	serious injury	1	3	50	150	M	n/a	training, safe work practices and procedures	helmet	snowmobile course
	Glacier or ski travel										
W10	glacier travel	serious injury or death from falling into crevasse	1	1	50	50	L	n/a	training, safe work practices	ropes, harness, ice axe, crampons, rescue kit	crevasse rescue course
W11	ski touring	serious injury or death from avalanche	1	1	50	50	L	n/a	training, safe work practices	avalanche beacon, probe and shovel	avalanche safety course
W12	Exposure to cold	frostbite, hypothermia	2	1	10	20	L	high quality equipment	training, safe work practices	appropriate clothing	SJP-T11, first aid course

Safe Job Procedures: SJP-A01 (ATV loading/unloading), SJP-H01 (Unscheduled landing or crash landing), SJP-T08 (Building signal fire), SJP-T11 (Hypothermia and frostbite), SJP-T19 (Unable to return to camp/stranded)



SAFE JOB PROCEDURES

Reference No:	SJP-A01	
Version:	2014-1	
	Name	Date
Developed By:	C. Welsh	2009/01/23
Last Reviewed By:	R Cobbett	2016/04/01

TASK: ALL-TERRAIN VEHICLE (ATV) – loading and unloading

HAZARD ASSESSMENT ISSUE NO: A12-14

RISK CLASS: VERY HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
ATV	n/a	Hearing protection, long pants, long-sleeve shirt, helmet, eye protection, closed-toe shoes or boots

Purpose

The purpose is to standardize the operational safety requirements linked to the overall proper use and maintenance of departmental trailers.

Responsibilities

- The Supervisor is responsible for ensuring that the requirements of this procedure are adhered to by all employees.
- Safety Officer shall work with employees and Contractors/subcontractors to ensure implementation and training.
- Employees are responsible for ensuring they are in compliance with requirements of this procedure.
- Contractors/subcontractors are responsible to ensure their employees are adhering to the procedure and training.

Procedure

DISCLAIMER: - The “Canada Safety Council” Safe Riding Training has been endorsed and adopted by YG for the use of both Departmental Snowmobiles and ATVs. Though this procedure does attempt to identify common safe riding and handling protocols, it is not meant to replace the actual classroom nor field training components.

The two primary methods of transporting snowmobiles and ATV's are on trailers and in the back of a pickup. Either is effective if appropriate safety measures are used.

Always wear the required personal protective equipment, including an approved helmet, safety glasses, appropriate footwear, clothing and gloves while loading and unloading any all-terrain vehicle and snowmobile.

- Trailers are generally hauled using a standard (1 7/8 or 2 inch) ball hitch and must meet regulations for use on public roads. Proper maintenance of the trailer should also ensure that the wiring for taillights and brake lights are functioning and that you maintain the manufacture tire pressure. Most new models of trailers are now designed with a built in ramp system to ease the loading and unloading of all-terrain vehicles. These ramps are designed to latch to the trailer preventing them from sliding off while loading and unloading a unit.
- Because of the safety implications and operating protocols associated with the use of trailers and varying levels of staff proficiency, it is often recommended that field staff have the support of a spotter during the loading /unloading of machinery and the parking of the trailer into confined areas.

Trailer procedures:

- Adhere to truck and trailer load / towing capacities (refer to truck operating manual).
- Conduct a safety inspection of the trailer prior to every use.
- Inspect the ball clamp and coupler prior to use.
- Ensure all brake, turn and running lights are functioning
- Ensure trailer tires are in good condition and properly inflated.
- Ensure access to the proper sized and maintained spare tire.
- Ensure access to the required tools and jack.



SAFE JOB PROCEDURES

- j) Ensure the trailer is securely hitched to the towing vehicle. Ensure the coupler is in proper working order and is of the same size as the vehicle's hitch ball.
- k) Tighten the coupler onto the hitch ball immediately. The trailer tongue should be snug on the ball when locked.
- l) Install a coupler safety pin or locking mechanism to the coupler immediately after placing the coupler to the hitch ball.
- m) Fasten the safety chain. The chains should be crossed under the tongue to prevent the tongue from dropping to the road should the primary hitch accidentally disconnect.
- n) Never load a trailer before it is properly hitched to the truck.
- o) Ensure the proper tie-down hooks are installed on the trailer.
- p) Secure both front and back of all units prior to transporting (all four corners of an ATV must be properly secured).
- q) Many trailers sit significantly lower than the box of a truck, making loading and unloading generally much safer.
- r) Whether a pickup or a trailer is used, the all-terrain vehicle must be securely tied down on all 4 corners. Ratchet-type nylon straps are recommended. Brakes should be locked during transportation, and the transmission should either be in first gear or in the park mode if so equipped.
- s) The tilt feature on certain older trailers is not recommended for the loading or unloading of snowmobiles nor ATV because of the risk level associated with their use.
- t) Overloading or poor load distribution can cause serious swaying and separation when driving. Tire, wheel bearing and axle failure can also occur as a result of improper load distribution. Be aware that towing a trailer can cause changes in vehicle handling.
- u) Before towing a trailer do ensure that the truck mirrors are adequately adjusted to give ample visibility to both sides of the trailer.

Transporting the unit in the back of a pickup provides added flexibility as areas inaccessible to a trailer can be reached. Problems can occur with loading and unloading the unit. Occasionally, an earth berm, ditch or snow bank may be located to facilitate the loading and unloading. Though this method can be practical and safely performed when applying due diligence, it is however recommended that a ramp system be deployed for both the loading and unloading of all-terrain vehicles.

Steep inclines, unstable ramps, excessive or lack of power, a short stopping area and an inexperienced operator makes loading and unloading ATV's and snowmobiles challenging. The goal is to reduce the element of risk associated with these operational activities.

NEVER USE AN UNSECURED RAMP SYSTEM.

Manufactured ramps are available in both tri – fold aluminum designs and can also be fabricated to be bolted to the box of a vehicle. Adopting the longest ramp which the truck will accommodate will decrease the approach angle and provide for a safer loading and unloading platform. Design and load bearing capacity must be considered prior to purchase.

Ramp Procedures:

- a) Park the truck and trailer on a flat, firm surface that is ideally free of obstacles in order to minimize the ramp angle, therefore providing a gentler grade and stable ramp to load and unload all-terrain vehicles.
- b) Ensure that no one is either in front of or behind the all-terrain vehicle, snowmobile or the trailer during loading or unloading procedure.
- c) Ensure the ramps are clear of mud, grease and debris before using.
- d) It is essential that a mechanism be devised to secure the ramps to the truck tailgate. A combination of ratchet straps secured on both sides of the tri-fold ramps to the underneath of the truck bumper must be used to prevent the ramps from sliding off the tailgate while loading and unloading all-terrain vehicles.



SAFE JOB PROCEDURES

- e) Use caution when loading and unloading ATVs from trailers to prevent strains or crush injuries.
- f) Use tie-down straps and or rods to secure the ATV, and periodically check them to ensure they are still intact and the ATV has not shifted.
- g) Ensure the ATV or snowmobile is properly aligned with the ramps prior to attempting any loading or unloading.
- h) As with a trailer, ride straight up or down the loading ramps. Do not attempt to turn the all-terrain vehicle while it is on the ramp.
- i) As with riding on any slope, keep your weight uphill. Stand on the foot pegs or running boards while loading in order to keep your weight forward of the ATV's /snowmobile's center of gravity. This will increase your visibility of the ramps and therefore of the trajectory and simplify and expedite your response to any unlikely failure of the ramp.
- j) If the loading ramps are on a gentle slope, or if you are a very experienced rider and are comfortable unloading, you may choose to ride the ATV down the ramps. Though riding an ATV down ramps can be performed safely, it is generally not recommended. Be absolutely sure you can safely ride down before you start.

ONLY AN EXPERIENCED RIDER SHOULD EVER ATTEMPT TO UNLOAD AN ATV BY RIDING.

- a) As with unloading from a trailer, it is recommended (while taking the same precautions mentioned above) not to sit on the ATV while unloading but to ease the ATV down the ramp by pushing it in a controlled fashion and allowing it to come to a stop at the base of the ramp. At which time the operator, while wearing the appropriate personal protective equipment, can then drive the ATV to a safe / designated area.
- b) The consistent application or feathering of both the brakes and throttle will greatly minimize the probability of mishaps while loading and unloading.

Required Training and General Information

- a) Know and adhere to federal and territorial legislation
- b) Ensure ATV is well-maintained
- c) Watch for hazards along trails and roadways
- d) Carry an emergency kit with first aid kit, survival gear, tools and food
- e) Ensure you have a check-in so someone knows where you are
- f) Do not drive under the influence of drugs, alcohol, fatigue or aggression
- g) Make sure that loading ramp has a non-slip surface
- h) All Terrain Vehicle Training

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 105-106.
- Farm Safety Association (December 2006) "ATV Safety for Agricultural Workers": <http://www.farmsafety.ca/manuals/manual-atv.pdf>



SAFE JOB PROCEDURES

Reference No:	SJP-H01
Version:	2016-1
Name	Date
Developed By: C. Welsh	2007/12/20
Last Reviewed By: D. Moynihan	2016/04/15

TASK: Unscheduled landing or crash landing

HAZARD ASSESSMENT ISSUE NO:
H07,11,12, W04&05, X08&09
RISK CLASS: HIGH

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
		natural fiber and/or fireproof clothing, leather gloves, appropriate (closed-toe) footwear, eye protection

ROLES AND RESPONSIBILITIES:

- Wear natural fibers and/or fireproof clothing next to the skin whenever possible as these do not melt like synthetic materials if exposed to flame. Wear boots or shoes – never sandals or open-toed footwear.
- Whenever possible, carry basic survival gear (*i.e.*, satellite phone, food, knife and matches), leather gloves and eye protection on your person or keep them within easy reach in the cabin.
- Crew-chief must ensure pilot provides a pre-flight briefing so all passengers know where the emergency transmitter locator (ELT), fire extinguishers, survival and first aid equipment are located.
- Minimize loose objects in the cabin and ensure all potentially dangerous equipment (*i.e.*, heavy or pointed objects, bear spray, gasoline, propane, *etc.*) is securely packed in an appropriate location in the aircraft.
- Listen and adhere to pilot's instructions and do not needlessly distract the pilot during flight, especially during take-off and landing.
- Be alert throughout the flight and report any nearby birds, aircraft or abnormalities to the pilot which they may not have noticed.

TRAINING REQUIREMENTS:

- Helicopter safety training, including underwater egress.

TASK STEPS:

In the event of an unscheduled landing or crash landing, the following procedure is recommended. Exact steps will depend on pilot instructions and circumstances.

1. If a "pre-crash" alert sounds, a warning is given by the pilot, or a crash-landing appears imminent, follow pilot instructions and remain calm. Avoid distracting the pilot unnecessarily, as they already have a great deal to think about. If there is time and you are able, call for help on your radio or phone.
2. Prepare for a crash landing:
 - a. pull your visor down if you are wearing a flight helmet, or put on eye protection if accessible;
 - b. put on leather gloves to protect your hands;
 - c. unplug the communications cable; crack open the door; and
 - d. landmark your hand on an emergency exit.
3. If wearing a shoulder belt, ensure seatbelt is tight and sit upright with your back straight. If wearing a lap belt only, place head between the knees and lock your arms under your legs. Keep both feet flat on the floor and clear of the underside of your seat.
4. Once the aircraft has come to a stop, remain in the fuselage until the rotors or propellers stop spinning and/or break off (approximately 3 seconds in water; longer on land).
5. Exit the aircraft, moving away as far as possible, and only return to help others and retrieve survival and emergency equipment if it is safe to do so.



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6. If you can return to the aircraft safely, switch the ELT on manually. If possible, remove it from the aircraft and place in a clearing or on a high point near the aircraft with an unobstructed view of the sky. If the aircraft radio or phone works, call for help.
7. If you crash on land and you can do so safely, switch off the main power to the aircraft and/or unplug the battery, unless you are able to use the aircraft radio.
8. While awaiting rescue, do not leave the accident site unless you are in adequate physical condition to quickly and easily reach nearby help.
9. If you crash into water and you are too far to make it to shore, stay with any floating debris and if possible climb up on to any floating debris to get out of the water.
10. Administer first aid if necessary, light a signal fire if possible, and stay warm and dry.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 107-133.
- Occupational Helicopter Safety Operations Training Manual, 2007. Rescue Canada.



SAFE JOB PROCEDURES

Reference No:	SJP-T08	
Version:	2015-1	
Developed by:	Name	Date
Last updated:	C. Welsh S. Israel	02/02/2009 2016/04/12

TASK: Building signal fires

HAZARD ASSESSMENT ISSUE NO:
RISK CLASS: **LOW**

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Matches, container for extinguishing fire		

ROLES AND RESPONSIBILITIES:

- Carry a knife, hand saw and matches or lighter (in waterproof container) when traversing.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Carefully choose the location of the fire so that it does not spread.
- Keep the fire in control - and do not let the fire get too large.
- Always ensure the fire is completely extinguished when you leave.

TRAINING REQUIREMENTS:

- Wilderness readiness/survival

TASK STEPS:

1. If possible, build three fires, in a triangle position, as an international distress signal. Otherwise just build one large fire.
2. Keep the fire(s) burning hot continuously and maintain a large supply of fire wood.
3. If you can't keep the fires going continuously because you are running out of wood or need to rest, keep the fires prepared. Find a way to cover them so they will stay dry. Keep tinder and wood ready to light at any given moment to get the attention of planes flying over head.
4. Collect a large pile of green wood to throw on the fire if you hear a plane flying nearby. The green wood will generate more smoke.
5. Several options exist for building a signal fire depending on the surrounding terrain. Some of these may include:
 - a. Try to find a large clearing to build your signal fires. If you build them in dense forest, the trees may block or obscure the view from aircraft.
 - b. If you are by a river or lake, you can make log rafts and build fires on them. Secure the rafts together, in a triangle position, and anchor them to the bank.
 - c. Light small isolated trees as your signal fires **only if you can be sure they won't catch other trees or vegetation on fire and start a forest fire.** Place dry timber and bark in the boughs of a living tree and light it up for massive smoke and a tall signal fire.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 141-144.



SAFE JOB PROCEDURES

Reference No:		SJP-T11
Version:		2016-1
Name		Date
Developed by:	C. Welsh	2009/02/04
Last Updated:	D. Moynihan	2016/04/15

TASK: Hypothermia and frostbite

HAZARD ASSESSMENT ISSUE NO: T-03

RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Survival equipment (matches/lighter, emergency shelter, satellite phone)	n/a	Warm dry clothes, gloves, hat, emergency blanket

ROLES AND RESPONSIBILITIES:

- Know the symptoms of hypothermia and be able to recognize frostbite.
- Be prepared to spend a night out and carry extra clothing for all potential weather conditions.
- Carry fire-starting and emergency survival equipment when traversing.

TRAINING REQUIREMENTS:

- First aid

TASK STEPS:

Hypothermia prevention and treatment:

1. Check the temperature and wind chill before heading out in the field.
2. Postpone or shorten time outdoors in cold winter conditions.
3. Keep active and moving when working outdoors to increase circulation.
4. Dress in layers and wear a hat.
5. Stay hydrated and eat high energy snacks frequently when working in cold weather.
6. Be alert to changing weather conditions and dress accordingly.
7. Do not over exert yourself. Remove wet or sweaty clothes and replace with dry layers.
8. As soon as you stop exerting yourself, put on more clothes before you get chilled. If you feel chilled or start shivering, put on more clothes, get out of the cold and/or start a warming fire.
9. Take immediate action to prevent heat loss if a previously shivering crew member starts acting irrational, clumsy, confused, fatigued or weak, or has slurred speech.
10. Shelter the victim and insulate them from the ground. Remove wet clothes, and insulate the body with dry clothing, blankets or sleeping bags. Focus on warming the head, neck, arm pits, chest, and groin areas, not the extremities. Administer warm sweet drinks and high energy food.

Frostbite prevention and treatment:

1. In extreme cold, postpone field day(s).
2. Be particularly cautious on wet windy days. Know the temperature and the wind chill.
3. Dress for the weather and take care to cover the head, face, and hands adequately. Wear properly-fitting gloves when working with your hands in cold weather – avoid using bare hands in sub zero temperatures.
4. Layer clothing and carry extra warm dry layers and a warm hat.
5. As soon as you feel chilled, put on more clothes, get out of the cold and/or start a warming fire.
6. Check your own skin and that of crew members regularly for frostbite. Look for waxy, pale and/or discoloured skin.
7. Remove any jewelry and warm any affected areas gradually – do not rub.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 30-34.



SAFE JOB PROCEDURES

Reference No:	SJP-T19	
Version:	2016-1	
Developed by:	Name	Date
Last Updated:	C. Welsh J. Bond	2009/02/04 2016/04/12

TASK: Unable to return to camp/stranded

HAZARD ASSESSMENT ISSUE NO: W-02,3,6
RISK CLASS: LOW

EQUIPMENT REQUIRED	MATERIALS REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
SPOT, Satellite phone	n/a	

ROLES AND RESPONSIBILITIES:

- Plan a realistic traverse. Allow yourself enough time to accomplish your goals for the day.
- Know the area(s) you will be traveling through.
- Anticipate problems and plan accordingly.
- Carry bear spray or a firearm.
- Maintain a clean field camp location and do not feed wildlife.
- Do not harass or inflict stress on wildlife.
- Ensure all people are made aware of wildlife sightings in or around work environments.
- Have an emergency preparedness plan and ensure available emergency communications are available.
- Always carry enough gear to spend a night out in case you can't make it back to camp or to a community (e.g., extra food, clothes, water, a knife and a lighter, tarp).

TRAINING REQUIREMENTS:

- First Aid

TASK STEPS:

1. Recognize that return to base camp or vehicle is not an option – this could be due to weather, a mechanical breakdown, physical condition, or wildlife circumstance.
2. Make every effort possible to communicate circumstance to base camp or YGS safety officer.

If communication to base camp or headquarters is available:

1. Before it gets dark, locate a suitable location for a shelter and begin gathering firewood.
2. Stay calm, and take all measures to stay warm and dry.
3. Establish a place that you and/or your crew members will be comfortable for the night.
4. Remove all food from shelter area and suspend from a tree if possible.
5. Send SPOT HELP message to YGS safety officer, unless absolutely necessary, DO NOT activate SOS function (this notifies rescue agencies outside of Yukon and is only for emergency purposes).

If communication to base camp or headquarters is not available:

1. Before it gets dark, set up shelter near a clearing not far from expected traverse area, as this is where a search will begin.
2. Stay calm, begin gathering firewood and take all measures to stay warm and dry.
3. Secure a bright flag in clearing and create a smoke signal or mark with something that will signal your position to aircraft.
4. Do not leave the area if you anticipate a search party has been sent to look for you.
5. Make all decisions as a team.

ADDITIONAL INFORMATION, REFERENCES AND LEGISLATION

- Safety Guidelines for Mineral Exploration in Western Canada, 4th Edition, 2006. Association for Mineral Exploration British Columbia, pages 141-144.
- For more information on SPOT device and services: <http://www.findmespot.ca/en/index.php> (accessed April, 2015)

CHAPTER 5. GENERAL FIELDWORK PROCEDURES

5.1 GENERAL PROVISIONS

Staff Information: All field staff MUST fill out a YGS Emergency Form before engaging in fieldwork. The form is attached in Appendix 2.

A copy will be kept on file in the office. You should also keep a copy yourself and keep it in your pack or give it to anyone working with you in the field.

- **Emergency Phone Numbers and Contact Information** for while you are in the field are found in Appendix 3. You should keep a copy of this page with your satellite (or other) phone at all times.
- **EMR field safety guidelines:** The Department of Energy, Mines and Resources has drafted departmental field safety guidelines that apply to everyone in the Department. Everyone going in the field must familiarize themselves with and adhere to these guidelines. They comprise Appendix 4 in *G:\Safety\YGS_safety_manuals\EMR_field_manual.doc*
- **Training:** All employees must be trained appropriately as outlined in Chapter 2 before departing for the field.
- **Communications** - A radio and/or satellite phone should be carried by at least one member of your party. Familiarize yourself with how to use this equipment and carry emergency phone numbers with the phone or radio (medevac, nearest nursing station, helicopter companies, YGS office, reporting forest fires – see Appendix 3). Make sure batteries are charged and/or you are carrying a spare battery.
- **Firearms**
Firearms are provided for your protection, but use of firearms is not mandatory. Anyone handling a firearm must have taken the Canadian Firearms Safety course and hold a valid Firearms Possession and Acquisition Licence (PAL). For more information go to http://www.cfc-cafc.gc.ca/default_e.asp. A number of private contractors teach the Canadian Firearms Safety Course (http://www.rcmp-grc.gc.ca/cfp-pcaf/safe_sur/cour-eng.htm#a3).

Environment's Conservation Officer Services, Enforcement and Compliance (Aaron Koss-Young, 667-5113) offers practical firearms proficiency and bear awareness courses. Please contact your supervisor if you would like to arrange a course.

All employees must familiarize themselves with the departmental EMR Firearms Directive (<G:\Occupational Health & Safety> [1275\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013](1275\Safety\YGS_safety_manuals\EMR_Firearms_Directive_2013))

5.2 CHECK-INS

To ensure your safety and to relay messages whether you are in remote camps or in hotels or campsites, you must call in to headquarters once per day. **The YWCHSB Order dated March 29, 2007 requires that you check in daily and communicate with a responsible person, and that you do not rely on voice-messaging devices for check-ins.**

- **Everyone who is working away from the office or core library must check in with the Field Coordinator once per day** so that we can ensure your safety and relay messages. This applies **regardless of whether you are in remote camps, doing local day field trips, or on road trips in the communities.** The preferred time for calling is between 6:00 pm and 8:00 pm every day, but if there is some reason why you cannot call at this time (e.g. you are moving camp) then call whenever possible.
- The check in phone number is 867-332-4008. This is a cell phone, and a responsible person (Field Coordinator) will be designated to carry it. This phone will only be used to receive calls from the field and will be on at all times.
- For staff travelling to communities with cell phone coverage, it is acceptable to communicate via text message with the responsible person. The communication must include a message from the field person to the responsible person, a reply from the responsible person, and a response back to the responsible person to acknowledge receipt of the reply (*i.e.*, three text messages). **This will ensure that both parties have made the other aware that their message has been received.** Spot transmissions are not adequate as they do not allow for a three-part exchange.
- The above procedure applies if there is internet access using the [ygssafety@gmail.com](mailto:ygsafety@gmail.com) e-mail address.
- The back-up procedure (e.g. if you accidentally leave your sat phone in camp, or you forget to call at the appointed time or you cannot get through to the cell phone) is that you should call 867-667-8508 or **call 867-333-9548** (and leave a voicemail message. This will be checked every morning.
- If you miss one check-in and there is no message on the answering machine then at noon the following morning a helicopter will be sent to look for you; cost to be charged to your budget.
- Camps with existing safety systems (e.g. co-located at a large exploration camp) do not need to call in every day so long as they have regular, daily contact with YGS via e-mails (or texts). However, a call is mandatory if there is an incident to report.
- It is very important that the Field Coordinator know your field schedules as soon as possible (even if they are just preliminary right now) as a log book will be kept of daily call ins and locations. This log will be kept in a centrally accessible digital format for ease of access.
- In case of an emergency in the field, follow the incident management procedures outlined in Chapter 6. Call for a helicopter or medivac first if immediate evacuation is necessary.
- There have been times that there have been network problems resulting in not being able to reach the safety phone. When this occurs, options to check-in include calling and leaving a message on the 667-8508 number; sending a SPOT ping; sending a text; or sending an e-mail. If it is an emergency, options also include calling Carolyn at home; calling the helicopter company directly; calling search and rescue; or calling the nearest nursing station for advice.

5.3 ASSIGNMENT OF CREW CHIEF

Each party of two or more persons (employees and/or guests, volunteers *etc.*) shall have a designated Crew Chief who is responsible for ensuring that all members of the party have been briefed concerning the safety guidelines and procedures applicable to the work they will be doing, and is responsible for ensuring that these guidelines and procedures are adhered to at all times.

Crew chiefs must also hold daily safety briefings prior to departure into the field each day. The “Daily Field Safety Checklist” must be reviewed with the entire crew, and a record of the briefing must be kept in a safety logbook following the format outlined in the “Daily Field Safety Log Sheet”.

5.3.1 Daily Field Safety Checklist

- ☐ **Crew Briefing (YGS/guests/volunteers)**
 - crew chief
 - travel route and terrain
 - aircraft (type, landing sites)
 - weather considerations
 - other considerations (forest fires, potential for overnight stay, *etc.*)
 - individual wellness
- ☐ **Vehicle/equipment inspection** (keys, fuel, fluids, tools, *etc.*)
- ☐ **Firearms** (keys, ammo, permits, storage if left in camp)
- ☐ **Traverse location and ETR left in camp or car** (map showing expected traverse route for each date)
- ☐ **Camp or vehicle secure** (firearms, clean camp)
- ☐ **Communications**
 - Sat phone and/or radio
 - phone numbers stored with device
 - batteries charged and spares?
- ☐ **Essential Pack Items:**
 - first aid kit
 - wildlife self-defense (bear spray, horn, bangers, *etc.*)
 - safety glasses and gloves
 - map, compass, GPS
 - survival gear (knife, fire-starter, extra food)
 - personal protective equipment (raingear, extra clothing)
 - sun protection (sunscreens, hat, sunglasses)
 - water and food
 - heli-flag and saw for clearing landing sites
- ☐ **Check in daily between 6:00 and 8:00 pm (867-332-4008)**
- ☐ **Document all items if they occur, using daily log book and/or forms:**
 - injuries, near-misses
 - hazardous situations
 - on-site training or safety instructions given to any crew member
 - aircraft logistical arrangements (who you talked to and when)
 - firearm discharge, damage or service

5.3.2 Daily Field Safety Log Sheet

Date:

Crew chief and signature:

Crew members and/or guests:

Weather:

Checklist reviewed?

Time of check-in:

Other (if items occurred throughout the day):

(briefing topics; on-site training; aircraft logistical arrangements; injuries, near-misses, or work refusal incidents; hazardous situations encountered; firearm use or damage)

5.4 WORK ALONE POLICY

- Staff working with a vehicle along highways and roads may work alone provided they have a working sat phone with them or a SPOT locator;
- Staff may not go into or remain in fly camps on their own – parties of two or more are required at all times;
- When staff are traversing in pairs, they may split up provided they stay within sight or earshot of each other and both are carrying working hand-held radios. Listening to iPods (or any portable music device with headphones) while working in the field is forbidden as it endangers both you and your partner.

5.5 FOREST FIRES

Have an evacuation plan if forest fires are burning in your area and know who to call to report forest fires.

Report fires: 1-888-798-FIRE (3473)

Wildfire updates: 1-800-826-4750

Yukon Wildfire Information: (867)-456-3845

<http://www.community.gov.yk.ca/firemanagement/>

5.6 WILDLIFE

- **Bears – See pages 146-153 of the AMEBC safety manual (http://amebc.ca/docs/default-source/publications/safety-guidelines_5th-edition.pdf)**
- **Also see ‘How you can stay safe in bear country’ by Environment Yukon (Appendix 8).**

Encounters with bears are infrequent but must be planned for. Know how to react in an appropriate way if you do encounter a bear. The YGS owns an excellent bear safety video (Staying Safe in Bear Country, 2001) which outlines how to react in various scenarios. This video should be viewed each year before departing for the field. The video script (appended to SJP-W01) serves as an excellent summary or refresher. More information and training resources is available on: www.bearsmart.com

Bear safety videos can be viewed at the Whitehorse public library. Within Yukon Government, EMR Client Services and Inspections and Environment's Conservation Officer Services, Enforcement and Compliance both offer practical firearms proficiency and bear awareness courses.

When working in areas where bears may be encountered, keep in mind the following:

- Bear encounters may be more likely when working below tree line because of limited visibility, but encounters can equally occur above tree line.
 - Pay attention to bear sign (noises, scat, diggings, dens, kills, *etc.*) at all times and be prepared to alter or suspend field work if necessary to avoid these areas.
 - When traveling along well developed game trails, pay attention to natural features and how they might concentrate more bear activity. For example, where a game trail becomes confined between a river and a cliff, you may have a higher chance of encountering a bear or a kill site, so make more noise.
 - If traversing in late spring, bears could still be in their dens with new cubs, so pay particular attention to avoiding potential den sites (small depressions, tree wells, *etc.*).
 - Always make lots of noise, especially when traversing into the wind (they can't smell you coming) or near streams (where it is harder to hear). Use of bear bells or other noise-making devices (yelling, boat horn, *etc.*) while on traverse is highly recommended.
 - Never get between a sow and her cubs or between a bear and its kill.
 - If you wound or kill a bear in self defence this must be reported to the district conservation officer.
 - Listening to iPods in the field is forbidden as it impairs the ability to hear approaching wildlife.
- **Bear safety in camp** - To avoid bear encounters in camp, choose appropriate camp locations and exercise clean camp practices (properly dispose of grey water and stow food and garbage securely far from tents). See page 49 of the AMEBC safety manual for more detailed guidelines for managing your camp in bear country. Never keep any food (even sealed energy bars) or scented items (toothpaste, deodorant, *etc.*) in your tent.
- **Bear deterrents** - Always carry some form of bear deterrent when traversing (bear spray, bear bangers, and/or firearms). This is particularly important even when working relatively close to a road, truck or town, when one commonly feels more complacent or feels a false sense of security (despite the fact that the likelihood of encountering a bear may actually be higher than in more remote areas). You should carry your bear spray on your person at all times (*i.e.*, attached to your belt). Even if you wander a short distance from your pack, a bear could still get between you and your pack.
- **Bear bangers** - New bear bangers should be purchased each year. Old bear bangers should never be fired, and should be disposed of safely. To dispose of old bear bangers, take them to your nearest RCMP office to be destroyed. If newly purchased bear bangers have any grey discoloration, do not use them. It is a good idea to write the expiration date on new bear bangers with a permanent marker. Expired or defective bear bangers may not eject from the firing pen and could explode in your hand. Make sure that cartridges are not stored in offices over winter as they are a fire hazard - put them in the safe with ammunition.
- **Bear spray** - New bear spray should be purchased every few years, when your old one expires. Bear spray from previous years can be fired for practice. Always be aware of the wind direction if you fire bear spray - never fire it into the wind because it will only be blown back into your face causing you serious discomfort. If any residue gets on your hands or body after firing, wash well with soap and water and do not touch your eyes or face for the next 24 hours (the residue may stay in your skin even after washing). Never leave bear spray in the cab of a vehicle on hot days (it can explode) and never bring bear spray into the cabin of a helicopter or aircraft – it must always be put in the external rear compartment, preferably in a container (such as a Kozee-Tote) that can safely contain the noxious pepper oil in the event of an accidental discharge.
- **Moose** – Moose can be very dangerous when aggressive, especially if you get between a cow and her calf or in the way of a rutting bull. Always give them a wide berth. See page 154 of the AMEBC safety manual for detailed instructions on procedures to adopt around moose.

5.7 MINIMUM FIRST AID REGULATIONS

Crew chiefs are responsible for ensuring that the contents of their first aid kits meet the YWCHSB minimum first-aid requirements, as outlined below.

The field first aid kit requirements are for base camps, office environments, and vehicle use only. It is up to your own discretion what you should carry for your personal first aid kit in your day packs.

For further details, review the Yukon Workers' Compensation Health and Safety Board Occupational Health and Safety Regulations for Minimum First Aid: <http://wcb.yk.ca/Regulations/LIB0001.aspx>.

If you have any further questions, contact YWCHSB.

ACTIVITY	MINIMUM FIRST AID REQUIREMENTS
Office work (Class "C" Hazard) (<i><20 min. from hospital</i>)	
11-50 people	#2 Unit Kit St. John Emergency First Aid Certification
Field work (Class "B" Hazard) (<i>> 20 min. from hospital</i>)	
1-5 people	#1 Unit Kit 3 blankets <i>variance requested in spring 2008 to waive stretcher requirement</i> St. John Emergency First Aid Certification
6-15 people	#2 Unit Kit 3 blankets stretcher St. John Standard First Aid Certification
Vehicle Transportation	
1-3 people	#01 Unit Kit
4-6 people	#1 Unit Kit
>6 people	#2 Unit Kit

MINIMUM CONTENTS - UNIT KITS

	# 01 Kit	# 1 Kit	# 2 Kit
PACKET A	1	2	4
PACKET B	1	1	2
PACKET C	2	3	6
PACKET D	1	1	2
PACKET E	1	2	6
PACKET F	-	1	2
PACKET G	-	1	2
PACKET H	1	1	3
PACKET I	1	1	1
PACKET J	-	1	6
SCISSORS	1	1	1
TWEEZERS	1	1	1

* When used outdoors the container shall be weatherproof.

UNIT PACKAGES

Unit packets, when required, shall be sealed and clearly marked as to contents and shall consist of:

PACKET A - Containing four Hand Cleansers and twelve Gauze Cleaning Pads.

PACKET B - Containing one 2-ounce unbreakable container of antiseptic, in fluid or powder form of twenty Antiseptic Swabs.

PACKET C - Containing twenty-five 1" x 3" Adhesive Dressings, individually wrapped.

PACKET D - Containing four 2" Compress Dressings.

PACKET E - Containing one 4" Compress Dressing.

PACKET F - Containing two Gauze Pads and two Eye Shields or equivalent cover.

PACKET G - Containing one 2 ounce or two 1 ounce tubes of Water Soluble Burn Treatment.

PACKET H - Containing one 4-ply Gauze Dressing, minimum size 17" x 17" square.

PACKET I - Containing two 2" x 6 yards Gauze Bandage and one 1" x 5 yards Adhesive Tape.

PACKET J – Containing one Triangular Bandage.

5.8 YGS STANDARDIZED FIRST AID KIT LISTS

	WCB items (required in camp kits)	SMALL CAMP KIT (camps up to 5 people, or up to 6 people in vehicle) (satisfies WCB #1 Kit)	OFFICE/LARGE CAMP KIT (camps 6-15 people, or >6 people in vehicle) (satisfies WCB #2 Kit)	YGS TRAV KIT (1-2 people)	
Cleansers	Packet A Packet A -	8 24 small box	16 48 small box	4 6 10	hand cleansers (antimicrobial hand wipes) gauze cleaning pads (4" x 4") Q-tips
Antiseptic	Packet B	1 20	2 40	0 6	2 oz (65 ml) unbreakable container of antiseptic in fluid (spray); or antiseptic swab towlettes (povidone iodine prep pads)
Blisters/Burns	Packet G - - -	1 2 sheets 4 roll	2 4 sheets 8 roll	0 1 sheet 2 1 m	2 oz water soluble burn treatment (65 ml bottle polyethylene glycol) moleskin 2nd skin moist burn pads (for burns or blisters) duct tape
Band-aids / individually wrapped adhesive dressings	Packet C -	75 (1" x 3") 6 sheets 2	150 (1" x 3") 1 box (8 sheets) 4	12 1 sheet 1	variety of shapes & sizes (eg. large, small, butterfly) - Elastoplast (fabric) is best 8 cm adhesive dressing strip (Elastoplast) - cut to custom length package of 10 x 4" steristrips (3M)
Dressings	Packet D Packet E Packet F Packet H - -	4 2 3 1 2 2	8 6 10 4 1 3 4	4 1 2 2 2	small sterile gauze pads/sponges/compress (4-ply, 2" x 2") 4" compress dressings (pressure bandages) large sterile gauze pads/sponges (4 ply, 4" x 4") sterile abdominal pads or 17" x 17" 4 ply gauze dressing Dry eye dressing, sterile 15x15cm sterile compress dressings, with ties sanitary napkins
Bandaging	Packet I Packet I Packet J -	2 1 4 1 1	2 1 6 2	1 1 2	3" roll conform stretch gauze (4 m) 1" adhesive tape or athletic/vet tape (5 m) triangular bandages Crepe tension bandage, 75mm wide
Miscellaneous	Other Other Other - - - - other - Packet F	1 5 1 1 1 4 0 1 1 6 2	1 8 1 1 8 1 1 1 10 4	1 1 1 2 1 1 2 0	Scissors Safely pins Waterproof waste bag tweezers CPR mask (cushioned, with one way valve is best) pairs latex gloves SAM splint or wire splint pocket first aid manual and/or vital signs cheat sheet Inventory of kit contents pairs ear plugs eye shields or equivalent cover
Drugs <i>- label packages and check expiry dates annually!</i>		1 0 small bottle small bottle 1 package	2 0 small bottle small bottle 1 package	1 2 12 pills 12 pills 12 pills	Water purification system (tablets, chlorine drops, filter, etc) Epipens Ibuprofen (200 mg) Tylenol or Aspirin Antihistamine (Benadryl)
OPTIONAL/RECOMMENDED		1 1 4 1 package 1 package 4 packets 6 1 1	1 1 8 1 package 1 package 8 packets 12 1 1	0 0 2 0 6 pills 2 packets 2 0 0	portable wall-mounted eye wash station with saline solution thermometer benzoin tincture swab sticks (to make moleskin stick) anti-congestant cold medication (Contac C, etc) Gravol/motion sickness pills Gastrolyte rehydration salts Cool Jel burn relief pads tube antibiotic ointment (polysporin) 20 cc syringe for rinsing wounds

5.9 YGS FIELD TRAVERSING & SURVIVAL GEAR LIST

Mandatory field traversing survival gear (indicated by 'X') for spring/summer/fall fieldwork:

REMOTE	NON-REMOTE	REQUIRED per party
	(within 30 min walk of vehicle or camp)	
X	X	sat phone with spare battery or SPOT tracker
X	-	Icom radio with spare battery
X	-	GPS with spare batteries
X	-	map
X	X	first aid kit
X	-	folding saw (when working below treeline)
		REQUIRED per person
X	-	high quality backpack
X	X	high quality footwear appropriate for terrain
X	-	compass with mirror for signaling
X	-	pocket knife
X	X	bear spray and holster (with Kozee-Tote if flying)
X	-	lightweight orange survival tarp/helicopter flag
X	-	15 m strong lightweight (parachute) cord or rope (for stream crossings, hanging pack, repairs, etc)
X	-	rain jacket and pants
X	X	clothes appropriate for weather/terrain - eg. hat, gloves, extra layers, etc (be prepared for potential overnight stay in remote regions)
X	X	sun protection (sunscreen, hat & sunglasses)
X	-	high energy food/lunch
X	-	1-2 L water
-	X	hard hat or helmet (where required on some industrial sites)
X	X	safety glasses
X	X	ear protection (if working near helicopters/machinery)
X	X	1 lighter or small box of matches
X	X	whistle
X	-	2 emergency energy bars
X	-	spare prescription eyewear
X	-	spare medication
X	X	watch

Additional recommended field traversing gear (at party/individual discretion):

per person:
traverse vest
belt
gaiters
leather work gloves
insect head net
space blanket
heavy duty XL orange garbage bag
bear bells
headlamp (if working in spring/fall)
caribeener

per party:
insect repellent
water purification system (purification drops, tablets or filter)
fishing line and hook or snare wire
repair kit (duct tape, cable-ties, bailing wire, multi-tool)
pocket survival manual
firearm and ammunition
air horn
bear bangers
pen flares
camera with scale card and spare batteries
binoculars
thermos with hot drink (for colder days)
fire starter
toilet paper
small bottle hand sanitizer
hand/foot warmers
small box of waterproof or strike anywhere matches in waterproof bag/container
tape measure
flagging tape
notebook, pencil and marker
magnet
HCl acid
hand lens
rock hammer and/or shovel
ziploc bags or sample bags
spare boot lace

5.10 FIREARMS CHECK-IN/OUT POLICY

This section provides information on YGS' firearms check-in/check-out procedures. When a firearm is signed out to an employee, that employee is responsible to ensure that the firearm is handled, stored and used in a safe manner. YGS procedures for handling of firearms are outlined in SWP-002.

YGS FIREARMS CHECK-IN/CHECK-OUT PROCEDURES

Check-in/check-out procedures are designed to ensure that the whereabouts of all firearms is known at all times, and that the use of ammunition is documented and accounted for. The Director and Operations Manager (or their delegates) have the authority to check firearms in and out and ensure that only qualified individuals are in possession of and are responsible for the firearm.

Specific firearms have been assigned to each qualified geologist, and only those individuals can sign out YGS firearms. A table documenting firearms status and ammunition use is attached on the following page. An up to date hard copy of this table must be posted on the inside of the gun safe at the YGS office. No firearms will be issued to employees who do not have a current PAL and who have not met YGS firearms training requirements.

5.10 FIREARMS CHECK-OUT/CHECK-IN RECORD

Designated responsible persons 2016/17: Craig Nicholson; Carolyn Relf

Non-restricted Firearms:

[illegible]

Restricted Firearms:

[illegible]

5.11 VEHICLE ROAD KITS - CHECKLIST

RECOMMENDED ITEMS – ALL SEASONS

First-aid kit (see section 5.8 for recommended items)	Fire Extinguisher
Emergency Contact Numbers	Extra fluids (Oil, washer fluid, coolant, <i>etc.</i>)
Small Tool kit	Matches/lighter, fire starter
Tow rope	Water bottle(s)
Booster Cables	Non-perishable high-energy foods
Tire Jack	Spare Tire
Extra Windshield Wipers	Axe and Shovel
Ratchet straps / bungees	Tire Iron
WD40, extra oil, washer fluid	12V Compressor

ADDITIONAL ITEMS – WINTER

Ice scraper/ Snowbrush	Road flares or warning lights
Gas line antifreeze	Flashlight & batteries
Sand	sleeping bag
Tire Chains*	

** If winter off-roading is necessary.*

CHAPTER 6. EMERGENCY RESPONSE PROCEDURES FOR FIELD-BASED INCIDENTS

6.1 INTRODUCTION

This chapter is meant to serve as a guide in case of an incident or medical emergency associated with a Yukon Geological Survey field project. It supplements the “Emergency Response Life Safety Plan” for the Elijah Smith Building and the “Emergency Response Plan” for the Professional Building, which collectively cover procedures in case of an emergency in an office environment.

The document is designed to provide clarity regarding:

- responsibility for communication and chain of command in an emergency;
- accountability for individuals responsible for various aspects of the response; and
- identification of follow-up steps required after the initial response.

This document outlines the roles and responsibilities of key YGS employees following a serious incident. The term “serious incident” is defined for the purposes of this section as an incident involving one or more of the following:

- an injury or medical situation that is potentially life-threatening;
- an injury requiring a medivac from the field;
- property damage valued at \$20,000 or more; or
- fatality of a worker.

Following a serious incident, it is critical that information be communicated effectively to appropriate individuals in positions of responsibility. This is to ensure that the affected individual(s) is removed from the hazard and provided the best treatment available as soon as possible, and to ensure that sound decision-making (around incident management, ensuring the safety of other workers, *etc.*) occurs in the period following the incident.

YGS has a dedicated staff member on call for daily check-ins and emergency communications whenever personnel are in the field. This person is referred to as the **Field Coordinator**, and they are responsible for communicating daily with all field parties on a pre-determined schedule (as defined in the YGS Health & Safety Program Manual), tracking the locations of all field camps, and monitoring any changes to field operations (*e.g.*, a geologist based at one camp moving to a different camp). The Director or Acting Director may reassign the person acting as Field Coordinator; however they must first inform all field parties and YGS management of the change, and check-in procedures for field crews must remain unchanged.

6.2 COMMUNICATION PROTOCOL

1. **Field crew** to call Field Coordinator and (if appropriate) medical assistance. The order of calls depends on the situation. For example, in the case of a medical emergency where medical assistance is readily available, it may make sense to call for medical assistance directly then inform the Field Coordinator. If medical assistance is not easily accessible (e.g., because the crew can only be reached by helicopter) it may be more prudent to contact the Field Coordinator and let them coordinate medical assistance while the field crew administers first aid.
2. **Field Coordinator** to collect as much information about the incident as possible from field crews, following the attached check list.
3. In a case involving a medical emergency, **Field Coordinator** to ensure medical assistance (helicopter, medivac, etc.) and/or evacuation is arranged, if not already done.
4. **Field Coordinator** to relay all incident information to Director.
5. **Director** to contact Assistant Deputy Minister, Deputy Minister and/or Minister's office, as required, informing them of the nature of the serious incident.
6. If the incident involves a YGS employee, the **Field Coordinator** will work with the Director to ensure the following additional people are contacted:
 - EMR Human Resources Director
 - family/emergency contact person named in the incumbent's personnel file
 - RCMP (if appropriate)
 - Yukon Government Transportation and Communications Manager (for vehicle or aircraft related incidents)
7. If a non-YGS employee is involved (such as a university researcher, an employee of a federal government department or an air charter company), **Director** will contact their host organization.
8. **Director** will provide information as necessary to EMR Communications, who will respond to any media inquiries.
9. **Director and Assistant Deputy Minister** will determine need for legal advice and Director will contact Department of Justice if required.

6.3 DOCUMENTATION REQUIREMENTS

- As soon as practical following the call to the Field Coordinator, **field crews** involved in the incident must record in writing every aspect of the incident that they can remember (*i.e.*, time, location, weather, persons involved) in as much detail as possible, preferably including photographs and/or drawings of the incident scene. A description of the incident by the injured worker(s), if applicable, should also be recorded in writing if possible.
- **Field Coordinator** must record in writing as many details as possible obtained during initial communications with field crews, following the attached check list.
- As soon as possible following the initial response, both the **Field Coordinator and Director** must record in writing all details regarding the incident that they can recall.
- As the incident response progresses, **all parties involved** must keep a written log of who has been contacted, and what has been communicated with each contact.

6.4 KEY RESPONSIBILITIES

Field Crew Chief (or delegate):

- Ensure other field workers are safe from threat.
- Ensure first aid is administered if it can be done safely (if applicable).
- Ensure all information is relayed as soon as possible following incident to Field Coordinator.
- If applicable, call, or ensure Field Coordinator calls for medical assistance.

Field Coordinator:

- Determine status from field crew chief (or delegate) and ensure they have help or are getting help.
- Make call to emergency organization(s) if not already called.
- Ensure senior management (Director, or actor, or other senior manager) is made aware of serious incident as soon as possible.
- Serve as central contact point for field personnel, senior managers, *etc.* immediately following serious incident until relieved of responsibility.
- Document all information collected as soon as practical after incident is reported.
- Provide moral support to field crew chief and/or injured party as required.

Director:

- Take over responsibility from field coordinator as central contact point for field personnel, senior managers, *etc.* as soon as reasonable following serious incident.
- Collect and compile notes related to incident.
- Initiate incident investigation.
- Provide moral support to field crews and/or injured party as required.
- Following incident, liaise with Yukon Workers' Compensation Health and Safety Board and provide support for any investigation.
- Ensure support for field workers and injured party (if applicable) following serious incident.
- Ensure Communications is notified and able to support branch and department with media relations.
- Ensure Justice is contacted if necessary.

COMMUNICATIONS		FIELD CREW CHIEF	FIELD COORDINATOR	YGS DIRECTOR
DOCUMENTATION		Relay to Field Coordinator: - location - status of injured worker(s) - who has already been called - phone number - first aid administered - nature of incident - status of threat - name of all field crew(s) in party - status of other worker(s)	Determine from Field Crew: - all items listed to left - need for medical assistance Relay to Field Crew: - stand by phone - do not admit guilt if involved in vehicle accident Key contacts: - appropriate emergency organization - YGS Director - YG Transportation Manager	Determine from Field Coordinator: - nature and status of incident - immediate support needs Relay to Contacts: - nature and status of incident - follow-up action underway Key contacts: - personnel emergency contact - Senior management - Communications - Justice - WCB
		Document incident ASAP: - time and location - site conditions - influencing factors - persons involved - all action taken - all communications - chronology of events - photographs and drawings - witness statements - recollection of events by injured	Document ASAP: - time and details of all communications with field crew and Director	Document ASAP: - summary of incident and response - roles of all personnel involved - recommended follow-up action - initiate incident investigation

SUMMARY OF FIELD -BASED EMERGENCY RESPONSE COMMUNICATIONS PROTOCOL

6.5 COMMUNICATIONS CHECKLIST FOR FIELD COORDINATOR UPON RECEIVING EMERGENCY CALL FROM FIELD CREW

1) Determine from caller:

- current location of field crew and/or injured worker(s), (request coordinates if possible)
- current status of injured worker(s), if applicable
- whether emergency medical assistance or evacuation arrangements have been made (if not, Field Coordinator to arrange immediately following call)
- status of first aid treatment (if applicable)
- phone number (satellite or otherwise) where caller can be reached
- full names of parties involved
- nature of serious incident
- current status of threat (if applicable)
- current status of other workers in area

2) Relay to caller:

- make sure caller stands by phone following call
- if serious incident involves vehicle collision, inform field person not to admit any guilt and provide only objective facts to police

3) Document during or following call:

- Time of call
- All information shared by caller (see above)
- Detailed description of incident and sequence of events following it, including all calls made

4) Follow-up action to take place immediately following call:

- Arrange medical assistance and/or evacuation
 - Medivac: 867-667-3333
 - RCMP: 911
 - Emergency Measures Organization (EMO): 867-667-5220
 - Canadian Search & Rescue HQ: 1-800-267-7270 or 613-965-3870
 - Helicopter charter companies (refer to field season information sheet):
- Call Director and relay all incident information
 - Carolyn Relf (work): 867-667-8892
 - Carolyn Relf (work cell): 867-332-4011
 - Carolyn Relf (home): 867-633-5818
 - Carolyn Relf (personal cell): 867-335-8449
- Inform personnel's family and/or specified emergency contact
- If incident is transportation related, inform Government of Yukon Chief Operating Officer at Fleet Vehicles (Cameron Kos, 867-667-5793)

Note: for the most up to date contact numbers and names use the YGS Sharepoint site <https://yukonconnect.gov.yk.ca/collab/emr-c1/YGS-Health/SitePages/Home.aspx>.

CHAPTER 7. OFFICE SAFETY

- **Check in/out board** - Always check yourself in and out of the office on the white board, even if you just leave for a coffee break. This is the only way we can properly account for who is in the office in the event of an evacuation.
- **Office Inspections** - Routine inspections are made throughout the office on a bimonthly basis by safety committee representatives to ensure general housekeeping (passageways are clear, etc.) electrical safety, fire safety (fire escapes are clear, extinguishers have been inspected, etc.) and emergency preparedness (first aid kits).

A copy of the office safety check list is attached in section 7.1 and can also be found at: "[G:\1275 Occupational Health & Safety\Safety\inspections\inspection form templates\5.16 Office Safety Inspection Form.xls](#)".

Please review this checklist, do your part to make sure the office meets these standards, and report anything you notice around the office that does not meet these standards to your supervisor.

- **Ergonomics** – Every employee is entitled to an ergonomic work station to minimize the risk of conditions such as tendonitis, eye strain, carpal tunnel syndrome and general back and shoulder pain. When working on a computer all day, try to maintain good posture, and take frequent breaks to stretch and focus your eyes on more distant objects.

For more detailed ergonomic guidelines for setting up your workspace see the following websites:

- <http://healthandsafety.gov.yk.ca/docs/downloads/guide-to-office-ergonomics.pdf>
- <http://www.healthandsafety.gov.yk.ca/our-health-safety-system/safe-work-practices-and-safe-job-procedures/ergonomic-guide-for-your-computer-workstation>

The YG Corporate Health and Safety Unit has established a list of environmental assessment experts who are available to departments to provide assessments for their employees. On the attached SOA list ([SOA Environmental Assessments 2016](#)), AMEC can provide personalized ergonomic assessment of your workstation. Physio Plus can also provide this service (<http://www.physiopluswhitehorse.com/>).

Corporate Health and Safety Consultants for the Yukon Public Service Commission can be contacted if you require more information:

Steve Hahn
(867) 667-3498
steve.hahn@gov.yk.ca

Michelle Christensen-Toews
(867) 667-8144
michelle.christensen-toews@gov.yk.ca

Ken Schamber
(867) 667-5963
ken.schamber@gov.yk.ca

More information at:
<https://yukonconnect.gov.yk.ca/employeeinfo/health-safety-wellness/Pages/default.aspx>

- **Personal Health and Wellness** – To speed your own recovery, and also in consideration of your coworkers, use your sick days if you aren't feeling well, even if you only have a minor cold or flu. Always wash your hands after using a toilet.

Try to maintain a healthy, balanced lifestyle and find ways of minimizing stress. For tips, see the EMR Wellness Committee website:

http://internal.gov.yk.ca/depts/emr/wellness/wellness_committee.html

Yukon Government has an Employee Assistance Program for assisting employees to deal with personal problems that affect or have the potential to affect their work performance. For more information: <http://yukonnect.gov.yk.ca/employeeinfo/yg-employment/Pages/eap.aspx>

- **Perfumes and Fragrant Cosmetics** – Please avoid the use of strongly scented cosmetics and perfumes or aftershaves, as some staff are sensitive or allergic to these products.
- **Respectful Workplace** - All employees are entitled to a respectful workplace, free of personal or sexual harassment of all kinds.

The Yukon Government's definition of harassment is "*any improper behaviour... directed at and offensive to another person... and which the first person knew or ought reasonably to have known would be unwelcome*".

This includes a wide spectrum of behaviour ranging from inappropriate remarks that make a person feel generally uncomfortable to sexual discrimination. For more information, see the Workplace Harassment Prevention Office website:

<https://yukonnect.gov.yk.ca/employeeinfo/health-safety-wellness/Pages/respectful-workplace.aspx>

All permanent employees should also take the one-day Respectful Workplace course offered by Staff Development. For more information, phone the Staff Development Office at 867-667-8198.

Staff Development Branch

Public Service Commission

Suite 210, 2nd floor Hougen's Centre

305 Main Street

Whitehorse, Yukon

Y1A 2B4

Elijah Smith Building

An Emergency Response Plan is in place for the Elijah Smith Building. Each individual office/work station should have a copy. A spare copy is located by the First Aid Box on the back wall in the administrative area.

H.S. Bostock Core Library

An Emergency Response plan is being developed for the new H.S. Bostock Core Library. A draft plan is included in the chapter (7.2).

7.1 Office Safety Inspection Checklist

Building: _____ Room: _____ Date: _____

Building #: _____

Inspection Performed | 1) _____ 2) _____ 3) _____

YES NO N/A Comments

A. Walking Surfaces

1. Aisles established and clear				
2. No tripping hazards present				
3. Floors even (no holes or cracks)				
4. Carpets and rugs secure				
5. Floors kept dry - not slippery				
6. Entrance mats available (wet weather)				

B. Bookcases, Shelves and Cabinets

1. Wall shelves designed for intended load				
2. Heavy storage cabinets, bookcases and file cabinets secured/ bolted from tipping				
3. File drawers closed when not in use (only one open at a time to prevent tipping)				

C. Electrical Hazards

1. All extension cords are 3 wire type and in good conditon no splices or broken insulation				
2. Limit extension cords to ten feet in length				
3. Only one extension cord used - not plugged into other extension cords				
4. Equipment power cords in good condition - no slices or broken insulation				
5. Plugs in good condition - no exposed wires				
6. Wall outlet and junction box covers in place				
7. Electric circuit panels clear (at least 30 inches open area)				
8. Circuits not overloaded - all multiple outlet stips equipped with overload protection				
9. No wires or extension cords under carpets or rugs, through doorways, or placed in other traffic area				

D. Stairways, Ramps, Corridors and Storage Areas

1. Adequate lighting in place (including emergency lighting)				
2. Stair treads in good condition				
3. Stairways clear - not used for storage				
4. Corridors kept clear of equipment and supplies				
5. No storage within 18 inches of sprinklers heads				
6. Ladder provided for high storage areas				

7.1 Office Safety Inspection Checklist

Building: _____ Room: _____ Date: _____

Building #: _____

Inspection Performed | 1) _____ 2) _____ 3) _____

YES NO N/A Comments

E. Office Equipment

1. Chairs in good condition and adjustable (when appropriate)

3. Step stools available for use, where needed (consult with EOHS for proper design)

F. Fire Prevention, Emergency Exits and Housekeeping

1. Fire extinguishers have current inspection tags

2. Fire doors not blocked open

3. Exits not obstructed and kept unlocked during normal business hours or special events

4. Exits properly marked, exit signs illuminated

5. Good housekeeping practiced - excess paper, computer cartons and trash removed

6. Office has an evacuation/emergency action plan - occupants trained upon initial hire and as necessary thereafter.

G. First Aid kit: Review log and check all required items are present

7.2 EMERGENCY RESPONSE PLAN – CORE LIBRARY

Mile 918 Alaska Highway, H.S. Bostock Core Library, Whitehorse, Yukon, Y1A 6E7

EVACUATION

If an evacuation of the building is necessary, whether during an actual emergency or drill **ALL STAFF AND PUBLIC MUST EVACUATE**. This applies whether at meetings, boards, conferences, or on long-distance calls. **NO EXCEPTIONS WILL BE ALLOWED**. Your life and the safety of others may be at stake. **PLEASE OBEY INSTRUCTIONS GIVEN BY THE BUILDING WARDEN**. Muster point for the core library is the Access Gate to Lower Parking lot.

BUILDING WARDENS

Building wardens for the H.S. Bostock Core Library are: Sarah Laxton.

EDUCATION

It shall be the role of the Building Wardens to educate new personnel about this emergency plan. This includes the procedures to be followed during an emergency. This proactive role of educating new personnel and of refreshing the memories of existing personnel should help keep this emergency plan current.

MANAGER RESPONSIBILITIES

- Supports the emergency plan and the floor warden.
- Confirms that the appropriate emergency response has been notified (fire, police, ambulance).
- Confirms (via the floor warden) that everyone has evacuated the floor.
- Assists floor warden and confirms staff checklist (that all staff are accounted for – present, away at meetings, holidays *etc.*).
- Where appropriate, advises responders (fire, police) of the evacuation/status.
- Advises executive management of the situation and receives instruction (where appropriate).
- In extraordinary emergency incidents (violence, bomb threat, hostage taking *etc.*), collects information, evidence and details as appropriate for delivery to investigators.

BUILDING WARDEN RESPONSIBILITIES

- Maintains an updated list of staff members.
- Maintains a list of persons requiring special assistance.
- Maintains a list of assets – flashlights, first aid equipment *etc.*
- Maintains a list of trained personnel – first aid *etc.*
- Educates all new personnel about this emergency plan.

In the event the building must be evacuated, the Floor warden must:

- Ensure that people have exited the building;
- Confirm that staff have rallies at the muster area (Access Gate to Lower Parking lot)
- Confirm evacuation status (Staff checklist) to the Manager;
- Await re-entry / further directions.

EXIT SIGNS AND EMERGENCY LIGHTING

EXIT signs are posted by all exits in the Core Library exit and exit stairwells. During a power failure, emergency lighting located in the hallways, stairwells and general office space will come on.

EVACUATION DRILLS

Evacuation drills will be held periodically. During an evacuation drill, **all staff and public must participate**. This applies whether you are at meetings, boards, conferences, or on conference or long distance calls. Your life and the safety of others may be at stake. The disabled shall participate as much as reasonably possible. **Muster point for the core library is the Access Gate to Lower Parking lot.**

ILLNESS OR INJURY REQUIRING ASSISTANCE

1. Notify a First Aid Attendant. Any trained YGS employees can act as First Aid Attendant in case of an emergency.
2. The First Aid Attendant will ensure that the appropriate emergency assistance is rendered. This may include calling an ambulance at **911** or other outside assistance. The First Aid Attendant will stay with the patient.
3. If ambulance or other outside help is called, the First Aid Attendant will ensure that:
 - i. Management is informed of the location of the emergency.
 - ii. If Management cannot be contacted, request a staff member to meet the arriving ambulance personnel or other responders at the main door.
4. **DO NOT** move ill or injured persons. Try to make them comfortable until help is obtained.

POWER FAILURE

During a power failure, emergency lighting in hallways, stairwells and general office space will come on. Any decision regarding stopping work and evacuating the building will be communicated by Management.

IF AN EXPLOSION OCCURS IN THE VICINITY OF YOUR WORK STATION

1. Take immediate shelter. Tables, desks, or other objects will offer protection against flying glass or debris. Protect your face and head with your arms.
2. Remain under cover until the effects of the explosion have subsided.
3. Call the Fire Department at **911**.
4. Check to ensure the exit stairwell is free of obstruction & evacuate the building.
5. If you require special assistance, make your way to your predetermined rendezvous point. You will be assisted.

IF YOU DISCOVER A CHEMICAL SPILL

1. Do not go near the chemical.
2. Warn other employees in the immediate vicinity.
3. Inform management and your building warden.
4. Ensure that someone (e.g. the building warden) calls the Whitehorse Fire Department (911), and provides the address (918 Alaska Highway) and details of the spill (location, amount, substance, etc.)
5. Evacuate to a safe location and await further instructions.

EARTHQUAKE

The initial earth movements and swaying of structures caused by an earthquake could be followed sometime later by aftershocks, usually of decreasing severity. The actual movement of the ground in an earthquake is seldom the direct cause of death or injury. Most casualties result from falling objects and debris. Modern buildings do not automatically collapse in earthquakes.

IF AN EARTHQUAKE OCCURS

1. **YOU DO NOT WANT TO BE THE HIGHEST OBJECT IN THE ROOM.** Take immediate shelter under tables, desks or other objects that will offer you protection against flying glass and debris. Hold on securely, protect your face and head with your arms as much as possible.

2. Stay under cover until ordered to evacuate the building.
3. Do not dash for exits, but proceed carefully ensuring the exit route is safe to use and not blocked by fallen debris. ***If possible, take one of the First Aid kits from the building.***
4. Once you are outside, **quickly get away from the building! Head straight to the Parking Lot. STAY OUT** and stay at least 100 metres away from all buildings and power lines that might be knocked down by aftershocks.
5. Notify the Fire Department if rescue is required or if there is a fire, however, as the Fire Department may be overwhelmed, be prepared to fight fire or perform rescue to the level of your ability with your co-workers and to survive without outside help for several days.

IF YOU REQUIRE SPECIAL ASSISTANCE

1. Take immediate shelter.
2. Use your arms to protect your face and head from flying debris.
3. Stay under cover until ordered to evacuate the building.
4. Make your way to the pre-designated rendezvous point. **Muster point for the core library is the Access Gate to Lower Parking lot.**

INCIDENT OF VIOLENCE

Violence is defined as any act of aggression, intimidation, or force used against staff or property. Incidents of violence may include but are not limited to:

1. Assault
2. Display or use of a weapon
3. Extortion

IF AN INCIDENT OF VIOLENCE HAS OCCURRED OR IS ABOUT TO OCCUR

1. Phone the appropriate civil emergency service.
2. Evacuate to a safe place.
3. Contact the responsible manager and/or building warden and provide the following:
 - a. Your name
 - b. Your present location and phone number
 - c. The nature of the emergency
 - d. Whether the people involved are staff, clients, contractors or visitors

The manager or building warden will now assume responsibility for the emergency response plan.

DURING THE INCIDENT OF VIOLENCE

1. Try to stay calm. Do not do anything that would endanger yourself or others.
2. Alert your co-workers by the safest and fastest means possible. This may include emergency alarms, telephone or personal contact.
3. If you are in danger, evacuate to a safe location. Do not attempt to forcibly detain the aggressor.

AFTER THE INCIDENT OF VIOLENCE

1. If it is possible, keep other people from entering the area where the incident occurred until the arrival of the responsible director or the police.
2. Do not handle any items that could be considered evidence, especially objects the aggressor may have used or handled.
3. Write down a description of the aggressor and a detailed summary of the incident including statements made by the aggressor. Accurate notes are important for court and/or identification purposes.

IF YOU DISCOVER A SUSPICIOUS PACKAGE OR OBJECT

- Do not touch the package or object.
- Clear the immediate area and warn others nearby to avoid it.
- Report the discovery immediately to your Supervisor/Manager.

STAFF CHECKLISTS

H.S. Bostock Core Library

1st FLOOR	2 nd FLOOR
FULL TIME STAFF	
	☐ Tiffani Fraser
	☐ Maurice Colpron
	☐ Steve Israel
	☐ Carolyn Relf
	☐ David Moynihan
	☐ Sarah Laxton
	☐ Kathy Walker
	☐ Rosie Cobbett
	☐ Esther Bordet
	☐ Matt Hutchison
SEASONAL STAFF (variable)	
	☐ Craig Nicholson

Designated meeting place: Access gate to lower parking lot

In the event of an **EVACUATION** (*i.e.*, fire), all persons will exit via the most accessible door and meet by the **access gate to the lower parking lot**.

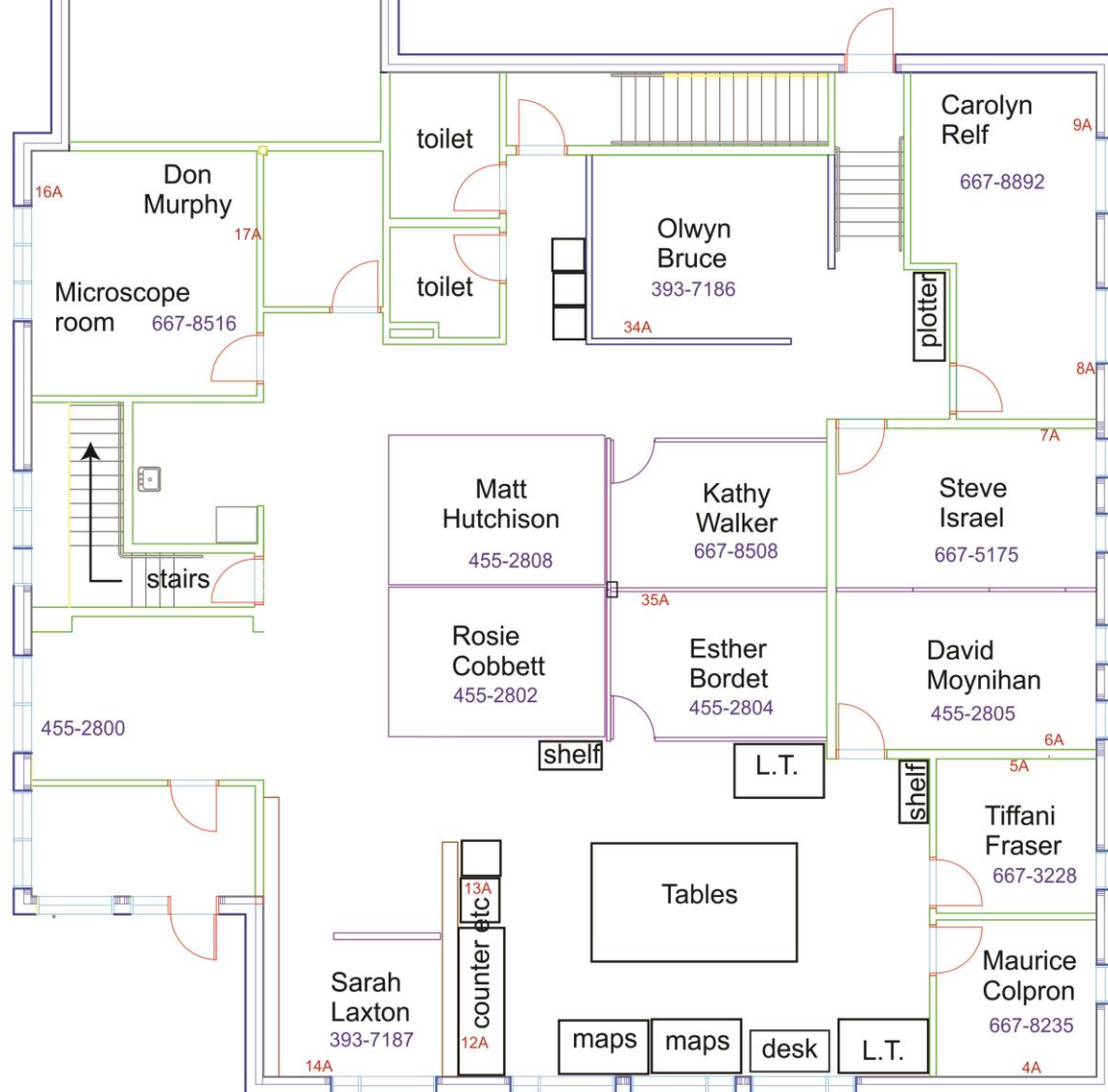
Elijah Smith

Elijah Smith Building – YGS K-102	
FULL TIME STAFF	
☐ Lara Lewis	☐ Bailey Staffen
☐ Patrick Sack	☐ Olwyn Bruce
☐ Derek Torgerson	
☐ Robert Deklerk	☐ Charlie Roots
☐ Karen MacFarlane	
☐ Brett Elliot	
SEASONAL STAFF	
☐ Scott Casselman	

Elijah Smith Building – YGS K-14	
FULL TIME STAFF	
☐ Jeff Bond	☐ Midori Kirby
☐ Panya Lipovsky	
☐ Kristen Kennedy	
SEASONAL STAFF	
☐ Sydney Van Loon	

Ensure that you check in with your Building Warden at the designated meeting place.

H.S. Bostock Core Library Yukon Geological Survey



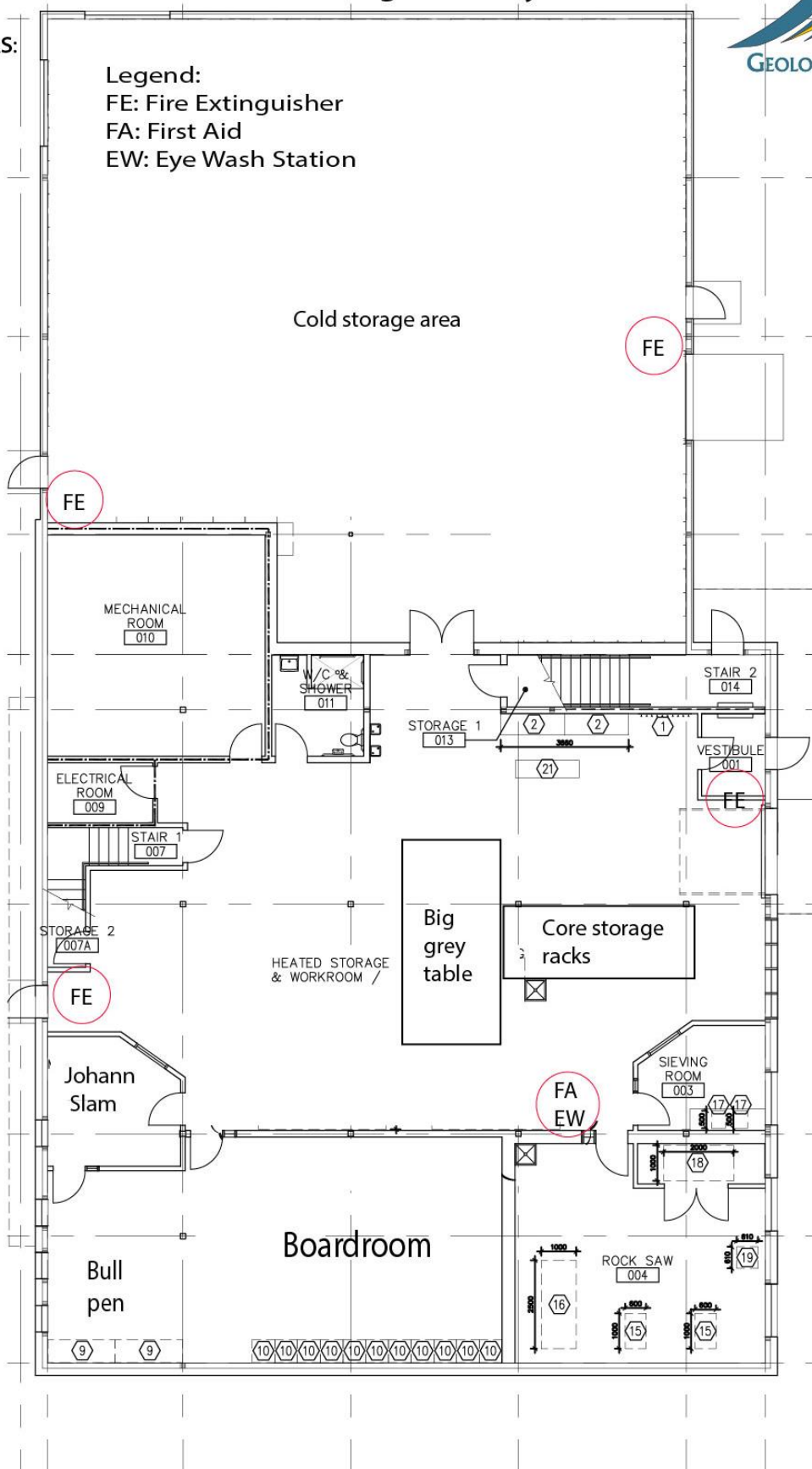
March 9, 2016

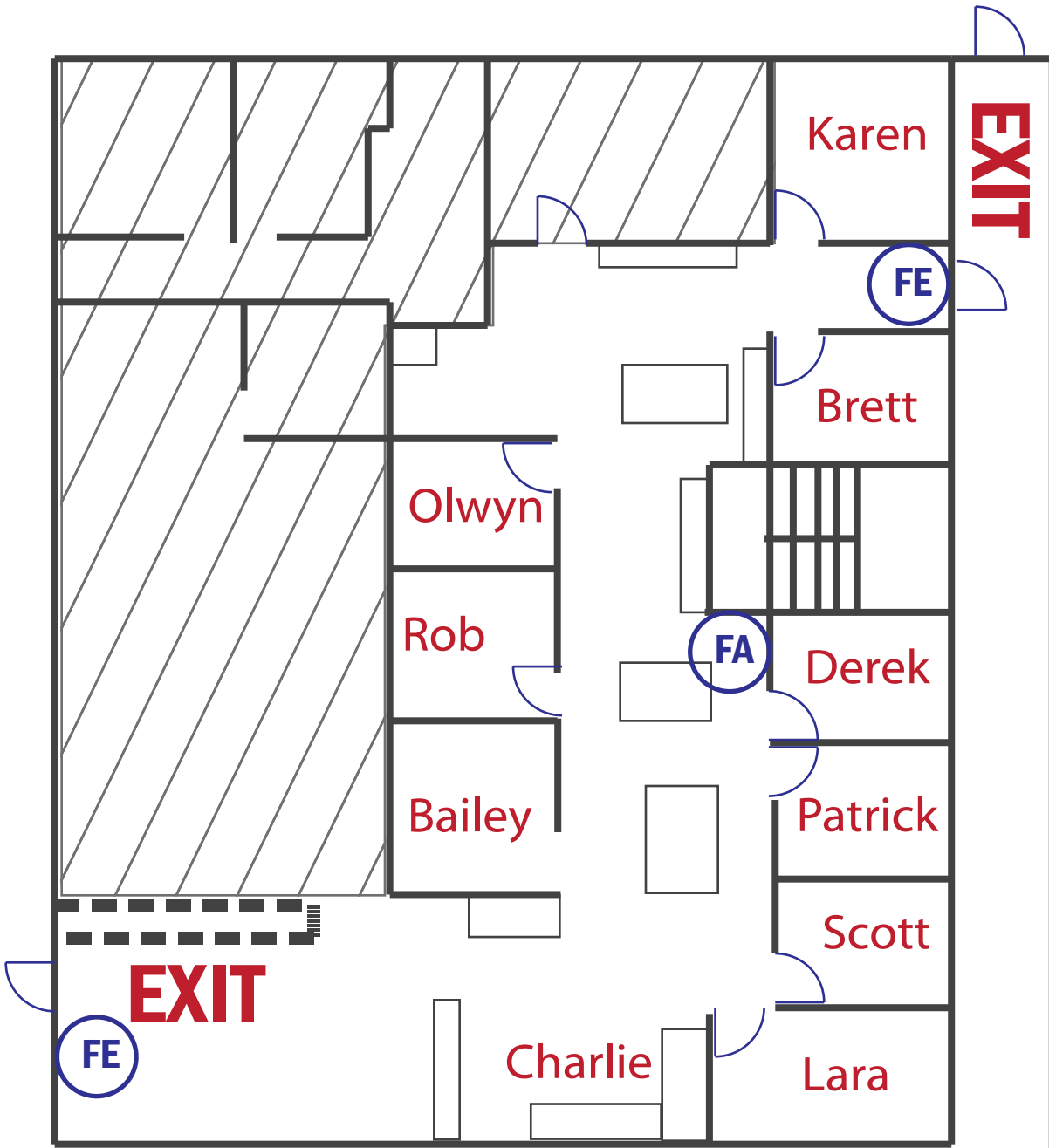
H.S. Bostock Core Library Yukon Geological Survey



DOWNSTAIRS:

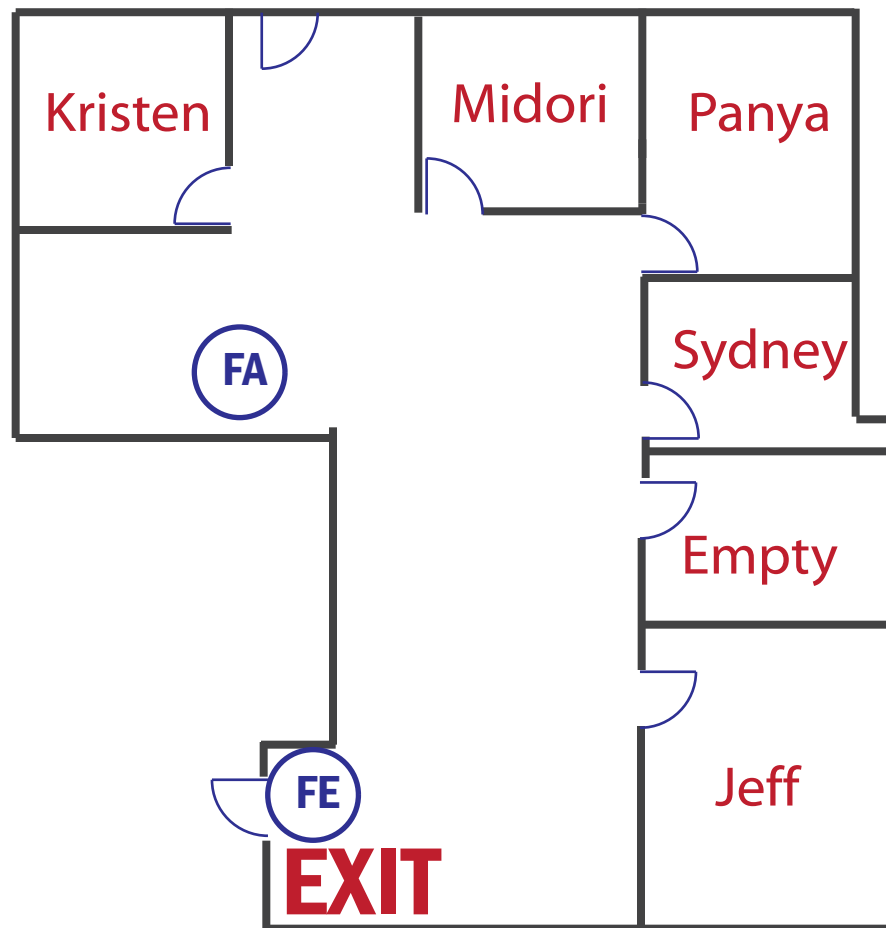
Legend:
FE: Fire Extinguisher
FA: First Aid
EW: Eye Wash Station





FA: First Aid Station
FE: Fire Extinguisher

1st Floor Elijah Smith Building



FA: First Aid Station
FE: Fire Extinguisher

2nd Floor Elijah Smith Building

EMERGENCY *TELEPHONE NUMBERS

AMBULANCE SERVICE	9-9-1-1
HOSPITAL (Switchboard)	9-393-8700
FIRE DEPARTMENT	9-9-1-1
RCMP	9-9-1-1
YUKON SPILL REPORT CENTRE	9-667-7244
Deputy Ministers Office (Stephen Mills)	9-667-5417
Communications (Ron Billingham)	9-667-8786
Blood Ties Four Directions (needle pickup)	9-633-2437

*** You Do Not Need To Dial 9 If You Are Outside The Building**

EMERGENCY RESPONSE LIFE SAFETY PLAN



ELIJAH SMITH BUILDING 2014-2015

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Appendices

Appendix A - List of Floor Wardens, Suite Monitors and Their Alternates

Appendix B - Building Emergency Organization Chart

Appendix C - *Request for Help During Evacuations* form (for persons with permanent and/or temporary disability)

Appendix D - FORM - *Workplace Violence Incident Report* form

Appendix E - FORM - *Bomb Threat Check List** form

****The detachable BOMB THREAT CHECK LIST, at the back of this manual, should be placed near your telephone. The bomb threat check list is also found on the back of your emergency response flip chart.***

1.0 Material Safety Data

MATERIAL SAFETY DATA SHEETS FOR ALL HAZARDOUS MATERIALS, USED IN THIS BUILDING, ARE LOCATED AT THE SECURITY DESK NEAR THE FRONT ENTRANCE.

Should Elijah Smith Building be evacuated and employees sent home the following procedure to notify employees of their “**return to work**” will be as follows:

- a) The “National Service Call Centre” (NSCC) 1-800-463-1850 will provide information regarding “return to work” information and procedures.
- b) CBC will also announce the “return to work” information and procedures.

2.0 Emergency Telephone Numbers

FIRE | POLICE | AMBULANCE 9-911

National Service Call Centre (NSCC).....1-800-463-1850

Security Officer (Commissionaire) 667-7664

BUILDING EMERGENCY OFFICERS

Chief Building Emergency Officer

Natasha Andrei 667-3800

Deputy Chief Building Emergency Officer

Terri Kaur..... 667-8100

Alternate Deputy Chief Building Emergency Officer

Jim Welsh.....667-5063

PWGSC – Pacific Region

Regional Manager - Safety Security & Emergency Preparedness

Jeff Kingsley 1-604-763-7301

Yukon Government Community Services

Emergency Measures Organization - (24 hour services) 667-5220

3.0 Introduction

This Emergency Response Plan has been designed and produced for distribution to the occupants of the Elijah Smith Building, Whitehorse, Yukon.

The plan, which contains reference information and checklist procedures on how to report an emergency and what action is to be taken, was written to conform to Canada's Occupational Safety & Health Regulations.

During an emergency every occupant must obey all instructions given by the Chief or Deputy Chief Building Emergency Officer. Members are identified by the white hat and red vest they wear.

If an evacuation of the building is necessary, whether during an actual emergency or drill **ALL STAFF AND PUBLIC MUST EVACUATE**. This applies whether at meetings, boards, conferences, or on conference or long distance calls. **NO EXCEPTIONS WILL BE ALLOWED**, your life and the safety of others may be at stake.

Any questions, comments or requests for additional information should be directed to the **Chief Building Emergency Officer at 667-3800**.

4.0 Building Emergency Organization

Aboriginal Affairs and Northern Development Canada is responsible for the development and maintenance of the Building Emergency Plan. The Chief Building Emergency Officer exercises control over all employees in an emergency situation. A regularly updated list of the Building Emergency Organization Chart is attached, **noted as Appendices A and B**.

5.0 Education

It is the Suite Monitor's role, of each department, to educate all new personnel in the procedures to be followed during an emergency. This proactive role of educating new personnel and of refreshing the memories of existing personnel should help to keep this emergency plan current.

6.0 Emergency Systems and Equipment

The Elijah Smith Building is equipped with a range of emergency systems and equipment to ensure the safety of employees and visitors

6.1 UNIVERSAL ALARM SOUND SYSTEM – SINGLE STAGE ALARM NO SECOND ALARM SOUND

Pulling any of the red manual fire alarm pull stations, which are generally located near the safe exit stairwells throughout the building, will activate the **evacuation alarm**.

Other sources for sounding the evacuation alarm are heat detectors, smoke detectors and the activation of the sprinkler system.

The alarm system is monitored by Advance Security who contacts the Whitehorse Fire Department to respond when the alarm is activated. As there is always a remote chance of a malfunction, the Building Technician is also notified when the alarm sounds.

6.2 FIRE EXTINGUISHERS

Class ABC, five kilogram, dry chemical fire extinguishers are located on every floor near the safe exit stairwells. Some floors have additional fire extinguishers at various locations due to specific hazards. Familiarize yourself with these locations. To use the portable extinguisher:

- 1- **P**ull the locking pin from the handle.
- 2- **A**im the nozzle at the base of the flame.
- 3- **S**queeze the handle.
- 4- **S**weep the extinguisher from side to side, discharging the contents of the extinguisher onto the base of the fire.

6.3 EXIT SIGNS

Throughout the building, you will find **EXIT** signs indicating the nearest exit or safe exit stairwell. In addition, all safe exit stairwells have signs indicating the floor number and stairwell letter. (e.g.: A-1)

6.4 SAFE EXIT STAIRWELLS (See floor plans in section 18.0)

Stairwell **A** - North West area of the bldg. Leads to the 4th Avenue and Steele St. exit

Stairwell **B** - South West area of the bldg. Leads to the 4th Avenue and Main St. exit.

Stairwell **C** - North East area of the bldg. Leads to the 3rd Avenue and Steele St. exit.

Stairwell **D** - South East area of the bldg. Leads to the 3rd Avenue and Main St. exit.

During an alarm these four stairwells and their stair landings are pressurized to keep them free of smoke, making them safe areas of exit from the building. Although everyone must leave the building during an emergency, under exceptional emergency circumstances, these stairwells and their stair landings can be used as an area of refuge.

Floor plans are also posted on each floor noting location and closest exit in the boardrooms, by the elevators and at each of the stairwell exits.

6.5 EMERGENCY LIGHTING

During a power failure, emergency lighting located in the hallways, stairwells and general office space will come on. An emergency generator will keep lights on for 24 hours.

6.6 ELEVATORS *DO NOT USE THE ELEVATORS FOR EVACUATION*

The glass elevators are programmed to automatically return to and stay at the ground floor in an emergency. If you are in an elevator during an emergency, stay calm, leave the elevator after it stops and then leave the building by the closest safe exit stairwell.

The freight elevator is designated "the fire elevator" If the alarm has originated on the ground floor, the freight elevator will stop and stay at the second floor. This elevator can be controlled with a key by the Fire Department for evacuating the mobility impaired.

6.7 AUTOMATED EXTERNAL DEFIBRILLATORS (AED)

Four automated external defibrillators (AED) are located in Elijah Smith Building:

1st Floor – Suite 122, Aboriginal Affairs and Northern Development Canada

2nd Floor – Suite 200, Public Prosecution Service; and Suite 205, Parks Canada

4th Floor – Suite 415C, Aboriginal Affairs and Northern Development Canada

7.0 Fire Procedures

The following fire orders have been developed in conjunction with the Fire Department and the 2010 National Fire Code of Canada.

7.1 IF YOU DISCOVER FIRE, SEE SMOKE OR SMELL GAS

- a) Pull the nearest red manual fire alarm pull station.

- b) If it is after business hours, **dial 9-911** and give the following information:
 - **Elijah Smith Building at 300 Main Street and the floor number where fire is occurring.**
- c) **Evacuate IMMEDIATELY.** Use the nearest safe exit stairwell. **Do not use the elevators!** Proceed to ground level, exit the building and go to the sidewalk on the far side of Third Avenue and wait there for instructions to re-enter.

7.2 ONCE AN “EVACUATION” ALARM SOUNDS

- a) **Evacuate IMMEDIATELY.** Use the nearest safe exit stairwell. **Do not use the elevators or atrium stairwell!** Proceed to ground level, exit the building and go to the sidewalk on the far side of Third Avenue and wait there for instructions to re-enter.
- b) Assigned monitors will help occupants requiring special assistance (see Appendix C).
- c) Do not attempt to remove any vehicle from the underground parking lot.
- d) Obey all instructions given by the Building Emergency Officers, Floor Wardens, and Suite Monitors.
- e) Return to the building only when authorized.

8.0 Evacuation Drills

Evacuation drills will be held regularly as required by Vo. 12, Chapter 7(7-1)01-01-90, Section 4.1. (a) of the Treasury Board's Personnel Management Manual. During an evacuation drill **all staff and public must participate** unless specifically exempted by the Chief Building Emergency Officer. This applies whether you are at meetings, boards, conferences, or on conference or long distance calls. Your life and the safety of others may be at stake. The disabled shall participate as much as reasonably possible as decided by the Chief Building Emergency Officer.

The Chief Building Emergency Officer or Building Maintenance shall be responsible for notifying the fire department at the beginning and end of a drill. Evacuation and drill result records will be completed and placed on file.

9.0 Illness or Injury Requiring Assistance

1. Notify a first aid attendant identified in your area.
2. The first aid attendant will ensure that the appropriate emergency assistance is

rendered by calling for an ambulance or for other outside assistance.

3. The first aid attendant will stay with the patient, ensure the patient is kept calm and administer first aid if required.
4. If **9-911** is called:
 - a) inform the responders of the location of the emergency;
 - b) request a member of the Building Emergency Organization or Security to meet the arriving ambulance personnel at the main door. If necessary they will redirect the ambulance to the loading dock (Steele St.) entrance.

10.0 Power Failure

During a power failure, emergency lighting in hallways, safe exit stairwells and general office space will come on. An emergency generator will keep them on for 24 hours. Any decision regarding stopping work and evacuating the building will be communicated by the members of the Building Emergency Organization.

If you are on an elevator when the power fails, remain calm. The elevator will stop. As soon as the power failure activates the emergency generator, the elevator will begin a controlled descent to the first floor.

10.1 IF A POWER FAILURE OCCURS

1. Remain on your floor; if you are on another floor do not attempt to return to your floor until the power is restored.
2. Await the restoration of power or information passed on via the Building Emergency Organization that the building will be evacuated.

10.2 IF YOU REQUIRE SPECIAL ASSISTANCE TO BE EVACUATED (SEE APPENDIX C)

1. Make your way to the designated rendezvous point.
2. If it is decided to evacuate the building you will be evacuated by the assigned monitors.

10.3 IF THE POWER FAILURE OCCURS DURING SILENT HOURS

If power has not been restored within 15 minutes, leave by the nearest safe exit stairwell.

11.0 Explosion

11.1 IF AN EXPLOSION OCCURS IN THE VICINITY OF YOUR WORK STATION

1. Take immediate shelter. Tables, desks, or other objects will offer protection against flying glass or debris. Protect your face and head with your arms.
2. Remain under cover until the effects of the explosion have subsided.
3. Activate the nearest fire alarm pull station.
4. **If possible** notify Security or the Chief Building Emergency Officer.
5. Check to ensure the nearest safe exit stairwell is free of obstruction, leave the building and proceed to the far side of Third Avenue. Wait there for instructions.

11.2 IF AN EXPLOSION OCCURS ON ANOTHER FLOOR

Remain at your workstation until the alarm sounds or until ordered to evacuate the building by your Floor Warden.

11.3 IF YOU REQUIRE SPECIAL ASSISTANCE TO BE EVACUATED (SEE APPENDIX C)

Make your way to your predetermined rendezvous point. You will be evacuated by Emergency Response Personnel, who will be looking for you.

11.4 IF AN EXPLOSION OCCURS DURING SILENT HOURS

Follow the same procedures as you would during normal working hours, **see section 11.1. (exception): Dial 9-911**

12.0 Chemical Accident

The response to a chemical spill or an accidental release of a hazardous substance will be determined by the Chief Building Emergency Officer. Any response shall be based on an assessment of the threat to the health and safety of building personnel and shall include reference to the appropriate WHMIS Material Safety Data Sheets.

12.1 IF YOU DISCOVER A CHEMICAL ACCIDENT

1. Do not go near the chemical.
2. Warn other employees in the immediate vicinity.
3. Inform a member of the Building Emergency Organization on your floor, see Appendix B.

4. Evacuate to a safe location and await further instructions from the Building Emergency Organization.

12.2 IF YOU DISCOVER A CHEMICAL ACCIDENT DURING SILENT HOURS

1. Phone NSCC at 1-800-463-1850, speak slowly and clearly. Say what you have discovered and give the following information:
 - Elijah Smith Building at 300 Main Street
 - What hazard you have noticed, where, and on what floor
2. NSCC will contact the Building Emergency Officers.
3. Evacuate the building using the nearest safe exit stairwell.

12.3 SUSPICIOUS ENVELOPES OR PACKAGES

IF YOU RECEIVE OR DISCOVER an unopened suspicious envelope or package:

1. **DO NOT** shake or empty the contents of any suspicious envelope or package.
2. **Follow the procedure of your department's "Security Measures" on handling suspicious envelopes or packages.**

12.4 SUSPICIOUS ENVELOPES OR PACKAGE DURING SILENT HOURS

IF YOU RECEIVE OR DISCOVER an unopened suspicious envelope or package during silent hours, follow these procedures:

1. **DO NOT** shake or empty the contents of any suspicious envelope or package.
2. **Follow the procedure of your department's "Security Measures" on handling suspicious envelopes or packages.**

12.5 IF YOU OPEN AN ENVELOPE OR PACKAGE

If you open an envelope or package and you find it contains powder or other biological agent threats, follow these procedures:

1. **COVER** the spilled contents **immediately with a garbage can** or anything handy (e.g., clothing, paper, etc.). **DO NOT** remove this cover. **DO NOT TRY TO CLEAN UP** the powder.
2. **IMMEDIATELY ISOLATE** the vicinity, **LEAVE** the room and **CLOSE** the door or section off the area to prevent others from entering (i.e., keep others away).
3. Remain away from other occupants, but alert them and advise them to move to a

remote area on the same floor.

4. **WASH** your hands with hygiene soap and water, or use waterless hygiene soap, to prevent spreading any powder to your face;

Hand Washing Steps:

- a) Turn on the sink and get your hands wet with warm water.
 - b) Use plenty of pump liquid soap, or non-water based hand hygiene agents, and rub hands together for 10 seconds.
 - c) Wash palms, backs of hands, wrists, fingers and under fingernails.
 - d) Rinse hands thoroughly with warm water and dry with paper towel.
 - e) Use a dry paper towel to turn off the sink water; this prevents re-infection of your hands.
5. **REPORT the incident to the Chief Building Emergency Officer at 667-3800.** The Chief Building Emergency Officer will notify SNC-Lavalin to turn off the air-handling system. **No one is to evacuate the building or move to other floors** within the building unless instructed to do so by the authorities verbally or by the sounding of the fire alarm.
 6. **IMMEDIATELY REMOVE** heavily contaminated **OUTER CLOTHING**, down to underwear if necessary. Place clothing into a plastic bag or other container that can be sealed, this clothing should be kept in the bag/container until further instructions are given. *A blanket or change of clothing will be provided through your employer or family member.*
 7. **SHOWER** with soap and water as soon as possible. **DO NOT USE BLEACH OR OTHER DISINFECTANT ON YOUR SKIN.**
 8. List all people who were in the room or area, especially those who had actual contact with the powder. Keep this list as it may be required by local public health authorities or law enforcement officials.
 9. The police, in consultation with other emergency service providers, will recommend any further action that should be taken.

12.6 DURING SILENT HOURS, IF YOU OPEN AN ENVELOPE OR PACKAGE

If you open an envelope or package during silent hours and you find it contains powder or other biological agent threats, follow these procedures:

1. **COVER** the spilled contents **immediately with a garbage can**, anything handy (clothing, paper, etc.) **DO NOT** remove this cover. **DO NOT TRY TO CLEAN UP** the powder.
2. **LEAVE** the room and **CLOSE** the door or section off the area to prevent others from

entering (i.e. keep others away).

3. **WASH** your hands with hygiene soap and water, or use waterless hygiene soap, to prevent spreading any powder to your face;

Hand Washing Steps:

- a) Turn on the sink and get your hands wet with warm water.
 - b) Use plenty of pump liquid soap, or non-water based hand hygiene agents, and rub hands together for 10 seconds.
 - c) Wash palms, backs of hands, wrists, fingers and under fingernails.
 - d) Rinse hands thoroughly with warm water and dry with paper towel.
 - e) Use a dry paper towel to turn off the sink water; this prevents re-infection of your hands.
4. Report the incident to **NSCC at 1-800-463-1850**. **NSCC** will notify SNC-Lavalin to turn off the air-handling system.
 5. As soon as possible, **REMOVE ONLY** heavily contaminated **OUTER CLOTHING**, down to underwear if necessary, and place in a plastic bag, or some other container that can be sealed. This clothing should be kept in the bag/container until further instructions are given. A blanket or change of clothing will be provided through your employer or family members.
 6. **SHOWER** with soap and water as soon as possible. **DO NOT USE BLEACH OR OTHER DISINFECTANT ON YOUR SKIN.**
 7. List all people who were in the room or area, especially those who had actual contact with the powder. Keep this list as it may be required by local public health authorities or law enforcement officials.
 8. The police, in consultation with other emergency service providers, will recommend any further action that should be taken.

12.7 IF THERE IS A CONCERN OR QUESTION OF ROOM CONTAMINATION BY AEROSOLIZATION (a warning that **air-handling system is contaminated**, or a warning that a biological agent has been released in a public space) observe the following protocol. ***Same Instructions Apply During Silent Hours.***

1. **LEAVE** the area immediately.
2. **CLOSE** the door, or section off the area to prevent others from entering (i.e., keep others away).
3. **REPORT** the incident to **NSCC at 1-800-463-1850**. **NSCC** will contact SNC-Lavalin to turn off the air-handling system.

4. List all people who were in the room or area. Keep this list as it may be required by local public health authorities or law enforcement officials.
5. The police, in consultation with other Emergency Service Providers, will recommend any further action that should be taken.

13.0 Earthquake

The initial earth movements and swaying of structures caused by an earthquake could be followed sometimes later by aftershocks, usually of decreasing severity. The actual movement of the ground in an earthquake is seldom the direct cause of death or injury. Most casualties result from falling objects or debris from within or around the building. Most modern buildings meet the earthquake-resistant design requirements of the National Building Code and should be able to resist moderate earthquakes without significant damage.

13.1 IF AN EARTHQUAKE OCCURS **DROP – COVER - HOLD**

You do not want to be the highest object in the room!

1. Take immediate shelter under your desk, chair, table, or other object that will offer protection against flying glass and debris. Adopt the “crash” position: on your hands and knees, head down, protecting your head and neck with one arm while holding onto a table or desk with the other. If the table or desk moves, move with it. If cover is not available, move away from windows, get down and brace yourself against a wall. **Stay alert to emerging major hazards!**
2. Remain calm. Stay under cover until the shaking stops. Do not be surprised if the fire alarm or sprinkler systems come on. Count to 10 slowly before getting out from under your cover, in case there may be aftershocks.
3. Check yourself for injuries. If you are capable of moving and it appears safe to do so, make your way to the nearest **Earthquake Supply Cabinet**, located on each floor near the elevators, and wait there for further instructions from the Emergency Response Authority.
4. **DO NOT** dash for exits and **DO NOT** use your vehicle. This action will keep the streets clear for Emergency Response vehicles.
5. **DO NOT** move seriously injured individuals unless they are in immediate danger and only if your own safety is not at risk. Make a note of their location to pass onto the Emergency Response Authority. If you have an injury that prevents you from moving, stay where you are and await the arrival of the Emergency Response Authority.
6. Stay calm and lend a hand to others in need.

13.2 DO NOT USE THE ELEVATORS

1. If the instruction to evacuate the building is given by the Chief Emergency Authority, using the nearest safe exit stairwell, proceed down and out of the building to an open area away from power lines, power poles, trees, etc. that might be knocked down during the earthquake and/or its aftershocks. USE **CAUTION** when exiting the building, in particular **WATCH OUT FOR FALLING DEBRIS**. Keep low to the ground and balance yourself.
2. **DO NOT** attempt to re-enter the building until it has been inspected by qualified personnel (such as the Fire Department, Structural Engineers etc.) as its structural integrity may have been compromised by the earthquake.

13.3 IF YOU ARE IN AN ELEVATOR DURING AN EARTHQUAKE

If you are in an elevator remain calm. You are probably better protected than most people as the elevator will not fall down the shaft, and nothing heavy can fall on you. If the power fails, the elevator will stop and the lights will remain off until emergency power is restored. Be patient and wait for assistance.

13.4 IF YOU ARE IN THE UNDER GROUND PARKING LOT DURING AN EARTHQUAKE

Individual Action Is Taken:

1. **Turn off your car engine** as the ventilation control system may have been interrupted and compromised. The exhaust fumes could asphyxiate you.
2. **Turn on your head lights and honk your horn once or twice** for assistance or guide other co-workers to your car for shelter and protection.
3. Cover your face with your arms, use items in your car such as blankets, coats etc., to protect yourself from broken glass and debris.
4. Remain calm, stay in your vehicle until the shaking stops.
5. Check yourself for injuries, if you are capable of moving and it appears safe to do so, by using the nearest stairwell make your way to the first floor earthquake supply cabinet located in front of the main elevators.
6. **Stay Alert to Emerging Major Hazards**
7. Stay at this location and wait for further instructions from the Chief Emergency Authority

13.5 EARTHQUAKE PROCEDURES FOR MOBILITY IMPAIRED PERSONS

1. If you are in a wheelchair, stay in it. Move to cover if possible, turning away from windows or office glazed area.
2. Lock your wheels and try to protect your head and neck from flying debris as much as possible (use books, folders or any handy objects for cover).
3. Stay under cover until the tremors stop.
4. After assessing your situation and checking for injury, you may have to obtain assistance from others nearby to move to the designated safe area. Those normally assigned to assist you during other emergencies may not be able to at this time.

13.6 IF AN EARTHQUAKE OCCURS DURING SILENT HOURS

1. Take immediate shelter under your desk, chair, table, or other object that will offer protection against flying glass and debris.
2. Adopt the “crash” position: on your hands and knees, head down, protecting your head and neck with one arm while holding on to a table or desk with the other. If the table or desk moves, move with it.
3. If cover is not available, move away from windows, get down and brace yourself against a wall. Stay under cover until the tremors stop.
4. After assessing your situation and checking for injury, exit the building using the nearest safe exit stairwell. **DO NOT USE THE ELEVATOR** - watch out for falling debris.
5. Keep low to the ground and balance yourself.

14.0 Incident of Violence

Violence is defined as any act of aggression, intimidation, or force used against staff or property. Incidents of violence may include but are not limited to:

- a) assault
- b) display or use of a weapon, and
- c) extortion

14.1 IF AN INCIDENT OF VIOLENCE HAS OCCURRED OR IS ABOUT TO OCCUR

1. Evacuate to a safe place
2. **Dial 9-911** giving:
 - a) your name

- b) your present location and phone number
 - c) the nature of the emergency, and
 - d) whether the people involved are staff, clients, contractors or visitors.
3. The responsible official will now assume responsibility for the emergency.

14.2 DURING THE INCIDENT OF VIOLENCE

1. Try to stay calm. Do not do anything that would endanger yourself or others.
2. Alert your co-workers by the safest and fastest means possible. This may include emergency alarms, telephone or personal contact.
3. If you are in danger evacuate to a safe location. Do not attempt to forcibly detain the aggressor.

14.3 AFTER THE INCIDENT OF VIOLENCE

1. If it is possible, keep other people from entering the area where the incident occurred until the arrival of the responsible director or the police.
 2. **Do not handle** any items that could be considered evidence, especially objects the aggressor may have used or handled.
 3. Write down a description of the aggressor and a detailed summary of the incident including statements made by the aggressor. Accurate notes are important for court and/or identification purposes.
-

15.0 Demonstration

The response to a demonstration in this building will vary according to the number of participants and the atmosphere in which it occurs. A member of the Building Emergency Organization will give you specific instructions on how to deal with the situation.

15.1 IF A DEMONSTRATION OCCURS OUTSIDE THE BUILDING OR IN THE ATRIUM

1. Do not involve yourself with the demonstration either verbally or physically.
2. If the demonstrators bar your entry to the building, withdraw and inform your supervisor, according to your unit's business continuity plan, that you can not enter the building.
3. Wait until the police arrive to clear a path through the demonstrators.

15.2 IF THE BUILDING IS OCCUPIED BY THE DEMONSTRATORS

1. Immediately lock up any security-classified and designated material or other valuables according to your unit's business continuity plan.
2. Do not say or do anything that will agitate the occupiers.
3. Do not attempt to physically restrain the occupiers.
4. Wait for instructions from your supervisor and a member of the Building Emergency Organization on your floor.

16.0 Hostage Taking

In the event of an on-site hostage taking, **you must be prepared for and be familiar with procedures** that will increase the chances of a positive resolution of the incident.

16.1 PREVENTATIVE MEASURES

Employees should be aware that hostage takers will gather information of the potential victim from a variety of sources including observing daily routines and travel routes, questioning co-workers and neighbours or by using false telephone surveys. Employees who work in high risk areas should not disclose plans, family matters, and business activities nor should they disclose those of other employees. If the employee's office is used for the purpose of interviewing, then all family mementos and family photos, in particular, should be removed.

16.2 RESPONSE PROCEDURE

The first employee to be aware of the hostage taking will:

- a) secure the area if possible to isolate the incident;
- b) phone 9-911; and
- c) 9-911 responders will initiate the Emergency Response Plan.

Negotiations with the hostage taker are handled by the police, who have trained personnel for this type of situation. A situation may evolve such that an employee must enter into negotiations with the hostage taker. In this case:

- a) Attempt to delay the negotiations, until the police arrive, by responding to a hostage taker's demand with **"I'll ask my supervisor" or "I have to find out"**. **Never say "No"** to a hostage taker's demands.
- b) Under no circumstances should illicit substances be provided to any person involved

in a hostage incident.

- c) Do not hesitate to engage other employees who may have influence over individuals involved in the hostage taking.
- d) The Emergency Response Team must be involved in any decision making process.
- e) Orders given by a hostage under duress should not be followed except to save lives. These orders should be met with the same response as those of the hostage taker e.g. **"I'll do my best"**.

16.3 GUIDELINES FOR THE HOSTAGE

If you become a victim of a hostage taking, you will need to know the following strategies that can be used to maximize your security during the incident.

- a) Follow the instructions of your captor.
- b) Accept your situation and be prepared to wait.
- c) Be especially careful during the first fifteen minutes of the hostage incident. It is expected that both you and your captor will be nervous.
- d) Speak only when spoken to; be polite and friendly but not phony. Do not criticize or make wisecracks.
- e) Try not to show emotion. Hostage takers take advantage of hostages' emotions.
- f) Try to sit and rest. If the situation continues for a long period of time, try to sleep.
- g) Do not make suggestions to the captor. If they do not go as suggested, the hostage taker may hold you responsible.
- h) If you see a chance to escape weigh it carefully. Do not attempt to escape unless you are sure of getting clear without endangering yourself or others.
- i) If you require medication, inform your captor.
- j) If you are required to negotiate on behalf of the captor, expect that the police will ask you as many questions as possible to evaluate the situation. Be prepared to respond "yes" or "no" in the presence of your captor.
- k) **DO NOT** turn your back on your captor unless ordered to do so, captors are less likely to harm a hostage that is looking at them. However, do not stare at the captor.
- l) Be patient. Even though it appears that nothing is being done, the police are following a strategy that is designed to resolve the situation peacefully or rescue you safely.
- m) If you are released by your captor, speak directly with the police once you are safe. Answer their questions accurately; **DO NOT** exaggerate your experience.

17.0 Bomb Threat

TAKE ALL BOMB THREATS SERIOUSLY.

Generally, a bomb threat is made for one of three reasons:

1. **If it is a hoax**, the caller wants to create anxiety, panic and disruption of normal activities.
2. **The caller knows or believes a bomb has been or will be planted** and wants to minimize personal injury. The caller may or may not be the person who planted the bomb, if one has been placed.
3. **The caller expects an evacuation**, and hopes to lure occupants to the exit route or to an outside area near an exit (or to where people normally evacuate) where a bomb has been planted in order to cause the most personal injuries.

In the event a bomb threat is received or a suspicious object is discovered, the Chief Building Emergency Officer will assess the threat to the safety of the building occupants and will decide whether or not to evacuate, based on information received from the caller and intelligence from the police.

17.1 IF YOU RECEIVE A TELEPHONE BOMB THREAT

1. Be calm and courteous.
2. Keep the caller on the line as long as possible.
3. Without alerting the caller, enlist the aid of a fellow employee to dial 9-911 **and give them your:**
 - a) name;
 - b) location;
 - c) phone number; and
 - d) floor number.
4. **Try to persuade the caller to tell you:**
 - a) when the bomb will go off;
 - b) where the bomb is located;
 - c) what kind of bomb it is;
 - d) how big the bomb is;
 - e) if there is any way to identify it; and
 - f) what kind of container it is.
5. **Note any identifying characteristics of the caller such as:**
 - a) gender;

- b) accent;
 - c) speech pattern;
 - d) age; and
 - e) background noise.
6. Report the threat immediately to Supervisor/Manager, he/she will report to the Chief Building Emergency Officer. **Complete the “Bomb Threat Check List Form” (Appendix F in this manual)** as soon as possible then submit the form to the Chief Building Emergency Officer.
7. Wait for further direction, **do not spread rumours.**

17.2 IF YOU RECEIVE A BOMB THREAT THROUGH THE MAIL

A written warning of a specific device may occasionally be received, **it should never be ignored.**

- 1. Avoid handling the envelope/package in order to preserve possible fingerprint(s), handwriting or typewriting, paper, postal marks, etc. These will prove essential in tracing the threat and identifying the writer.
- 2. Contact your Supervisor/Manager; he/she will contact the Chief Building Emergency Officer.
- 3. Wait for further direction, **do not spread rumours.**

17.3 IF YOU DISCOVER A SUSPICIOUS PACKAGE OR OBJECT

- 1. The finder must not disturb or move the suspected package or object.
- 2. Clear all person(s) from the immediate vicinity.
- 3. Tell your Supervisor/Manager, he/she will notify the Chief Building Emergency Officer.
- 4. Retreat to a safe distance and warn others to avoid the area. Be available to provide information to the police.
- 5. Wait for further direction, **do not spread rumours.**

17.4 IF A SEARCH IS NECESSARY (take the following action)

If the decision is made to SEARCH, the most effective and fastest search of a building can be made by the occupants of that building. The occupants are the only ones who will know if a box, briefcase, etc. belongs in that location.

The Chief Building Emergency Officer will notify all Floor Wardens giving them “search instructions” to be followed accurately and promptly by their Suite Monitors.

THE SEARCH IS TO IDENTIFY ANY OBJECT WHICH:

- a) should not be there;
- b) is a suspicious package;
- c) is out of place; or
- d) becomes suspicious for any other reason (e.g. suspiciously labeled, or similar to that described in the threat)

1. **Follow the instructions** given to you by your Suite Monitors.
2. Quickly search your work station then proceed to your pre-designated meeting place (e.g: receptionist desk in your area).
3. If you find anything that should not be there and looks suspicious, report it to your Suite Monitor immediately.
4. Wait for direction from the Chief Building Emergency Officer.

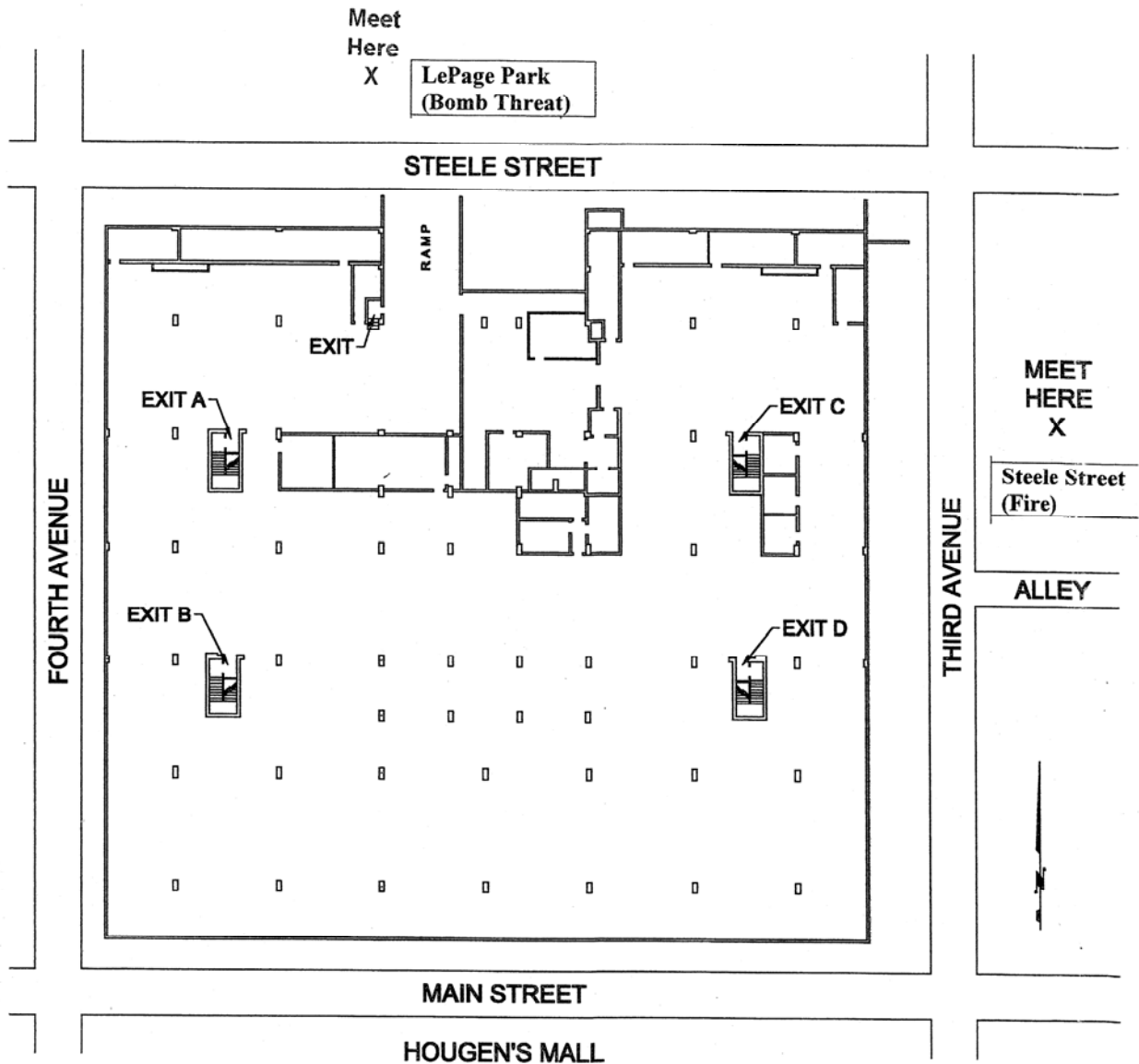
IF THERE IS TO BE AN EVACUATION you will hear the following message **3 times** over the PA System: “**EVACUATE THE BUILDING...Avoid Stairwell A,B,C,D... or another High Risk Area given**”

1. **Unless otherwise advised, evacuate immediately** to the safety stairs, BUT report to your Suite Monitor at **Lepage Park at the corner of Wood Street and Third Avenue**. If the weather is bad, you will be redirected to the Atrium of the Yukon Law Courts Building.

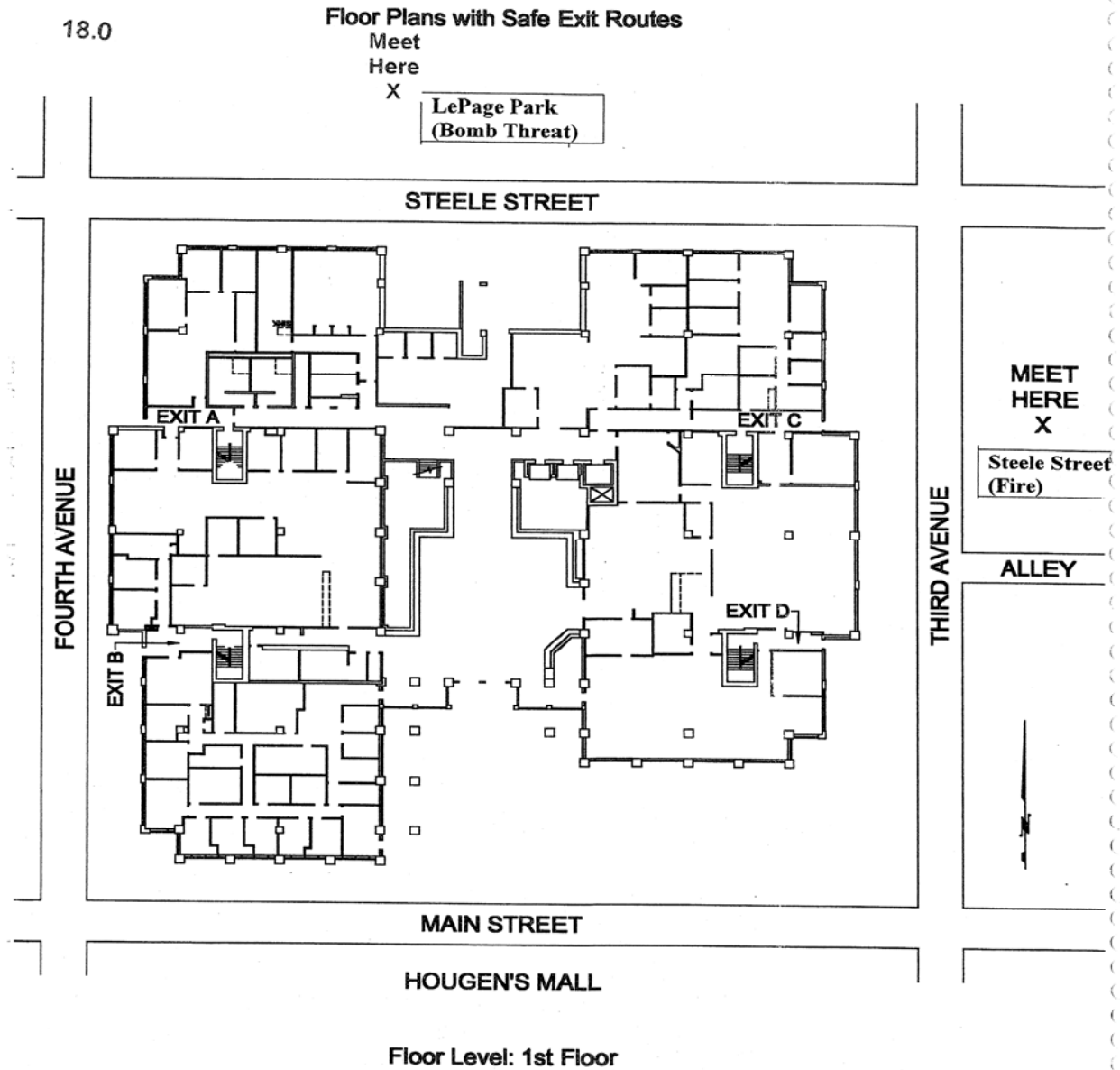
2. Await re-entry instructions from the Chief Building Emergency Officer.

18.0

Floor Plans with Safe Exit Routes

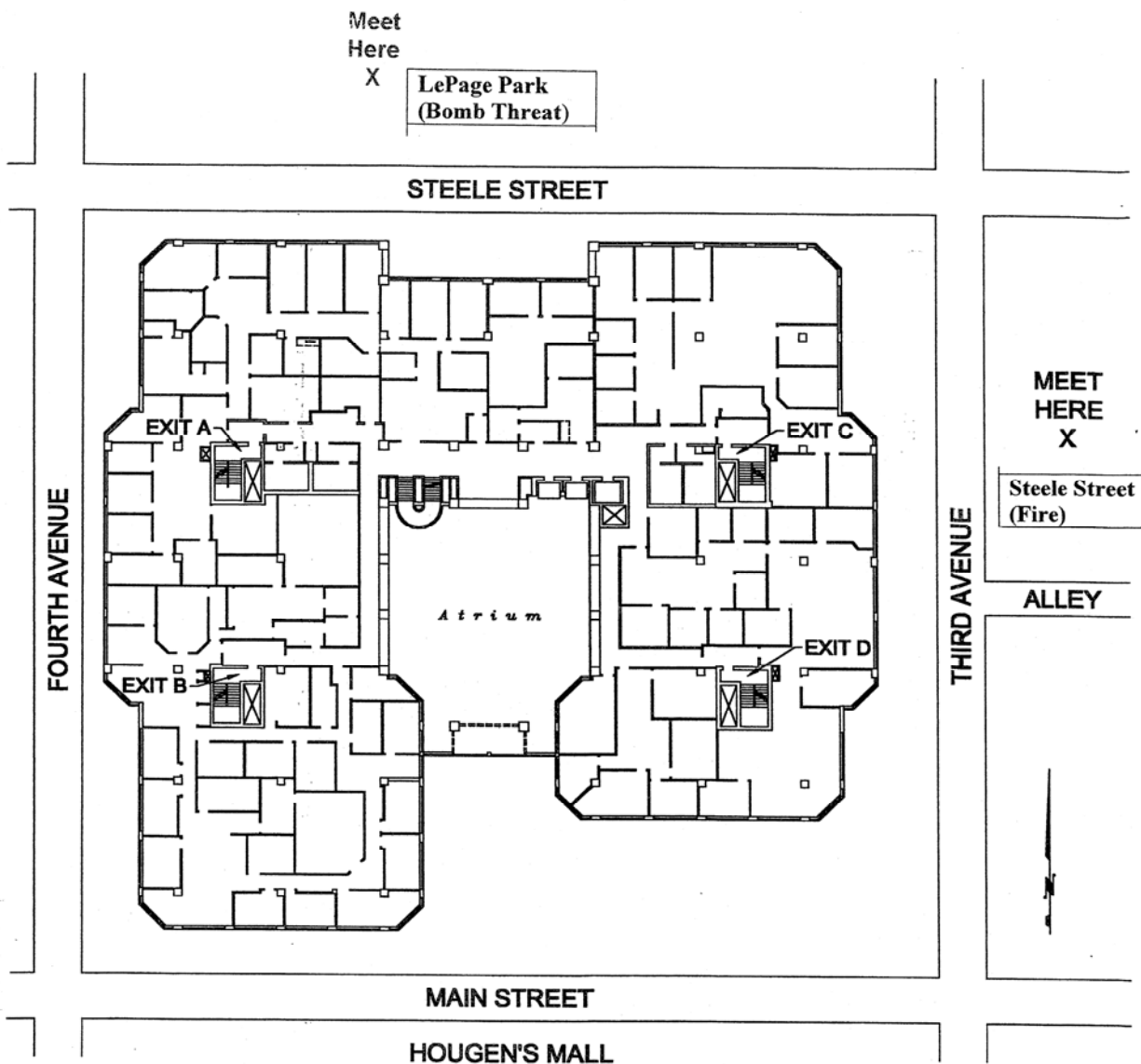


Floor Level: Basement



18.0

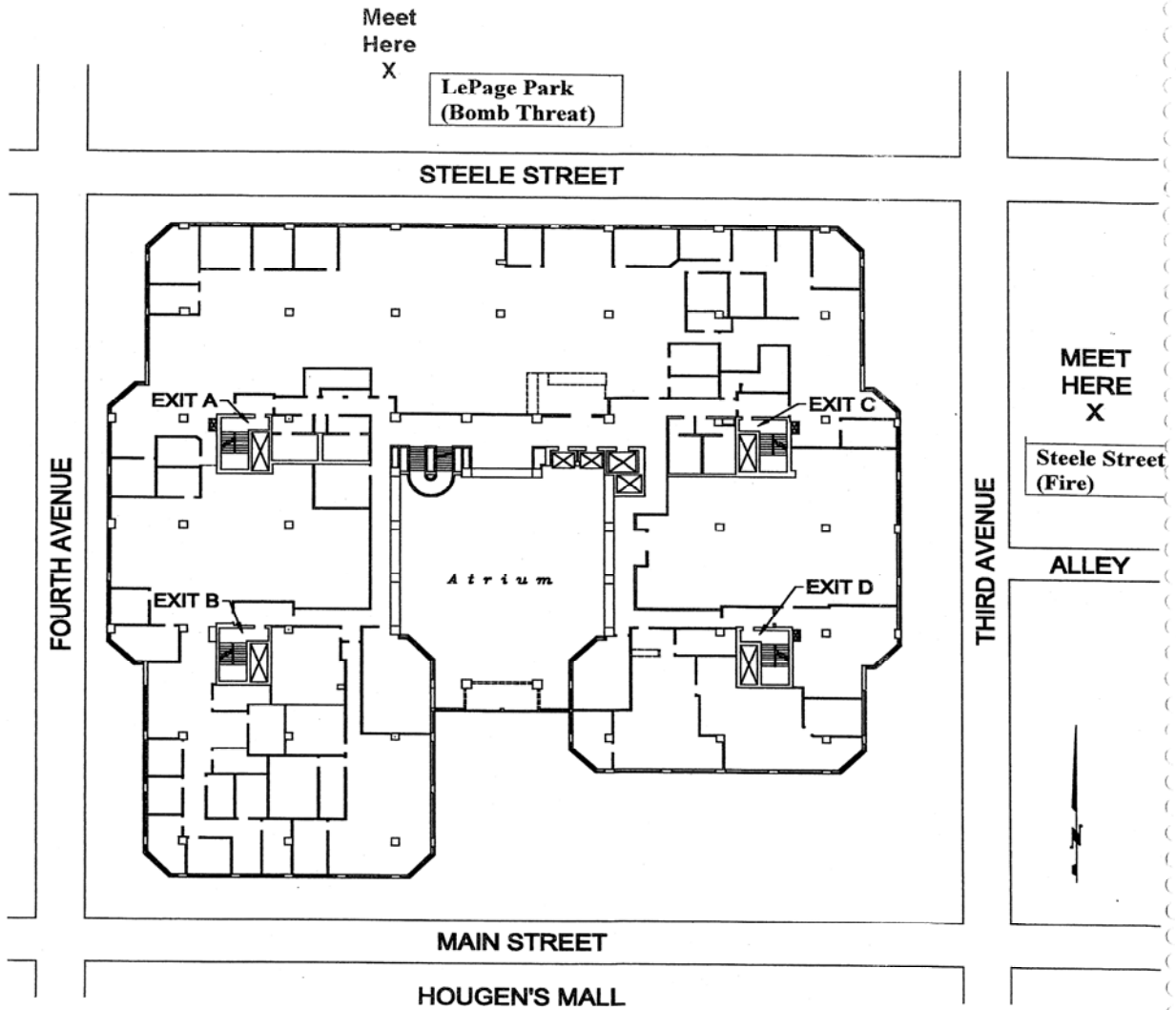
Floor Plans with Safe Exit Routes



Floor Level: 2nd Floor

18.0

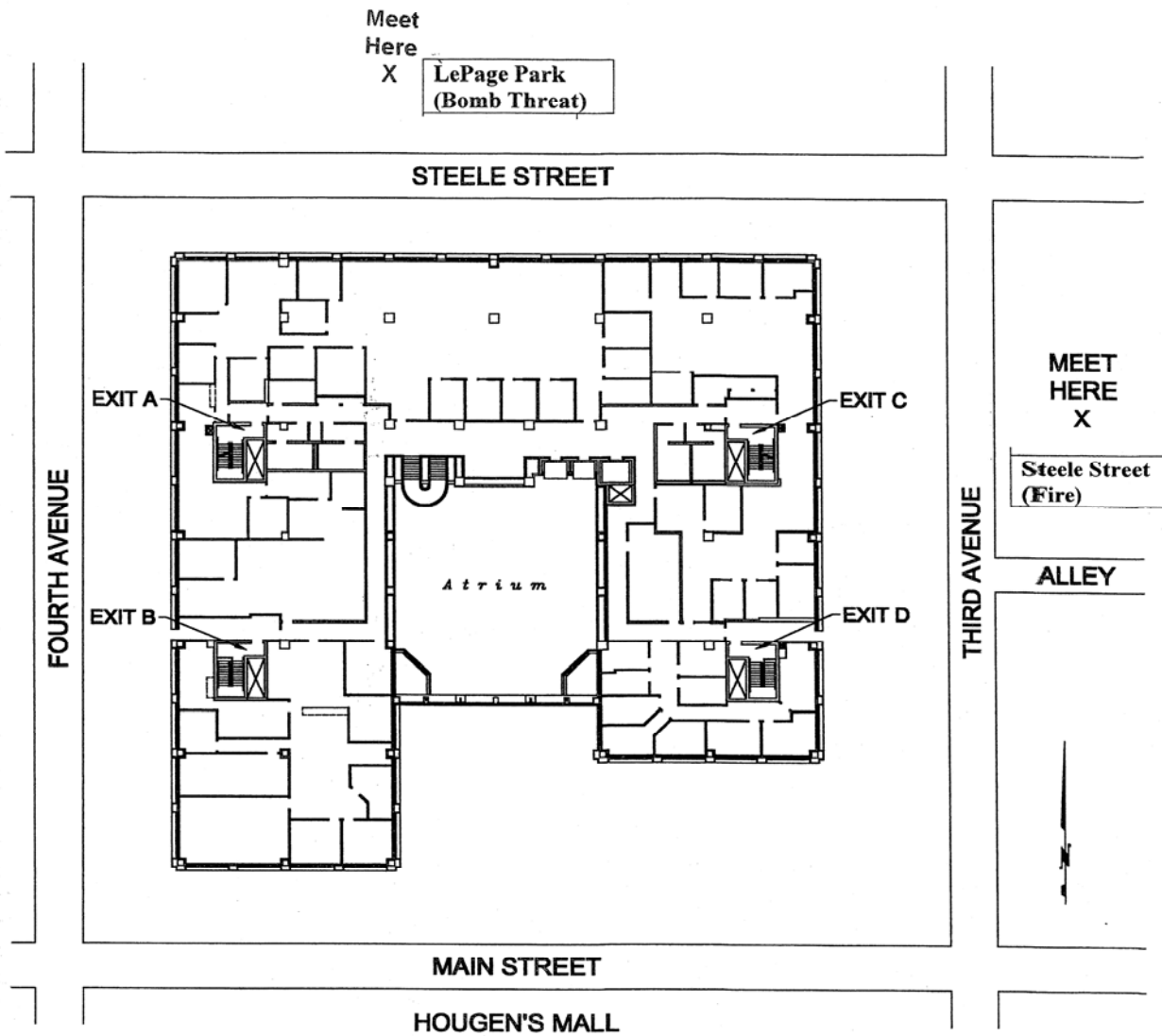
Floor Plans with Safe Exit Routes



Floor Level: 3rd Floor

18.0

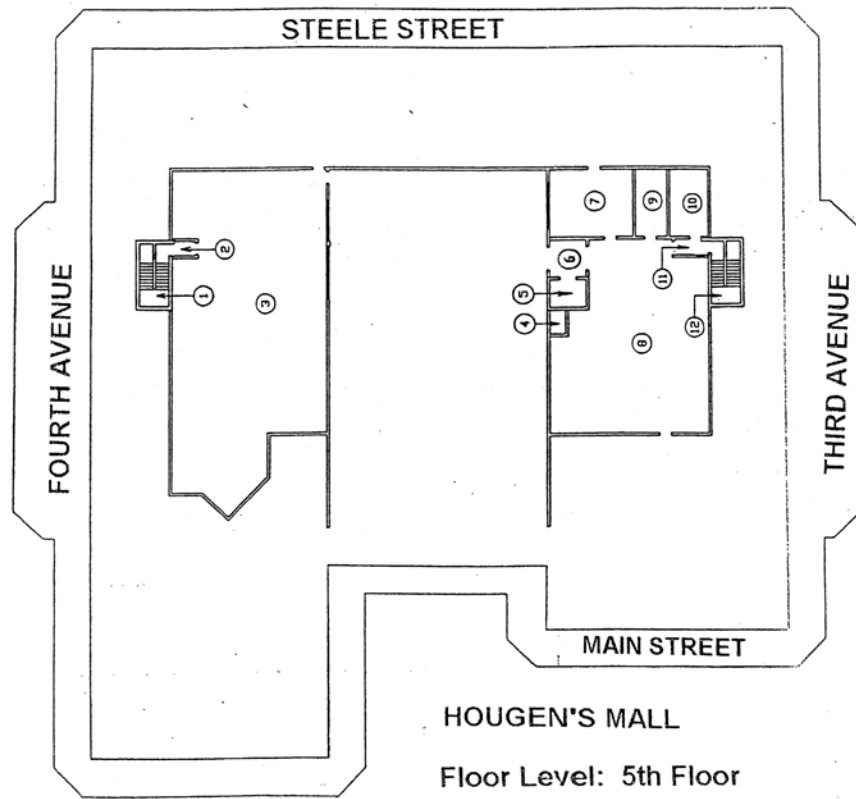
Floor Plans with Safe Exit Routes



Floor Level: 4th Floor

18.0

Floor Plans with Safe Exit Routes



BUILDING: LOCATION:	ELIJAH SMITH BUILDING 300 MAIN STREET WHITEHORSE	FLOOR PENTHOUSE		
		SCALE 1 : 350 DATE 96/09/13 DRAWN L.S.	REVISION 00.03.22 C.C. NO. 520532 ASSET NO. 701418	

19.0 Standard Operating Procedures during and Evacuation

Responsibilities and Duties

In extended periods of absence from the building of over 24 hours, it is the responsibility of each position to inform and notify their alternate and vice versa of the duration they will be away to ensure their responsibilities and duties are covered in an event of an emergency.

19.1 CHIEF BUILDING EMERGENCY OFFICER: WHITE HAT - RED VEST

1. Place 911 Call
2. Exit building using the closest safe exit stairwell and meet Commissionaire Security and SNC-Lavalin Staff at the flag pole outside the main entrance.
3. Request the "Register of Persons Requiring Special Assistance" forms and the evacuation report.
4. Remain at the flag pole to meet with Fire Department and Emergency Response Personnel to exchange information.
5. By radio (channel 3) attain evacuation status from Deputy Chief Building Emergency Officer and/or Alternate relaying the current emergency status information.
6. By radio (channel 3) continue to relay current status of emergency situation to Deputy Chief Building Emergency Officer, Commissionaires, and SNC-Lavalin Staff.
7. Relay re-entry information to employees when received from Fire Department.

Note: *If resigning, inform the Building Emergency Organization and return equipment.*

19.2 DEPUTY CHIEF BUILDING EMERGENCY OFFICER: WHITE HAT - RED VEST

Performs the Chief Building Emergency Officer's duties when that person is away

As Deputy Chief:

1. Perform final sweep of the underground parking lot.
2. Leave the building by the closest safe exit stairwell and go to the main Steele Street parking lot (Fire) or LePage Park (Bomb Threat). **Do not use atrium stairwell!**
3. Collect evacuation information from all Floor Wardens, or their alternates.

4. Radio (channel 3); relay report status to the Chief Building Emergency Officer
5. Await re-entry instructions.

19.3 ALTERNATE DEPUTY CHIEF BUILDING OFFICER: WHITE HAT – RED VEST

Performs the Deputy Chief Building Emergency Officer's duties when that person is away

1. Leave the building by the closest safe exit stairwell and go to the main Steele Street parking lot (Fire) or LePage Park (Bomb Threat). **Do not use atrium stairwell!**
2. Provide assistance to Deputy Chief Building Emergency Officer.

Note: *If resigning, inform the Chief Building Emergency Officer and return equipment.*

19.4 FLOOR WARDEN: RED HAT – RED VEST (ALTERNATE FLOOR WARDEN)

Makes on-the-spot decisions for the safety of occupants during an emergency situation.

1. Evacuate nearby washrooms, boardrooms and east/west corridors on your designated floor.
2. Use emergency radio (channel 3) for communications with and Deputy Chief Building Emergency Officer and for any incidents occurring on your floor.
3. Leave the building by the closest safe exit stairwell. **Do not use atrium stairwell!**
4. Go to the main Steele Street parking lot (Fire) or LePage Park (Bomb Threat) and collect the Suite Monitor's evacuation information slips.
5. Report your evacuation status information to the Deputy Chief Building Emergency Officer.
6. Await re-entry instructions.
7. Fourth Floor Wardens are required to also do a sweep of the balcony area if not allocated to a suite monitor.

Note: *If resigning, it is your responsibility to inform the Chief Building Emergency Officer, who will contact your Employer to find a replacement.*

**19.5 SUITE MONITORS: ORANGE HAT - GREEN VEST
(Alternate Suite Monitors)**

1. Evacuate your suite.
2. Follow behind the last person from your area.
3. Leave the building by the closest safe/exit stairwell and go to the main Steele Street parking lot (Fire) or LePage Park (Bomb Threat). **Do not use atrium stairwell!**

4. Report your area evacuation status to your Floor Warden.
5. Await re-entry instructions.

19.6 EMPLOYEE RESPONSIBILITY

At the sound of an Emergency Alarm or PA Announcement:

1. **Evacuate** the premises immediately when instructed to do so. Use the nearest safe exit stairwell. **Do not use the elevator or atrium stairwell!**
2. During evacuation, **if it is necessary to avoid a specific area**, you will be instructed to do so via the PA System.
3. **Do not attempt to remove** any vehicle from the under ground parking lot.
4. Proceed to ground level, 1st.Floor level, exit the building and go to the sidewalk on the far side of Third Avenue and Steel Street (Fire) or LePage Park (Bomb Threat)
5. Await re-entry instructions.

19.7 COMMISSIONAIRE SECURITY: YELLOW HAT – ORANGE VEST

1. Examine the fire alarm annunciator panel for the source of the alarm.
2. Clear everyone from the atrium, loading dock bay room, first floor washrooms and lunchroom.
3. Take the "Register of Persons Requiring Special Assistance" forms from your desk.
4. Take the "Sign In" book with you.
5. Go out the front door and wait near the flag pole for the Chief Building Emergency Officer and Fire Department to inform where the alarm originated, and help if asked.
6. Report your area's evacuation status to the Chief Building Emergency Officer and give him/her the "Register of Person Requiring Special Assistance" forms.
7. Ensure that only Emergency Response personnel enter the building.
8. Remain outside unless requested to enter by the Emergency Responder or have received clearance from the Chief Building Emergency Officer that it is now safe to re-enter the building.
9. Upon receiving the all clear from the Fire Department, announce over the PA system "Building is all clear, tenants can now return to their offices."

19.8 SNC-LAVALIN STAFF

1. Leave the building by the closest safe exit (preferred exit is the stairwells) and go to the flag pole to meet with the Chief Building Emergency Officer and Fire Department.
2. Provide any information or assistance if required by Fire Department.
3. Remain outside unless requested to enter by the Emergency Responder or have received clearance from the Chief Building Emergency Officer that it is now safe to re-enter the building.
4. If off site and in an event of an emergency, the Chief Building Emergency Officer may contact the SNC-Lavalin Building Technician to assist with the Fire Departments Platoon Chief.

Appendix A - Emergency Personnel Volunteer Contact List*

*Updated as of January 15, 2015

Location	Position	Name	Phone#	E-mail Address
Parkade	Deputy Chief Officer	Terri Kaur	667-8100 / 335-7508	Terri.Kaur@ppsc-sppc.gc.ca
	Alternate Deputy Chief	Jim Welsh	667-5063	Jim.welsh@gov.yk.ca
1st Floor				
	Floor Warden	Mike Stanley	667-5803	Mike.Stanley@ServiceCanada.gc.ca
	Alternate	Lorraine Donovan	393-3800	Lorraine.donovan@hc-sc.gc.ca
Rm 100	Suite Monitor	Sarah Drury-Clark	393-6872	Sarah.drury-clark@hc-sc.gc.ca
	Alternate	Lorraine Donovan	393-3800	Lorraine.donovan@hc-sc.gc.ca
Rm 102	Suite Monitor	Tammi Sikorski	667-3190	tamera.sikorski@gov.yk.ca
	Alternate	Tori-Ann Chislett	667-3107	toriann.chislett@gov.yk.ca
Rm 105	Suite Monitor	Miriam Holder	393-6850	miriam.holder@tc.gc.ca
	Alternate	VACANT		
Rm 110	Suite Monitor	Dan Robitaille	667-3944	daniel.robitaille@cbsa-asfc.gc.ca
	Alternate	Terry Joss	667-3965	terry.joss@cbsa-asfc.gc.ca
Client Services (Rm 122)	Suite Monitor	Roger Skaper	667-3329	Roger.skaper@aandc-aadnc.gc.ca
	Alternate	Melissa Hall	667-3366	Melissa.hall@aandc-aadnc.gc.ca
Rm 125	Suite Monitor	Mirjam Vallier	667-5083 Ext. 264	mirjam.vallier@servicecanada.gc.ca
	Alternate	Mike Stanley	667-5083 Ext.262	mike.stanley@servicecanada.gc.ca
2nd Floor				
	Floor Warden	Ann Rudniski	667-8100	Ann.Rudniski@ppsc-sppc.gc.ca
	Alternate	Patrice Brunet	393-6883	Patrice.brunet@ppsc-sppc.gc.ca
Rm 200	Suite Monitor	Yannick Larocque	667-3996	yannick.larocque@ppsc-sppc.gc.ca
	Alternate	Sandy Duncan	667-8107	Sandy.duncan@ppsc-sppc.gc.ca

Location	Position	Name	Phone#	E-mail Address
Rm 205	Suite Monitor	Andrée Gaulin	667-3910	Andree.gaulin@pc.gc.ca
	Alternate	Pauline Livingstone	667-3971	Pauline.livingstone@pc.gc.ca
Rm 215	Suite Monitor	No staff on site		
Immigration	Alternate	No staff on site		
Rm 225	Suite Monitor	Elden Pheiffer	667-3958	epFeiffe@nrcan.gc.ca
	Alternate	VACANT		
Rm 230	Suite Monitor	Bailey Staffen	456-6801	bailey.staffen@gov.yk.ca
	Alternate	VACANT		
Rm 235	Suite Monitor	Darlene Morgan	667-3187	darlene.morgan@gov.yk.ca
	Alternate	Rose Williams	667-3123	rose.williams@gov.yk.ca
Rm 240	Suite Monitor	Cathy Merkel	456-3855	Cathy.merkel@gov.yk.ca
	Alternate	VACANT		

3 rd Floor				
	Floor Warden	Kyla Wirth	667-8110	Kyla.Wirth@justice.gc.ca
	Alternate	Vera Bossenberry	667-3142	vera.bossenberry@gov.yk.ca
Rm 300/305	Suite Monitor	Denise Tremblay	393-7957	Denise.Tremblay@ppsc-sppc.gc.ca
	Alternate	Charlene Desjarlais	393-7958	Joshua.Hunt@ppsc-sppc.gc.ca
Rm 310	Suite Monitor	Caitlin Moorcroft	393-7950	Caitlin.Moorcroft@justice.gc.ca
	Alternate	Jonathan Gorton	667-8113	Jonathan.Gorton@justice.gc.ca
Rm 315/320	Suite Monitor	Christopher Belanger	667-3734	christopher.belanger@gov.yk.ca
	Alternate	Tomoko Haigo	667-3179	Tomoko.haiga@gov.yk.ca
Rm 315/320	Suite Monitor	Marjorie Frame	667-3150	Marjorie.frame@gov.yk.ca
	Alternate	Erin Dixon	667-3242	Erin.Dixon@gov.yk.ca
Rm 330A Mgmt	Suite Monitor	Kathy Pritchard	667-3137	kathy.pritchard@gov.yk.ca
	Alternate	Paula Sauve	667-3209	paula.sauve@gov.yk.ca
Rm 330B District Office	Suite Monitor	Lori Lemieux	456-3882	lori.lemieux@gov.yk.ca
	Alternate	Heather Robb	667-3141	heather.robb@gov.yk.ca

Location	Position	Name	Phone#	E-mail Address
Rm 335	Suite Monitor	Anna Pearson	667-3108	anna.pearson@gov.yk.ca
	Alternate	Pam Walden	456-3902	pam.walden@gov.yk.ca
Rm 345	Suite Monitor	Anne Powers	456-3854	anne.powers@gov.yk.ca
	Alternate	Jenny Whitehouse	667-3097	jenny.whitehouse@gov.yk.ca

4 th Floor				
	Floor Warden	Elijah Buffalo	393-7964	Elijah.buffalo@aadnc-aadnc.gc.ca
	Alternate	Marie-Louise Boylan	667-3854	MarieLouise.Boylan@aadnc-aadnc.gc.ca
Rm 400 Canada School of Public Svc	Suite Monitor	Karen Wienberg	393-6713	Karen.Wienberg@csps-efpc.gc.ca
	Alternate AANDC	Melissa Yu-Schott	667-3806	Melissa.YuSchott@aadnc-aadnc.gc.ca
AANDC Rms 405 & 415A (Governance)	Suite Monitor	Melissa Yu-Schott	667-3806	Melissa.YuSchott@aadnc-aadnc.gc.ca
	Alternate	Heather Kelly	667-3309	Heather.Kelly@aadnc-aadnc.gc.ca
	Alternate#2	VACANT		
Rm 410	Suite Monitor	Empty Office		
	Alternate	Empty Office		
Rm 420	Suite Monitor	Ellen Sedlack	667-3326	Ellen.sedlack@aadnc-aadnc.gc.ca
	Alternate	Denise Bicknell	667-3819	Denise.bicknell@aadnc-aadnc.gc.ca
Rm 415C Reception & Corp Services	Suite Monitor	Katie Swan	667-3337	katie.swan@aadnc-aadnc.gc.ca
	Alternate	Carly Carruthers	667-3984	carly.carruthers@aadnc-aadnc.gc.ca
	Alternate #2	Kirsten Pattimore	667-3851	Kirsten.pattimore@aadnc-aadnc.gc.ca
RDGO/Comms/ HR	Suite Monitor	Jacqueline Moore	667-3379	Jacqueline.moore@aadnc-aadnc.gc.ca
	Alternate	VACANT		

5th Floor

	Mechanical Room	Fire Department		

Appendix B - Building Emergency Organization*

*Updated as of November 27, 2014

Emergency Officers

Position	Name	Contact Information
Chief Building Emergency Officer	Natasha Andrei	(w) 667-3800 (c) 335-0631 Natasha.Andrei@aandc-aadnc.gc.ca
Deputy Chief Building Emergency Officer	Terri Kaur	(w) 667-8100 (c) 335-7508 Terri.Kaur@ppsc-sppc.gc.ca
Alternate Deputy Chief	Jim Welsh	(w) 667-5063 Jim.Welsh@gov.yk.ca
Building Emergency Officer	Commissionaire	(w) Philippe Praprotnik 667-7664 Esbsecurity@northwestel.net

Wardens

Floor	Position	Name	Phone	Email
1	Floor Warden	Mike Stanley	667-5803	Mike.Stanley@servicecanada.gc.ca
	Alternate	Lorraine Donovan	393-3800	Lorraine.Donovan@hc-sc.gc.ca
2	Floor Warden	Ann Rudniski	667-8100	Ann.Rudniski@ppsc-sppc.gc.ca
	Alternate	Patrice Brunet	393-6883	Patrice.brunet@ppsc-sppc.gc.ca
3	Floor Warden	Kyla Wirth	667-8110	Kyla.wirth@justice.gc.ca
	Alternate	Vera Bossenberry	667-3142	vera.bossenberry@gov.yk.ca
4	Floor Warden	Elijah Buffalo	393-7964	Elijah.Buffalo@aandc-aadnc.gc.ca
	Alternate	Marie-Louise Boylan	667-3854	Marielouise.Boylan@aandc-aadnc.gc.ca

SNC – Lavalin O&M

Position	Name	Contact Information
Assistant Facilities Manager	Joanne Gueho	(w) 667-3893 (c) 335-3753 joanne.gueho@snclavalinom.com
Building Technician	Justin Peterson	(w) 668-6910 (c) 333-9834 justin.peterson@snclavalinom.com
Building Technician	April Williams	(w) 668-8120 (c) 334-5211 april.williams@snclavalinom.com

Commissionaires

Position	Name	Contact Information
Supervisor	Philippe Praprotnik	(w) 667-7664 (c) 333-3429 esbsecurity@northwestel.net

Regional Contacts

Position	Name	Contact Information
Emergency Measures Organization		867-667-5220
Public Safety Canada		250-363-3621
PWGSC Safety, Health, Security & Emergency Preparedness	Jeff Kingsley, Regional Manager Safety & Security	604-775-9380

Distributed by:

Corporate Services
Aboriginal Affairs and Northern Development Canada
Yukon Region

Room 415C, 300 Main Street
Whitehorse, Yukon Y1A 2B5
Phone: 867-667-3800

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Contact information updated quarterly

Appendix C - Registry of Persons Requiring Special Assistance

The Deputy Chief Building Emergency Officer maintains a list of persons requiring special assistance during an emergency. A copy of this register is also kept at the front door security and information desk by the commissionaires as, a reference for Fire Department personnel.

This lists occupants with:

- a) permanent disabilities such as visual or mobility impairments, etc;
- b) medical disabilities such as heart conditions, back problems, etc;
- c) temporary physical conditions such as broken limbs, pregnancy, etc.

If you will need help during evacuations, please complete the form on the next page, remove it and give it to the Chief Building Emergency Officer and a copy to the Commissionaire at the security desk.

Note: This form must be submitted on a yearly basis by April 1st to keep records current, up to date and active.

Request for Help During Evacuations Form

To: Chief Building Emergency Officer

Date: _____

Re: **Help During Evacuations**

I have a permanent disability ☐

I have a medical disability ☐

I have a temporary physical condition ☐

I would like to receive more information on evacuation procedures for mobility-impaired persons, including having monitors assigned to provide assistance in my evacuation of the building during an emergency.

I understand that the information below is to be maintained in a log book at the security desk for use by the Emergency Responders upon their arrival.

Name: _____

Phone: _____

Floor: _____

Workstation Location: _____

Nature of your disability:

This form must be submitted on a yearly basis by April 1st to remain active.

Appendix D - Workplace Violence Incident Report

To be completed separately by all individuals involved in the incident

Complainant Information

LAST NAME		FIRST NAME		PHONE NUMBER
DATE (YY/MM/DD)	TIME	DURATION (MINUTES)	INCIDENT LOCATON	

Alleged Perpetrator (s)

NAMES IF KNOWN
☐ Co-Worker ☐ Client ☐ Visitor ☐ Other:
BRIEF DESCRIPTION OF THE ALLEGED PERPETRATOR(S)

Name(s) of Witness(es) and/or those providing assistance

NAME	PHONE NUMBER
☐ Co-Worker ☐ Client ☐ Supervisor ☐ Member of the Public ☐ Other:	
NAME	PHONE NUMBER
☐ Co-Worker ☐ Client ☐ Supervisor ☐ Member of the Public ☐ Other:	
NAME	PHONE NUMBER
☐ Co-Worker ☐ Client ☐ Supervisor ☐ Member of the Public ☐ Other:	

Description: Give a thorough description of the incident (what happened, where it occurred, what led up to the incident (any other occurrences) who else was present, what action was taken, impact on you)

Medical Attention Required: ☐ Yes ☐ No

Name of Person Reporting Incident (Print)

Signature

Role in Incident: _____

Date: _____

Appendix E - BOMB THREAT

Telephone Procedures Bomb Threat Checklist

Instructions:

- Stay calm
- Be courteous
- Listen to the caller, but do not interrupt
- Notify Supervisor by pre-arranged signal if possible while caller is on the line.
- If have call display; make note of phone number.

Time: _____ Date: _____ Time Call Ended: _____

Description of Caller:

Sex:	☐ Male ☐ Female	Age:	☐ Young ☐ Middle Aged ☐ Senior
Tone of Voice	☐ Loud ☐ Highly Pitched ☐ Raspy	☐ Soft ☐ Deep ☐ Pleasant	☐ Gruff ☐ Disguised
Speech:	☐ Fast ☐ Distinct ☐ Stutter ☐ Slurred	☐ Slow ☐ Distorted ☐ Nasal ☐ Lisp	☐ Slang ☐ Halted ☐ Garbled
Language:	☐ Excellent ☐ Poor	☐ Good ☐ Foul	☐ Fair
Accent:	☐ Yes, sounds like: _____ ☐ No		
Manner:	☐ Calm ☐ Emotional ☐ Excited ☐ Crying	☐ Angry ☐ Deliberate ☐ Drunk ☐ Irrational	☐ Rational ☐ Incoherent ☐ Laughing ☐ Other: _____
Background Noises:	☐ Machinery ☐ Office Equipment ☐ Traffic	☐ Animals ☐ Airplanes ☐ Trains ☐ Music	☐ Voices ☐ Party Atmosphere ☐ Other: _____ ☐ PA System

Can you identify the voice? _____

Bomb Facts: If the caller seems agreeable to further conversation, ask:

When is the bomb set to go off? Hour: _____ Time Remaining _____

Where is the bomb located? Building _____ Area _____

Did the caller seem familiar with the building through his description ☐ Yes ☐ No

What kind of bomb is it? _____

How do you know so much about the bomb? _____

Who are you (name & address)? _____

What would you like me to do? _____

Action to take immediately after the call:

- Write out the entire message and any other comments on a separate sheet of paper and attach it to the bomb checklist.
- Notify your supervisor
- Do not talk to anyone else, unless instructed to by supervisor.

Name of Person Receiving the Call: _____

Employer and Department: _____

CHAPTER 8. PERSONAL PROTECTIVE EQUIPMENT POLICY

8.1 PURPOSE

The purpose of this chapter is to minimise accidents and injuries to employees through the mandatory use of Personal Protective Equipment (PPE). This Chapter is in two parts – the first part consists of the YGS Policy concerning when and where PPE is to be employed, including the purchase and maintenance of PPE, and the second part consists of information sheets describing the types of PPE that are approved for use by YGS employees.

8.2 POLICY

Under the Yukon Workers Compensation Act and YGS operational rules, all employees **must** use proper PPE as outlined in this chapter. This policy also applies to all students, volunteers, visitors and guests who are working under the supervision of a YGS employee, working closely with a YGS employee or working in a YGS facility (e.g., by visiting a camp administered or operated by YGS, by traversing with a YGS employee, or by working in the Core Library). Failure to use proper PPE may lead to a fine under the Yukon Worker Compensation Act.

8.2.1 General Provisions

- All PPE purchased and used by YGS shall be within the requirements prescribed by the Yukon Occupational Health and Safety Act and Regulations and shall be CSA or ANSI-certified where applicable;
- All PPE used by YGS shall be maintained and stored in accordance with the manufacturer's instructions and requirements;
- All YGS-issued PPE will be inspected at the time of issue and before each use by the employee using the PPE;
- All PPE that is of questionable reliability, damaged or in need of service or repair shall be tagged and removed from service immediately;
- All tagged PPE that has been removed from service will either be disposed of immediately or repaired and inspected by a qualified person, at which time it will be returned to service with a tag indicating its working condition;
- YGS will maintain appropriate logs/records of appropriate inspection and service for specialised PPE for which regular inspection and/or servicing is recommended by the manufacturer;
- No piece of PPE will be modified or changed contrary to its manufacturer's instructions or specifications or applicable OH&S legislation or regulations.

8.2.2 Purchase of PPE

- Employees who are in positions that require them to conduct fieldwork on a regular and continuing basis and are required to purchase PPE (such as work boots and rain gear) are eligible to be reimbursed \$10/day up to a maximum of \$200 per year on or after April 1st. Receipts must be provided
- All PPE other than work boots, rain gear and thermal wear will be purchased directly by YGS and will remain the property of YGS.

8.2.3 Vehicles

While driving government vehicles (cars, vans and trucks) supplied by the employer, employees are required to wear properly fitting shoes or boots that are securely attached to the feet. The driving of government vehicles in bare feet, stocking feet, or loose-fitting footwear such as sandals or flip-flops is not permitted.

8.2.4 ATVs

While driving, or riding as a passenger on an ATV, employees are required to wear sturdy leather work boots, long trousers, long-sleeved shirts, CSA-approved eye protection, a CSA-approved helmet and leather work gloves.

8.2.5 Chartered Aircraft

While riding as a passenger in chartered fixed-wing or rotary-wing aircraft, all employees are required to wear sturdy leather work boots or winter boots, long trousers, and long-sleeved shirts. It is recommended that clothing worn next to the skin be made of natural fibres (*i.e.*, wool, cotton or silk). When working outside a running aircraft, all employees are required to wear hearing protection.

Employees are also encouraged to wear:

- flight suits or clothing made of flame-retardant fabrics such as NOMEX®
- approved flight helmets
- leather work gloves.
- Safety glasses

8.2.6 Camps

While working in or around field camps operated or maintained by YGS, all employees are required to wear sturdy leather work or hiking boots. This does not apply while employees are off duty or while they are inside tents or sleeping, dining, office or dry facilities.

8.2.7 Work Sites with Mobile Heavy Equipment

Where YGS employees are conducting site visits to mining camps, drill pads, or work sites where mobile heavy equipment is employed, including all underground work sites, they must adhere to PPE requirements outlined by the site operator.

At a minimum, YGS employees at these sites are required by YGS to wear long trousers, long-sleeved shirts, CSA Grade 1 high-cut steel-toed safety boots, CSA-approved eye protection, a CSA-approved hard hat and leather work gloves. Any additional requirements in force by the operator will apply to YGS employees. This does not apply while employees are inside tents or sleeping, dining, office or bathroom facilities.

Mobile heavy equipment includes: dump trucks, wheel or track-laying loaders, bulldozers, shovels, excavators, back-hoes, scrapers, graders, overburden drills and rock drills, and trommels, sluice-boxes, processing plants, muckers, slushers, scoop-trams, load-haul-dump machines, raise-climbers, and locomotives.

8.2.8 Traversing

While traversing on foot in the field all employees are required to dress appropriately for the terrain and the weather conditions. All employees are also required to carry on their person at all times:

- a bear-spray canister in a holster securely attached to clothing (belt, trousers or cruiser vest).
- an appropriate backpack containing basic safety equipment that will allow you to call for help and survive up to 24 hours if you become injured, lost or stranded (as outlined in the safe work practices for fieldwork and traversing, SWP-004).

Each member of a field party must carry a VHF radio if they are separated beyond the distance of voice travel, while remaining in distance of sight.

One member of a field party must carry a satellite telephone with spare battery.

8.2.9 Hammers & Chisels

While using hammers and chisels to collect rock specimens and samples all employees are to wear CSA-approved eye protection (as outlined in the following section) and leather work gloves.

8.2.10 Boats

- While operating, or riding as a passenger in, a boat, all employees are required to wear a Transport Canada-approved personal flotation device or lifejacket.
- In addition, all employees are required to carry the same minimum safety equipment as outlined under Traversing above in an easily accessible and secured waterproof bag.
- In addition, all boats owned, leased or used by YGS are required to carry additional safety equipment as prescribed in the Small Vessel Regulations made under the Canada Shipping Act, 2001 for the type and size of boat being used. Depending upon the type and size of boat such equipment may include some or all of the following: a bailing device, a floating line at least 15m long, a life ring, oars or paddles, a sound signalling device, a waterproof flashlight, a re-boarding device, a fire extinguisher. Further details of these requirements are outlined in the section on safe work practices for boating (SWP-003).

8.2.11 Rock splitting, cutting and polishing equipment and soil/aggregate sieving equipment

While operating any of this equipment employees shall wear CSA-approved eye and ear protection (as outlined in the safe work procedures) and appropriate work gloves. Further details of these requirements are outlined in the section on safe work practices for the Core Library (SWP-007).

8.2.12 Handling core and working on warehouse grounds in proximity of forklift

When handling core and working in the warehouse area and on the core library grounds, employees shall wear CSA-approved eye protection, appropriate work gloves and appropriate steel-toed footwear. When working in and around an operating forklift and other moving vehicles, employees shall further wear CSA-approved hard hats and high visibility safety vests as well as eye protection, work gloves and steel-toed footwear.

8.3 FURTHER INFORMATION

- General PPE regulations are outlined by the Yukon Workers Compensation Health & Safety Board in the Occupational Health and Safety Regulations, Part 1: General Safety Regulations, Sections 1.08 – 1.43:
<http://www.wcb.yk.ca/ActsPoliciesAndRegulations/OccupationalHealthAndSafety/OccupationalHealthAndSafetyRegulations.aspx>

8.4 EYE PROTECTION

General Information

This PPE is designed to protect the worker from flying particles produced during hammering (with or without a chisel) and rock cutting and polishing equipment, as well as from dirt and particulates kicked up in the wash of the overhead rotor blade of a helicopter.

CSA-approved eye protection offers side protection. Markings indicating safety approval are usually found on the frame inside the temple near the hinges of the glasses. The lenses must be either plastic or polycarbonate, which are lightweight but scratch easily. Plastic lenses have less resistance to sharp or pointed objects and are significantly weakened by scratches or chipped edges. If significantly scratched they should be disposed of and replaced immediately. Polycarbonate lenses offer good UV protection and are more impact-resistant, even if badly scratched.

Hardened glass prescription lens and sun and sport glasses are not an acceptable substitute for proper, mandated industrial safety eye protection. Safety eyewear should be worn over prescription lenses.

DO

- Ensure eye protection is CSA-approved.
- Ensure your eye protection fits properly and that your vision is not impeded or distorted. Comfort and fit are very important in the selection of safety eye wear. Lens coatings, venting or fittings may prevent fogging.
- Clean safety glasses regularly. Rinse them first with water to remove any large particles, then clean with soap and water and dry with a soft lint-free cloth.
- Store safety glasses in a safe, clean, dry place. This is key to their longevity!
- Replace pitted, scratched, bent and poorly fitted eyewear. If they interfere with your vision or are uncomfortable, you will be disinclined to wear them all the time.
- If you wear contact lenses, consider that your PPE must fit over your spare glasses also.

DO NOT

- Modify eye protection.
- Use eye protection that does not have a proper CSA certification.

For more information, refer to:

- Canadian Center for Occupational Health and Safety – Safety Glasses and Face Protectors:
<http://www.ccohs.ca/oshanswers/prevention/ppe/glasses.html>

8.5 FOOT PROTECTION

General Information

Safety footwear protects the feet from injury (compression, puncture injuries, ankle injuries and impact) and provides optimum stability in the workplace. This section describes 1) boots for field traversing and 2) industrial footwear for working around heavy equipment and unstable objects.

1. For traversing, sturdy leather or plastic backpacking or mountaineering boots are appropriate; not suitable are shoes designed for day hiking or light trail running. The sole of hiking boots should have good traction (tread deeper than 6 mm; not worn down), and the uppers should extend above the ankle and be stiff enough to support it.
2. Industrial footwear is divided into three grades indicated by coloured tags and symbols:
 - The tag color tells the amount of resistance the toe will supply to weight dropped on it.
 - The symbol indicates the strength of the sole. For example, a triangle means a puncture resistant sole able to withstand 135 kg (297 lbs) of pressure without being punctured by a 5 cm (2 inch) nail.

The choice of protective footwear is a balance of function in normal use and protection for the worst foreseeable, injury-causing situation. The preference should be toward over-protection where practical.

DO

- Choose footwear according to the job hazard and approved standards.
- Choose a high-cut boot to provide ankle support for fieldwork. A low-cut shoe with steel-toed protection is suitable for warehouse work and core handling at the H.S. Bostock core library.
- Fasten the boots securely (boots do not protect if the laces are a tripping hazard or they come off during an emergency).
- Use protective coatings (wax- or silicone-based preparations) to preserve the boot exterior; dry them at every opportunity and keep them safe from gnawing creatures.
- Remember that wet boots conduct electrical current.

DO NOT

- Wear defective industrial footwear (*i.e.*, exposed steel toe caps).
- Expect your previously used and comfortable hiking boots to provide as much traction as they did when new. Traversing rugged terrain is hard on stitching and flex points, so new boots are recommended when starting a prolonged season.
- Under-protect your feet.
- Modify safety footwear.

For more information, refer to:

- Canadian Center for Occupational Health and Safety – foot comfort and safety at work:
(http://www.ccohs.ca/oshanswers/prevention/ppe/foot_com.html)

8.6 HEAD PROTECTION

General Information

Hardhats and helmets are designed to protect the head in injury-causing situations: abrupt contact with immovable objects, impact by falling objects, splashes from harmful substances, and contact with energized objects and equipment.

Most head protection is made up of two parts:

- The outer shell (rigid to deflect blows, shield from liquid penetration or insulate from current)
- The suspension (to absorb energy of an impact and distribute the remainder around the skull)

The two components must be compatible and maintained according to manufacturer's instructions. Attachments must be designed specifically for the headwear.

Chin straps are recommended for use with hard hats to keep them in place when bending or stooping to complete work tasks.

Inspection and Maintenance

Proper care is required. The effective life of a hard-hat may be adversely affected by temperature, chemicals, moisture and ultraviolet radiation. Regular washing with a mild detergent and rinsing, drying at every opportunity is wise, also precautions against mould and gnawing animals.

DO

- Replace headgear that is pitted, holed, cracked or brittle.
- Replace headgear that has been subjected to a blow even if damage is undetectable.
- Replace headgear if its serviceability is in doubt.
- Use the components of the headgear according to manufacturer's instructions.

DO NOT

- Drill, remove peaks, or alter the shell or suspension.
- Use solvents or paints on the shell (can compromise structural integrity by brittle or soft spots).
- Re-position chin straps (*e.g.*, over the brim).
- Use a liner that contains metal or conductive material.
- Carry anything in the hard hat while wearing it.

For more information, refer to:

- Canadian Center for Occupational Health and Safety – Headwear:
<http://www.ccohs.ca/oshanswers/prevention/ppe/headwear.html>

8.7 EAR PROTECTION

General Information

Hearing protection devices should be worn if the noise or sound level at the workplace exceeds 85 decibels (dB) or is prolonged. These devices reduce noise levels (either by blocking /filtering noise or cancelling particular frequencies), thereby decreasing the potential for hearing loss.

Typical truck traffic (road-side): 85 dB

Most power tools at 1 m: 110 dB:

Pneumatic (jack-) hammer: 125 dB

Most people's pain threshold: 135 dB

The only useful kind of protection is the protection that is actually worn. The effectiveness of hearing protection is reduced if the hearing protectors do not fit properly or if they are worn during only part of the period of noise exposure. To maintain their effectiveness, they should never be modified.

There are three main types of hearing protection:

1. Ear plugs are inserted to block the ear canal. They may be pre-molded or moldable (foam ear plugs). Ear plugs are sold as disposable products or reusable plugs. Custom molded ear plugs are also available.
2. Semi-insert ear plugs which consist of two ear plugs held over the ends of the ear canal by a rigid headband.
3. Ear muffs consist of sound-attenuating material and soft ear cushions that fit around the ear and hard outer cups. They are held together by a headband.

Protection is increased by using both ear plugs and ear muffs at the same time.

Off-the-shelf ear plugs alone are not recommended where the noise level exceeds 105 decibels.

Note: the manufacturer's noise reduction rating on a hearing protection product is based on continuous noise production, not impulsive noise such as gunfire, and should be considered an estimate; actual protection may be up to 70% less than indicated.

For more information, refer to:

- Canadian Center for Occupational Health and Safety – Hearing Protectors:
http://www.ccohs.ca/oshanswers/prevention/ppe/ear_prot.html

8.8 Hand Protection

General Information

Hand protection is designed to protect against hazards in the workplace either in the field or from working around equipment. Appropriate hand protection is determined relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified. Hand protection is used when hands are exposed to hazards, such as those from:

- skin absorption of harmful substances,
- severe cuts or lacerations,
- severe abrasions, punctures
- harmful temperature extremes.

Hand protection includes gloves or mittens. Glove and mittens can be leather, fabric, rubber or vinyl. The material will depend of the type of protection needed. Protection against abrasion, flying particles or the weather may require leather or fabric hand protection. Chemical protection could be rubber or vinyl depending on what is required by the available M.S.D.S.

DO

- Choose gloves/mitts according to the job hazard.
- Choose glove/mitts that fit properly.
- Replace gloves/mitts that are ripped or have holes.

8.9 High-Visibility Safety Vest

General Information

High-visibility safety vests improve the visibility of workers in areas of high traffic; they are worn to alert drivers and other vehicle operators to a worker's presence. Employees working in the warehouse area and grounds of the H.S. Bostock core library should wear high-visibility safety vests to maximize their visibility in these areas.

Yukon Geological Survey has high-visibility safety vests (HSVA) appropriate for Class 1 activity under the CSA Standard.

DO

- Wear safety vests when working in the warehouse and on grounds of the core library during times of vehicle traffic.

For more information, refer to:

- http://www.ccohs.ca/oshanswers/prevention/ppe/high_visibility.html

8.10 Respiratory Protection – i.e. Dust Masks

General Information

Dust masks are designed to protect the user from airborne particulate such as dust, filings etc. They do not protect the user from noxious fumes or chemical vapours thus should not be used in the place of an approved respirator. Any employee who may encounter or use a hazardous material which may release a hazardous vapour **Must** consult the appropriate **Material Safety Sheets** (MSDS) residing in the **Workplace Hazardous Materials Information System (WHIMIS)**. An up to date version of the **Material Safety Sheets** are kept in a binder by the first aid station outside the saw room at the core library.

Dust protection is used to protect a person's respiratory system from particular matter created in the following activities:

- Dust created while cutting rocks in the saw room,
- Fine vapors created while cutting rocks on the oil saws. Pella oil, the oil we use in the rock saws is a non-toxic mineral oil which may give you the runs if you breathe in too much of it.
- Dust created when sieving rock or glacial material.
- Dust stirred up moving old core boxes or boxes holding archival material.
- Dust created when sanding wood or metal parts.

Where possible employ suitable ventilation to reduce the amount of dust present, i.e. open a widow/door or turn on an exhaust fan.

The Yukon Geological Survey provides fabric disposable masks and a more sophisticated mini respirator type mask which uses disposable cartridges. They are stored outside the rock saw room. If an employee will be working in dusty conditions for long periods of time they may ask their supervisor to purchase a respirator type dust mask for their own personal use so they don't have to share it with other users.

DO

- Replace dust mask when heavily soiled, saturated with sweat or becomes clogged.
- Replace cartridges in respirator type mask when they become clogged.
- Properly dispose of used masks/cartridges in appropriate garbage receptacle.
- Make sure dust mask or respirator type mask is properly fitted.

DO NOT

- Use a dust mask or respirator type dust mask if clogged.
- Continue to use a dust mask or respirator type mask if you feel light headed.
- Use a dust mask or respirator type mask for protection from toxic vapours.

- **For more information, refer to:**

- *Canadian Center for Occupational Health and Safety – Respirator Selection:
<http://www.ccohs.ca/oshanswers/prevention/ppe/respslct.html>

*This site is mostly for enclosed respirators but offers some advice for dust masks and dust type respirators.

CHAPTER 9. H.S. BOSTOCK CORE LIBRARY

9.1 BACKGROUND

The H.S. Bostock Core Library, located at 91807 Alaska Highway in Whitehorse, is a facility owned by the Government of Yukon and co-managed by the Yukon Geological Survey (YGS) and Forestry Management Branch (FMB). YGS is the primary tenant, with occasional seasonal use by FMB staff. The facility consists of a building and a shared compound surrounded by a chain link fence.

Compound

The compound is shared with FMB and Compliance Monitoring and Inspections (CM&I). It can be accessed from the east side (off the Alaska Highway) through a locked vehicle gate and from the west side through a locked person-gate.

Within the compound, YGS has two outdoor sheds, used to store gasoline and propane, and numerous lockers for storing diamond drill core. ATVs and travel trailers belonging to YGS are stored on site within the compound, as are YGS fleet vehicles. Additional vehicles and outbuildings belonging to FMB and CM&I are also in the compound.

H.S. Bostock Core Library Building

The Core Library building is a two storey building comprising a cold storage warehouse and heated lab space on the first floor, and heated offices on the second floor. The cold storage is used to store field gear and sample collections belonging to YGS; some shelves can only be accessed with a forklift. Only certified users can use the forklift (for training requirements for forklift operation, see Chapter 2, section 2.3). The lab area includes layout space for sample viewing, a saw room with 4 rock saws, and a sieving room with sieves and shakers for processing sediment samples and a vibrating lap for grinding and polishing rock slabs. Use of any equipment requires pre-authorization by the Core Library Manager or YGS Head of Mineral Services (or a delegate).

Contact Information:

- Core Library Manager (seasonal): Craig Nicholson; creg.nicholson@gov.yk.ca
- Economic Geologist: Patrick Sack; 667-3203; patrick.sack@gov.yk.ca

Offices at the Core Library are located on the second floor, accessible by the front entrance.

9.2 SECURITY

Both gates into the Core Library compound are kept locked at all times. For access through the gates, contact the Core Library Manager or building staff. The front entrance to the Core Library building is outside the compound, allowing access to the building without going through a gate. The door is unlocked between 8:30 am and 4:30 p.m., Monday to Friday.

With the exception of the front door, all outside doors to the Core Library are kept locked at all times. Access is via an electronic lock, and authorized staff have been assigned fob keys.

The lower door at the stairs between the upper and lower floors has a keyed lock to prevent unauthorized access from the lower level to the upper level. This locking door prevents visiting clients from wandering into the office space on the upper floor after hours.

The double doors into the cold storage warehouse have a keyed lock to prevent unauthorized access from the warm area into the warehouse. This locking door prevents visiting clients from accessing the warehouse after hours.

Two whiteboards are posted on the second floor of the building. One is used to track the status (In/Out) of staff and one is used to indicate the presence of visiting clients in the lab area on the first floor. In the event of a need to evacuate the building, the building safety monitor (Johann Slam, lower level; Sarah Laxton, upper level) will bring the two whiteboards outside as they leave the building, to confirm everyone has safely left the building.

In order to keep the building secure, staff is reminded of the following:

- the last person to leave the facility for the day must ensure the building is secure and the doors are locked; and
- ensure that any equipment stored outside in the compound is secure.

9.3 EQUIPMENT AVAILABLE FOR USE

Prospectors, geologists, researchers and others may request access to use the Core Library. Equipment available to users includes oil- and water-cooled rock saws, a shaker table with sieves, a manual core splitter, binocular microscope, a vibrating lap for grinding and polishing rock slabs, a manual core splitter, and tables for laying out and viewing rock and core samples.

Approval must be obtained from the Core Library Manager or YGS Head of Mineral Services (or delegate) before using any of the lab equipment. Users must comply with all the safe work practices and safe job procedures identified for each piece of equipment in the lab area and sign the liability waiver.

9.4 USE POLICY

The two largest issues surrounding Core Library use are thievery/vandalism and safe work practices when using equipment.

- Safe work practices and safe job procedures documents found in Chapter 4 of the Yukon Geological Survey Health & Safety Program Manual must be read, understood, signed and dated by all new employees and any non-YGS or non-Forestry person using the Core Library facility and equipment therein.
- New users or users unfamiliar with the YGS equipment they want to operate must receive a safety orientation including instruction and demonstration of any specialized equipment from a qualified YGS employee before using the Core Library equipment. Contact the H.S. Bostock Core Library Manager. Instructions for the safe use of rock saws are posted on the walls above the saws and all safety equipment required to operate the saws (hearing protection, eye protection, rain jackets, gloves, *etc.*) are stored in the area.
- Users must familiarize themselves with the location of emergency equipment prior to using equipment at the Core Library. First aid kits and an eye wash station are on-site. A phone with emergency numbers posted is located in the office by the core layout area. All users should be familiar with chemical storage locations and WHMIS information sheet locations in the Core Library.
- All non-YGS and non-Forestry users must report to either Mineral Services or Forestry to obtain permission to use the Core Library.
- Government and non-government users who wish to use the YGS test sieve shaker must receive instruction on the equipment prior to using it. Contact Mineral Services to receive permission to use the sieve shaker and to gain access to the sieving room.
- The sign-in/out book for both the Core Library facility and the YGS rock saws are kept near the saw and sieving room. Users must record their name, the date and the hours used on which piece of equipment.
- With special permission from the Head of Mineral Services, users may be able to use the facilities over the weekend if they plan to do work at that time. The Head of Mineral Services will provide the user with a fob to access the lab area on the first floor, and provide a security briefing to the users.

- All users of the core facility are responsible for cleaning up after themselves and reporting any damage or safety issues to the Mineral Services office or to the Forestry office.
- Users wishing to temporarily store large items (e.g., ATVs, trucks) within the Core Library compound must receive special permission from the Head of Mineral Services and/or Forestry.

9.5 CORE AND ROCK VIEWING/LOGGING

- Users may request permission to use the Core Library facilities to view/sample core donated to the YGS by various companies. Users must have an orientation of the facilities and any equipment they plan to use (including, but not limited to, the rock saws and sieve shaker). The sign-in/out book contains safe job procedures and safe work practices, and is located beside the entrance to the saw room. Users are required to review the appropriate SWP and SJP and sign the YGS liability waiver before permission to use the facilities is granted. Core boxes or rock samples brought in by users must not block any external entrances to the Core Library building (regular or garage doors). Rock samples and drill core must not be stored in the loading area or in the halls where it can obstruct passage.
- Users that are logging or viewing drill core or rocks in the cold storage area may request the use of stand-alone floodlights and electrical heaters. These lights and heaters must be shut off when not in use.
- Users that are logging or viewing drill core must follow safe job procedures and safe work practices for lifting and moving core boxes, as outlined in Chapter 4 of the Yukon Geological Survey Health & Safety Program Manual.

CHAPTER 10. PREVENTATIVE MAINTENANCE PROGRAM

10.0 PREVENTATIVE MAINTENANCE POLICY

It is the policy of Yukon Geological Survey to inspect and maintain all tools, vehicles, and equipment in a condition that will maximize the safety of all personnel.

To accomplish this, a Preventative Maintenance Program shall be maintained and shall include the following components:

- Adherence to applicable regulations, standards, and manufacturers' specifications
- Services of appropriately qualified maintenance personnel
- Scheduling and documentation of all maintenance work

This policy covers use and maintenance of the following equipment:

- Core Library: power and hand tools, rock saws, core splitter, sieving equipment, ladders, power cords, temporary lighting equipment, temporary heating equipment, personal protective equipment, hoses, fire protection equipment
- Transportation: travel trailer, trucks, ATVs and ATV trailers
- Field equipment: hammers, firearms, bear spray, propane stoves and hoses, generators, batteries

10.1 RESPONSIBILITIES

- Employees will be designated for a specific component of the program for which he/she will be responsible.
- All preventative maintenance and servicing are to be carried out by qualified personnel according to established schedules.
- Records must be kept of all inspections, servicing, and corrective actions and filed with the office administrator.
- All employees shall regularly check all tools, vehicles, and equipment that they are working with, and shall take out of service any equipment that is not functioning properly. A Tool/Equipment inspection tag (repair tag) must be affixed to the item and brought to the attention of their supervisor.

10.2 FLEET VEHICLES

This policy applies to the two fleet vehicles owned by the Yukon Geological Survey, as well as to all other vehicles rented during the field season.

RESPONSIBILITIES:

- Crew chiefs are required to inspect their rental vehicles regularly during the field season (i.e. at least once every 30 days, and prior to and following trips on remote or rough roads), and keep records of having completed the inspection checklist below.
- Major mechanical inspections, maintenance and provision of safety equipment are the responsibility of Fleet Vehicles and/or the affiliated rental agency.
- Any major adjustments, repairs, oil changes, electronic malfunctions or other substantial issues that require corrective action must be brought to the attention of Fleet Vehicles immediately.

VEHICLE INSPECTION CHECKLIST (to be performed at least once per month):

Item	Check	Pass (Y/N)	Action required
Tires	-air pressure as specified on tire (including spare tire) -even and acceptable degree of wear on tires (no cuts, cracks and bulges)		
Fluids	Adequate windshield washer fluid, engine oil and brake fluid		
Lights & electronics	Exterior lights & electronics fully functioning		
4 wheel drive	4 wheel drive fully functioning		
Parking brake	Parking brake fully functioning		
Engine	Engine running smoothly without unusual noises		
Alignment	Steering doesn't require excessive correction due to poor wheel alignment		
Safety equipment	Shovel, jumper cables, tow rope, jack, wheel wrench, spare tire, flashlight, first aid kit, fire extinguisher, roadside safety triangles		
Other observations			
DATE: _____ LICENCE PLATE: _____ ODOMETER: _____ km			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.3 ALL TERRAIN VEHICLES (ATVs)

This policy applies to the two ATVs owned by the Yukon Geological Survey, as well as to any that are borrowed or rented for extended periods of time. YGS ATVs are stored at the core library and are available for use by any YGS employee who has completed ATV Safety Certification training. YGS owns a Suzuki Quad Runner 300 and a Suzuki King Quad 300.

RESPONSIBILITIES:

- The Mineral Services unit is responsible for the care and maintenance of both ATVs.
- Users must familiarize themselves with the owner's manual for the model of ATV they are using.
- Crew chiefs are required to inspect their ATV regularly during the field season (i.e. at least once every 30 days, and prior to and following trips on remote or rough roads), and keep records of having completed the inspection checklist below.
- Any problems that can be remedied on the spot should be addressed immediately by the inspector.
- If problems are identified that cannot be remedied immediately, they must be reported immediately to the unit Head and the equipment must be disabled and tagged with a repair tag describing the service or repair required.
- Records of each inspection and any necessary corrective action must be filed with the Head of Mineral Services and the YGS office administrator.
- Detailed mechanical inspections, servicing and maintenance should be scheduled as needed with Lister Motor Sports or other ATV dealership, and should be completed once a year in the spring before the field season.

BASIC MAINTENANCE PROCEDURES:

- Rinse the ATV after each trip and let it dry. Allow the brakes to fully dry before riding.

Engine oil

- The ATV takes 2 cycle oil. Add oil when the oil level is no lower than ½ inch from the bottom of the tank. Never run ATV without 2 cycle oil, as this will destroy the engine.
- Use synthetic oil, which is less sensitive to temperature and provides instant lubrication when starting the engine.

Winter storage

- Store the ATVs inside the gas storage shed in the Core Library compound.
- Remove the batteries and store them indoors on the warm side of the Core Library.
- Turn the wheels a little every month in order to prevent the tires from becoming degraded in one spot.
- Fill gas tank with fuel containing appropriate cold-storage solvent for prolonged winter storage.

ATV INSPECTION CHECKLIST (to be performed once per month or after heavy use):

Item	Check	Pass (Y/N)	Action required
ATV	ATV is generally clean		
Battery	Battery is in good condition. Terminal connections are clean and tight.		
Fuel tank	Fuel tank is reasonably full (prevents moisture from condensing)		
Crank Case Oil	Oil level is adequate.		
Engine	Engine is working well and does not make any unusual noises.		
Air filter	Air filter is clean.		
Spark plug	Spark plugs are clean, functioning and free from cracks or corrosion.		
Handlebars	Handlebars move easily left and right. Throttle, clutch and brake move easily and snap back.		
Cables	Throttle cable and brake cables are not worn or kinked. (Cables can be lubricated to prevent premature wear or corrosion.)		
Drive chain	Drive chain is clean and lubricated. Use non-oil-based graphite spray.		
Brakes	Brakes (including parking brake) are fully functioning		
Nuts & bolts	Nuts & bolts are not loose or corroded.		
Tires	Tires have adequate pressure and an acceptable degree of wear.		
Lights & switches	Lights and switches are functioning. (Check ignition switch and engine stop switch)		
Other observations			
DATE: _____ UNIT: _____ ODOMETER: _____ km			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.4 MANUAL CORE SPLITTER

This policy applies to the manual core splitter owned by the Yukon Geological Survey and located at the H.S. Bostock Core Library, stored in the storage room of the Saw Room.

RESPONSIBILITIES:

- The core splitter should be inspected by a qualified YGS employee, as designated by the Head of Mineral Services, before any scheduled or unscheduled use following the inspection checklist below.
- Any problems that can be remedied on the spot should be addressed immediately by the inspector.
- If problems are identified that cannot be remedied immediately, they must be reported immediately to the Head of Mineral Services and the equipment must be disabled and tagged unusable until it is fixed.
- Records of each inspection and any necessary corrective action must be filed with the Head of Mineral Services and the YGS office administrator.

CORE SPLITTER INSPECTION CHECKLIST (to be performed every two months):

Item	Check	Pass (Y/N)	Action required
Blade	Core splitting blade is sharp (feels slightly sharp to touch) and free from damage		
Wheel handle	Wheel rotates freely. (Use oil on threads if wheel doesn't spin freely)		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.5 SIEVE SHAKER

This policy applies to the sieve shaker owned by the Yukon Geological Survey, and located at the H.S. Bostock Core Library.

RESPONSIBILITIES:

- The sieve shaker should be inspected by a qualified YGS employee, as designated by the Head of Mineral Services, as appropriate seasonally using the inspection checklist below.
- Any problems that can be remedied on the spot should be addressed immediately by the inspector.
- If problems are identified that cannot be remedied immediately, they must be reported immediately to the Head of Surficial Geology and the equipment must be disabled and tagged unusable until it is fixed.
- Records of each inspection and any necessary corrective action must be filed with the Head of Surficial Geology and the YGS office administrator.

BASIC MAINTENANCE PROCEDURES:

- Sieve shaker should be cleaned after use. Ensure all sieves are free from sediment and other particulates. Wipe dust from machine and wipe surrounding area after use.

SIEVE SHAKER INSPECTION CHECKLIST (to be performed at least once per month):

Item	Check	Pass (Y/N)	Action required
Motor	Motor is in good shape with no grinding noise or variation in pitch (frequency)		
Sieve trays	Round trays are in good condition – no broken mesh, no build-up of residue or stuck particles		
Bolt	Bolt attaching the unit to the counter-top is secure		
Belts	Gas spring is in good condition – moves easily within its housing		
Ventilation system	Main ventilation system is free of dust and particle build-up and is fully functioning. Empty bag in adjacent room if it is full. Overhead air cleaner is system and fully functioning.		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.6 ROCK SAWS

This policy applies to the four rock saws owned by the Yukon Geological Survey, and located at the H.S. Bostock Core Library.

RESPONSIBILITIES:

- The rock saws should be inspected by a qualified YGS employee, as designated by the Head of Mineral Services, every two months using the inspection checklist below.
- The rock saw water recycling system should be inspected by a qualified YGS employee, as designated by the Head of Mineral Services, every two months using the inspection checklist below.
- Any problems that can be remedied on the spot should be addressed immediately by the inspector.
- If problems are identified that cannot be remedied immediately, they must be reported immediately to the Head of Mineral Services and the equipment must be disabled and tagged unusable until it is fixed.
- Records of each inspection and any necessary corrective action must be filed with the Head of Mineral Services and the YGS office administrator.

BASIC MAINTENANCE PROCEDURES:

- Shut down and unplug all saws during maintenance and inspections.

10.7 INSPECTIONS AND SERVICING

10.7.1.1.1 Level I Service – all saws (to be completed once every two months)

Item	Check	Pass (Y/N)	Action required
Saw blade (see Saw Blade Inspection – Section 3)	Blade has none of the following: -dishing or warping -cracks -uneven segment wear/loss -flattening near arbor hole -undercutting Water saw blades are set at appropriate height – blade edge is just below assembly conveyor		
Oil coolant	Adequate oil coolant in reservoirs of oil saws -14" slab saw - bottom 1/4" - 1/2" of diamond blade is submerged in oil. (no more than 3/4 inch of blade should be submerged in oil) -Large oil saw – oil is spraying on to blade		
Sediment build-up	No sediment build-up in water-cooled rock saws		
Overall saw condition	No other notable issues		
Rock pails	Rock sediment pails are empty (discard in dumpster)		
Inspect sump	-First sump is not overflowing into second sump. Shovel out sediment into 5 gal bucket once a few centimeters of sediment builds up at the bottom. Dispose of sediment in designated site on property. -Second sump is empty (call contractor to empty)		
PPP safety equipment	-Ear protection, eye protection, hand protection equipment and protective clothing is clean, in good condition, and stored appropriately in close vicinity to the saws		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.1.2 Level I Service – water recycling system (to be completed once every two months)

Item	Check	Pass (Y/N)	Action required
Water level alarms High level alarm Low level alarm	Turned to Auto		
Upper water drain stopcock valve	Turned to Open		
Rice sacks containing sludge	Less than two-thirds full		
Sludge levels in bottom tray	All pipes clear and allow water to flow freely between compartments		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.2.1 Level II Service – (to be completed once every six months)

Saw: Lortone 14" (segmented diamond blade) bench-top oil slab saw with built-in blade sharpener with Hp drive

Item	Check	Pass (Y/N)	Action required
Bolts and fittings vise, hood hinge, carriage feed	Bolts and fittings are secure. Vise, hood hinge and carriage feed are in good working condition.		
Motor	No excess noise or grinding.		
Saw blade (see Saw Blade Inspection – Section 3)	Blade has none of the following: -dishing or warping -cracks -uneven segment wear/loss -flattening near arbor hole -undercutting		
Saw blade (see Saw Blade Inspection – Section 3)	Blade cuts efficiently -check for ease of cutting -check blade wear -Sharpen blade (re-expose the cutting diamonds) by using built-in sharpener.		
Oil fill level	Adequate oil coolant in the reservoir -bottom ¼" - ½" of diamond blade is submerged in oil. (no more than ¾ inch of blade should be submerged in oil)		
Oil quality	Oil is not discoloured, does not smell bad, and has not separated.		
Sediment	Sediment is no more than ¼" deep, otherwise, complete level III Service		
Overall saw condition	No other notable issues		
Oil absorbent	Oil absorbent material is stored in appropriate container in close proximity to the saw		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.2.2 Level II Service – (to be completed once every six months)

Saw: F-36 large oil slab saw – (non-segmented 36" blade)

Item	Check	Pass (Y/N)	Action required
Bolts and fittings, vise, hood hinge and latch	Bolts and fittings are secure. Vise, hood hinge and carriage feed are in good working condition.		
Motor	No excess noise or grinding		
Saw blade (see Saw Blade Inspection – Section 3)	Blade has none of the following: -dishing or warping -cracks -uneven segment wear/loss -flattening near arbor hole -undercutting		
Saw blade (see Saw Blade Inspection – Section 3)	Blade cuts efficiently -check for ease of cutting -check for blade wear -Sharpen blade if necessary (re-expose the cutting diamonds) by making 3-4 cuts through a piece of brick.		
Oil fill level	Adequate oil coolant in the reservoir -oil is spraying onto blade from rear Oil catchment below saw – first two baffles should be full up to holes.		
Oil quality	Oil is not discoloured or smelly, and has not separated.		
Overall saw condition	No other notable issues		
Oil absorbent	Oil absorbent material is stored in appropriate container in close proximity to the saw		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.2.3 Level II Service – (to be completed once every six months)

Saw: #1 Water-cooled core-cutting saw - Pothier Enterprises (14" diamond blade) (with detachable core-cutting bracket)

Item	Check	Pass (Y/N)	Action required
Bolts, fittings and conveyor assembly	Bolts and fittings are secure. Conveyor assembly is in good working condition.		
Motor	No excess noise or grinding.		
Saw blade (see Saw Blade Inspection – Section 3)	Blade has none of the following: -dishing or warping -cracks -uneven segment wear/loss -flattening near arbor hole -undercutting		
Saw blade (see Saw Blade Inspection – Section 3)	Blade cuts efficiently -check for ease of cutting -check for blade wear -Sharpen blade if necessary (re-expose the cutting diamonds) by making 3-4 cuts through a piece of brick. Ensure blade is at appropriate height -if core-cutting bracket is attached, blade edge should be just below "V" in core-cutting bracket) -without core-cutting bracket, blade edge should be just below conveyor assembly, i.e., rock-holding platform		
Water Hoses and Faucets	Water hoses for saw are connected properly, do not have excessive wear, and have properly functioning faucets		
Overall saw condition	No other notable issues		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.2.4 Level II Service – (to be completed once every six months):

Saw: #2 Water-cooled core-cutting saw - Pothier Enterprises (14" diamond blade)

Item	Check	Pass (Y/N)	Action required
Bolts, fittings and conveyor assembly	Bolts and fittings are secure. Conveyor assembly is in good working condition.		
Motor	No excess noise or grinding		
Saw blade (see Saw Blade Inspection – Section 3)	Blade has none of the following: -dishing or warping -cracks -uneven segment wear/loss -flattening near arbor hole -undercutting		
Saw blade (see Saw Blade Inspection – Section 3)	Blade cuts efficiently -check for ease of cutting -check for blade wear -Sharpen blade (re-expose the cutting diamonds) by making 3-4 cuts through a piece of brick. Ensure blade is at appropriate height -if core-cutting bracket is attached, blade edge should be just below "V" in core-cutting bracket) -without core-cutting bracket, blade edge should be just below conveyor assembly, i.e., rock-holding platform		
Water Hoses and Faucets	Water hoses for saw are connected properly, do not have excessive wear, and have properly functioning faucets		
Overall saw condition	No other notable issues		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.1.3 Level III Service – all saws - to be completed every 6 year):

Item	Check	Pass (Y/N)	Action required
Saw blade inspection & reversal (see Section 3 procedures)	Inspect blades for wear & warping.		
Oil Change (see Section 2. Oil Change)	Replace oil in two oil saws -14" Lortone slab saw contains approximately 2.5 gallons of oil coolant in its reservoir -large oil saw contains approximately~ 30 gallons in its oil catchment reservoir under the saw.		
Other observations			
DATE: _____			
COMPLETED BY: _____ SIGNATURE: _____			
DATE CORRECTIVE ACTION COMPLETED: _____			

10.7.2 Oil Change Procedures (Level III Service – once every 6 years)

Wear rubber gloves, face mask and protective clothing when handling used oil. If skin comes into contact with used oil, wash skin with soap and water. Oil is non-toxic but may be an irritant to some.

Only use Lortone cutting oil or a neutral petroleum base oil such as Almeg or Pella with a high flash point and no additives in oil saws

Large rock saw

1. Unplug saw from wall electrical socket.
2. Drain oil into several rock pails
3. Use shovel scoop to scrape sediment into pails. Label pails "pella & rocks for disposal"
4. Attach pre-made PVC piping stored behind the rock saw for drainage into sump.
5. Power wash inside of saw (use degreaser or dishwash detergent). Make sure gears are free of grit. Keep lid up to completely dry out.
6. Once saw is completely dry, refill reservoir with 30 gallons of oil.
7. Unplug hydraulic pump. Remove pump from oil catchment under saw and place pump in bucket half full of clean pella oil.
8. Unscrew metal clip holding the pump hose at the back of the saw. Place hose in bucket with pump. Cover bucket with lid and place a large rock on top (so oil does not spray out). Plug pump into outlet and let the clean oil circulate back into bucket in a circular fashion for several hours.
9. Plug pump into outlet and let the clean oil circulate back into bucket in a circular fashion for several hours if time permits. Label bucket "pella oil for disposal".
10. Drain oil catchment under saw into pails and mark them "pella for disposal".
11. Rinse oil catchment with hot water and scrub with soap until clean and drain water into sump.
12. Allow oil catchment to completely dry then fill first two compartments of oil catchment with oil (up to the holes) then fill third compartment to within 1/2" of top holes.
13. Attach hose back to saw and put hydraulic pump back into third compartment of oil catchment. See labels on catchment.

Lortone oil slab saw

1. Drain oil into bucket. Mark it "Pella for disposal"
2. Unbolt saw case from coolant pan and lift out the case.
3. Remove sediment from the coolant pan (reservoir) using a trowel
4. Wipe down inside with a rag to remove most of the debris.
5. Wipe down power feed screw.
6. Reinstall case in coolant pan, attach bolts
7. Add 2.5 gallons of new oil, so that the blade is submerged up to 1/2".

10.7.3 Detailed Saw Blade Inspection Procedures

WARPING/DISHING

1. Mark rotation direction on each of the blades for the four saws with a felt-tip marker.
2. Remove saw blades one by one.
3. Lay blades on a flat surface and place a rigid metal flat rule on blades to detect warping.
4. If blades are in good shape, reverse them and re-attach them to the saws.
5. If blades are warped or worn, replace them.

Oil saws

1. Examine the blade by looking straight at the blade edge and manually rotating it to detect any warping.
2. Mount a felt-tip marker in the vise of oil saw so that it just touches the blade.
3. Close lid and run saw without oil pump running.
4. If the mark on the blade is even in thickness, the blade is 'true'.
5. If there are big differences in thickness of the mark, the blade is warped and should be replaced.

Water saws

1. Examine the blade by looking straight at the blade edge when the blade is spinning without water.
2. Hold a felt-tip marker firmly on the conveyor assembly with the tip against the edge of the blade.
3. Start the blade for a second without water then turn off.
4. Examine the mark on the blade. If it is even, the blade is 'true'.
5. If there are big differences in thickness of the mark, the blade is warped and should be replaced.

UNEVEN SEGMENT WEAR

1. **Water saws** - With the saw turned OFF - Run your fingers over entire diameter of blade edge to feel for irregularities. Diamonds should protrude $\frac{1}{4}$ mm from blade.
2. **Large Oil Saw** – measure width of serrated edge. If there is more than $\frac{3}{8}$ " (see photo right) the blade is almost new, less than $\frac{1}{8}$ " means it will soon need replacing.
3. **14" Oil Saw** – run your fingers over entire diameter of blade edge to feel for irregularities. Diamonds should protrude $\frac{1}{4}$ mm from blade.



BLADE FLATTENING/UNDERCUTTING

1. Feel around arbor hole for flattening.
2. Undercutting - Examine steel adjacent to diamond-impregnated sections for wear.

Inefficient cutting

1. Examine cut rocks for excessive saw marks and warped rock cut surfaces.



CHAPTER 11. YGS FIELD SAFETY LOGBOOK & FORMS

11.1 PURPOSE

This chapter includes a number of forms and documents reproduced from other parts of the YGS Safety Manual. They have been compiled into a single chapter that can be easily extracted and copied to create a Field Safety Logbook. The logbook is to be used to document activities such as daily crew safety briefings, helicopter check-lists, Declarations of Understanding, and, if required, incident/near miss reports.

Field crew leaders should reproduce enough copies of each page to cover their field program, and are required to turn in their field safety logbook at the end of the season.

The forms included in the Field Safety Logbook include:

- 11.2 Employee Declaration of Understanding
- 11.3 Daily field safety checks
- 11.4 Helicopter safety check
- 11.5 Incident/Near Miss Report
- 11.6 Emergency contact forms
- 11.7 Protocols for firearms storage, practice and emergency use in the field
- 11.8 Camp safety checklist
- 11.9 Phone numbers

11.2 EMPLOYEE DECLARATION OF UNDERSTANDING

YGS Employees

I have read and understood the guidelines and information presented in the document entitled "Yukon Geological Survey Health and Safety Program Manual 2015". I have been apprised of the potential hazards involved in geological fieldwork, and understand the safe work procedures that have been put in place to mitigate those hazards.

I understand my responsibilities and rights regarding occupational health and safety, and so far as is reasonably practical:

- I will take all necessary precautions to ensure the health and safety of myself and others in the workplace;
- I will comply with health and safety procedures and instructions given for my own or anyone else's health or safety by a person having authority over me;
- I will only use equipment on which I have been properly trained according to the training requirements of Yukon Geological Survey's safety program;
- I will report promptly to my immediate supervisor any situation I have reason to believe would present a hazard and which I cannot correct; and
- I have been given the opportunity to ask questions of _____ concerning the content and meaning of the Guidelines. *(supervisor's name)*

Name (Print):	_____	Signature:	_____	Date:	_____
Witness Name (Print):	_____	Signature:	_____	Date:	_____

11.3 DAILY FIELD SAFETY LOG SHEET

Safety Checklist

Check-in number: 867-332-4008

- ☐ **Crew Briefing**
 - crew chief
 - travel route and terrain
 - aircraft (type, landing sites)
 - weather considerations
 - other considerations (forest fires, potential for overnight stay, *etc.*)
 - individual wellness
- ☐ **Vehicle/equipment inspection** (keys, fuel, fluids, tools, *etc.*)
- ☐ **Firearms** (keys, ammo, permits, storage if left in camp)
- ☐ **Traverse location and ETR (expected time of return) left in camp or vehicle**
- ☐ **Camp or vehicle secure** (firearms, clean camp)
- ☐ **Communications**
 - Sat phone and/or radio
 - phone numbers stored with device
 - batteries charged and spares?
- ☐ **Essential Pack Items:**
 - first aid kit
 - wildlife self-defense (bear spray, horn, bangers, *etc.*)
 - safety glasses and gloves
 - map, compass, GPS
 - survival gear (knife, fire-starter, extra food)
 - personal protective equipment (raingear, extra clothing)
 - sun protection (sunscreen, hat, sunglasses)
 - water and food
 - heli-flag and saw for clearing landing sites
- ☐ **Check in daily between 6:00 and 8:00 pm (867-332-4008)**
- ☐ **Document all items if they occur, using daily log book and/or forms:**
 - injuries, near-misses
 - hazardous situations
 - on-site training or safety instructions given to any crew member
 - aircraft logistical arrangements (who you talked to and when)
 - firearm discharge, damage or service

Documentation

11.4 HELICOPTER PILOT BRIEFING CHECKLIST

Crew chief must ensure all crew are briefed by the pilot on each of the following each time they:

- (a) fly with a new pilot, new crew, or new aircraft; or
 - (b) anytime a non-YGS employee with no formal helicopter safety training will be flying with YGS personnel.
- General safety:
 - Aircraft type and range
 - location and operation of ELT and flight-tracking equipment (how to connect/disconnect)
 - Radio equipment, frequencies and operation, radio checks
 - Pilot's satellite phone (how to operate it)
 - Battery location and disconnection
 - Fire extinguisher location and operation
 - Doors and emergency egress
 - Seat belts
 - Intercom and headsets
 - Flotation equipment
 - First aid and survival equipment
 - External features:
 - Cargo storage
 - Skids (height and where to stand)
 - Main rotor
 - Tail rotor
 - Exhaust
 - Controls and panel:
 - Fuel switch and tank location
 - Master power
 - Collective, throttle, cyclic, pedals
 - Warning lights (chips, hot battery, low fuel, transmission pressure/temperature, low RPM, engine out)
 - Emergency procedures and pilot actions:
 - Engine failure
 - Rotor strikes
 - Fire (electrical or otherwise)
 - Crash landings
 - Other malfunctions (hot battery, chips, hydraulic failure, servo failure)
 - Landing sites and approaching the helicopter:
 - Clearances for tail and main rotor
 - Wind and weather considerations (thunder heads, fog, whiteouts)
 - Air-ground communications
 - Pilot's preferences for crew approach/retreat directions
 - Where to wait for pick up (site considerations)
 - Selecting landing sites on snow and ice (pad strength and stability considerations)
 - Toe-in procedures
 - Pilot's preferences for loading crew and gear

Aircraft: _____ Date: _____

Pilot name and signature:

Field crew names and signatures:



11.5 INCIDENT REPORT

TYPE OF INCIDENT: ☐ INJURY ☐ PROPERTY LOSS/DAMAGE ☐ NEAR-MISS

**Lost time injuries must include a copy of a Worker's Report of Injury/Illness (YWCHSB)*

PART 1: TO BE COMPLETED BY CREW-CHIEF OR EMPLOYEE INVOLVED

Please attach additional pages if required

DATE OF INCIDENT:	TIME:	ESTIMATED DAMAGE: \$
NAME(S) OF EMPLOYEE(S) INVOLVED:		
LOCATION:		
DESCRIPTION OF INCIDENT <i>(include factors contributing to incident, and any injuries or damage to property that occurred):</i>		
SUGGESTIONS FOR PREVENTING SIMILAR INCIDENTS IN FUTURE <i>(safe work practices, training, etc):</i>		
LESSONS LEARNED:		
REPORT COMPLETED BY:		
SIGNATURE:	DATE:	
DATE REVIEWED BY INVOLVED PARTIES, FOLLOWING COMPLETION OF PART 3:		

PART 2: TO BE COMPLETED BY REVIEWING TEAM OR SUPERVISOR

RECOMMENDATIONS FOR FURTHER CORRECTIVE OR PREVENTATIVE ACTION:
REVIEWED BY:
SIGNATURE:
DATE:

PART 3: TO BE COMPLETED BY SENIOR MANAGEMENT

ACTION TAKEN:	DATE COMPLETED:
DIRECTOR:	
SIGNATURE:	DATE:

YGS INCIDENT # 2014 - _____

11.6 EMERGENCY CONTACT FORM

Date: _____

Name:	
Address: (Physical and Mailing)	
Phone: (home, cell, work)	
Employee No.:	
Date of Birth:	
YHIP # / Health Care #:	
Doctor (name/phone):	
Contact Person 1 (in Yukon): Relationship to you - Name and phone #	
Contact Person 2: Relationship to you - Name and phone #	
Allergies:	
Medications:	
Blood Type (if known):	
Date of Last Tetanus Shot:	
Other:	
PAL Number:	
Serial Number of Gun:	
Handgun:	

CONFIDENTIAL

11.7 PROTOCOLS FOR FIREARMS STORAGE, PRACTICE AND EMERGENCY USE IN THE FIELD

Each crew chief must ensure they define and communicate with all crew members specific protocols for storage, practice and emergency use of firearms carried in the field or stored in camp. While the exact protocols may vary depending on the camp or field situation, the following items should be addressed when briefing crews on firearms protocols:

General rules, such as

- Never point at another person
- Treat all firearms as loaded
- Never shoot unless practicing or life and limb are at risk
- Never shoot until sure of target and what's beyond
- Cleaning after each use
- Store and transport unloaded

Firearm and ammunition storage

- Location of firearms and ammunition when in camp
- Never store ammunition for different types of firearms together
- All firearms locked out of sight in vehicle or secure location if camp is vacant and firearms are left behind.
- Use of trigger locks and safety mechanism.

Practice sessions

- Review parts and use of firearm model being used
- Suitable location (no hard surfaces or water bodies in direction of fire; Note: handgun practice can only be done at the official shooting range in Whitehorse).
- Establish location of firing line
- Firearms unloaded and placed on ground if anyone crosses firing line
- Use of hearing and eye protection

Emergency warning signals

- Use of flares, noise-maker shotgun cartridges and bear-bangers
- Sequence of warning shots

Emergency use procedures

- Location of firearm to use
- Define marshalling area where people must gather before any shots are fired
- Ensure no person, hard surface, water body or flammable item is in direction of fire

Documentation

- Report killed or injured animals to conservation officers
- Record date of use (for practice or emergency use) and cleaning
- File incident report if firearm used in an emergency

Other

-

Date: _____

Camp or Crew Chief: _____

Crew Members initials _____

11.8 CAMP SAFETY CHECKLIST

Each camp or crew chief is responsible for establishing and communicating protocols to all crew members for first aid, daily check-in procedures, emergency protocols and camp safety. Although the exact protocols will vary depending on the camp or field situation, the following items should be addressed when briefing crews on camp safety:

- First aid
 - Location of first aid kit in pack and/or in camp
 - Location of first aid attendant in camp
 - Review first aid qualifications of all crew members
 - Review special medical conditions of crew members
- Communications
 - Location of satellite phone or radio, spare batteries and emergency phone numbers
 - (medivac, nursing stations, RCMP, helicopter company) while on traverse and/or in camp
 - Review how communications device works
 - Daily check-in procedure
- Accident response
 - Treat victims with first aid
 - Call for help or medevac if necessary
 - Phone Field Coordinator or Carolyn once situation is under control
 - Location of emergency contact numbers for each crew member
- Fire safety
 - Location of fire extinguishers
 - Outline proper use of stoves and heaters
 - Smoking policy
 - Campfires
- Camp safety procedures
 - Firearms – designated users, storage
 - Garbage storage
 - Food storage
 - Kitchen hygiene
 - Personal hygiene
 - Latrine
 - No food or fragrant items in sleeping tents
- Documentation
 - Daily notation in camp safety logbook
 - Record and report all injuries
 - Record and report all near-miss incidents
- Other
 -
 -
 -

Date: _____

Camp or Crew Chief: _____

Crew Members: _____

11.9.1 PHONE NUMBERS

YGS EMERGENCY PHONE NUMBER LIST		
YGS CHECK IN	Cell phone	(867) 332-4008
Cameron Kos	YTG Transportation Mgr	(867) 667-5793
YGS EMERGE NCY	Craig Nicholaon Carolyn Relf (work) Kathy Walker (work) Midori Kirby (work)	W(867) 456-5584 C(867) 333-9548 W(867) 667-8892 C(867) 335-8449 H.633-5818 (867) 667-8508 (867) 455-2800 / 667-3201
MEDIVAC: Whitehorse dispatch Incident Command / Whitehorse Search & Rescue		(867) 667-3333 (867) 667-5220
YT Nursing Stations	Beaver Creek	(867) 862-4444
	Burwash Landing	(867) 841-4444
	Carcross	(867) 821-4444
	Carmacks	(867) 863-4444
	Dawson	(867) 993-4444
	Destruction Bay	(867) 841-4444
	Faro	(867) 994-4444
	Haines Junction	(867) 634-4444
	Mayo / Elsa / Keno City	(867) 996-4444
	Old Crow	(867) 966-4444
	Pelly Crossing	(867) 537-4444
	Ross River	(867) 969-4444
	Tagish	(867) 821-4444
	Teslin / Swift River	(867) 390-4444
	Watson Lake	(867) 536-4444
	Whitehorse Hospital Emergency	(867) 393-8700 911
Northern B.C. Ambulance / Medical Emergency		1-800-461-9911
Fort Liard, NWT: ambulance, nursing station		(867) 770-4301
Inuvik Regional Hospital		(867) 777-8000
POISON CONTROL CENTER		(867) 393-8700
SEARCH & RESCUE		
Whitehorse RCMP		911 or (867) 667-5555
Inuvik RCMP		(867) 777-1111
National Marine & Air Search & Rescue		1-800-567-5111
Canadian Search and Rescue – Joint Rescue Coordination Centre (JRCC) Victoria BC.		1-800-567-5111 / 1-250-413-8933
HELICOPTER COMPANIES		
Trans North	(867) 863-5551 Carmacks (867) 993-5494 Dawson (867) 996-2355 Mayo (867) 536-2100 Watson Lake (867) 634-2242 Haines Junction (867) 969-2374 Ross River	Whitehorse HQ PH: (867) 668-2177 Fax: (867) 668-3420
Fireweed Helicopters	(867) 993-5700 Dawson (867) 996-2100 Mayo	Whitehorse HQ PH: (867) 668-5888 Fax: (867) 668-7875
Capital Helicopters	Whitehorse	PH: (867) 668-6200 Fax: (867) 668-6201
Kluane Helicopters	Haines Junction	PH: (867) 634-2224 Fax: (867) 634-2226
Heli Dynamics	Whitehorse	PH: (867) 668-3536 Fax: (867) 668-5637
Prism Helicopters	Vancouver	PH: (604) 465-7979 Fax: (604) 465-7970
Canadian Helicopters	Whitehorse	PH: (867) 633-4354 Cell: (867) 678-0111
Horizon Helicopters	Whitehorse	PH: (867) 633-6044 Cell: (867) 335-2568

11.9.2 PHONE NUMBERS

FOREST FIRES		
Report a wildfire	Yukon Northern BC	1-888-798-3473 1-800-663-5555
Fire information hotline	Yukon	1-800-826-4750 (867) 393-7415
Yukon Wildland Fire Management,	general inquiries (Whitehorse)	(867) 456-3845
Yukon Regional Zone Protection Offices:		
Dawson	Klondike Zone	(867) 993-5992
Haines Junction	Kluane Zone	(867) 634-7061
Carmacks	Tatchun / St. Cyr Zone	(867) 863-2408
Ross River		(867) 969-2242
Mayo	Northern Tutchone Zone	(867) 996-3200
Whitehorse	Southern Lakes Zone	(867) 456-3845
Teslin		(867) 390-2531
Watson Lake	Tintina Zone	(867) 563-2005
CONSERVATION OFFICERS		
Whitehorse	Southern Lakes Region	(867) 667-8005
Dawson	Northern Region	(867) 993-5492
Watson Lake	Liard Region	(867) 536-3210
Haines Junction	Kluane Region	(867) 634-2247
Mayo	Northern Tutchone Region	(867) 996-2202
Old Crow		(867) 966-3040
Ross River		(867) 969-2202
Faro		(867) 994-2862
Teslin		(867) 390-2685
VHF RADIO PHONE		
	NWT account/PIN	
IRIDIUM		
	Sat phone assistance	811
	Sat phone to land line	001 + area code + #
	Land line to sat phone	011 + area code + #
OTHER (crew sat phones, base camp, local contacts, etc.)		

CHAPTER 12. EXTERNAL RESEARCHERS SAFETY POLICY

12.0 PRINCIPLE

YGS has some (though limited) responsibility to ensure that YGS-supported external researchers deliver their projects in a safe and environmentally responsible manner. To that end, YGS will require that field activities are carried out in a manner consistent with YGS' field safety manual as a condition of support.

12.1 POLICY

1. Researchers will provide emergency contact information for all members of their field party to YGS operations manager before starting their field operations (allergies, medical conditions, name and contact details of employer and next of kin, etc.). This information will be provided on the YGS Emergency Form and Project Safety Information form.
2. YGS will provide researchers with key phone numbers for daily call-in number, helicopter and other transportation bases, nursing stations, search and rescue (Appendix 3).
3. Each research party will acquire a reliable communications device that allows them to contact help in case of an emergency, and they must carry this device with them at all times while in the field. Acceptable communications devices include, but are not limited to: satellite phone, SPOT personal tracker, emergency locator beacon, or air-to-ground portable radio.
4. Researchers will commit to daily check-ins with YGS or another party via satellite phone or other communication device. If checking in with YGS, researchers will follow the protocols outlined in Section 5.2. If they are in daily contact with another party (*e.g.*, their employer), the researcher must provide contact information so that YGS is able to contact them in case of emergency or logistical concerns.
5. Researchers will commit to keep YGS updated on camp and field work locations, and must provide regular updates on the status of YGS-funded logistical support so that YGS can keep up-to-date expenditure records (*e.g.*, hours expended on a helicopter contract).
6. YGS requires that external researchers sign a waiver that outlines the conditions of support and waives liability as a condition of funding (Section 12.7).
7. In order to ensure the safety of YGS staff, non-employees accompanying personnel in the field (such as guests, volunteers and university research partners) must be able to demonstrate they have received training similar to that of YGS' field assistants (see Section 12.4).
8. Project leads will report all near-miss incidents or injuries that occur while performing fieldwork, using the 'Incident Report' form in the YGS safety manual (Appendix 1).

12.2 PROJECT SAFETY INFORMATION

Form must be completed and appropriate documentation must be provided to YGS Operations Manager prior to performing field work in Yukon.

Project leader: _____

Emergency communications device: _____

Satellite and/or contact phone number in Yukon: _____

Method of check-in (check one):

☐ Daily check-in with YGS

☐ Alternate check-in system

(Please indicate method, phone number and frequency below:)

PROJECT MEMBERS' AFFILIATIONS

Project Member	Organization	Phone (work/cell)	Email

PROJECT MEMBERS' EMERGENCY CONTACTS

(Please provide phone numbers for work, home and cell if applicable).

Project Member	Emergency Contact	Phone	Email

FIELD WORK LOCATIONS AND DATES

Date(s)	Location(s) (e.g., base camps, hotels, etc.)	Coordinates * (latitude/longitude or UTM)

* Please specify UTM zone and UTM coordinate system NAD 83, and include maps if appropriate.

12.3 PRE-FIELD SAFETY CHECKLIST

Checklist must be completed by project lead and associated documentation must be provided to YGS Operations Manager prior to performing field work in Yukon.

- ☐ I have completed the 'Project Safety Information' form (Section 12.2)
- ☐ I have been briefed on YGS check-in and safety policies by (circle one or all that apply):
YGS Operations Manager (Name: _____)
YGS Field Coordinator (Name: _____); or
YGS Lead (Name: _____)
- ☐ I understand the YGS check-in protocols (Section 5.2 of the YGS safety manual).
- ☐ I have a list of important phone numbers for each member of the field party to carry with them in the field (Appendix 3 of the YGS safety manual).
- ☐ I have access to a hard copy of the YGS safety manual.
- ☐ Each member of my field party has completed a 'YGS Emergency Form' (Appendix 2 of the YGS safety manual).
- ☐ Each member of my field party member has signed the "Declaration of Understanding, Non-YGS Research partners, volunteers and visitors' waiver (Chapter 12, section 12.6 of the YGS safety manual).
- ☐ Each member of my field party has taken appropriate field safety training necessary for planned field work, as outlined in section 2.3 of the YGS safety manual, and has completed an 'External Researcher Safety Training Record' form (Section 12.5).
- ☐ I will return this checklist and supporting documentation to the YGS Operations Manager before leaving for the field.

Project Leader: _____

Signature: _____

Date: _____

Project safety information summary and pre-field safety checklist reviewed by:

YGS Lead: _____

Signature: _____

Date: _____

Project safety information summary and pre-field safety checklist received by:

YGS Operations Manager: _____

Signature: _____

Date: _____

12.4 FIELD SAFETY TRAINING

In order to ensure the safety of external researchers and YGS staff, non-YGS employees accompanying personnel in the field must be able to demonstrate they have received training equivalent to that of a YGS geological assistant.

- All geological assistants performing field work are required to take wilderness readiness/emergency survival training, comprehensive helicopter training including egress and toe-ins, standard first aid, bear awareness training and firearm PAL and proficiency training.
- If geological assistants are returning from previous years and they have maintained valid first aid certification, they are only required to take the helicopter refresher course, the bear awareness course and the firearm awareness or proficiency training.
- Non-employees who will be accompanying personnel in the field may participate in courses arranged for YGS staff prior to the field season, subject to space availability and cost-sharing arrangements.
- If non-employees are unable to participate in the pre-field season safety training courses, the YGS employee accompanying them in the field is responsible for briefing them on the safe work practices relevant to the tasks they will be undertaking together, *prior* to departure into the field.
- If flying in a helicopter, the pilot must give a comprehensive briefing that addresses the items listed in the helicopter briefing checklist provided in the safe work practices section of this manual. **The pilot, YGS employee and the non-employee must all sign and date this checklist, and the YGS employee accompanying the non-employee must retain this document in their safety records.**
- All other safety briefings given to non-employees must be recorded in the YGS employee's safety logbook or notebook.
- The guest, volunteer or university partner must also sign the declaration of understanding included in the YGS safety manual.
- YGS accepts no responsibility for the safety of friends or family members who visit or accompany YGS personnel in field camps or on traverse.

12.5 EXTERNAL RESEARCHER SAFETY TRAINING RECORD

Each member of the project team must complete this safety training record form. If no formal training has been taken for a component, please indicate whether anyone has provided provisional briefings and if so, when they were provided and by whom.

Training Component	YGS Specifications / Content	Equivalent Training (Certification No. / Date)
YGS safety manual orientation	Brief overview of YGS safety program, policies and emergency procedures; delivered by operations manager or YGS lead <u>prior to performing field work.</u>	
Workplace Hazardous Material Inventory System (WHMIS)	<i>Delivered by Yukon Public Service Commission (½ day course) or YGS (self-study course). WHMIS-controlled substances include: HCl, sulphuric acid, petroleum products, etc.</i>	
Task-specific training	Delivered on site as necessary by project lead or crew chief for use of specific equipment such as rock saw, rock hammers, communications and GPS equipment.	
Standard First Aid & CPR "C" or Wilderness First Aid	Delivered by certified instructor from Yukon College (WFA010), Red Cross, St. John's Ambulance, or other PSC-approved company • Minimum 16 or 20-hour full course, or • 8-hour recertification course	
Helicopter safety, toe-ins and egress	Delivered by certified instructor (e.g., from Rescue Canada or Fire Management) or helicopter pilot (for non-employees only)	
Fixed wing	Delivered by certified instructor (e.g., from Rescue Canada) or fixed-wing pilot (for non-employees only)	
Bear Awareness	½ day course delivered by YG conservation officers or "Safety in Bear Country" video.	
Firearm License (PAL)	Delivered by certified instructor.	
Firearm awareness	½ day course delivered by certified instructor (e.g., conservation officer or EMR natural resources officer).	
All-terrain vehicles	1-day course delivered by certified instructor.	
Boat Operator/ Pleasure Craft (for power boats); Intro to moving water (for canoes)	Delivered by certified instructor (e.g., Yukon College or Transportation Canada).	
Wilderness Readiness and Emergency Survival	1-day course delivered by certified instructor.	

Project Member: _____

Signature: _____

Date: _____

12.6 DECLARATION OF UNDERSTANDING

(Non-YGS Research Partners, Volunteers and Visitors)

I have been familiarized and understand the guidelines and information presented in the document entitled "Yukon Geological Survey Health and Safety Program Manual".

I understand my responsibilities and rights regarding occupational health and safety, and *so far as is reasonably practical*:

- I have been apprised of the potential hazards involved in geological fieldwork, and understand the safe work practices and safe job procedures that have been put in place to mitigate those hazards;
- I will take all necessary precautions to ensure the health and safety of myself and others in the workplace;
- I will comply with health and safety procedures and instructions given for my own or anyone else's health or safety by a person having authority over me;
- I will promptly report any situation I have reason to believe would present a hazard and which I cannot correct; and
- I have been given the opportunity to ask questions of _____ concerning the content and meaning of the Guidelines.

Name (Print):	_____	Signature:	_____	Date:	_____
Witness Name (Print):	_____	Signature:	_____		_____

12.7 WAIVER

YUKON GEOLOGICAL SURVEY ASSUMPTION OF RISKS, WAIVER and RELEASE OF CLAIMS, and INDEMNITY AGREEMENT (hereinafter, the "Agreement")

BY SIGNING THIS AGREEMENT, YOU WILL WAIVE OR GIVE UP IMPORTANT LEGAL RIGHTS, INCLUDING THE RIGHT TO SUE.

PLEASE READ CAREFULLY BEFORE SIGNING

IN CONSIDERATION for _____ (the "Activity").
I, ACKNOWLEDGE AND AGREE on behalf of myself, my heirs, executors, administrators, personal representatives, next of kin and assigns to the following terms and conditions:

- 1) I am aware that my participation in this Activity involves many RISKS AND DANGERS, including known and unknown risks and dangers that may result in personal injury, death, property damage or loss, which may also be caused or contributed to by the NEGLIGENCE OR CARELESSNESS of others.
- 2) I ASSUME AND ACCEPT, FREELY AND VOLUNTARILY, WITHOUT QUALIFICATION OR LIMITATION, ALL RISKS AND DANGERS associated with this Activity.
- 3) I ASSUME FULL RESPONSIBILITY for my personal safety at all times and for obtaining, understanding and following any rules and safe practices associated with this Activity.
- 4) I, RELEASE, WAIVE AND FULLY AND FOREVER DISCHARGE YG, and its officers, directors, elected officials, employees, agents, successors, and assigns from all claims, liabilities, obligations, and demands of any kind or nature whatsoever, arising directly or indirectly, from any act or omission of NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY, ANY INJURY OR DEATH TO ME, DAMAGE OR LOSS to MY PROPERTY, or any cause whatsoever related to my presence or participation in this Activity, and I accept that this Agreement covers and includes, but is not limited to, all unknown and unforeseen claims, injuries, permanent disability, damages and losses, and any consequences arising directly or indirectly from my presence or participation in this Activity.
- 5) I, shall HOLD HARMLESS and FULLY INDEMNIFY YG, and its officers, directors, elected officials, employees, agents, successors, and assigns from and against all claims, liabilities, demands, damages, losses, costs (including legal costs) and other expenses, arising directly or indirectly, from MY NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY, or any claim whatsoever related to my presence or participation in this Activity.
- 6) This Agreement shall be interpreted and enforced in accordance with the laws in Yukon.
- 7) I HAVE READ THIS AGREEMENT THOROUGHLY and UNDERSTAND THAT YG IS RELYING ON MY FULL RELEASE AND WAIVER OF ALL CLAIMS WHEN ALLOWING ME TO PARTICIPATE OR ENGAGE IN THIS ACTIVITY.
- 8) I, ACKNOWLEDGE and AGREE that ALL the terms and conditions of this Agreement are set out herein in their ENTIRETY and that the execution of this Agreement has not been induced by, nor have I, relied upon, any representation, warranty, condition or agreement, whether written or oral, other than as expressly set out or referred to herein.

PRINT NAME: _____

SIGNATURE: _____

DATE: _____



APPENDIX 1

INCIDENT REPORT

TYPE OF INCIDENT: ☐ INJURY ☐ PROPERTY LOSS/DAMAGE ☐ NEAR-MISS

**Lost time injuries must include a copy of a Worker's Report of Injury/Illness (YWCHSB)*

PART 1: TO BE COMPLETED BY CREW-CHIEF OR EMPLOYEE INVOLVED

Please attach additional pages if required

DATE OF INCIDENT:	TIME:	ESTIMATED DAMAGE: \$
NAME(S) OF EMPLOYEE(S) INVOLVED:		
LOCATION:		
DESCRIPTION OF INCIDENT <i>(include factors contributing to incident and any injuries or damage to property that occurred):</i>		
SUGGESTIONS FOR PREVENTING SIMILAR INCIDENTS IN FUTURE <i>(safe work practices, training, etc):</i>		
LESSONS LEARNED:		
REPORT COMPLETED BY:		
SIGNATURE:		DATE:
DATE REVIEWED BY INVOLVED PARTIES, FOLLOWING COMPLETION OF PART 3:		

PART 2: TO BE COMPLETED BY REVIEWING TEAM OR SUPERVISOR

RECOMMENDATIONS FOR FURTHER CORRECTIVE OR PREVENTATIVE ACTION:	
REVIEWED BY:	
SIGNATURE:	DATE:

PART 3: TO BE COMPLETED BY SENIOR MANAGEMENT

ACTION TAKEN:	DATE COMPLETED:
DIRECTOR:	
SIGNATURE:	DATE:

CONFIDENTIAL

YGS INCIDENT # 2016 - _____



APPENDIX 2

YGS EMERGENCY FORM

Date: _____

Name:	
Address: (Physical and Mailing)	
Phone: (home, cell, work)	
Employee No.:	
Date of Birth:	
YHIP # / Health Care #:	
Doctor (name/phone):	
Contact Person 1(in Yukon): Relationship to you - Name and phone #	
Contact Person 2: Relationship to you - Name and phone #	
Allergies:	
Medications:	
Blood Type (if known):	
Date of Last Tetanus Shot:	
Other:	
PAL Number:	
Serial Number of Gun:	
Handgun:	

CONFIDENTIAL

YGS EMERGENCY PHONE NUMBER LIST		
YGS CHECK IN	Cell phone	(867) 332-4008
Cameron Kos	YTG Transportation Mgr	(867) 667-5793
YGS EMERGENCY	Kathy Walker (work) Carolyn Relf Craig Nicholson	(867) 667-8508 (867) 633-5818 (H) (867) 335-8449 (C) (867) 333-9548 (C)
MEDIVAC: Whitehorse dispatch		(867) 667-3333
Incident Command / Whitehorse Search & Rescue		(867) 667-5220
YT Nursing Stations	Beaver Creek	(867) 862-4444
	Carcross	(867) 821-4444
	Carmacks	(867) 863-4444
	Dawson	(867) 993-4444
	Destruction Bay	(867) 841-4444
	Faro	(867) 994-4444
	Haines Junction	(867) 634-4444
	Mayo / Elsa / Keno City	(867) 996-4444
	Old Crow	(867) 966-4444
	Pelly Crossing	(867) 537-4444
	Ross River	(867) 969-4444
	Teslin / Swift River	(867) 390-4444
	Watson Lake	(867) 536-5255
	Whitehorse Hospital Emergency	(867) 393-8700 911
Northern B.C. Ambulance / Medical Emergency		1-800-461-9911 1-250-374-5937
Fort Liard, NWT: ambulance, nursing station		(867) 770-4301
Inuvik Regional Hospital		(867) 777-8000
POISON CONTROL CENTER		(867) 393-8700
SEARCH & RESCUE		
Whitehorse RCMP		911 or (867) 667-5555
Inuvik RCMP		(867) 777-1111
National Marine & Air Search & Rescue		1-800-567-5111 1-250-413-8933
Canadian Search and Rescue – Joint Rescue Coordination Centre (JRCC) Victoria BC.		1-800-567-5111 / 1-250-413-8933
HELICOPTER COMPANIES		
Trans North	(867) 863-5551 Carmacks (867) 993-5494 Dawson (867) 996-2355 Mayo (867) 536-2100 Watson Lake (867) 634-2242 Haines Junction (867) 969-2374 Ross River	Whitehorse HQ PH: (867) 668-2177 Fax: (867) 668-3420
Fireweed Helicopters	(867) 993-5700 Dawson (867) 996-2100 Mayo	Whitehorse HQ PH: (867) 668-5888 Fax: (867) 668-7875
Capital Helicopters	<i>Whitehorse</i>	PH: (867) 668-6200 Fax: (867) 668-6201
Kluane Helicopters	<i>Haines Junction</i>	PH: (867) 634-2224 Fax: (867) 634-2226
Heli Dynamics	<i>Whitehorse</i>	PH: (867) 668-3536 Fax: (867) 668-5637
Canadian Helicopters	<i>Whitehorse</i>	PH: (867) 633-4354 Fax: (867) 633-4345
Horizon Helicopters	<i>Whitehorse</i>	PH: (867) 633-6044 Fax: (867) 633-6045

FOREST FIRES		
Report a wildfire	Yukon Northern BC	1-888-798-3473 1-800-663-5555
Fire information hotline	Yukon	1-800-826-4750 (867) 393-7415
Yukon Wildland Fire Management,	general inquiries (Whitehorse)	(867) 456-3845
Yukon Regional Zone Protection Offices:		
Dawson	Klondike Zone	(867) 993-5992
Haines Junction	Kluane Zone	(867) 634-7061
Carmacks	Tatchun / St. Cyr Zone	(867) 863-2408
Ross River	(seasonal)	(867) 969-2242
Mayo	Northern Tutchone Zone	(867) 996-3200 / 3201
Whitehorse	Southern Lakes Zone	(867) 456-3901
Teslin	(seasonal)	(867) 390-2531
Watson Lake	Tintina Zone	(867) 563-2005
CONSERVATION OFFICERS		
Whitehorse	Southern Lakes Region	(867) 667-8005
Dawson	Northern Region	(867) 993-5492
Watson Lake	Liard Region	(867) 536-3210
Haines Junction	Kluane Region	(867) 634-2247
Mayo	Northern Tutchone Region	(867) 996-2202
Old Crow		(867) 966-3040
Ross River		(867) 969-2202
Faro		(867) 994-2862
Teslin		(867) 390-2685
VHF RADIO PHONE		
	account/PIN	
IRIDIUM		
	Sat phone assistance	811
	Sat phone to land line	001 + area code + #
	Land line to sat phone	011 + area code + #
OTHER (crew sat phones, base camp, local contacts, etc.)		



APPENDIX 4

INCIDENT SUMMARY – 2015-16

Report Number (date)	Incident Details	Actions Taken
Aug 6, 2015	Foot broken off core rack stairs whilst being moved by skid-steer through compound rear gate – vegetation obscured all round visibility.	Vegetation has been trimmed, recommendations for spotter to assist safe movement of loads. \$750 damage.
Sep 18, 2015	Delivery company driver used YGS forklift to move shelves off truck into core store – driver backed into doorframe causing damage to door flashing and siding. Also near miss from driving forward with unstable load.	Damage <\$500. Recommendations: - Users of our equipment need to be trained users of our equipment and facilities to ensure they are aware of height restrictions and other hazards ie: loose ground in some areas. - Any deliveries requiring special unloading equipment must notify the Library Manager or another contact to ensure that a properly trained person is available to assist in the receiving of freight. This practice has been initiated since the spring, 2015 and worked well. Only some companies do not call, but will if reminded. Companies should be turned away until appropriate contact has been made with a representative who can assist with the freight.
unknown	Rock chip on windshield of rental truck	None. \$365 damage.
June 22, 2015	Emergency button on Inreach device was set off unintentionally, device lock and sound was turned off so SOS not detected by user for an hour	No damage/loss. The device was originally intended as a sat phone substitute – after incident user was given a sat phone. Recommendations: - The sound should never be turned off during use and operation - Phone will be checked every morning to ensure locks are on and sound is on and carried in cozytote - Checks of Inreach device throughout the day will be done to ensure device remains secure

Aug 11, 2015	Field assistant slid down a rubble slope and received cut on head from 2 rocks falling on him. Field crew were evading grizzly bear. Helicopter pilot took 2 hours to locate crew for medivac as pilot unable to use GPS properly	No damage/loss: Recommendations: - Avoid steep rubbly outcrops - Try to not rush too much while escaping from a potentially hungry grizzly - Make sure the helicopter pilot you hire will be able to use a GPS and find you fast. In the case of a more critical injury, this delay could have had way worse consequences.
Oct 1, 2015	Canopy damage (small tears) to Big White after collision with low hanging pipe in underground ESB parking lot.	\$<500 damage. Large vehicles with canopies are not to be parked in ESB underground lot.



ANNUAL SAFETY ACTIVITY SUMMARY

1) TIME PERIOD

April 1, 2015 - March 31, 2016

2) STAFF ORIENTATIONS

Number of new staff hired:

1 FT + 10 seasonal field staff/students

Number completed orientation:

unknown – in review by OH&S sub-com

3) SAFETY MEETINGS

Number scheduled:

Number conducted:

Percentage attendance:

3 (1 all staff pre-season, 2 OH&S sub-com)

5 in each OH&S sub-com meeting

4) INSPECTIONS

Number scheduled:

Number conducted:

Total unsafe acts/conditions identified:

Number corrected:

Number outstanding:

ESB-102

ESB-230

Core Library

12		

12	1	2

0	0	5

		5

		0

5) INCIDENTS

Total number:

Damage only (include \$ value):

Injury only:

Injury and damage (include \$ value):

Near-miss:

Number of recommendations made:

Completed:

Outstanding

6

4 (approx. \$2,115)

1

0

1 (included in a damage only incident)

11

11

0

6) INVESTIGATIONS (for accidents/injuries)

Completed:

Outstanding:

n/a

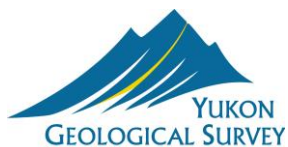
n/a

7) SAFETY TRAINING

Number of persons trained:

\$ spent on training:

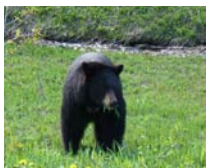
Depended on reqs. – all FT & seasonal staff attended at least Bear Aware



ANNUAL INJURY SUMMARY

YEAR: 2015-16

	Number of Personal Injury Cases				
Month	Lost Time Cases	Medical Referral	Days Lost	Frequency	Severity
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Total:					
	Average:				



Safety Guidelines

for Mineral Exploration in Western Canada

5th Edition



Health & Safety Committee

Suite 800, 889 West Pender Street | Vancouver, BC V6C 3B2

T 604.689.5271 | F 604.681.2363

www.amebc.ca | info@amebc.ca

Safety Guidelines for Mineral Exploration in Western Canada Health & Safety Committee | Association for Mineral Exploration British Columbia (AME BC)

First edition 1982

Second edition 1989

Third edition 2002

Fourth edition 2006

Fifth edition 2013

Library and Archives Canada Cataloguing in Publication

Safety guidelines for mineral exploration in Western Canada/Health & Safety Committee, Association for Mineral Exploration British Columbia -- Fifth edition.

Safety guidelines for use in mineral exploration activities including prospecting, geological mapping, trenching and drilling as well as camp life and transportation.

Includes bibliographical references. ISBN 978-0-9738395-5-5 (pbk.)

1. Prospecting--Canada, Western--Safety measures--Handbooks, manuals, etc. **2.** Mineral industries--Canada, Western--Safety measures--Handbooks, manuals, etc. **3.** Mines and mineral resources--Canada, Western--Handbooks, manuals, etc. **I.** Association for Mineral Exploration British Columbia. Health & Safety Committee, author

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Disclaimer

Amendments to the *Health, Safety and Reclamation Code for Mines in British Columbia*, *Workers Compensation Act*, and the Occupational Health and Safety Regulation are ongoing. The online regulation and excerpts and summaries of the Act are updated on the effective date of the amendment.

The following information is a series of guidelines to best practices for an exploration program in British Columbia. For more comprehensive regulations and requirements, contact the Mines Inspector for the region in question, refer to the *Health, Safety and Reclamation Code* or review the Occupational Health and Safety Regulation.



Aircraft

The nature of mineral exploration requires the use of chartered fixed-wing aircraft and helicopters. By following safe operating procedures, the risks associated with flying can be minimized.

Accidents and Incidents

The Transportation Safety Board of Canada defines an **aircraft accident** as “*an event resulting in serious injury, death, or substantial damage to an aircraft*”. Such events are reportable and are well documented. Incidents, such as near misses are not necessarily reportable by The Transportation Safety Board, but are reportable by some operators per company policy. A “*near miss*” is a **type of incident** - other types include “*first aid cases*”, “*medical treatment cases*”, “*LTIs*”, and “*property damage*”. Incidents are not necessarily reportable by some operators.

Any activity on the part of the flight crew that places personnel or equipment in jeopardy should be considered an “*incident*” and reported to employers. Keeping track of incidents will alert supervisors to situations that need improvement regarding safety and potentially can prevent a true accident from happening. To improve air safety it is necessary to track statistics.

The Transportation Safety Board of Canada reports that in 2011, 35 Canadian-registered helicopters were involved in accidents. Sadly, aircraft accidents are the number one cause of fatalities in Canadian mineral exploration.

Aircraft Operations

There are four authorized conditions for aircraft operations that should be followed:

- Use of registered, chartered, passenger aircraft, preferably from an audited charter company, or a company that has a reputation for safe and reliable operations.
- Acceptance of pilots only who have flown more than the minimum number of required hours on the type of aircraft to be used, and who are rated for the conditions.
- Never fly as a passenger or an ad hoc crew member on:
 - 1) an aircraft chartered for cargo
 - 2) geophysical surveys
 - 3) a helicopter carrying a load on the cargo hook
- Report to your employer any stunt, trick, or extreme flying on aircraft. Transport Canada Visual Flight Rules (VFR) state a maximum flight path of one mile horizontal and 500 feet vertical.

Pre-Flight Actions

- A flight plan should always be filed. In remote areas, base camp is to be notified as are the local police (or similar authority) of your planned route. This includes your destination, estimated time of departure (ETD), estimated time of arrival (ETA), passenger numbers, and names.
- A Search and Rescue (SAR) plan should be established.
- Identification of any obstacles/restrictions that might be present in the operational area should be understood.
- A safety check is required to ensure that no flags, tags, or tie downs are attached to the aircraft.
- Emergency exits, the SAR plan, seat belts, life jackets, radio operation, fire extinguishers, emergency locator transmitter (ELT), first aid kits, and survival kits should all be inspected and discussed regarding their proper use.
- Aircraft is to be equipped with mobilization equipment and a litter kit.

Helicopter Selection

Helicopters are selected based on the needs of any given exploration program. It is important for companies to reference the aircraft's performance section in the pertinent flight manual and discuss the aircraft capabilities with the operator to ensure that it can safely fulfill the needs of the exploration program.

The type of terrain has an influence on helicopter selection. For instance, a reconnaissance-type program may require many landings on irregular ground surfaces with relatively confined landing sites. In such a case, it would be prudent to have excess power available and a machine with relatively short rotor blades and a high skid to ensure sufficient ground cover clearance.

Although similar hazards are present in the operation of all helicopters, including lighter models, there are several safety implications associated with the use of medium and heavy-lifting helicopters. Larger helicopters are used for the development of vertical reference slinging (long line) and the transportation of sophisticated externally carried electronic equipment. Due to this, increased rotor downwash and possibly more confusion in the landing or loading area is more common. Some operators provide loadmaster specialists as crew members who are given the responsibility for organizing and positioning loads. In the absence of a loadmaster, it is essential that exploration personnel have clearly defined safety responsibilities and authority.

Aviation Threats to Safety

Aircraft can be involved in accidents or incidents whether on the ground or in the air. The following hazards and mitigations are recommended:

- **Landing sites** – airfield inspections, adequate length of landing site.
- **Adverse weather** – VFR minimums, cold weather training, weather training.
- **Incorrect loading** – passenger weights, cargo weights, weight and balance.

- **Fuel Exhaustion** – fuel check, flight plan, fuel reserve.
- **Fuel Contamination** – fuel testing, fuel filtration, fuel storage, fuel sampling.
- **Collision on Ground** – passenger control, ground procedures.
- **Collision in the Air** – airspeed, weather procedures.
- **Medical Evacuation** - medevac capability, securing equipment, aircrew experience, simulations.

The Pilot

In the field, if you are unfamiliar with the pilot's credentials, it is your responsibility and your right to satisfy yourself that the pilot meets or exceeds the required skill and experience level needed for the project. **Inquire about total flying hours, total hours on aircraft type, formal mountain flying training (if applicable), vertical reference training and experience, accident record, experience on your type of operation, date of last *Pilot Proficiency Check*, and hover exit training.**

The pilot is in command of the aircraft and his judgment shall be respected concerning such items as adequacy of weather for flying operations, suitability of landing sites, and payload to be carried.

Under no circumstances should the pilot be harassed, coerced or otherwise encouraged to act against the pilot's own judgment.

Pilot Fatigue

Fatigue is a progressive decline in one's ability to perform safely. For pilots, fatigue results in an insidious change of attitude toward flying. The pilot's personal standards decline; more risks are taken; and small (warning) incidents tend to occur. If the pilot exhibits stress symptoms (e.g. irritability, isolation, missing cues, distracted attention), contact the helicopter company immediately and advise them of the situation. Flight and duty times are clearly defined and governed by the Canadian Aviation Regulations (CARs). Fatigue is the cause of many aircraft accidents and incidents.

The aircraft operator or maintenance service provider must establish a program to minimize the effects of acute and chronic fatigue amongst maintenance personnel which shall include maximum working hours, minimum rest periods and roster schedules.

Clear communication between pilots and workers will reduce fatigue and stress.

The pilot is in command of the aircraft and his judgment shall be respected concerning such items as adequacy of weather for flying operations, suitability of landing sites, and payload to be carried. Under no circumstances should the pilot be harassed, coerced or otherwise encouraged to act against the pilot's own judgment.

The Passenger

Although passenger-related accidents are few, the passenger or individual working around aircraft must be aware of potential hazards which can be dangerous. A passenger should not perform any crew function unless safety is otherwise in jeopardy. An inexperienced float plane passenger attempting to assist the pilot to dock is exposed to extreme danger from the rotating propeller. Passengers have been struck by propellers while walking forward to the front end of the float to tie the aircraft to a dock or mooring point.

Many incidents and several fatal accidents have occurred when a passenger or bystander walked into a moving helicopter tail rotor or main rotor. Similar accidents and incidents have been caused by hats or other loose items being blown into the main rotor blade of an helicopter. Inexperienced personnel frequently misjudge the location of a revolving main rotor blade. Therefore, items such as backpacks, shovels, skis, and drilling rods should be carried low and parallel to the ground in the vicinity of the helicopter to prevent them from striking the blade.



Carry tools horizontally below waist level (never upright or over shoulder).



Hold onto hat when approaching or leaving machine, unless chin straps are available and secured.

During flight, when passengers are seated next to the pilot, ensure that no loose items interfere with controls or obscure the pilot's view. A seat belt buckle or earphone jammed underneath the pilot's collective lever at a toe-in landing site where both pilot's hands are occupied would almost certainly cause an accident.

In-Flight Procedures

- Wear seat belts at all times.
- Do not smoke.
- Do not open doors or windows in flight unless instructed by the pilot.
- Do not extend parts of your body or equipment out of the aircraft unless instructed by the pilot.
- Do not throw anything from a moving aircraft unless specifically approved by the pilot.
- Do not talk to or unnecessarily distract the pilot during take-off, climb, descent, landing, or when flying in difficult conditions.
- Calmly advise the pilot if you think there is something wrong.
- Follow the pilot's instructions and do not pressure the pilot to fly against his judgment or against regulations.

Ground Safety

- Do not remain on an aircraft that is being refueled and do not smoke within 15 metres of refueling operations.
- Do not approach, enter, exit, or refuel a fixed-wing aircraft with the propeller turning.
- Use extreme caution if you approach and leave a helicopter with the rotors turning. The rotors are flexible and generally 2.5 metres above the skids of the helicopter. This clearance can be greatly reduced if the ground is uneven, in gusty or windy conditions, or if the engine is running down or idling. (Figure 1)

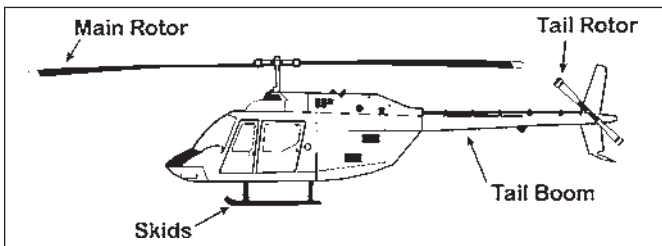


Figure 1

- Always approach a helicopter and leave a helicopter from the downhill side in a semi-crouched position and in full view of the pilot. Only approach from the front after the pilot has seen and acknowledged you. Walk - never run. (**Figures 2,3**)
- Never approach the tail rotor, move behind the rear passenger doors or baggage compartment, or move to the other side of the helicopter by crossing under the tail boom. (**Figure 3**)

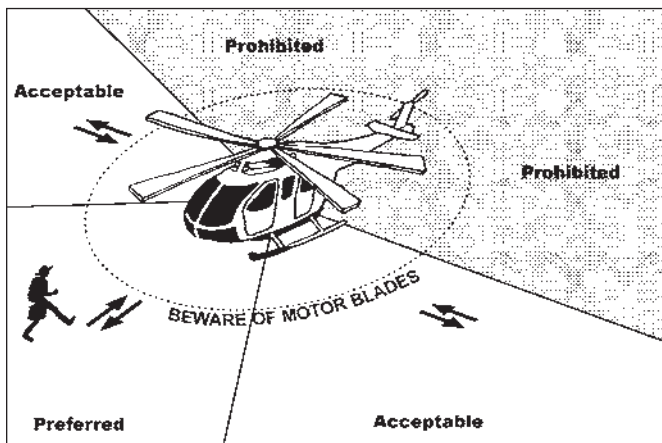


Figure 2: Approaching or leaving a helicopter

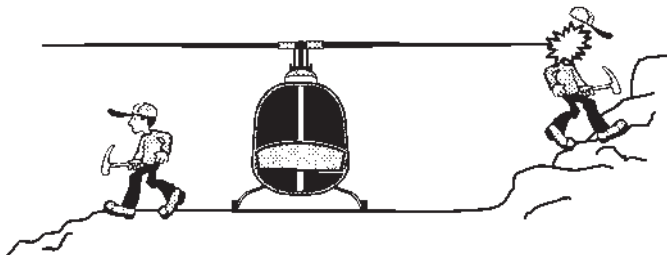
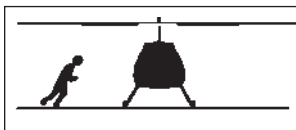


Figure 3: Safe entry/exit on sloping ground

Helicopter Approach and Take-Off Procedures

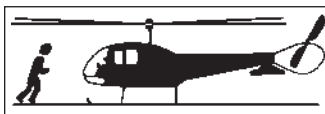


Approach or leave machine in a crouched position for extra clearance from main rotor.



Approach or leave on the down slope side to avoid main rotor.

Do not damage the body or the bubble of the helicopter. Scratches on the bubble impair vision.

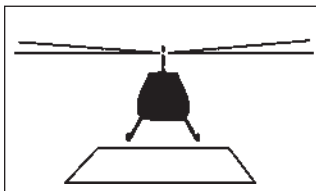


Approach or leave pilot's field of vision to avoid tail rotor.

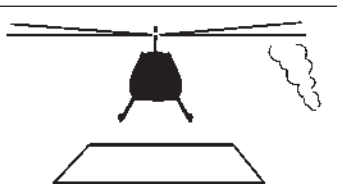


Do not touch bubble or any of the moving parts (tail rotor, linkage, etc.)

Give the pilot a clearance to take-off after ensuring that his skids are free from possible obstructions and that all personnel are at a safe distance from the helicopter.



Keep landing site clear of loose articles (water bags, groundsheets, empty cans, etc.)



Keep cooking fires well clear of landing site.

Ensure that there are no loose items near the landing site which could be blown into the rotor blades either during the approach or take-off of a helicopter (see Landing Site).

Helicopter supported reconnaissance programs commonly involve landing, hovering, vacating, entering, unloading or loading a helicopter in undesignated landing sites. These are potentially hazardous operations that require a high degree of cooperation and trust between pilot and passengers. No personnel should feel pressured to conduct these operations and never pressure a reluctant pilot to participate.

Passenger Briefing – Pilot Responsibility

The pilot must thoroughly brief each passenger concerning safety procedures. If the pilot neglects to provide a briefing and you are unfamiliar with procedures, do not hesitate to ask for the information before an emergency arises.

Briefings should be repeated frequently throughout a sustained operation to combat complacency and when a new pilot is assigned to the aircraft.

The safety briefing should include but not be limited to:

- **Aircraft description**
- **Approaching and departing**
 - Hazards of main rotor and tail rotor
 - Crouch position
 - Eye contact with pilot
 - Sloping ground
 - Obstacles
 - Pilot's field of view
- **Communication**
 - Use of headset
 - Hand signals

- **Caution Areas**
 - Antennas
 - Floats
 - Baskets
- **Doors**
 - Opening
 - Closing
 - Latching and locking
- **Baggage and Cargo**
 - Bear spray
 - Dangerous goods
 - Long items
 - Thrown objects
 - Secured cargo
 - Weight
 - Baggage doors
 - Cabin baggage
 - Electronic devices
- **Seat Belts: use of**
 - Adjustments
 - Release
 - Stowage
- **Emergency Procedures**
 - Pilot's direction
 - Exits: location, operation, disabled person
 - Ditching
 - Life jackets: location, operation
 - Raft: location, operation
 - ELT: location, operation
 - Briefing card: location
- **Safety Equipment**
 - First Aid kit: location
 - Survival kit: location
 - Fire extinguisher
- **No Smoking**
 - In helicopter
 - Within 15 metres of helicopter
 - Within 30 metres of fuel storage

Special Operations Procedures Briefing

- **Helipad Procedures**
 - Size
 - Function
 - Clear of loose objects: clothing, tarps, plywood, etc.
- **Approach and Departure**
 - Clear of personnel
 - Clear of vehicles
 - Clear of power lines
- **Landing Sites**
 - Size
 - Terrain
 - Loading procedure
 - Unloading procedure
 - Special conditions
 - Pilot's instructions
- **Special Equipment**
 - Long lines: type, function
 - Carousel: type, function
 - Hook(s) manual release
 - Hookup procedure
 - Ground crew safety
 - Hand signals
 - Radio communication
- **Hover Exit**
 - Seat belts
 - Headsets
 - Baggage
 - Weight transfer
 - Mustering (gathering) point
 - Pilot signals & instructions
 - Radio communication

In helicopter operations, it is good practice to buckle both ends of the seat belt together when leaving the helicopter, as this avoids a loose buckle from interfering with the pilot's controls or flapping against the outside of the hull during flight.

Emergency Procedures and Exits

In large fixed-wing aircraft, each passenger seat is provided with printed information listing the emergency equipment carried and the location and operation of emergency exits. In smaller charter aircraft, there may be no emergency exits. Passengers should be aware of the location of life jackets or flotation devices on float planes. Certain authorities insist that life jackets be worn when in flight over open water.

A seat belt is required for every passenger. The seat belt must be secured during takeoff and landing and whenever considered necessary by the flight crew. In the event of an accident, correct use of available restraints and proper body positioning immediately prior to impact can reduce the chances of serious injury in a high impact landing or a crash.

Occupants should have their restraint systems securely fastened and tightened to a snug position at all times when seated. Shoulder harnesses should always be used whenever available. When high impact landing or crash is imminent, crew and passenger safety can be further enhanced by assuming the following body positions:

Seats with Lap Belt Only

Passengers should lean over until their chest rests on their thighs and should attempt to protect face and upper body with any garment available. Their arms should be clasped together under their thighs to hold this position. Front seat passengers must avoid interfering with the flight controls.

Seats with Lap Belts and Shoulder Harnesses

Occupants should sit with their backs straight and against the seat back as much as possible. If a manual inertia reel lock is available, and time and conditions permit, the inertia reel should be manually locked. Unless hands are required on the flight controls, the arms should be used to brace in the upright position.



Fasten seat belt on entering aircraft and leave it buckled until pilot signals you to get out.

Emergency Locator Transmitter (ELT)

All Canadian aircraft operating in Canada are required to carry one or more serviceable emergency locator transmitters and a compact radio or satellite phone in a crash-proof container. The radio will pick up distinctive signals on the emergency frequency of 121.5 MHz, permitting the detection and location of other downed aircraft equipped with ELT. Although the ELT is normally activated automatically during a forced landing, it can also be turned on manually if this does not occur. The battery life of an ELT is at least 60 hours with signals heard up to 100 miles (160 km) line-of-sight distance by high-flying aircraft. The ELT provides a homing signal to pinpoint location and greatly reduces rescue time. The location of ELT devices is indicated by placards inside the cabin and is externally marked on the aircraft. Passengers should know how to remove and operate the ELT manually should the pilot be unable to activate it. **ELT orientation should be provided to all staff members.**

Flight Plans

Flight plans provide air traffic control with a record of the destination and routing of the flight. In a helicopter-supported mineral exploration program, contact between the aircraft and airbase may not be possible or reliable. Accordingly, each Camp/Project Manager should leave information on the proposed flight plan. One of the most convenient procedures is to plot the flight plan. Drop-off or pick-up points should be on a map of the general area (1:250,000 scale preferred) which are displayed at base-camp at an appropriate location (e.g. next to the radio/satellite telephone or in an office-tent).

If the only means of communication with the outside world is by radio, the Camp/Project Manager should ensure that whoever is left in camp is conversant with the operation of the radio and knows how to describe the camp's location and the proposed routing of the aircraft. There have been many instances where proposed or changed flight plans were not filed or the flight plan was inadequate or changed. Consequently, locating missing aircraft and passengers was seriously delayed.

- A properly filed flight plan leading to rapid location of downed aircraft and passengers and crew could be the determining factor in whether or not injured individuals survive.
- Pilots must be provided with a copy of maps covering the complete flight area.
- Pilots should be able to accurately locate the drop-off point on a map.
- If the pick-up point is at a different location from the drop-off point, be sure that it is accessible to the aircraft and agree with the pilot on an alternate pick-up plan if necessary. As a general rule, if the pick-up point is different from the drop-off point, the proposed route should be flown before drop-off. This will only take a few minutes of extra flying time and it may save the ground party several hours, particularly if the pilot needs to rendezvous with the ground party before the designated pick-up time.

Transport of Large Crews



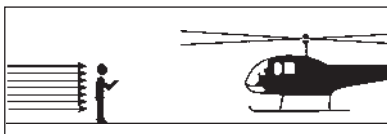
- Safety briefing is required.
- Everyone should stay together and well back at the side of the landing zone. This gives the pilot more space to maneuver in the event he has to land suddenly either during landing or take-off.
- Face away and shield eyes from machine during landing and take-off.
- Each passenger is required to look after their personal gear.
- Passengers should be paired off and ready to get aboard as soon as pilot gives the signal.

Landing Sites

Prior to arrival of larger helicopters, it is necessary to prepare loading and landing sites free of loose debris and with dimensions adequate to accommodate freight being handled. Normally the volume of freight and weight of individual pieces is such that very little can be organized once freighting begins. If possible, a tractor should be on hand to move heavy pieces from nets and slings so that hernias and other muscle damage can be avoided.

Experience will give you an idea of how much room is required and type of site each pilot requires. Some pilots and helicopters require more room and more level sites than others. For your own safety, it is essential that you find or prepare a site which your pilot will use with confidence. Remember that every helicopter landing is a unique combination of winds, terrain, elevation and temperature. If you are on the ground, stand on the upwind side of the landing site, if possible, and signal the wind direction, preferably with flagging or, alternatively, with your arms (back to the wind with arms pointing in wind direction). Remember that all aircraft take off and land into the wind.

When directing machine for landing, stand with back to wind with arms outstretched toward landing pad.



Clear any obstructions from the landing site area, bearing in mind the clearance required for the tail rotor. In tight landings, the pilot may want you to help him position his tail, which he cannot see (whether you are inside or outside). Use your thumb to indicate direction tail is to move and your palm to indicate vertical movements (see 'Signals'). If the terrain is too rough at the site to land solidly, the pilot will sometimes steady the helicopter by resting only part of the skids on the ground while you enter or leave. You must shift your weight very slowly in these situations so that the pilot can maintain his delicate balance.



Helicopter Landing Pad

For landing small helicopters, if the pilot has not provided instructions on an adequate landing pad, allow a level landing area about four metres by four metres and clear the area to ground level within six metres of the landing pad to provide main rotor clearance and tail rotor clearance in two directions.

If a landing pad is required in soft ground, place five or six poles on the ground; each about four metres long and about half a metre apart, perpendicular to the prevailing wind direction (i.e. the flight path). Poles must be secured to ensure they cannot move. Poles rot quickly, and old or unfamiliar heliports should be checked very carefully before being used. Finally, prepared landing sites that are old or abandoned should be destroyed.

Toe-In Landing Sites and Disembarking at the Hover

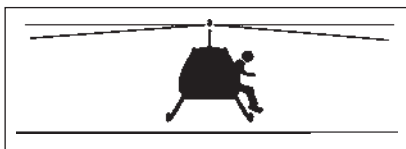
Toe-In Landing is classified as a *Hover Exit*. The pilot must be trained in the maneuver and passengers must be trained by the pilot according to CARs.

Toe-in landings are illegal unless the operator has an amendment to his Operating Certificate and Operations Manual which provides for such landings.

In mountainous terrain, a pilot may permit passengers to leave or enter the helicopter on mountain sides while the front part of the skids is resting against the ground. The pilot must ensure the safety of the landing site, particularly on steep slopes where considerable judgment is required to ensure that the tips of the main rotor blades are a safe distance above the ground. Since both the pilot's hands are occupied with the controls, passengers must ensure that doors are securely latched before the helicopter departs and that no items interfere with the control of the aircraft. In addition, passengers need to carefully control their movements to avoid sudden shifts of weight.

The order for passengers to embark or disembark the helicopter should be confirmed with the pilot as it may affect the aircraft balance. Remember to ensure that the cabin door is firmly closed and that seat belts are inside the cabin when disembarking.

If leaving machine at the hover, get out and off in one smooth, unhurried motion.



Cargo

Personal baggage and equipment should be properly secured. In fixed-wing aircraft, cargo carried inside the cabin with passengers should be secured by nets, strapping, or another tie-down to prevent shifting in flight and possible injury or fatality to passengers in the event of a crash or hard landing. Cargo should not restrict the use of emergency or regular exits. It is the pilot's responsibility to ensure that the aircraft's total allowable payload is not exceeded and to ensure that the load is distributed so that the aircraft is within its centre of gravity limits. The pilot often has to rely upon the advice and knowledge of the passengers; therefore, extra items should never be loaded on the aircraft without the pilot's knowledge. The weight of items should be determined as accurately as possible.

If legally permitted, externally loaded equipment must be tied on helicopter racks under the pilot's supervision to avoid loss of items or possible damage to the helicopter during flight by loose buoyant equipment being sucked into the main and tail-rotor blades. Use only tie down ropes provided by the pilot as they will have been cut to specific lengths both for utility and safety reasons.



Carry tools horizontally, below waist level (never upright or over shoulder).

Hold onto hard hat when approaching or leaving machine, unless chin straps are used.

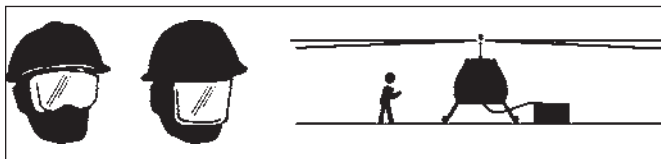
Hooking Up

Bulky items (e.g. fuel drums, drilling equipment) are frequently slung under the helicopter with lanyards and a net attached to a hook which can be released by the pilot. The pilot will provide instructions on the correct procedure for arranging and hooking up such loads and the signals to be used. Ground personnel should have training on slinging safety procedures before they are permitted to hookup loads.

- All items must be securely held within the cargo net since loss during flight could cause the net and remaining items to be sucked into the main blades or tail rotor with disastrous results.
- Keep clear of approach and take-off paths when sling loads are being carried.
- Wear gloves to protect your hands, particularly since a static charge can build up in a light rain, snow, or dust.
- If a helicopter is lifting a heavy load and appears to have difficulty getting airborne, NEVER try to assist by lifting the load. If the machine cannot lift it, it cannot fly with it.

In snow there are special considerations:

- The pilot must hover above the doughnut of blowing snow and may not have visual contact with individuals on the ground.
- Static electricity from sling gear can knock you down. Get briefed on grounding the helicopter.
- Allow plenty of time to prepare the aircraft for flight.



Loading assistants should always be supplied with plastic eye shields.

After hooking up cargo sling, move forward and to side to signal pilot (to avoid entanglement and getting struck by loaded sling).

Passengers are not permitted to travel in the helicopter during a slinging operation.

Pilots should familiarize the appropriate workers with external load hook up procedure, as per this checklist:

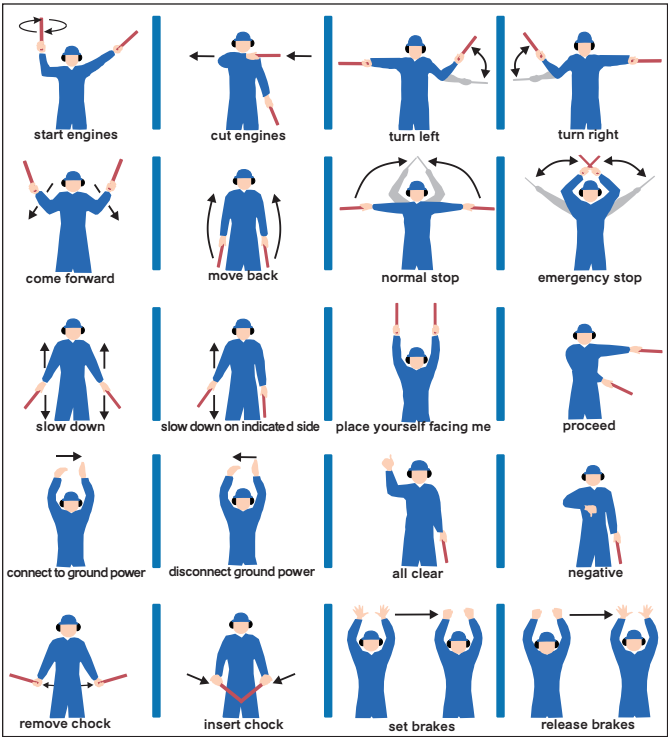
Non-Company External Load Assistant – Training Criteria

- ✓ Describe in detail aircraft hook components and functions, including manual and electric release functions.
- ✓ Describe in detail carousel hooks and function.
- ✓ Explain extended line function and type to be used in current application.
- ✓ Demonstrate correct method of closing both aircraft and carousel hooks.
- ✓ Demonstrate downward tug on lanyard method to confirm hook is closed correctly.
- ✓ Allow trainee to experience closing hooks and attaching lanyard without aircraft operating.
- ✓ Explain radio and hand signals to be used on current assignment.
- ✓ Explain pilot site lines during hookup phase.
- ✓ Demonstrate correct method for hookup personnel to clear aircraft after hookup.
- ✓ Explain personal protective equipment required during hookup operations.
- ✓ Explain hazards to personnel and aircraft posed by unsecured material in the working area.
- ✓ Explain in detail safety procedures required while working in the proximity of helicopters, including risks associated with fouled long lines.
- ✓ Establish an emergency response plan.
- ✓ Allow trainee to experience a minimum of three demonstration hookups with the aircraft operating.

Signals

Hand Signals

In the past, most helicopter or fixed-wing operators did not acquaint passengers with air-to-ground or ground-to-air signals that should be used for communication purposes. As per Work-SafeBC regulation, in addition to two-way radio communications, flight crews and ground crews must be able to communicate with signals.



Courtesy Great Slave Helicopters

Air-to-Ground Signaling

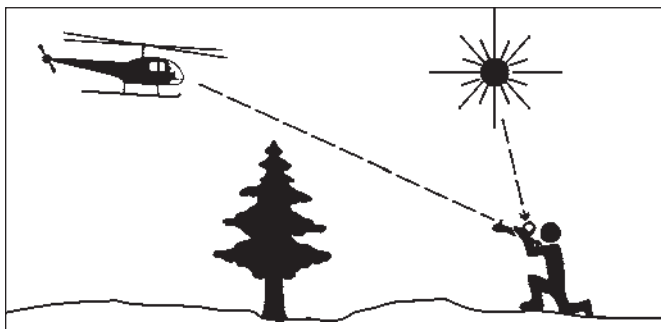
Without adequate air-to-ground radio communication, the pilot has extremely limited ability to communicate with the crew on the ground. The most common signal, the 'wing-waggle', the pilot notifies those on the ground that they have been sighted or that a message has been received.

The helicopter pilot must brief passengers on pick-up or emergency pick-up arrangements before they leave the aircraft (e.g. proceed for pick-up in the direction of the helicopter after three tight circles).

Ground-to-Air Signaling

There are many established procedures for signaling aircraft among which the following are most common:

- **Bright Coloured Clothing** – fluorescent jackets, vests, or caps can be spotted more easily than natural coloured bush gear.
- **Fluorescent Orange and Red Cloths** – generally made of nylon and should be at least 2x2 metres in size. When on a traverse, drop the folded cloth over your packsack if expecting a helicopter pick-up.
- **Pocket Flare Gun** – this is pen-shaped with a pocket clip and a spring-loaded mechanism, that when released, can discharge flares to a maximum height of 60-70 metres. It is particularly useful when a helicopter is trying to locate personnel in forests.
- **Heliograph Mirror** – most useful for attracting fixed-wing or rotary wing aircraft on sunny days. The mirror contains a small sighting hole to pin-point targets. Avoid use of the mirror when close to a helicopter.
- **Mirror, Brunton Compass Mirror, Metal Clip Board, etc.** – similar principal to the heliograph mirror but less precise. The best signaling procedure is to extend one arm with the thumb held vertically on target and, with the other hand, line up the reflection of the mirror held at eye-level on the thumb. The top of a small tree at greater distance can be used for greater sighting accuracy.



Signaling Helicopter with Mirror

- **Smoke Fire** – On bright days, smoke is more noticeable than fire, while on dull days or in twilight, the reverse applies. Smoke dissipates quickly in a strong wind and a small fire is useless in these conditions. Keep green boughs available to create smoke on a well established fire.

Three fires, about 20-30 metres apart at the apices of a triangle are an international distress signal and should be used only in an appropriate emergency. For practical purposes, a single column of smoke is as effective and is far easier to maintain.

- **Signal Code** – Previously recommended ground-to-air signal codes, using visual elements laid out on the ground, are so rarely used that the cryptic messages are unlikely to be recognized by current pilots and are no longer recommended for communication purposes. These may be useful to attract attention if you are lost or stranded, but during Search and Rescue, it is important to use a variety of ways to attract attention to yourself.
- **Portable VHF Transceivers** – Two types of VHF hand-held radios are available for air-to-ground communications. One less-familiar type makes use of the VHF-AM radio system installed in all aircraft. These radios are used in all airport air-to-ground and air-to-air communications.

The flexibility of being able to talk to any aircraft flying overhead makes this system of communications very advantageous. These portable radios have crystal-controlled frequencies so a great range of frequencies are available. Each hand-held unit usually carries two to five different frequencies. **The recommended frequencies to carry are:**

- **122.5 MHz:** Common air-to-air and air-to-ground “gossip” frequency, almost always monitored by aircraft.
- **121.5 MHz – EMERGENCY FREQUENCY.** All aircraft including commercial flights monitor this frequency, so in an emergency, one can call for help.

The frequency 121.5 MHz should never be used unless there is an absolute emergency and only to call for help.

The most popular type of radio system is the VHF-FM system. These radios are smaller than the VHF-AM sets and are much easier to license. Unless the pilot has extra hands available to hold onto his own portable set, an addition must be made to the aircraft’s present avionics system. This system is limited to use in aircraft which have the special VHF-FM package and thus does not have the flexibility of the VHF-AM systems.

Both radio systems, depending upon the qualities of the ground units, have very good range and resolution. VHF-FM is also very useful in line-of-sight and ground-to-ground communications between field crews.



When directing pilot by radio, do not give landing instructions that require acknowledgement, as the pilot will have both hands busy.

Emergency Equipment for Fixed-Wing Aircraft and Helicopters

All aircraft, both fixed-wing and helicopters, should be equipped with the following emergency equipment:

- ELT, preferably equipped with both an impact and a manual switch.
- Emergency rations of a suitable quantity to meet Transport Canada regulations for the number of persons being carried (only required when flying over sparsely settled areas as defined in Air Navigation Order (ANO) Series 5, No. 12).
- First aid kit.
- Sleeping bags sufficient to accommodate all passengers.
- Tent large enough to accommodate all persons on board (in the Arctic only, north of treeline).
- Portable compass.
- Axe.
- Signaling mirror.
- Gun (12-gauge shotgun is ideal) and ammunition (No. 4 shot, SSG and rifle slugs). Documentation is required.
- Hunting knife.
- Fire makers (matches in waterproof container).
- Pyrotechnical distress signals.
- Snare wire.
- Fishing tackle and fishing net.
- Cooking utensils.
- Survival booklet.

Additional items in winter:

- Snowshoes.
- Extra socks and mitts.

Additional items in summer:

- Mosquito repellent.
- Mosquito nets.

Emergencies

- In the event of an emergency, follow the pilot's instructions.
- In the event of a crash landing, do not attempt to leave the aircraft until it and the propellers or rotors have stopped moving. Then exit as quickly as you can and move to safe ground. If an aircraft is going to catch fire, it will usually do so within 60 seconds of impact.

Airstrip Safety

The airstrip should be treated with caution. There may be times when an airplane will land at unscheduled times. Before doing any work at the airstrip, make sure to check with the Camp Manager to find out about flights. Listed below are general safety requirements for the airstrip:

- Always be aware of low flying airplanes over the airstrip (the pilot will usually make one pass over the airstrip before landing. If you are on the runway at this time, make sure that the runway is clear and leave the runway immediately).
- Always remain clear of the runway during take-off and landing.
- Only approach the airplane once the pilot has given the ok signal.
- When loading and unloading be careful about driving around the airplane and under the wings.
- Remove any obstacles for the runway or notify the Camp Manager if there are any problems so the pilot can be informed.

No one is obliged to fly in charter aircraft when conditions are unsafe.

APPENDIX 6. YUKON WILDLAND FIRE HELICOPTER EXIT GUIDELINES

Hover Exit Guidelines



V1.7

NOTE: page numbers in this pdf have been assigned by YGS.

Preamble

Disembarking from a helicopter in a hover can be accomplished safely providing the personnel are trained in the manoeuvre. The movement of personnel and equipment must be pre-planned and practiced and the personnel must have an appreciation of why these moves are made and the results and effects of movement on a hovering helicopter.

It must be clearly understood that hover exiting and boarding are much less desirable than a full skid landing. The option to hover exit one or more firefighters with a chainsaw to improve the site in order to facilitate a full skid landing is preferred and should be exercised where possible. The procedures within this document should only be used where no other reasonable option exists and only with the full consent of the Pilot-in-Command of the helicopter.

Ultimately the pilot has overall authority for the hover exit manoeuvre. However, all personnel involved have a shared responsibility to ensure the operation is conducted safely. Each individual has not only the right but also the obligation to halt the procedure should they feel their own or another's' safety may be compromised.

1.0 Introduction

1.1 Purpose

The purpose of this document is to outline standard operating guidelines to be available for use by all CIFFC member agency staff when exiting or boarding from a hovering helicopter. Individual agency policy dictates that their staff may not be trained or allowed to perform some of the hover exiting or boarding options outlined within this document (ie. high hover exits are not conducted by all agencies). Please see Appendix 6-1 Matrix for details

1.2 Definition

A hover is a state in which the helicopter is under power and the pilot must manipulate the flight controls to maintain a stable attitude. This could be free of, or in partial contact with a grounded surface.

A helicopter in full skid contact with an unstable surface that requires the pilot to make power and flying control surface adjustments is also considered to be in a "hover" for the purposes of this document. The evaluation of the stability of the surface to necessitate a hover exit is at the discretion of the Pilot-in- Command.

The implications for a fire crew member are the same for all hover exits; they must ensure a smooth transfer of weight from the helicopter to the ground.

Additionally, all weight transfers within the cabin must be steady, deliberate, and smooth.

1.3 Transport Canada Authority

Canadian Aviation Regulations and Commercial Air Service Standards provide the authority for conducting hover exits. The particular clauses are as follows:

CAR 602.25 (2) (b)

2) No pilot-in-command of an aircraft shall permit a person to enter or leave the aircraft during flight unless

(b) the entering or leaving is permitted under section [702.19](#);

702.19 For the purposes of [paragraph 602.25\(2\)\(b\)](#), the pilot-in-command of a helicopter may permit a person to enter or leave the helicopter in flight

(a) where

(i) the helicopter is operated at a low hover,

(ii) the person is able to enter directly from or alight directly onto the supporting surface,

(iii) the air operator is authorized to do so in its air operator certificate, and

(iv) the air operator complies with the [Commercial Air Service Standards](#);

722.19 Entering or Leaving a Helicopter in Flight

Authorization to permit a person to enter or leave a helicopter in flight other than by external load attaching means is subject to the following standards:

(a) operations are conducted under day VFR conditions while the helicopter maintains a stabilized hover;

(b) the longitudinal and lateral centre of gravity shall be calculated for embarking and disembarking operations and shall not exceed the limitations of the applicable flight manual. The operating weight shall be calculated and shall not exceed the applicable weight/attitude/temperature (WAT) hover performance charts for the helicopter type and configuration at the operating altitude;

(c) persons to be embarked or disembarked have been instructed on related hazards and techniques;

(d) crew members shall be trained in accordance with [section 722.76](#) of the *Commercial Air Services Standards*;

(e) any equipment or cargo to be loaded or unloaded shall be secured to prevent shifting in flight except during loading and unloading. Cargo or equipment shall not be loaded or unloaded from a baggage compartment remote from the main cabin unless the applicable centre of gravity calculation is completed and cargo handlers have been instructed on procedures; and

(f) the air operator's Company Operations Manual content includes embarking and disembarking operational procedures, briefing procedures and crew member training requirements.

1.4 Safety of Procedure

The safety of the operation is paramount. All personnel onboard an aircraft have the authority to say "NO" to a particular situation or procedure they are not personally comfortable with. It shall be recognized by the pilot and crew that, should this occur, the situation or procedure shall not continue until;

- conditions have changed
- other alternatives are sought
- the individual has been provided with additional information, training or briefings to remove doubt as to the safety of the flight
- **"ONE NO IS A No-GO"**

1.5 Hover Time Benchmark

Hover time kept to a minimum consistent with safe work practices recognizing that extended time in the hover increases the risk.

2.0 Conditions and Criteria for Hover Exits

2.1 Communications

All helicopters that are required to conduct hover exit operations shall have the ability to conduct hot (hands free) communications between the pilot and the crew leader. The first person to exit the helicopter shall have a functioning radio (preferred to have earpiece or headset) to facilitate communication. It is noted that during high noise situations hand and other non verbal signals are most often the primary forms of communication.

2.2 Exiting

Exiting in a hover shall only be conducted by trained personnel engaged in wildland fire management operations who have received the initial annual training and any required proficiency maintenance training through the season.

2.3 Boarding

Boarding in a hover shall only be conducted by trained personnel and in situations where no other reasonable option exists.

2.4 Flight Conditions for Operation

Hover exit operations shall only be conducted under day VFR conditions while the helicopter maintains a stabilized hover that will permit persons to safely deplane.

If a stabilized hover cannot be accomplished, the operation shall be aborted until conditions for a stabilized hover exist.

2.5 Doors

Only the doors required for unencumbered safe operations shall be removed prior to the commencement of a hover exit, or shall be of a type, which can be safely opened and closed in flight in accordance with manufacturers' specifications.

2.6 Maximum Hover Distance

Low hover exits refer to skid heights of 3 feet (.91m) or less. High hover exits refer to skid heights of .91 to 1.5 m. Skid height not to exceed 5 feet (1.5m) above the deplaning surface thus ensuring personnel can transfer their weight from the helicopter to the surface smoothly and gradually.

2.7 Weight Transfer During Flight

Crew members shall deplane one at a time in a previously designated order and by the deliberate and smoothest transfer of weight as possible. The sudden and abrupt shifting of any weight on the helicopter may have drastic effects on its' ability to maintain a stabilized hover. The transfer of weight to the ground from the helicopter shall be done in a gradual and deliberate manner.

2.8 Power Requirements

The helicopter shall be operated in accordance with the approved Flight Manual. Out-of-ground effect limits shall be used as appropriate.

2.9 Weight and Balance Calculations

To ensure that the helicopter's Centre of Gravity limits are not exceeded at any time during the hover exit operation the pilot-in-command shall complete the appropriate C of G calculations based on the load and the most extreme case in the hover exit/enter manoeuvre. The Pilot shall determine the sequence of offloading passengers and cargo to remain within Centre of Gravity limits. Calculations shall be based on actual crew member weights and cargo where available, otherwise standard weights shall apply.

Non standard helicopter configurations (such as cargo baskets) require extra care in determining weight and balance limits.

Although hover exits may take place from either side of the helicopter it is important to be aware of the implications of exiting out one side or the other on the lateral C of G. This is particular significant with certain helicopter types (ie. Bell 206, 206L)

2.10 Authority

The Pilot-in Command shall have sole responsibility for deciding if a hover exit can safely be conducted, and shall abort any attempts to hover exit if not safe to do so.

The safety of the operation shall be the responsibility of all staff involved under the Pilot-in-Command's final authority.

2.11 Personnel Clothing and Protective Gear

All clothing shall have all closures securely fitted to avoid getting hung up on parts of the helicopter. Work boots shall be worn providing ankle support and protection and sufficient traction. Personnel shall wear a hard hat complete with a functional chin strap and hearing protection. Hearing and eye protection shall be worn. "Caution items" such as (but not limited to) rings, necklaces, watches, hoods etc. shall be either tucked inside the clothing or removed prior to the hover exit. Long hair shall be securely tied and tucked inside the clothing.

2.12 Cargo

Helicopter type and space or operational expediency may dictate fire suppression gear be stowed in the cabin area. Backpacks, tools and other equipment must be properly packaged, protected and secured. Cargo shall be restrained so as to prevent shifting during flight and shall be placed so as not to block or restrict the exit of passengers in an emergency. Cargo or equipment shall not be loaded or unloaded from a baggage compartment remote from the main cabin unless the

applicable centre of gravity calculation is completed and cargo handlers have been instructed on procedures. If tag lines are used they shall not exceed 4 feet (1.2m) in length and shall be stored properly when not in use.

3.0 Qualifications

3.1 Pilot Qualifications

The helicopter company shall be on the agency's approved operator list. The pilot shall meet the agency's minimum pilot requirements for the helicopter type being operated.

The pilot shall have received the initial and recurrent training for hover exits as outlined in their company's Air Carriers Operations Manual. The pilot shall be prepared to demonstrate his/her ability to carry out personnel and equipment moves to the satisfaction of the participating CIFFC member agency if and when requested.

3.2 Crew Qualifications

Fire crew members shall be:

- physically fit and capable of exiting /boarding safely from a helicopter in a hover.
- able to understand verbal and hand signal instructions.
- willing to exit from a helicopter in a hover.
- trained in basic helicopter orientation and safety and have successfully completed a training program in exiting/boarding from a hover.

4.0 Training and Currency

4.1 Pilot Training and Certification

Pilots shall review this manual (CIFFC National Hover Exit Guidelines) prior to participating in training sessions with agency staff. Pilot training shall conform to their Company's Air Operations Manual amendment.

4.2 Fire Crew Training

At the beginning of each operational season a training program shall be initiated and completed for all fire crew personnel and any other fire staff that may be required to participate in a hover exit. The minimum training shall consist of:

- A complete review of this manual
- A review of safety practices on and around the helicopter

- A minimum of two (2) simulated exits in static helicopters
- A minimum of three (3) actual hover exits shall be completed two (2) of which are with full crew and gear in terrain and vegetation similar to fire site conditions.
- A minimum of two (2) hover boarding exercises shall be completed for those agencies that allow boarding in a hover. Agencies that allow equipment to be boarded in a hover shall include the hover loading of equipment.

4.2.1 Fire Crew – Proficiency Maintenance

Proficiency maintenance requirements either through operational or live hover exits shall be managed on an agency specific basis. Agency specific proficiency maintenance targets can be found in Appendix 6-2.

4.3 Crew Leader Designation

The crew leader shall be responsible for the conduct and movement of the agency personnel. A leader must be designated for each operation and shall be positioned in the appropriate seat during the hover exit providing direction to the crew and pilot.

4.4 Certification Identification

Trained crew members shall be issued a hard hat sticker annually made from non-destructive sticker material indicating their successful completion of annual hover exit training and demonstration of competence at performing hover exit operations.

5.0 Procedures

5.1 Briefing

A briefing shall be held with the crew and pilot any time there is a change of (a) pilot, (b) crew or crew member, (c) helicopter or helicopter configuration, or, (d) prior to the operational hover exit to review and solidify the plan. This briefing should include but is not limited to:

- Sequence of crew to hover exit
- Performing a mock-up hover exit to ensure that the helicopter load configuration allows for all or portion of crew to hover exit
- Agree upon which type of exit (high/low/toe-in)
- Review of standard signals
- Any transfers of personal gear and cargo

- Emergency procedures – including where the pilot would likely turn/move the helicopter in the event of an emergency

5.2 Reconnaissance of Potential Exiting Sites

The pilot in command has full responsibility for the safe operation of the helicopter and its' occupants during flight.

The pilot shall be solely responsible for deciding if a hover exit can be safely executed and carried out within the limitations of the acceptable operating procedures outlined in the Air Carrier's Company Operations Manual. Notwithstanding that all personnel onboard a helicopter have the authority to say "NO" to a particular situation or procedure they are not personally comfortable with. (see section 1.4)

The crew leader shall assess the fire potential and determine the merits of conducting a hover exit if an acceptable full skid landing site is not in the immediate vicinity of the fire.

The crew leader and pilot shall assess the potential landing areas and hover exit locations and shall consider:

- Opportunities to deplane one or more firefighters with a chainsaw to improve the landing area to allow for a full skid landing
- The distance and time delay involved if deplaning from the nearest full skid landing location
- An estimate of time saved by a hover exit and the effect that earlier suppression activity will have on the fire
- Degree of difficulty

The pilot shall evaluate the suitable areas near the fire that will accommodate a hover exit and shall advise the crew leader. They must agree on the location and procedure prior to conducting a hover exit.

The pilot and crew leader shall identify the area to be used for the main helispot and any possible alternate locations.

The pilot shall advise the crew leader of the improvements required at the main helispot area to make it suitable for a full skid landing.

The escape route(s) to be used by the ground crews will be identified by the crew leader and acknowledged by the pilot.

5.3 Exit Preparation

Exiting to the outside of the skids in a hover is the preferred method of deplaning, however if outside of the skid is not the safest method of exiting then inside of the skid is acceptable.

The pilot shall brief the crew and shall advise the crew leader if there are any special weight requirements or considerations that are necessary to maintain acceptable C of G limits.

If a door has to be removed, the pilot shall locate the nearest acceptable full skid landing area and proceed to remove the required door. Open door flights shall be as short as possible and only those doors necessary shall be removed.

The crew leader shall brief the crew of the exit sequence and advise the crew of the type of exit to be completed. Once the crew leader has briefed the crew and is satisfied that all crew and equipment is ready, the crew leader shall advise the pilot by intercom.

The crew leader shall notify the appropriate Flight Watch facility of their specific location and indicate that a hover exit is commencing. The pilot shall re-establish communications with the flight watch facility as soon as practical once the hover exit is complete.

5.4 Positioning Helicopter for Hover Exit

The helicopter shall be manoeuvred into a stable hover with a skid height not to exceed 5 feet (1.5m) above the deplaning surface for a high hover exit or no more than 3 feet (.91 m) above the surface for a low hover exit.

The crew leader (if requested by the pilot) may provide rotor clearance and height information to help precisely position the helicopter.

The pilot shall advise the crew leader when the helicopter is in a stable hover and confirm that exit procedures can commence. If changing conditions dictate or a stable hover cannot be maintained, the exit shall be aborted immediately.

The crew leader shall initiate the commencement of exit procedures with crew members.

5.5 Exiting from a Hover

Hover exits may take place from either side of the helicopter.

The following hover exit sequence is for the Bell 206 Helicopter exiting out the left side of the helicopter although steps a) through h) are common to all hover exits.

Note: The sequence to exit from the right hand side for the hands and feet placement will be reversed.

Hover exits of up to 5 feet (1.5m) shall occur outside the skid unless an inside the skid exit is a safer method. Hover exits at level heights of 3 feet (1m) or less shall always occur outside the skid.

- a) Crew leader acknowledges helicopter is stable and pilot confirms, "ready for exit".
- b) Crew leader shall point to the first crew member and nod in the affirmative.
- c) The crew member shall undo their seat belt and re-secure it behind him/her. The crew member shall remove headset and don hearing protection if not done already.
- d) Crew leader shall advise pilot that, "Number one exiting now". The amount of movement information required to be given to the pilot will vary between pilots and helicopter type. The crew leader and the pilot shall discuss the specific requirements prior to commencing the hover exit procedure as part of the briefing.
- e) The exiting crew member shall grip the co-pilot's seat back or door post with the left hand and transfer his/her weight forward on the left foot grasping a suitable handhold with the right hand (not seat cushion).
- f) The crew member shall pivot on the left foot to face the inside of the helicopter and extend the right leg over the doorsill until the right foot is secure on the skid or step.
- g) The left hand shall then be transferred to grip the door step.
- h) The left foot shall then be moved to the skid.

5.5.1 High Hover Exit Method

Note: The sequence to exit from the right hand side for the hands and feet placement will be reversed.

- a) The crew member shall then semi crouch on the skid keeping body weight as close to the doorsill as is comfortable.
- b) The crew member's right hand shall now be transferred to grasp the doorsill. The left hand shall grip the front cross tube as close to the doorsill as is comfortable and move to a kneeling position.

- c) Using the doorsill and/or skid cross tube as hand holds – the crew member shall gradually and smoothly lower their body outside the skid and extend their legs to make ground contact and place partial weight to confirm solid footing. The crew member shall then smoothly transfer weight to both feet and release handholds.
- d) The crew member shall exit to left side of skids and crouch either inside or outside the rotor disc as circumstances and terrain allow but not directly under the tips of the blades.
- e) The crew member shall make eye contact with the crew leader and shall indicate all is well with a nod of the head or thumbs up signal.
- f) Once the first crew member is safely on the ground the crew leader then advises the pilot “number one is clear”.
- g) The crew leader signals the second crew member to unfasten his/her seatbelt and to move to the exit seat. Crew members exit in sequence.
- h) If gear and/or equipment is to be offloaded it shall be done at this time.
- Once the interior offloading crew member is in the exit seat, the seat belt must be fastened prior to commencing the cargo off load.
 - The crew leader advises the pilot that the offload procedure is beginning now and signals the crew member to begin the procedure.
 - The cargo is handed or lowered (with the aid of tag lines) to the crew member on the ground.

On completion of the offload, the crew leader advises the pilot and the crew member prepares to exit the helicopter.

- i) The crew leader shall advise the pilot “number two beginning to exit now” and signals the second crew member to begin his procedure.
- j) The crew member exits using the procedure as outlined above.
- k) Once the second crew member is clear of the helicopter, the crew leader advises the pilot that “number two is clear”.
- l) The crew leader then advises the pilot of his intentions to exit, gives any final rotor clearance, secures cabin, his/her seatbelt and headset.
- m) The crew leader then exits onto the skid and moves to the normal crew exit position, during crew leader exit, one crew member should move into the pilot’s line of sight to provide positioning information.

n) Once on the ground the crew leader shall make eye contact with the pilot and give the “thumbs up” signal.

5.5.2 Low Hover Exit Method

The movements are the same as the high hover for most of the procedure except for procedures as follows.

a) Using the skid cross tube and door sill or skid as hand holds – the crew member shall extend either leg to make ground contact and place partial weight to confirm solid footing. The crew member shall then smoothly transfer weight to both feet and release handholds.

5.5.3 Partial Skid / Toe in Method

Single skid toe-ins are prohibited.

The initial movements are identical a) to h) with careful attention paid to tail and main rotor clearance.

- The crew member shall step backwards or slightly sideways to make ground contact and place partial weight to confirm solid footing
- The crew member shall smoothly transfer weight off the skid ensuring solid footing before releasing handhold

The crew must remain crouched near the helicopter after deplaning, and within the normal view of the pilot at all times.

5.6 Cargo Offloading

Initial Attack Load configurations of helicopters shall take into consideration the possibility of full crew and gear hover exits. Different helicopter types and different load/crew configurations can substantially change the offloading procedure for hover exit. The pilot shall determine the unloading sequence to ensure the helicopter's centre of gravity limits are maintained particularly when baggage and tail boom areas contain equipment that may or may not be accessible during the hover exit.

- The crew leader shall ensure he/she has been fully briefed by the Pilot on the cargo unload sequence.
- The crew leader is responsible to ensure the crew is fully briefed on the sequence.

- The crew leader shall keep the pilot informed how offloading is progressing.
- If equipment is inaccessible (tail boom or baggage compartment) the pilot must be informed and the unload sequence shall be adjusted.
- Inaccessible equipment shall necessitate a shuttle with the helicopter locating a full skid landing area and transferring the equipment from the baggage area to the main cabin.
- Equipment shall be unloaded from the cabin in layers to maintain a balanced load from side to side (lateral c of g).
- Crew members outside the helicopter shall stand outside the skids (never straddle the skid) and form a single line to accept offloaded equipment from the main cabin.
- Crew members shall ensure that light items are weighed down to prevent downwash from blowing them around and up into the rotor system
- If taglines are required they are to be no more than 4 feet (1.2m) in length to prevent the possibility of having the tagline getting caught.
- Crew members shall ensure a smooth transition of weight from the helicopter to the receiving ground member.
- Hand signals for off loading the gear shall be the same as the hand signals given to crew members when conducting a hover exit.

5.7 Additional Helicopter Type Considerations

During training the pilot briefing shall include procedures specific to the model of helicopter used during the training. Some critical points associated with the common series of helicopters are presented in sections 5.7.1 through 5.7.3.

Many helicopters of the same type are configured differently with their own specific procedures to deal with optional equipment and hazards. The pilot shall brief the crew on the hover exit procedures and anomalies specific to the individual aircraft used for hover exiting.

When confronted with an unfamiliar helicopter type or a familiar type in a non standard configuration crews must, at a minimum, receive a briefing and perform a mock up hover exit. Additional mock-ups or practice live hover exits may be required to ensure the comfort level of both the pilot and crew.

5.7.1 Bell 206 Long Ranger Series

Hover exit procedures from the Bell 206 Long Ranger series parallels that of the Bell 206 Jet Ranger as described in section 5.4. Additional details for this helicopter are:

- Safety securing of the small double fold door after the large door has been removed.

- Extra care must be taken when unloading gear from the rear baggage compartment to stay within C of G limits.
- Secured gear may be carried in cabin area. No unsecured gear to be carried in the hat rack.
- Forward skid cross tube may be used as a hand hold during exit.

5.7.2 Aerospatiale AS 350/355 ASTAR Ecureuil Series

The standard exit procedures as outlined in section 5.4 apply to this series of helicopter. There are obvious cabin, door and skid differences. The following are particular to this series of helicopter.

- The cabin is unobstructed with full crew and pilot contained in the same cabin area.
- Seat cushions attached to the seats in the rear cabin with hook and loop (Velcro) may be required to be removed so they do not fly out of the cabin during open door flight.
- The co-pilot seat may or may not be reversible. If it is, this will allow the crew leader to face the crew and direct the activity.
- The skid configuration dictates that the exit shall be outside the skid
- The front skid cross tube is behind the exit to skid point.
- The large forward main door is not normally removed. This door can be opened in a hover and is steadied by the pneumatic strut, (some helicopters may have a rearward sliding door which in itself poses no particular problems other than securing a different handhold).
- The small rear quarter door (if existing) remains closed and affords a hand hold for exit.
- Crew leader to inspect the upper and lower small quarter door latches for positive locking before beginning exits.
- Baggage space aft of the left cabin area may restrict the size of gear that can be carried, often used for chainsaws and small fuel containers. Some helicopter models have extended wide baggage compartments. No fluids are permitted in the aft baggage area of the tail boom due to an electrical panel under the floor.

5.7.3 Medium Bell Series

Standard exit procedures in section 5.4 apply with modifications to handhold control and some cabin movement.

- Gripping the small port side door with the left hand instead of the co-pilots seat or door post.
- Crew members to position themselves to grip the cross tube and skid rather than the cross tube and door sill.

Exiting crew members must be prepared for heavy rotor downwash.

Small forward cabin door on 205, 212 shall be secured to allow for handhold in the exit. Cargo off loading shall take place according to the general rules outlined in section **5.5**.

5.8 Helicopter Boarding in a Hover

The reloading of personnel and equipment into a hovering helicopter is considered to be an exception rather than a standard practice and all reasonable efforts should be undertaken to prepare a suitable landing area. However, there is a requirement to train fire staff for this manoeuvre for fireline emergencies as well as for swamp and muskeg pickups.

Hover loading of personnel and equipment may be authorized providing:

- The helicopter is in a low stabilized hover – may be a full skid landing on muskeg or swamp.
- Personnel have been trained in the procedure.
- The pilot and crew leader agree on the sequence of events.
- The site is acceptable to the pilot.
- The equipment is packaged in an acceptable manner and capable of hand to hand transfer if it is to occupy cabin space.
- The helicopter must be capable of exiting the pick up area with an out of ground effect power reserve with the anticipated load.

The pick up site shall be prepared to provide rotor clearances for the helicopter and sure footing for the personnel.

Personnel and pre-packaged equipment shall be assembled before the helicopter arrives and equipment is to be secured.

Reloading sequences are essentially the reverse order of exit. Emphasis shall be on the smooth initial transfer of weight onto the skid. Smooth crew movement control is vital as the weight of the helicopter increases. The first person in the helicopter shall establish pilot/air crew contact as soon as possible after boarding and shall control the reloading of crew by the use of hand signals.

5.9 Common Signals

In order to have easy and specific communication amongst the crew involved in the hover exit (including the pilot), specific hand signals have been developed so that there is no misinterpretation of information and direction

- Abort – Slash across the throat
- Undo the seatbelt – Single decisive chopping motion of the forearm and pointing at the individual's seatbelt

- Move to the exit seat – single decisive chopping motion of the forearm pointing to the exit seat
- Proceed with the exit outside the cabin and continue to ground – abrupt sweeping motion to the door
- Hold/Stop – Hand thrust out towards the individual with the palm of the hand facing the individual
- Acceptance or Agreement - Hand held with thumb pointed up.

When loading in a hover hand signals are given in reverse order of when conducting a hover exit.

See Appendix 6-3 Hand Signals.

6.0 Terminating Hover Exits

6.1 Initial Warning

If, for any reason there is a need to terminate the manoeuvre immediately, the command issued by the pilot or crewleader shall be “**abort-abort-abort**”.

6.2 Crew Leader Procedure

- The crew leader shall acknowledge the “abort” signal saying “aborting” to the pilot.
- The crew leader shall signal crew to “Stay and Secure” by thrusting their hand forward to the crew in a stop gesture and perform the slashing motion across the throat the pilot shall activate the siren if equipped.
- The crew shall immediately secure seat belts and be prepared to assume the crash position as briefed by the pilot.
- If there is a crew member in the exit sequence it is the crew leader’s decision as to the course of action that is to be taken. It is to be noted that once a crew members is in the suspension phase it is time consuming and physically difficult to re-board the helicopter, as well the attention of the exiting crew member will be difficult to get as they have lost eye contact.
- It is important that the pilot and crew leader inform each other of their intentions and actions.

6.3 Helicopter Emergencies

During hover exit training the pilot shall review Land Immediately Emergencies in general and those specific to the helicopter type with the crew.

Prior to the operational hover exit the pilot will review emergency procedures with the crew as part of the standard briefing identified in section 5.1.

When there is an aircraft emergency that requires immediate action by the pilot, the pilot shall fly the aircraft, take action to address the emergency and then advise the crew of the intended action

There are three types of Helicopter emergencies

- Land Immediately emergencies include engine, lubrication, drive train, tail rotor, hydraulic and control failures among others.
- Land as Soon as Possible emergencies require that the helicopter relocates and lands at a safe level landing spot as soon as possible. These include but are not limited to low fluids, hydraulics, clogged filters, chip lights.
- Land as Soon as Practical emergencies will terminate hover exits but can be done in a controlled fashion.

Only Land Immediately and Land as Soon as Possible emergencies should have an instant effect on hover exit operations resulting in immediately terminating the procedure.

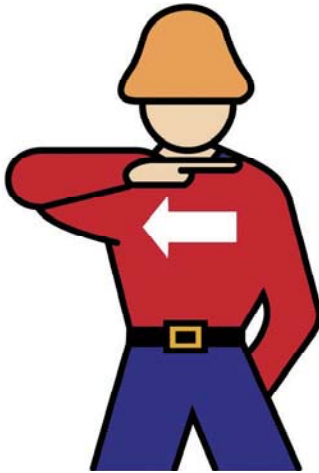
Appendix 6-1 Agency Specific Matrix

Agency	High Hover Exit	Low Hover Exit	Emplane Personnel and Equipment	Emplane Personnel Only	Weight Limit
BC	X	X		X	200 lbs
YT					
AB					
NT					
SK					
MB		X	X		
ON		X	X		
QC					
NS					
NL					
PC	X	X	X		

Appendix 6-2 Proficiency Maintenance Matrix

Agency	Proficiency Standard
BC	Mock up and live practice hover exit annually as per guideline
YT	
AB	Operational or live practice hover exit every 30 days
NT	
SK	
MB	Annual recertification with periodical practice throughout the season
ON	Annual recertification
QC	
NS	
NL	
PC	Mock up and live practice annually, operational or live practice every 90 days

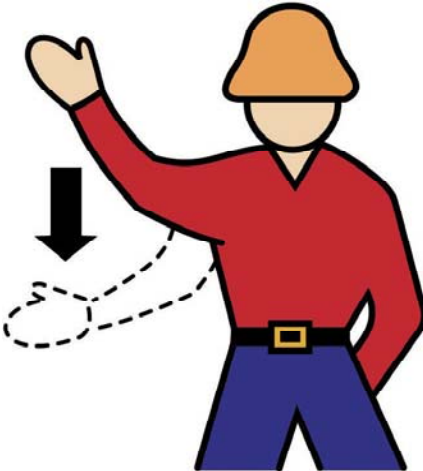
Appendix 6-3 Hand Signals



Abort - slashing motion across throat



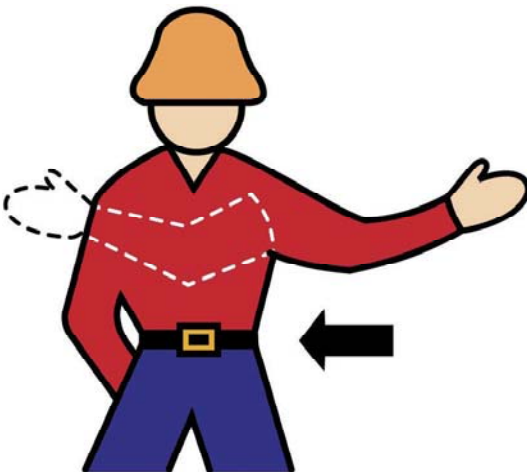
Stop/Hold - hand thrust out with palm forward



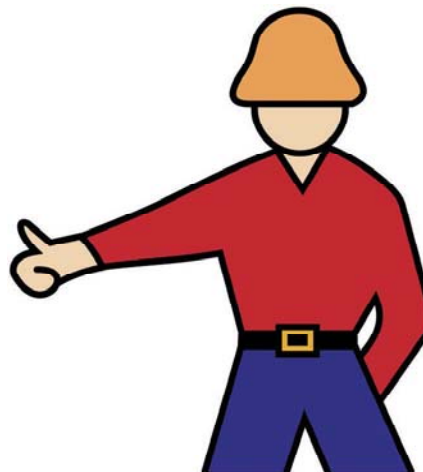
Undo Seatbelt - single decisive chopping
Motion of the forearm followed immediately
by pointing to the individual's seatbelt



Move to the Exit Seat - undo seatbelt signal
accompanied by pointing to the exit seat



Proceed With Exit Outside the Cabin -
abrupt sweeping motion towards the door



Agreement or affirmative - thumb or
thumbs up

Appendix 6-4 Contacts

This guideline is a living document and will be reviewed on an annual basis. Comments, suggestions, revisions, and additions should be sent to:

Hover Exit Guideline Development Team
C/O Aviation Working Group Chair
Canadian Interagency Forest Fire Centre
210-310 Weston Street
Winnipeg, Manitoba, R3E 3H4
[aircraft @ciffc.ca](mailto:aircraft@ciffc.ca)

APPENDIX 7. 4X4 DRIVING SAFETY

GETTING STARTED

General Principles

Even if you never take your 4x4 vehicle off-road, you'll be glad you have it when the snow falls and the roads get slippery. The extra traction you get when all four wheels are pulling gives you a margin of safety two-wheel drive vehicles just can't deliver. But keep the following points in mind.

4-wheel drive does not support braking. Don't get complacent just because you've got a 4x4. When roads get slick - slow down. Anticipate problems with plenty of time so you can brake under control.

Be familiar with the type of 4-wheel drive system your vehicle has. There are so-called "part-time" and "full-time" systems. A part-time system gives you better traction on slippery surfaces because the front and rear sets of wheels are locked together, but you shouldn't keep a part-time system in 4WD on dry pavement. This creates too much wear on the drivetrain. A full-time system lets a little slip occur between the front and rear wheels, so running it on dry pavement is ok. A full-time system is more convenient when you're driving on a road with intermittent patches of ice and snow, with dry pavement in between, because you can just put it in 4WD and leave it there. A part-time system gives you more traction when the surfaces are covered with solid snow or ice.

Remember that most two-wheel drive vehicles are really only one-wheel drive (if that wheel has no traction the vehicle will be stationary, because a normal differential transfers the power to the moving wheel). Likewise, a four-wheel drive vehicle has only one powered front wheel and one powered rear wheel. To avoid being stuck with two wheels spinning, some vehicle makers offer a limited slip differential. This permits a reduced torque to be transferred to the wheel that is not spinning.

Most off-road driving is a matter of common sense, experience and intuition. First, never drive faster than is necessary. Second, take obstacles at a slow and steady pace. With minor exceptions this wisdom will carry you through tough situations more easily than charging the obstacle, which will certainly damage your vehicle. In remote places, your life depends on your vehicle, so treat it with respect.

A basic rule of off-roading is always to prepare for the worst case scenario. If you have free-wheeling hubs, lock them as soon as you leave the main road. I lock them when I leave the tarmac, so that if I hit a slippery or tricky patch, a flick of the transfer stick into high ratio four-wheel drive helps regain traction. The use of high range four-wheel drive on rough or corrugated tracks also halves the fatigue loading on the rear prop shaft and half shafts by evenly spreading the transmission loads and, depending on the vehicle, can significantly reduce fuel consumption.

Always select the gear you will need for a situation before entering it, and try to stick with that gear throughout: more vehicles bog down through botched gear changes than for any other reason. You must know the exact position of all the vulnerable undercarriage points (*e.g.*, differential, spring U-bolts, sump, and steering rods) and steer accordingly.

Always walk a tricky section before driving it, so that you know exactly where the hidden obstacles are. Always keep both hands firmly on the steering-wheel and never hook your thumbs over the inside of the wheel as a sudden jolt could break your finger. Wear your seat-belt to prevent sliding around or hitting your head against the ceiling.

Know the Weather

If you're going to be driving any distance at all, check the weather first. Be sure you know what the weather is going to be doing all along your route. Are you going to be crossing mountain passes? A light rain in the valleys may be a raging blizzard at higher altitudes. In Yukon, go to www.511yukon.ca or dial 511 for local highway information.

Routinely check your tires

Make sure you do the following routine maintenance:

- Keep your tires properly inflated. The correct air pressure for your tires is specified by the vehicle manufacturer and can be found on the vehicle door edge, door-post, and glove box door or fuel door. It is also listed in the owner's manual. The number listed on the side of the tire is not the recommended air pressure for your tire -- it is the maximum air pressure for the tire. You should check your tire's air pressure at least once a month.
- Check the tire's tread depth. Proper tread depth will help prevent skids, aquaplaning and blowout.

Be aware of your surroundings

You must pay great attention to what is going on in front, to the sides and behind your vehicle. When driving disused back country roads, consider when it was last driven or maintained. Where the road crosses a slope or follows the edge of a watercourse, be aware that part of the roadbed would be undercut by erosion. Culverts and bridges may look good on the surface, but be structurally unsound beneath. Look up-slope as you drive to make sure there are no hanging snags or cut-bank boulders that could be released by the vibration of the vehicle.

File a "Flight Plan"

It's a good idea any time you take a trip anywhere to let co-workers, friends and family know where you're going and when you expect to be back. Also let them know what route you intend to take. This is especially important in the winter, particularly if you're going to be traveling off the beaten path.

DRIVING

Common 4x4 Driving Techniques

The following techniques are common to all types of terrain. Techniques for particular types of terrain are mentioned under the different terrain headings.

- Hand position
When driving off road, it is important not to place your thumbs on the inside of the steering wheel. When driving over any large ruts or potholes, the wheel could suddenly turn. This may result in the thumb being bruised or even dislocated if it is inside the rim. With power steering fitted to most four-wheel drives these days, this technique is not as critical because the power steering unit dampens out sudden steering wheel movements as well as steering stabilizers.
- Location of differential housings
It is important to know the position of your front and rear differentials on the underside of your vehicle because they are usually the lowest ground clearance points. Similarly, any other low ground clearance points should be noted (e.g., exhaust, spare tire, etc.). When you must drive over a large rock or other obstacle, ensure that it does not strike these unprotected protrusions of the undercarriage.

- Braking
When using the vehicle's brakes hard, your vehicle's front suspension compresses, 'using up' most of the suspension travel. When braking sharply to avoid an obstacle (e.g., pot hole or rut), and you cannot stop in time, release the brake pedal just prior to hitting the obstacle. This will allow the front suspension to return to its normal height, allowing more suspension travel when hitting the obstacle.
- Vehicle limitations
A four wheel drive vehicle cannot be treated like a normal car when cornering. As a result of its higher centre of gravity, a 4WD will roll over more easily than a car while cornering if they are taken too fast. This applies to gravel and paved roads equally. Although a 4WD generally has better traction on gravel than a car, it will tend to roll earlier when safe cornering speeds are exceeded.

Water crossings can be challenging, and if judgement is poor, can be expensive! A water crossing should not be attempted by inexperienced or ill-prepared 4x4 drivers.

A 4x4 is not an amphibious vehicle; they are not even waterproof. The actual depth that you can cross depends on your vehicle. As a general rule, if the water is above the top of your wheels it's probably too deep.

Prior to a water crossing, it is a good idea to place your recovery gear (winching equipment, waterproof boots, shovel, etc.) on top of other luggage. The last thing you want is to be searching for your recovery gear when you are stuck in the middle of a crossing.

Know the capabilities of your vehicle, and as a driver

- It's important always to drive within your ability. There are times when in soft sand, like beaches and washes, speed needs to be moderate and flotation through mud and snow needs to be kept up, hence "within your ability." Usually taking your time on the trail will allow you to pick a smooth path and allow you time to react to the varieties of terrain you can encounter. To increase ground clearance, you may be able to steer such that the tires roll over rocks and logs. Furthermore, going slow ensures that, if you do hit a rock with the differential or other rock grabber, it will usually stop the vehicle on impact or you will lightly scrape over it. If you hit a rock or other obstacle with excessive force, it could knock a hole in the oil pan, differential, or even knock off the oil filter.
- Avoid surprises by surveying the road ahead before you encounter it. Make sure the trail goes beyond the obstacle, doesn't become a bottomless quagmire, and continues over the hill (cliff?) or just plain ends. You can get a good idea where to place your tires and the differentials to have a plan of approach. Follow through to beyond the obstacle.
- Driving diagonally down steep slopes = rollover. Always drive straight down hills or steep terrain. Know your approach and departure angles, the bumper to tire distance. Some trails will require off-camber driving. In situations like this it's best to go slow, keeping the tires in the tracks. Avoid losing traction and ascending up a rock or stump on the up side of the hill. Tires will slip sideways a little. Stop if the slide puts you off the edge of the track. If it is clear downhill and a rollover is imminent, immediately turn the vehicle into the slide and drive it down. If that is not an option, and you are going over, turn the vehicle off and hold on to your seat-bottom.
- Reducing tire pressure will increase traction on gravel and sand. For most 4-wheeling purposes, a tire pressure of 18 to 20psi will be adequate. Highway pressure is another consideration altogether. The maximum tire pressure is marked on the side. Don't overlook the importance of reading the manufacturer's label. The air pressure difference between the front and rear is due to the tire and auto manufacturers' experimentation for over/under steer and load variances.

- Cross ditches or logs at an angle so that one wheel at a time goes over the obstacle - the other three help the one wheel to climb over. Dropping the wheel into a ditch or crack in a rock can put you and your truck in a vulnerable position. Sometimes the vehicle pitches and one or more tires lift off the ground. Be very deliberate and careful. Logs can bounce up and catch the undercarriage, so exit these obstacles slowly and carefully. Be careful not to allow one front wheels and one rear wheels to enter a ditch at the same time.

Vehicle Rollover

Hills should always be tackled straight up or down. A vehicle has to be at an extreme angle for it to roll head to tail, whereas a sideways roll can occur at much more modest angles. Keep the center of gravity of your heavy gear as low as possible - it influences the maximum tilt the vehicle can sustain before rollover. Avoid roof-top loads.

Sand, mud or other soft substrate may increase the risk of a rollover because the weight transfer to the downhill wheels will cause them to sink more deeply, increasing the actual slope angle. So what may appear an acceptable angle on firm terrain may result in a rollover on soft terrain.

Night-time driving

Night driving can be a pleasure if you are aware of the special alertness demanded by low visibility. A few fundamentals:

- Keep your headlights and tail lights on.
- Put your headlights on low-beam when another vehicle is within 200 metres, or when driving behind another vehicle.
- If your car breaks down at night, make sure other drivers can see your car and stop in time. Turn on the hazard warning lights. If possible, pull off the road. Avoid stopping just over a hill or just around a curve.
- Slow down.

GROUND QUALITY

Rocky ground

Rocky ground should be attempted at low speeds to minimize vehicle contact with the terrain.

While independent front suspension generally provides a smoother ride, it has a variable ground clearance to the front differential. As the front wheels hit a bump, the wheels rise up to absorb the bump. However the differential remains in the same relative position, effectively reducing the ground clearance under the differential. This can result in the differential hitting the ground, even though the obstacle under the differential was only half the height of the static ground clearance.

Live axle front suspension generally does not provide as smooth a ride as independent front suspension. However, many live axle suspensions are now fitted with coils rather than leaf suspension, which significantly improves ride comfort. The advantage of live axles when off road is that when the wheels hit a bump, the whole axle rises with the wheels to absorb the bump. This maintains the clearance from the differential to the ground. While this is an advantage off-road, the fact that the weight of the entire axle and diff is constantly moving with any bumps, leads to a rougher ride, compared to independent front suspension.

When large drop-offs or ledges are encountered, they can be tackled at an angle to allow one wheel at a time to mount the obstacle. Bear in mind how this will affect the position of the vehicle as turning at an angle to a downhill ledge may result in exceeding the side rollover angle.

Rocky Tracks, Gullies, Ridges

Avoid the big rocks, drive slowly, and engage high ratio four-wheel drive to reduce transmission wear and give greater vehicle control. I drop my tire pressures to the point where the tire is just beginning to bulge, which makes the ride more comfortable, saves on suspension, and saves on punctures as the tire has some 'give' when it hits rocks, rather than presenting a rigid, hard surface which can split.

In deep V-shaped gullies, be careful not to drop one side of the vehicle into the deepest point: drive with the wheels straddling the gully so you don't end up hopelessly jammed in a position where digging and pushing are much more difficult. When approaching a small gully head-on, enter at an oblique angle, dropping and removing one wheel at a time into and from the gully.

Gravel roads

Traveling on long straight stretches of gravel roads can lull the driver into a false sense of security. Modern 4WD's can make a relatively rough road seem smooth with their long travel suspension and sound deadened interiors. Speed creep can occur in these circumstances and when a bend is encountered the high centre of gravity in most 4WD's may cause you to cross to the other side of the road or a rollover.

If a sudden obstacle (*e.g.*, an animal), appears it is very important not to swerve while braking. This goes for any road surface, not just gravel roads. However it is more critical on gravel roads as once a skid or slide starts, it is very difficult to regain control. It is better to avoid a head-on collision with the moving vehicle and hitting a roadside object, but neither of these options is particularly attractive and it is far better to be travelling at a safe speed for the conditions.

In part-time 4WD's, it is best to use 4WD on gravel roads to gain the better traction and road-handling of 4WD. Gravel roads provide enough slip not to cause any transmission windup problems. It is not necessary to use the centre differential lock of permanent 4WD's on gravel roads.

Corrugated gravel roads cause severe vibration - bolts loosen, wiring frays, structural weaknesses are magnified and electrical components fail. The key to minimize these problems is to find the right combination of vehicle speed and tire pressures.

Increasing vehicle speed until it 'planes' over the corrugations can significantly reduce vibration, but the speed may be too great for the driving conditions. Lowering tire pressures reduces vibration as the tire sidewalls act as shock absorbers. However this causes the tire to heat up and can lower tire life. It is sometimes better to sacrifice tire life and lower tire pressure to reduce vehicle wear and tear, as well as the comfort of the vehicle's occupants.

After driving long distances on poor quality roads, it is a good idea to check all nuts and bolts to see they haven't vibrated loose. It is difficult to check suspension components when the vehicle is stationary; have a companion stand outside the vehicle while you drive slowly over a bump and listen for unusual noises.

Badly Rutted Tracks

Deeply rutted tracks may be impossible to drive without 'high-centering' the undercarriage. Drive with one wheel in a rut and the other on the hump to prevent your undercarriage getting hung up. If there is enough side room, drive with one wheel on the middle hump, and one on the far side of one of the ruts.

Mud

When driving through mud, first walk the route. Fill deep holes with rocks or other material. Check for alternative routes - there may be a path around hidden in the bushes. All water-filled holes must be waded through to assess their depth and firmness of the bottom. Then map your route through the mud hole. A companion should navigate the driver through.

Mark the exact position your steering-wheel is in when the wheels are pointed dead ahead. It's easy to turn your wheels too far to one side without realizing it. The vehicle may continue going in a straight line with the wheels turned.

Select your driving gear, and try not to change gear throughout the crossing. Maintaining momentum is critical, with problems increasing if going too slowly or going dangerously fast. Low range second or third gear are obvious choices. First gear gives too much torque and causes the wheels to spin.

Reduce power when slipping, and gradually increase power as traction improves. If the wheels spin, gently drop the revs until they grip again. Jiggling the steering from side to side helps the wheels regain traction, but avoid exaggerated steering. If you start bogging down, stop immediately without braking. Get out and plot the best course of action before sinking to the axles - usually this will mean simply reversing or a bit of minor digging.

Dust Control

When driving on dusty roads, it's a good idea to have all your windows closed and the ventilation control set to outside air with the fan on high. This pressurizes the vehicle interior slightly and helps reduce the amount of dust sucked into the vehicle. When another vehicle approaches, move the ventilation control to "recirculate" to stop dusty air coming in. Remember to move the ventilation back to outside air once you have passed through its dust trail or else the pressurization effect will be lost. In hot weather, vehicles without air-conditioning have to make a choice between minimizing dust intake or winding the windows down for the (cough) fresh air.

The biggest problem area for dust intake is from the rear tailgate. Check that the rubber seals are in good condition and that they seal when closed.

Sand

Sand, particularly desert sand, is a vehicle trap waiting to happen. You need to float over the top, not brute your way through. The only way to achieve this is by having a wide tire 'footprint' and keeping your momentum. If your vehicle is fitted with standard issue 'biscuit' tires (the best all-round off-roading wheels) deflate them so the side walls begin to bulge outward.

Most of the time, high range four-wheel drive will be fine, but when things get churned up, switch to low range. The hotter it is, the tougher the going, because as the sand heats up, moisture evaporates and the air molecules in the sand grains expand, making the surface looser and stickier. Heavy dew or light rain makes a huge difference to traction, as does driving early in the morning or late afternoon.

Execute gear changes well before hitting the tricky patches, as sloppy gear changes cause wheel spin, which can bog you down, or worse, snap a half-shaft. Don't fight the steering-wheel, rather grip it loosely and let the sand do the steering. Never use your brakes except in an extreme emergency, as braking will bog you down, lift your foot off the accelerator, and allow the sand to bring you to a halt.

Desert Sand Dunes

Sand dune driving is environmentally destructive and dangerous, but sometimes sand dune cresting is the only route through. Always carry out a walking check; some gentle dunes hide steep drop-offs or rocky cliffs on the far side.

Drive onto the dunes head-on — at right angles to the crest. Entering at an oblique angle can cause you to roll. Build up enough momentum to get you just to the top of the dune, at which point you need to halt the vehicle, with the nose pointing over the other side. Dig away the crest, dropping the nose, and descend slowly in low range second gear without touching the brake or accelerator pedals. Let the gears do the work as the brakes could lock and cause you to roll. Your descent must be dead straight, angled descents are a recipe for a rollover.

There are three conventional ways to approach bad corrugations: very fast, skimming over the top (a dangerous practice), very slow, so you drive up and over each rut, and driving on the wrong side of the road, so you approach the corrugation from the 'gentler' side. There is also a fourth option, which is lowering tire pressures until they start to bulge. This works like an extra set of shock absorbers, and means you end the day in a far better mood than with hard tires. Tire punctures can be repaired, whereas a cracked chassis or smashed spring cannot.

Watch out for changes in the colour of the sand on the road ahead - this almost always signals a change in its consistency or composition.

Ice and Snow

Tires play a very important role in snow; deep lugs and sidewall projections improve traction, as does decreasing the tire pressure by a third. Wide tires may float on hard snow. Wheel chains may help. Studded tires increase traction on ice, but are of limited benefit in deep snow or for braking.

To avoid 'spinning out', use high range second or third, and always brake very gently, as front wheels may not have ABS and 'lock-up' easily on icy surfaces, which will then limit your ability to steer. Use a lower gear or short, gentle taps on the brake pedal to control your speed.

WATER CROSSINGS

Walking the Crossing

When walking your water crossings it's best to follow the intended wheel tracks to find if there are any hidden rocks or potholes, as well as for checking the depth. Potholes at common crossings are often caused by previous vehicles spinning their wheels after hitting a submerged rock. So if you find a pothole, check for submerged rocks. It's a good idea to place markers at these points so you can avoid them. Even a relatively easy crossing may contain a single pothole that causes the hood to momentarily dip below the water level, resulting in water entering the air intake, hydro-lock and a damaged engine.

Vehicle Preparation

The first thing to do before any unfamiliar water crossing is to walk it. If you cannot cross it on foot, your 4WD can't do it either. If the water is flowing too quickly to safely walk the crossing, then it's unwise to drive across. Vehicles actually float until water seeps into them. When you walk the crossing you are actually starting your vehicle preparation. You are giving the axles, differentials and gearbox time to cool down while you find out exactly how deep the water is.

Driving Technique

With a mental picture of your route, or better still, with markers in place, and all your vehicle preparation done, it's time to start the crossing. Before you enter the water, remember to take off your seat belt and wind down your window.

Using low range second gear at 1500-2000 rpm (for most vehicles) creates just the right bow wave. It's important to get the speed right as too fast will send water everywhere while too slow may flood the engine bay. Hopefully you follow your markers and get to the other side with no problems. But if you do

strike problems, avoid using the clutch as this may allow water to get between the friction plate and the flywheel, limited applied torque.

If the wheels start to slip, it's important not to increase engine speed but back-off the accelerator. The wheels may regain traction. Excessive wheel-spin will not help.

If the engine stalls, put the vehicle in neutral without using the clutch and attempt to re-start. If the engine is submerged, do not attempt to restart as it will ingest water — it is better to find a way to pull the vehicle out.

Rivers

Deep water river crossings are among the most dangerous of all off-road hazards. If you have any doubt about a river crossing, don't do it. Find an alternative route, or wait for another vehicle to come along.

You must walk the route before driving it. If a river is flowing strongly enough to make you lose your footing, then it will be dangerous for your vehicle. If necessary, remove boulders. Mark obstacles with stakes, or have a passenger stand by them. Make sure that the exit point on the opposite bank is driveable.

If the water is above the bottom of your door frames, open two opposite doors for the crossing so you don't turn the vehicle into a floating box that flips over. If you have two vehicles, use one as a recovery vehicle.

Take the crossing at a slow and steady pace. Never change gear in the water: water will enter the clutch plate and cause the clutch to slip, leading to potentially disastrous loss of torque. Select your gear in advance - low range second or first are probably best, depending on the severity of the crossing.

Proceed at a steady, fast walking pace - this sets up a bow wave in front of the vehicle, pushing the water to the side. Once you are up and running, there is no stopping - steady momentum is essential. If for any reason you should lose power and the bow wave overtakes you, switch off immediately before water gets sucked into the air intake or manifold, and into the cylinders. Isolate the batteries to prevent the starter motor shorting and turning the engine.

Don't restart the engine unless you are certain no water has been sucked into the cylinders. If the water has risen higher than the inlet and exhaust valves or if your air intake is wet, then you have to assume water has entered the combustion chambers. If you can recover the vehicle without restarting the engine, then do so, rather than risk the possibility of damaging the engine.

Maintenance after water crossings

Once you have successfully crossed to the other side, remember to check the differential oil for water contamination. Having an extended differential breather is not a 100% guarantee of waterproofness and any crossing above your axles without extended breathers mean a mandatory inspection.

Checking your differentials for water contamination is very easy. Since water is heavier than oil, it will collect at the lowest point in the differential, right where the drain plug is located. After allowing time for your vehicle to cool, just loosen the drain bolt and run a small amount (~20 ml) of the differential oil into a glass. Clear water or milky colored oil indicates water is present and the differential oil should be drained completely. It is best to flush the differential several times to ensure all traces of water are removed. .

If you're like the majority of 4WDers, you won't be able to change the differential oil until you get home, because you won't have spare oil and a sump pump to change it. If you suspect contaminated oil (a deep water crossing without extended differential breathers or perhaps you have leaking differential seals) then you can try and remove the water by draining the differential until only oil comes out the drain hole. Do not drain too much and leave your differential short of lubrication. Collect this oil and water emulsion as

you should never dispose of oil into the environment. Save it until you get back home and dispose of it properly.

It's not only differentials that can have water contamination, but also your gearbox, transfer case and engine oil. However, it is usually only when a vehicle is stationary in deep water that these components are contaminated.

Amongst other items to check, are bar mounted electric winches. These components may not be used for extended periods and when they're needed you may find they have seized up. If the winch has been submerged in water it is advisable to strip it and grease it accordingly.

A water crossing is something that should not be taken too lightly as it has the potential to do expensive engine and drive-train damage.

Water Crossing Summary

Vehicle preparation

- Walk the crossing to check its depth.
- Don't cross fast flowing water.
- Place markers at hidden obstacles.
- Place a tarp across the front of the vehicle.
- Disconnect the fan belt if a viscous coupling fan is not fitted.
- Spray water repellent on distributor and ignition wires.
- Pack recovery gear on top, ready for use.

Driving technique

- Take off seat belt and wind down window.
- Use low range 2nd gear (in most situations).
- Drive at a steady speed to create a bow wave.
- Avoid using the clutch.
- Do not over-rev the engine if you lose traction.
- If engine stalls, place in neutral without using clutch to restart. Takeoff in 1st low.

Post water crossing maintenance

- Check differentials, etc. for water if depth above axles.
- Check winches if fitted.

Differential Breathers

When a hot axle hits cold water it cools rapidly. This has the effect of lowering the air pressure inside the axle and the differential housing, causing air to be drawn in via ventilation ports. Even with tubes from these ports extended higher on the chassis, the sudden reduction in air pressure inside the differential can still cause water to be drawn in via your axle seals if the breathers do not equalize the pressure quickly enough. This is why it's still necessary to allow the vehicle time to cool down, even when extended differential breathers are fitted.

Air Intake

Water and engines do not mix; when they do, it almost always results in bent pistons, valves and crankshaft commonly called "hydro-locking". This is an expensive repair. The positioning of the air intake is critical to how well a vehicle can handle a crossing.

NEVER attempt a water crossing where the water depth is above the air intake height. If you intend doing regular water crossings, it's a good idea to fit a snorkel as it raises the air intake to your roofline. Even so, the 4WD is not a submarine!

Radiator Fan

While under the hood spraying water repellent, check to see what type of radiator fan is fitted. Most 4WD's these days have the viscous coupling type, which means that when the engine is cool enough the fan doesn't spin at full speed. With the engine off, try and turn the fan. If it turns easily, you will probably get away without having to take off the fan belt. If it doesn't turn easily or yours is the fixed type, then you should remove the fan belt, if you don't and water enters the engine bay. The fan may act as a propeller, bend forward and cut a nice round hole through your radiator. It's certainly one problem you don't want to discover once you have completed the crossing. Even if it doesn't affect your radiator, you still do not want water being sprayed around, especially in a petrol vehicle.

Engine Bay Protection

Placing a tarp across the front of the vehicle minimizes water entering the engine bay by creating a bow wave, provided forward momentum is maintained. The result is less water for the radiator fan to spray over the ignition system, less chance of water entering the air intake and less likely for the fan to propel its way up to and through the radiator.

Diesel vehicles are usually better for water crossings as you do not have the ignition system to worry about. Water in the ignition system usually results in a stalled engine and not actual engine damage, though this is of little comfort when you find yourself stuck in the middle of a crossing. Depending on the water depth, it's advisable to climb out of your window rather than open the door and flood your carpets. To minimize stalling from a wet ignition, it's a good idea to spray all the ignition system with water repellent beforehand.

HILLS

Hill Ascent

It is usually best to tackle a hill climb that's any sort of challenge in low range. Although you may be able to just reach the top of a hill climb in 1st high, it doesn't leave you with any lower gears if the need arises. By using say 2nd or 3rd low range instead of 1st high, you have lower gears available if needed. If you run out of gears on a hill climb, you may have to back down to the bottom of the hill and start again. Most 5-speed gearboxes allow vehicles to travel up to 60km/h in low range, so you don't have to be continually swapping between low and high range as you travel between hills.

Diesel vehicles are generally better for hill ascents and descents as they usually have better low rpm torque for climbing the hill and higher engine compression for descending. However, in long sandy hill ascents, where traction is low and a run-up is required, the greater power of gas engines can be an advantage.

Hill Descent

When descending hills, you should always be in low range and have selected the gear required before descending. You should always avoid braking on downhill sections as you run the risk of locking up your wheels and causing a slide. Engine braking slows the vehicle without causing wheel lockup. However it is better to use the brakes than allow the vehicle to 'run away' and pick up speed. Always apply the brakes gently, rather than applying them abruptly and risking a wheel lockup.

Often hills get steeper the further you go down, so it's best to be in 1st low from the beginning rather than having to try and change gear halfway down. When changing down a gear while descending, it is best to be feathering the brakes as you depress the clutch, otherwise the vehicle freewheels while the clutch is depressed and picks up speed. It is far better to be in too low a gear and travel down slowly rather than be in too high a gear and have a potentially dangerous situation arise.

Hill Stall Recovery

A very common occurrence on hill climbs is the stalling of the vehicle when the hill becomes too steep. When this occurs, you will be left in gear with the engine switched on but stalled. To recover from this situation you should perform a Hill Stall Recovery, rather than just fire up the engine. This is accomplished by:

- Switch the (stalled) engine off and place your foot firmly on the brake.
- Depress the clutch and select reverse gear in low range.
- Take your foot off the clutch then slowly take your foot off the brake. The vehicle is now in reverse gear with the stalled engine stopping it from rolling down the hill.
- After checking the track behind is clear, start the engine and keep your feet off all pedals.
- The starter motor will start to drive the vehicle backwards as the engine begins to fire.

This will result in a smooth downhill progression while starting the engine and ensuring you have been in gear at all times. If you simply start the engine and then select reverse gear, it will result in a fast jerky take-off and being out of gear during some stage of the take-off.

The hill stall recovery does not apply to automatic vehicles as they should never stall; just lose forward drive when the hill becomes too steep for the gear it's in. When this occurs, simply place your foot on the brake while restarting the engine, select the appropriate gear and gently take your foot off the brake.

A lesser used method after an uphill stall can be done in situations where the terrain is not extremely steep and you wish to continue forward up the hill but you do not wish to attempt to let the clutch out while trying due to tire spin. This method only applies to manual transmissions and drive trains that have very low forward gears. By leaving the vehicle in gear and starting the engine without pressing the clutch in the vehicle will begin to move forward while the engine fires. Once the engine fires, you can begin forward movement. This method is hard on the starter and electrical system and should not be attempted on very steep terrain due to the possible overload on the electrical system and starter. Some vehicles will not allow the starter to be engaged if the vehicle's clutch is not depressed. In some cases, this feature can be overridden by use of a clutch safety cancel switch.

WINTER DRIVING

Vehicle Prep and Maintenance

When the weather turns cool, think about getting your rig ready for winter. Don't wait until the asphalt turns white to prep your vehicle.

Tires – If you're planning to spend any significant time driving in snow or ice, invest in a set of appropriate tires. They'll help you avoid the hassle of chains in most situations. Whatever tires you use, you'll get more traction and better stopping power if they have sipes –tiny slits in the tread. Put dedicated winter tires on your vehicle well before the first snowfall. Recent tests by Michelin show that the special tire compounds used in the tread of high-end snow tires need to be conditioned after you mount them each year by about 600 miles of dry highway driving before they develop maximum traction in snow.

You can also use studded snow tires, with small match-stick-sized metal projections sticking out of the tread about an eighth of an inch. Studded tires give superior traction on icy surfaces, but they give less traction on dry pavement because they keep the tread from fully gripping the surface.

Fluids – Check the potency of your antifreeze before the first frost, and be sure to change your oil to lower viscosity winter-weight. Invest in an oil pan heater if you live in an especially cold climate. Don't forget to change the windshield washer fluid to an antifreeze type. Then be sure to wash the windshield before freezing temperatures arrive, so you have the antifreeze solution in the washer lines, or else they'll freeze solid and you won't be able to squirt the winter grime off your windshield until they thaw in the spring.

Vision – Be sure your windshield wipers are up to par. Carry windshield de-icer and an ice scraper. Plan ahead so you can start your engine a few minutes before you have to leave and get the heater and defroster going. Never risk driving with the windows frosted over; peering through a little peephole you've managed to scrape clear in the middle of the windshield.

Heater – A functioning heater and defroster provide more than just comfort. They provide safety by keeping the windows clear. Check them thoroughly as part of your winter prep.

Battery – Don't take a chance driving in winter weather with a marginal battery. Your battery won't be nearly as efficient in cold temperatures anyway, and has to work a lot harder to turn the engine over when the oil's stiffened by the cold. A dead battery in a blizzard or remote location can be life-threatening. If you're not sure about your battery, invest in a new one with abundant 'Cold Cranking Amps'.

Miscellaneous – Keep the door locks and rear hatch locks well lubricated and de-iced. Make sure your headlights, tail lights, and brake lights are all functioning well. You need to see and be seen as much as possible when driving in the mist and fog. Consider carrying a yellow flashing light with a magnetic base. Plug it into the cigarette lighter and put it on your roof to increase visibility in bad weather. (

Winter Highway Driving

Shift into 4-wheel drive at the first sign of losing traction. Don't wait until you're stuck to engage the transfer case. And remember – the cardinal rule of driving on slippery surfaces is to SLOW DOWN. Don't get complacent just because you've got 4WD. Drive smoothly – no abrupt turns and no sudden braking.

Be sure you know what kind of brakes you have. If you have ABS, then you need to apply firm, steady pressure to stop. If you have regular brakes, then you need to pump the brake pedal rapidly. ABS helps you maintain some degree of steering while you brake. Without ABS, if you lock your wheels into a skid, you lose all ability to steer the rig around the obstacle, so it's important to modulate them by pumping, pushing the brake down quickly and firmly just to the point of lockup, then releasing momentarily.

There are two kinds of skids to recognize and recover from – under-steer and over-steer. They're handled differently.

An over-steer skid is the most common, and occurs when the rear wheels break free and skid sideways toward the outside of a curve. That points the nose of the vehicle into the turn more than you intended – it's steering too much, so it's called an over-steer situation. You avoid this type of skid by slowing down well before you enter a slippery turn. You recover by recognizing it the instant you feel the rear lose traction, steering back slightly toward the outside of the turn (toward the direction the rear wheels are sliding), and accelerating just a touch. Do not apply the brakes because if the front wheels have grip the weight of the vehicle shifts forward and the rear wheels lose traction even more. With front wheel drive, you can be more aggressive in accelerating out of the skid. It's easier to recover by adding acceleration with 4WD, too, but not as effective as with front wheel drive alone.

An under-steer skid happens when you turn the steering wheel to try to steer around a curve, but the front end just keeps going straight. It happens if you are going too fast for the conditions, or accelerate as you

enter a slippery turn, which shifts the weight to the rear wheels, reducing traction of the front wheels. Avoid an under-steer skid by slowing down before the curve, and coasting around the turn until you're well into it. Recover from an under-steer skid by turning the steering wheel back toward the outside of the turn (toward the direction the front wheels seem to be sliding) and coming off the accelerator to shift weight back onto the front wheels, then gently turning back into the curve.

Don't use cruise control or overdrive on a slippery road. Either of these modes causes an automatic transmission to downshift when going uphill and the sudden surge of power to the wheels will reduce traction on slippery surfaces.

If the road is icy you should put on the chains. With 4WD, there are good arguments for putting them on the front wheels or for putting them on the rear wheels. It's best to carry two pairs, so you can chain up all four driving wheels.

Winter Trail Driving Tips

When you're traveling off-highway in the snow over unmaintained dirt roads or trails, be aware of several points. Determine the depth and consistency of the snow. If it's too soft to support your rig, is there firm ground six or eight inches down that your tires can grip? If not, you can get high centered in a hurry, and it may prove impossible to winch free if the snow is heavy and deep.

Remember that a layer of crusted snow might support your vehicle in the morning, but in the evening when you return over the same trail, the afternoon sun may have softened the surface so it won't support you anymore.

It's important to travel with other rigs when you venture into the backcountry in snowy weather, and don't forget the "flight plan". Make sure your satellite phone is operational (correct SIM card and active account)

Survival equipment in your vehicle

Even if you're not planning to be driving off-highway, winter driving demands that you carry equipment to get you moving if you get stuck on a slippery road. You also need emergency survival gear in case you get bogged down in a blizzard or if you get caught in miles of traffic brought to a stand-still by an accident. Here's a minimal list of equipment and supplies to bring along on snowy highways:

- General stuff: Satellite phone to call for help (don't count on a cellular phone if you're out in the country), windshield de-icing fluid, a waterproof tarp to lie on in the snow in case you have to put on chains or make repairs. Be sure you have a full tank of gas, and fill up at every opportunity. Don't forget to bring at least two flashlights with extra batteries for each.
- Getting unstuck: Tire chains, spare tire with a lug wrench and a Hi-Lift jack with a bumper-lift accessory, a shovel, a hand winch (a "come-along"), traction strips to put under slipping wheels, a nylon tow strap, a buck saw to cut brush and firewood if necessary.
- Food and water: At least a gallon of drinking water for each person, emergency food to last each person at least one day.
- Protection from the cold: A warm sleeping bag for each person, several extra blankets. Bring along fire-making equipment in case your impromptu stay in the outdoors lasts longer than a few hours – waterproof matches, gelled alcohol fire starter, Duraflame-type fire logs to get a fire started.
- Warm clothing: Warm coats or parkas, sweaters, and winter boots, along with a change of gloves, boots, socks, underwear, and pants in case your basic clothes get wet. Bring along waterproof foul weather gear for anyone who may have to be working outside on the vehicle in cold, sloppy weather.

Additional equipment for off-road travel

Things get a bit more complicated when you travel off-highway in the winter. You have to be prepared to survive for several days if you get stranded in a remote area, so plan accordingly even if you didn't plan an overnight trip originally. It's especially important to let people know where you're going and how long you'll be gone.

Some advice:

- Travel with another vehicle: It's foolish to travel in a remote area by yourself. Whoever gets stuck has someone to tow him or her out. If one vehicle gets disabled miles from nowhere, you can go for help or carry out an injured person.
- All the suggestions above plus a lot more: Bring more food, warm clothes and a source of heat. Be sure to use polypro or other wicking-type synthetic fiber long underwear. Avoid cotton clothing. Wear layered clothing, so you can adjust the layers to stay warm without getting wet with sweat when you cut wood or do other work. Wear winter hiking boots. Bring more fire-making equipment and bring along some dry firewood to get a good fire going to help dry out wood you pick up in the woods.
- Camping supplies: A winter tent for shelter, cooking utensils, a propane stove and propane lanterns. Tarps and rope to build shelter from wind, rain, and snow.
- Winch and winching supplies: At least one of your vehicles should be equipped with a good winch. Driving off-road in the winter, it's very likely you're going to have to winch at some point. (See SJP-V06 and V07 - Use of winch and jack for getting unstuck) Winching supplies include D-shackles, a pulley block for double-lining the pull, several nylon tow straps, a length of chain with a hook on each end, and extra cable (to reach anchor points out of reach of your installed winch cable). Include leather-palmed gloves and eye protection.
- A satellite phone and list of emergency numbers.
- Bring a first aid kit and survival equipment. Bring a water filter in case you run out of fresh water and get stuck somewhere without snow to melt. In springtime, bring sunglasses for everyone, and bring plenty of sunblock. Bring snowshoes in case of deep snow.
- Anticipate minor vehicle repairs: duct tape, epoxy and sealer for holes in the oil pan or gas tank

How you can **stay safe** in bear country



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STAYING SAFE

Bears are magnificent, fascinating animals. Although people and bears have been interacting for thousands of years, the relationship has often been based more on fear than understanding. Studying how bears interact with each other can teach us a lot about how they avoid or resolve conflicts—lessons relevant to how we should respond to bears during encounters.

This booklet presents a clear approach to understanding bears and offers practical, and possibly life-saving, advice on how you can stay safe in Bear Country.

CAUTION

While there is no guarantee that the advice in this booklet will prevent you from being harmed by a bear, it can help you reduce your risks.

If you understand and apply these safety principles, you can make your next trip into bear country safer for both you and the bears.



YG Photo (K. Egl)

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Our thanks to the members of the Safety in Bear Country Society:

Andy McMullen—*Chair and Executive Producer; Wildlife Safety Consultant, Yellowknife, NWT.* Andy specializes in practical solutions for preventing bear and human conflicts. He worked with the NWT and Nunavut governments as a Wildlife Officer for 13 years and also spent 11 years working directly with mining and tourist industries.

Stephen Herrero—*Professor Emeritus, Environmental Science, University of Calgary, Alberta.* Steve has extensive experience in teaching, research, and professional practice in wildlife ecology and management. He is the author of the book *Bear Attacks: Their Causes and Avoidance*.

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Grant MacHutchon—*Wildlife Biology Consultant, Nelson, B.C.* Grant specializes in bear research and management issues, including habitat ecology, population biology, and bear and human conflict management. He is a specialist in wildlife research and management, and has worked extensively with bears.

Phil Timpany—*Wildman Productions, Whitehorse, Yukon.* Phil has long studied bears and their behaviour. He did field production segments for B.C. Ministry of Forests' *Bear Aware* safety video (1993) prior to producing, directing, and major filming of the *Safety in Bear Country* video series. Phil has demonstrated the effectiveness of video as an educational tool in bear safety training courses.

ABOUT BEARS IN GENERAL

3

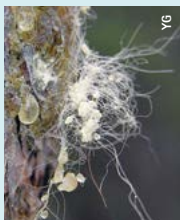
- Bears are intelligent and curious animals.
- Their vision is comparable to that of humans.
- Bears' sense of smell is legendary. They often stand up to catch a scent or get a better look.
- They can move much faster than any human... over any terrain... uphill or down. They're also very strong swimmers.
- Black bears are much better at climbing trees than grizzly bears, but many grizzlies are good climbers as well.
- Mother bears, especially grizzlies, are intensely protective of their offspring.
- Bears have better hearing than humans.
- The quest for food shapes every aspect of a bear's life. They spend much



Bear den

of their time searching for food to support growth, sustain their offspring, and prepare for winter denning.

- Bear behaviour is more predictable than most people think.



Look for hairs

KNOW YOUR BEARS

Black bears

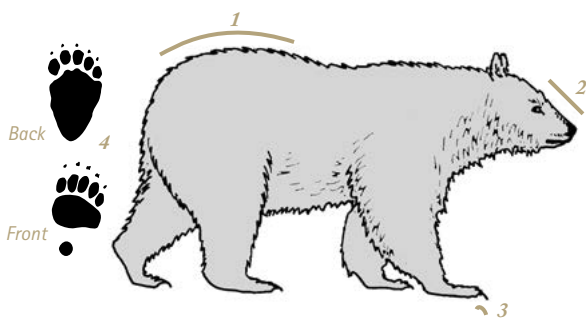
Black bears may vary in colour from blonde to black and sometimes even grey-blue; however, most are black or some shade of brown. They lack a shoulder hump, and have shorter front claws than grizzlies.

Adult males weigh about 135 kg (300 lbs) and adult females weigh only 70 kg (150 lbs) on average. The black bear's diet can be up to 90% vegetation. Unlike grizzlies, black bears

seldom eat plant roots.

Berry crops are critical. Before berries ripen, or in years when the crop fails, black bears will forage widely for food including human-made sources.

Black bears evolved in forested habitats and are agile climbers. Consequently, when a black bear is threatened, it usually seeks the safety of the forest rather than stand its ground and fight.

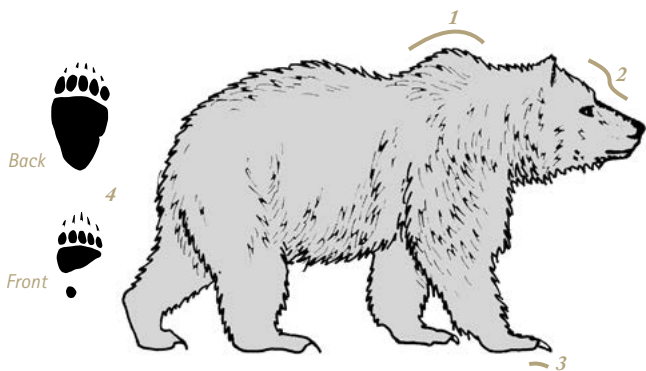


1. Highest point of back is over hind legs.
2. In profile, muzzle is straight and long.
3. Front claws are dark, relatively short and well curved.
4. Black bear tracks can be distinguished from a grizzly's tracks by the curved line made by the front toes. Their claws leave little or no imprint in front of the toes.

Grizzly bears

A grizzly's fur can vary in colour, from blonde to red to dark brown—or even black. Silver-tipped hairs can give them a “grizzled” appearance. They usually have a prominent hump over the shoulder, and their front claws are long and specialized for digging. Adult males weigh about 250 kg (550 lbs) and adult females can weigh 150 kg (330 lbs), though Yukon bears tend to be smaller.

Grizzly bears evolved in open habitats and without the ability to use escape cover to hide from danger. As a result, when they feel threatened, they are inclined to defend themselves. Today's grizzlies live in open and forested habitats. In some places—such as the Kluane Park region—they can be more abundant than black bears.



1. Highest point of back is over the shoulders.
2. In profile, brow gives face a dished or concave look.
3. Front claws are light coloured, 10 cm long or longer and slightly curved.
4. Grizzly tracks can be distinguished from a black bear by the comparatively straight line made by the toes. The claw imprints are easier to see, usually 2-3 inches in front of the toes.



BEARS IN YUKON

- Yukon has three bear species
Black | *Grizzly* | *Polar*
- Yukon is home to about 10,000 black bears, and 6,000–7,000 grizzlies spread thinly from the BC border to the Arctic coast, including Herschel Island. The north coastal region is also home to polar bears.



- The names *grizzly bear* and *brown bear* refer to the same species.
- Colour isn't always a positive indication of species.

CO-EXISTING WITH BEARS



A Conservation Officer sets a bear trap.



Bear release

Bears are an important part of the ecosystem. Without them many other wildlife species would decline. In order to keep bears in the ecosystem, people must manage their use of potential bear attractants and ensure that they use bear-safe practices when spending time in bear country. Becoming "bear-wise" gives bears and people the best chance of coexisting.

Safety when roadside bear viewing

The bears you see along roadways are usually digging up roots or eating grasses and other plants that make up to 90 per cent of a Yukon bear's diet.

Traffic safety comes first. If there is traffic behind you, keep your eyes on the road and don't stop. Recognize that your passengers will get a quick look at the bear but you may not. If there is no other traffic near you, slow down and pull over where it is safe to do so.

Don't stop in the middle of the road, or close to a hill or curve. Other drivers may not see you in time to avoid a collision.



Niels Jacobson

Stay in your vehicle, even when taking a photo.

At all times...

- *Never feed a bear. It is dangerous, can create a danger for other travellers, and it is illegal.*
- *Stay in your vehicle.*
- *Remain a respectful distance from the bear.*

If the bear retreats or seems to ignore you...

- *Take pictures, watch for a few moments, and then move on.*
- *Keep your vehicle on the shoulder of the road.*

If the bear approaches your vehicle...

- *Put your window up and leave immediately. This bear may have been previously fed by people and could be dangerous.*

Safety when walking or hiking

- Stay alert. Keep an eye out for bears so you can give them plenty of room. Look for recent bear signs such as tracks, scats, fresh diggings or tree scratches. (If you see any of these be especially cautious.)
- Choose routes with good visibility where possible.
- Closely supervise children and teach them about safety in bear country. For all ages, travelling in groups of three or more is safer.
- Pay attention to wind direction. If you are travelling into the wind, a bear may not be able to smell you.
- Make noise to let bears know you're coming, especially in thick brush, berry patches or near running water.
- Loud talking or singing is better than using bells.
- Don't approach a bear for a closer look or better photo. Use binoculars or a telephoto lens.



When viewing wildlife, keep your distance. Use binoculars, scopes or telephoto lenses.



P. Timpany

Be especially alert near running water which can mask the noise of an approaching bear.

Safety when fishing

- Stay alert. Keep an eye out for bears so you can give them plenty of room. Look for recent bear signs such as tracks, scats, fresh diggings, partly eaten fish, bear beds, rub trees and carcasses that a bear may be feeding on. (If you see any of these, be especially cautious or avoid the area.)
- Fish with friends. Bears are less likely to approach groups.
- Carry deterrents such as bear spray.
- Make noise, especially when your visibility is limited. If a bear hears you coming it will probably leave the area.
- Clean your catch at the shoreline or at home, not at camp. Put the guts in fast-moving water. Pop the air bladder so the guts will sink.
- Do not get fish odours on your clothes. Wash your hands, knife and cutting board after cleaning the fish.
- Keep your fish cooler in your vehicle. If tenting, store fish and food away from your tent in bear-resistant and odour-proof containers.

Safety when camping

- Choose a campsite well away from wildlife trails, spawning streams, signs of recent bear activity, and bear foods such as berry patches.
 - Keep a clean camp.
 - In the backcountry, garbage should be stored in bear-resistant and odour-proof containers and packed out. If you have a fire, burn only safely combustible waste and pack out all unburned items, e.g. tins.
 - In a campground, use the bear-proof garbage
- cans provided.
 - Where bear-proof storage containers are not available, hang food and attractants 4m off the ground between trees.
 - Don't bring greasy, smelly foods like bacon and canned fish.
 - Store attractants and cook food well away from your campsite, downwind if possible.



Bear-proof containers



P. Timpany

Berry patches may be inviting places to camp, but they also invite foraging bears.

ATTRACTANTS

11

Not everything a bear smells is food, but all things that smell may attract a foraging bear.



P. Timpany

*Strong smells don't have to come from garbage.
Inedible items can also be attractants.*

These are some common items that may attract a bear to your home, yard, campsite, or even you:

- Garbage
- Improperly stored foods
- Improperly burned garbage
- Barbecues
- Pet foods and bird seed
- Oils
- Propane and other petroleum-based products
- Compost and gardens
- Animal manure
- Recycling containers
- Poultry and chicken coops
- Home insulation
- Hot tub covers

If a bear succeeds in getting an easy meal from improperly stored food or garbage, it is almost certain to return or seek the same food elsewhere.

DETERRENTS

There are a number of tools that can help you deter a bear, including bear spray, non-lethal projectiles, a variety of noisemakers, and electric fencing. Used properly, deterrents can be helpful, but they're not 100% effective. Make sure you're familiar with their use before you need them. And don't let deterrents give you a false sense of security.

Bear spray

Bear spray should only be used at close range—on an aggressive or attacking bear. Carry it ready to use, not in your pack.

Before using it, ensure the

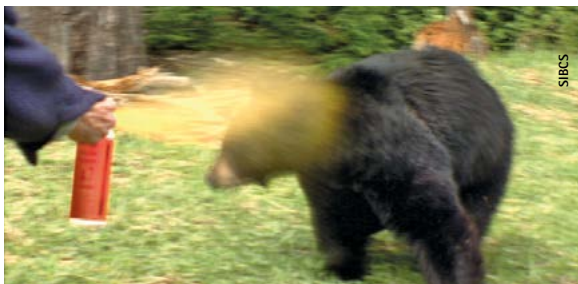


Bear spray should be easily accessible – not in your pack.

nozzle is pointed away from you. Exercise caution... If discharged upwind or in a confined space, bear spray can affect or, in extreme cases, disable the user.

Even in your tent, keep bear spray close at hand.

Note: Bear spray should not be applied to property as a preventative measure.



You may have to discharge your spray more than once to repel a determined bear.

MYTHS

Fed bears are tame.

False. Fed bears can be more dangerous than wild bears because fed bears have an expectation of receiving food from humans.

Black bears aren't dangerous.

False. Black bears can be as much a danger to people and property as other bears.

Bears are slow.

False. Bears can run at high speeds over short distances.

All bear attacks are predatory.

False. Bear attacks can be predatory or defensive. Most life-threatening attacks by black bears are predatory while most attacks by grizzly bears are defensive.

Bears can't run downhill.

False. Bears are agile and can run downhill easily and quickly.

Bears don't swim.

False. Bears are excellent long-distance swimmers.

Firearms

If you intend to carry a firearm, make sure it is adequate—30 caliber or larger or a 12-gauge shotgun with rifled slugs.

Practice until you can shoot quickly and accurately under stress and at close range.

If you use a firearm to stop a *bear attack*, aim to kill. Wounding a bear can make the situation much worse.

Firearms should only be used as a last resort in a life-threatening situation.

Transportation

Bear spray, firearms and explosive type deterrents have regulations governing their transport and use. Consult with local authorities about what is allowed in your area.

Non-lethal projectiles

Use of a 12-gauge shotgun allows you the option of using non-lethal projectiles that are designed to hurt the bear, but not to kill it.

As with standard ammunition, you should practice with its use.



A bear that feels crowded will display aggressive behaviour.

HOW DO BEARS RELATE TO OTHER BEARS?

Bears spend much of their time alone but they are also social animals and have a social structure. Large individuals are dominant over smaller or newly independent juvenile bears. Dominant bears have best access to preferred feeding sites and mates.

While each bear has a home range, these ranges overlap. Yet each bear maintains and defends its own immediate, personal space. Depending on seasonal food abundance, bears may or may not tolerate the presence of each other.

A bear's body language communicates a great deal about its mood or temperament, as well as conveying important signs of dominance or submission.

Most encounters between bears involve caution and avoidance, with the bears slowly separating. But if one ignores the other's warnings or crowds its personal space, the situation can suddenly turn nasty.



A juvenile black bear, low in the social structure

HOW DO BEARS RELATE TO HUMANS?

Bears may relate to humans in similar ways to how they relate to other bears. But many bears also have had previous experience around people and have learned—good or bad—from each interaction.

- Bears are remarkably tolerant of people.
- A bear won't attack just because it senses that a person is scared or vulnerable.
- Bears are generally cautious around humans and will try to avoid people if they can. However, if they are surprised or feel cornered, they may defend themselves.
- A bear that has been fed—intentionally or through poorly handled attractants—may be more determined to get food in another encounter.

Luckily, the most common interaction is a bear avoiding a human who is not even aware of the bear's presence.



Nobody likes to be surprised. If it happens, respect the bear's need for space.

SIGNS OF STRESS

Whether relating to another bear or to a human, bears use the same behaviours to indicate their stress.



P. Timpany

A salivating bear is stressed.

Some are *subtle*, such as

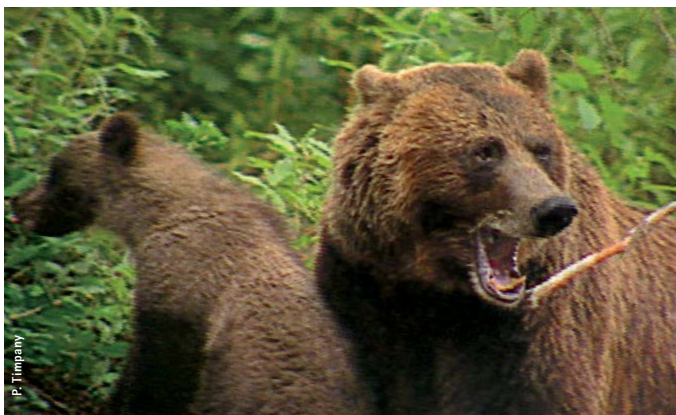
- a pause in activity,
- yawning,
- a stiffening stance, or
- a change in body orientation.

Others are *more obvious*, such as

- huffing,
- moaning, and
- teeth popping.

High stress or aggression is expressed by

- salivating,
- roaring and open-mouth jawing,
- paw swatting,
- guttural sounds, or
- a charge—which usually stops short of contact.



P. Timpany

This "yawning" mother bear is indicating her stress.

WHAT DO YOU DO IF YOU ENCOUNTER A BEAR?

Your best strategy is to avoid unwanted encounters with bears... just as most bears avoid you. But in the wild, this isn't always possible. So what should you do if you see a bear? Stop. Remain calm. Assess the situation.

Does the bear know you're there? If not, move away quietly, watching for any change in its behaviour. Be careful not to startle it. Shouting at a grizzly that is unaware of you could provoke an attack. Make a wide detour and try to leave undetected. If you see young bears on the ground or in a tree, or you hear bear vocalizations, be extremely cautious and go back the way you came, as quietly as possible.

If the bear becomes aware of your presence, stay calm, and in a non-threatening way, let it know you're a human. Talk to it in a low, respectful

voice. Wave your arms slowly. Even if it seems unconcerned, *never approach a bear*. If you crowd it, you might provoke an aggressive response. Instead, back away slowly, avoiding sudden



Wave arms slowly. Talk calmly.



Back away slowly.

movements and keeping an eye on the bear. And *don't run*: that could trigger a chase.

A bear's usual response to detecting a person is to move away. Let it leave. If you must proceed, do so cautiously, making noise as you go.

WHAT DO YOU DO IF A BEAR APPROACHES YOU?

If a bear starts to approach, you're in a more serious situation. Stop and remain calm. Get ready to use any deterrent you may be carrying. *Don't run away*—unless there is a safe place so close, you're absolutely certain you can reach it before the bear can get to you.

Remember: climbing a tree is no guarantee of safety. If you're with others, group together. Keep your pack on—it may protect your back and neck.

This is when you need to assess the bear's behaviour and determine *why* it is approaching.



Bluff charges can stop inches short of you or veer off beside you.

DEFENSIVE

It may be reacting defensively, *perceiving you as a threat*—to itself, its cubs, or its food. Whatever the cause, a defensive bear will likely appear agitated or stressed.

The closer you are when a bear becomes aware of you, the more likely it will react in a defensive manner—and the less time you'll have to react.

Though most defensive interactions with bears stop short of contact, they do sometimes result in attacks.

With *grizzlies*, defensive attacks almost always stem from surprising a bear at close range—when it's on a carcass—or protecting its young. On the rare occasion when a *black* bear attacks defensively, it usually involves a mother defending her young.

NON-DEFENSIVE

A bear may approach and take an interest in you for non-defensive reasons as well. It could just be *curious*. It might be after your *food* or testing its *dominance*. In the rarest case, it might be *predatory*—seeing you as potential prey. All of these non-defensive approaches can appear similar—and shouldn't be confused with defensive behaviours.

A *curious* bear will have a slow, hesitant approach with ears cocked forward, and head and nose raised to investigate what you are. *Food-conditioned bears* may be bold and come right into your camp or home looking for food.

Sometimes a bear may approach you deliberately to test its *dominance*.

In contrast to these, a *predatory* bear will be intensely focused on you—as a potential meal. With its head up and ears erect, its approach is confident and persistent. Predatory bears—especially ones that have been food-conditioned—have been known to break into structures and attack people. Despite all the media attention, predatory attacks are extremely rare.

SIBCS



This hesitant bear is merely curious...

P. Timpany



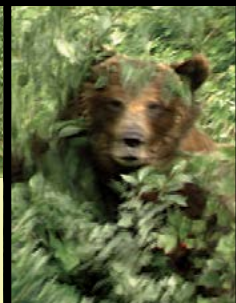
...while this bear is intent, predatory.

NOW WHAT DO YOU DO?

If you think a bear is reacting **DEFENSIVELY**, your goal is to avoid being seen as a threat. Talk to the bear, and let it know you mean no harm. A defensive bear is stressed by your presence. When it no longer feels threatened, it may simply retreat.

A defensive bear might also approach you—or even charge. If it does, stand your ground! Facing a defensive bear can be terrifying, but it's your best strategy: most defensive charges stop short. Don't shout or throw anything. Once it knows there's nothing to fear, the bear should calm down and stop its approach. When it's no longer advancing, start slowly moving away—still reassuring it in a calm voice.

If the defensive bear advances again, stop and stand your ground once more! If the bear seems intent on attack, use your deterrent.



An encounter is considered an attack only if the bear contacts you.

Finally, if a **DEFENSIVE** bear *attacks*, wait as long as you can before it strikes you, then fall straight to the ground, face down, with your legs spread slightly. Lock your fingers behind your neck. Protect your face and vital organs. If the bear flips you over, roll back onto your stomach. Don't cry out or fight back. Once a defensive bear no longer thinks you're a threat, it will stop attacking. Lie still and wait for the bear to leave. Moving too soon may provoke another assault.



Protect your face and vital organs



*A defensive bear attacks to remove a threat.
In a defensive attack... play dead.*

Whatever its motivation, when a **NON-DEFENSIVE** bear moves toward you, it will show little stress—and your response needs to be assertive: Stay calm and talk to the bear in a firm voice. Try to move out of its way—it may simply want to continue on its path.

If the bear follows and stays focused on you, you're in a dangerous situation: it's time to become aggressive. Shout! Stare the bear in the eye. Make yourself appear as large and threatening as possible. Let it know you'll fight if attacked. Stamp your feet and take a step or two towards the bear. Stand on a rock or log. Threaten the bear with anything you can. And use your deterrent.

If a **NON-DEFENSIVE** bear *attacks*, fight back with all your might. Use any weapon within reach. At this point, you're dealing with a predatory bear intent on eating you. Be as aggressive as possible, concentrating on the bear's face, eyes and nose. Don't give up! You may be fighting for your life...



Stand on a log to make yourself appear larger.



*A predatory bear is intent on eating you.
In a predatory attack... fight back.*

REMEMBER

If you come across a bear that isn't aware of your presence:

- Try to move away without getting its attention.

When you encounter a bear that already knows you're there:

- Identify yourself as human by talking and waving your arms.
- Move away without running.

If the bear starts to approach:

- Stand your ground.
- Stay calm.
- Prepare to use your deterrent, and
- Determine what kind of approach the bear is making.

If it is a DEFENSIVE APPROACH:

(bear will appear stressed or agitated and may vocalize)

Try to appear non-threatening.

Talk in a calm voice.

When the bear stops advancing, start slowly moving away.

If it keeps coming closer, stand your ground, keep talking, and use your deterrent.

If the bear attacks, fall on the ground and play dead.

When the attack stops, lie still and wait for the bear to leave.

or

If a bear APPROACHES you NON-DEFENSIVELY:

(bear will be intent on you with head and ears up)

Talk in a firm voice.

Move out of the bear's path.

If it follows you, stop and stand your ground. Shout and act aggressively. Try to intimidate the bear and use your deterrent.

If it attacks, fight for your life!

ADDITIONAL RESOURCES

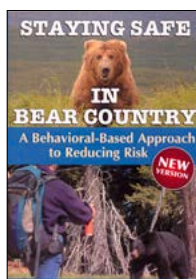
Environment Yukon brochures



Available on DVD and in digital format

- Staying Safe in Bear Country
- Living in Bear Country
- Working in Bear Country

These productions can be purchased at some book and souvenir stores or ordered from Distribution Access:
 1-888-665-4121 for western Canada
www.distributionaccess.com



Websites

- www.env.gov.yk.ca/environment-you/bearsafety
- www.env.gov.bc.ca/wld/bearsmart/

PROTECT YUKON WILDLIFE

TURN IN POACHERS

1-800-661-0525

www.env.gov.yk.ca/TIPP



24 hour • Anonymous • Rewards available

How you can help: If you see someone you suspect is violating wildlife or environmental laws, don't confront them and risk an unpleasant reaction. That's our job. You can help by watching carefully and recording the facts including:

- date and time
- location
- number of people involved
- description of the people
- description of the vehicle and licence plate number
- details of the violation or activity

When you reach a phone you can call a Conservation Officer or the TIPP line at 1-800-661-0525 and report the details of the offence. You'll be helping the wildlife conservation effort and you may be eligible for a significant cash reward.



Grizzly bear



Front

Black bear



Back



Safety in Bear Country Society

Script of the program

Staying Safe in Bear Country: Revised Edition 2008

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Introduction

Bears are among nature's most fascinating creatures. Although people and bears have been interacting for thousands of years, the relationship has often been based more on fear than understanding.

How bears and humans get along has a lot to do with how we respond to each other during encounters. Knowing a little about their behavior can enable us to have safe and enjoyable interactions in the wild. This program presents a new approach to understanding bears, and offers practical – and possibly life-saving – advice on how *you* can stay safe in Bear Country.

Staying Safe in Bear Country

Bears are powerful carnivores, well-equipped to do each other serious harm. Yet they have also evolved ways to minimize the chance of injuring each other. Most encounters between bears are characterized by tolerance and restraint. It's the same when they meet up with people: they usually try to avoid a confrontation. Countless interactions between people and bears occur without any harm. A meeting ... a mutual departure... no attack no injury ... no news. Despite their formidable strength and their potential for aggression, violent encounters between bears and humans are surprisingly rare. In North America, on average three people die from bear attacks each year, although injuries occur more frequently. On some occasions, it may be necessary to destroy a bear to defend a person's life or property. Regrettably, hundreds of other bears are also shot and killed every year - needlessly. In some parts of North America, bear populations are increasing. And as more people live, work, and travel in Bear Country, the number of interactions between bears and humans is also on the rise.

To avoid troublesome encounters with bears, the best strategy is to avoid confronting them in the first place. Yet most people don't know how to steer clear of bears, or what to do when they meet one. Do *you*?

Biologist John Hechtel has over 30 years of hands-on experience with both black and grizzly bears. John uses his expertise to educate people about bear safety and bear conservation.

John Hechtel: *"The best way to minimize conflicts with bears is by practicing prevention."*

Though bears are forgiving of almost all human behavior by following some simple rules you can reduce your chances of encountering a bear, and just as important, of attracting one. But despite the best precautions, you still may occasionally meet a bear. Bears often display many of the same types of behaviors toward humans that they use with each other, therefore, the safest way to reduce risk during an encounter is to have knowledge and understanding of their behavior and motivation. You should be able to anticipate the most common situations where you might encounter bears and it's a good idea to mentally practice how you should respond. This knowledge and preparation can empower you to act appropriately around bears and avoid an attack. You have control over most of the important factors that determine your safety. Safety is no accident. It's your responsibility."

Bears are usually characterized as either fierce and frightening, or cute and cuddly. The truth lies somewhere in between. Learning the basics about their nature can help minimize the likelihood of an unfortunate encounter.

Bear Characteristics

Bears have excellent senses. Their sense of smell is legendary. They often stand up to catch a scent or get a better look. If you can see a bear, chances are it's already detected you. Despite their keen senses, it's still possible for a bear to be surprised by your approach. And catching a bear off guard is never a good idea. Neither is running from a bear. They can move much faster than any human ... over any terrain.... uphill or down. They're also very strong swimmers.

Black bears are much better at climbing trees than grizzly bears, but many grizzlies - like this adult female – are good climbers as well. You also don't ever want to disturb a mother with her young. Mother bears, especially grizzlies, are famously protective of their offspring.

The quest for food shapes every aspect of a bear's life. They spend much of their time searching for food to support growth, sustain their offspring, and prepare for winter denning.

Both black bears and grizzlies may become quite tolerant of humans and can adapt to areas occupied by people. However, not many *people* are willing to adapt to the presence of *bears*. The more frequently bears come in contact with humans, the more likely they will be exposed to improperly stored food or garbage. Once a bear associates human activity with a free meal, it can become a nuisance, or – even worse – aggressive and dangerous. In rare cases, people have been killed by food-conditioned bears. However, when there are problems with humans, it's usually the bear that pays the price.

Differences between Grizzly and Black Bears

Although black bears and grizzlies share many characteristics, knowing the differences between the two species may help you to better understand their behavior – and to respond accordingly. Grizzlies evolved in treeless habitats where escape to cover wasn't an option. As a result, when they feel threatened, they are inclined to defend themselves. Black bears, on the other hand, evolved in forested habitats. Consequently, when a black bear is threatened, it usually climbs a tree ... or seeks the safety of the forest rather than stand its ground and fight.

The names “grizzly bear”, “brown bear” and “Kodiak bear” refer to the same species. For clarity,

we'll call them all "grizzlies". Grizzlies inhabit forested and open habitats in Alaska, northern and western Canada and a few scattered locations in the western U.S. In some places, they can be more abundant than black bears. Certain visual clues can help you distinguish a grizzly from a black bear, although color alone isn't a reliable way to identify either species. A grizzly's fur can vary in color, from blonde to red to dark brown - or even black. Silver-tipped hairs can give them a "grizzled" appearance. They usually have a prominent hump over the shoulder, and their front claws are long and specialized for digging.

Black bears are the most abundant bears on the continent, widely distributed throughout the forested areas of Canada, the U.S. and parts of northern Mexico. Their fur is usually black, although they can be brown or even white. They lack a shoulder hump, and have shorter front claws than grizzlies.

Bear Society & Bear to Bear Interactions

Although bears spend much of their time alone, they are also social animals. They're not usually territorial, and their home ranges overlap. Yet each bear maintains and defends its own personal space – a trait vital to remember in Bear Country.

A dominance hierarchy structures social interactions. Large males rank at the top, while juveniles reside at the bottom. Those high in the pecking order have first access to preferred feeding sites and mates. Juveniles engage in aggressive play, developing skills that will help them during interactions with other bears later in life.

Studying how bears interact can teach us a lot about how they avoid or resolve conflicts – lessons relevant to our own safety with bears. A bear's body language communicates a great deal about its mood or temperament, as well as conveying important signs of dominance or submission. Most encounters between bears involve caution and avoidance, with the bears slowly separating.

But if one *ignores* the other's warnings or crowds its personal space, the situation can suddenly turn nasty... like this female defending her cub. Bears show stress in many ways. Some are subtle, such as a pause in activity, yawning, a stiffening stance, or a change in body orientation. Others are more obvious, such as huffing, moaning, and teeth popping. High stress or aggression are expressed by salivating, roaring and open-mouth jawing, paw swatting, guttural sounds, or a charge - which usually stops short of contact.

Bear to Human Interactions

Ideally, you'll never surprise a bear in the wild. However, if you spend much time in Bear Country, chances are you'll encounter a bear – one way or another. Usually when a bear detects you, it will try to avoid an encounter. That's the best-case scenario...

If instead it approaches you, it's important to determine *why*. It may be reacting defensively, perceiving you as a *threat* - to itself, its cubs, or its food. Whatever the cause, a defensive bear will likely appear agitated or stressed. The closer you are when a bear becomes aware of you, the more likely it will react in a defensive manner – and the less time you'll have to react. Though most defensive interactions with bears stop short of contact, they do sometimes result in attacks. With *grizzlies*, defensive attacks almost always a result of surprising a bear at close range... when it's on a carcass ... or protecting its young. On the rare occasion when a *black* bear attacks

defensively, it usually involves a mother defending her young.

A bear may approach and take an interest in you for *non-defensive* reasons as well. It could just be curious ... It might be after your food or testing its dominance..... In the rarest case, it might see you as potential prey. All of these *non-defensive* approaches can appear similar – and shouldn't be confused with *defensive* behaviors.

How can you tell if a bear is curious? Look for a slow, hesitant approach with ears cocked forward, and head and nose raised to investigate what you are... Food-conditioned bears may be bold and come right into your camp or home looking for food. Sometimes a bear may approach you deliberately to test its dominance. Unlike a *curious* bear, one that is *predatory* will be intensely focused on you - as a potential meal. With its head up and ears erect, its approach is confident and persistent. Predatory bears - especially ones that have been food-conditioned - have been known to break into structures and attack people. However, despite all the media attention, predatory attacks are extremely rare.

Stephen Herrero is professor emeritus of environmental science at the University of Calgary. He has done research on bear ecology, behavior, and conservation for over 30 years. He is author of the classic book, "Bear Attacks: Their Causes and Avoidance".

Stephen Herrero: *"Over the past 33 years, I've studied serious and fatal injuries inflicted by bears to people throughout North America. The data clearly show that although bear attacks are rare, grizzly bears are more dangerous than black bears. Most serious and fatal grizzly bear attacks are defensive, while such attacks by black bears are typically predacious. Your response to a bear encounter shouldn't just depend on whether it's a black or a grizzly bear but on the circumstances and the bears behavior."*

Reacting During Bear Encounters

So far, you've seen the different behaviors bears may exhibit around people. Now let's find out the safest way to respond.

What should you do if you see a bear? Always stop ... remain calm ... and assess the situation. Does the bear know you're there? If not, move away quietly, watching for any change in its behavior. Be careful not to startle it. Shouting at a grizzly that is unaware of you could provoke an attack. Make a wide detour and try to leave undetected. If you see young bears on the ground or in a tree, or you hear bear vocalizations, be extremely cautious and go back the way you came, as quietly as possible.

If the bear becomes aware of your presence, stay calm, and in a non-threatening way, let it know you're a human. Talk to it in a low respectful voice. Wave your arms slowly. Even if it seems unconcerned, never approach a bear: if you crowd it, you might provoke an aggressive response. Instead, walk away slowly, avoiding sudden movements. And don't run: *that* could trigger a chase. A bear's usual response to detecting a person is to move away. Let it leave. If you must proceed, do so cautiously, making noise as you go.

If a bear starts to approach, you're in a more serious situation. Stop and remain calm. Get ready

to use any deterrent you may be carrying. Don't run away – *unless* there is a safe place so close, you're absolutely certain you can reach it before the bear can get to you. Remember: climbing a tree is no guarantee of safety. If you're with others, group together. Keep your pack on; it may protect your back and neck.

This is when you need to assess the bear's behavior... If you think it's reacting *defensively*, your goal is to avoid being seen as a threat. Talk to the bear, and let it know you mean no harm. A defensive bear is stressed by your presence. When it no longer feels threatened, it may simply retreat. However, a defensive bear might approach you – or even charge. If it does, stand your ground! Facing a defensive bear can be terrifying, but it's your best strategy: most defensive charges stop short. Don't shout or throw anything. Once it knows there's nothing to fear, the bear should calm down and stop its approach. When it's no longer advancing, start slowly moving away - still reassuring it in a calm voice. If the bear advances again, stop and stand your ground once more! If the bear seems intent on attack, use your deterrent. Finally, if a defensive bear *attacks*, wait as long as you can before it strikes you, then fall straight to the ground, face down, with your legs spread slightly. Lock your fingers behind your neck. Protect your face and vital organs. If the bear flips you over, roll back onto your stomach. Don't cry out or fight back. Once a defensive bear no longer thinks you're a threat, it will stop attacking. Lie still and wait for the bear to leave. Moving too soon may provoke another assault.

Now that you have seen what to do when a bear approaches in a defensive encounter, let's look at *non-defensive* approaches. Remember, there are a number of reasons why a bear may make a *non-defensive* approach: it may be curious, or food-conditioned. It could be asserting its dominance. Or it may see you as potential prey... Whatever its motivation, when a *non-defensive* bear moves toward you, it will show little stress - and your response needs to be assertive: Stay calm and talk to the bear in a firm voice. Try to move out of its way: it may simply want to continue on its path. However, if the bear follows and stays focused on you, you're in a dangerous situation: it's time to become aggressive. Shout! Stare the bear in the eye. Make your self appear as large and threatening as possible. Let it know you'll fight if attacked. Stamp your feet and take a step or two towards the bear. Stand on a rock or log. Threaten the bear with anything you can. And use your deterrent. If it attacks, fight back with all your might. Use any weapon within reach. At this point, you're dealing with a predatory bear intent on eating you. Be as aggressive as possible, concentrating on the bear's face, eyes and nose. Don't give up! You may be fighting for your life...

Remember, a defensive bear attacks to remove a threat while a predatory bear is intent on eating you. In a defensive attack play dead. In a predatory attack fight back.

Preventing Bear Problems

The key to staying safe is prevention. When moving through bear habitat, try to travel in a group. Avoid surprising bears by making your presence known: talking, clapping, or using noisemakers. Be cautious in areas where bears may not be able to detect you and be on the alert for signs of bear activity, like tracks, droppings, or marks on trees. Don't camp in areas that bears are likely to be using. Keep children close at hand. Dogs should always be under control. An unleashed dog may bring an angry bear back to you. Be especially careful in the early morning and evenings when bears are often most active. If you detect a carcass or see

scavengers, keep away: a grizzly feeding on carrion is particularly dangerous. Be extremely careful with food and garbage. Use bear-resistant containers, and burn your trash fully. Carry out whatever can't be incinerated. A bear that finds your discarded food or garbage may become a serious threat to the next person using the area.

Bear Deterrents

There are a number of tools that can help you deter a bear, including noisemakers, firearms, and bear spray. Bear spray should only be used at close range - on an aggressive or attacking bear. Carry it ready to use, not in your pack. In your tent, keep deterrents close at hand. If you use a firearm to stop a bear attack, aim to kill. Wounding a bear can make the situation much worse...

Used properly, deterrents can be helpful, but they're not 100% effective. Make sure you're familiar with their use before you need them, and don't let deterrents give you a false sense of security.

Review

Let's review the basic rules for staying safe in a bear encounter. If you come across a bear that isn't aware of your presence:

- try to move away without getting its attention.

When you encounter a bear that already knows you're there:

- Identify yourself as human by talking and waving your arms
- Move away without running.

If the bear starts to approach:

- Stand your ground
- Stay calm
- Prepare to use your deterrent, and
- Determine what kind of approach the bear is making.

If it's a defensive approach:

- Try to appear non-threatening
- Talk in a calm voice;
- When the bear stops advancing, start slowly moving away;
- If it keeps coming closer, stand your ground, and keep talking;
- If the bear seems intention attack, use your deterrent;
- If the bear attacks, fall on the ground and play dead;
- When the attack stops, lie still and wait for the bear to leave.

If a bear approaches you non-defensively:

- Talk in a firm voice; and
- Move out of the bear's path;
- If it follows you: stop and stand your ground... shout and act aggressively...try to intimidate the bear and use your deterrent...
- If it attacks, fight for your life!

Conclusion

Bears are magnificent, fascinating animals. They play a complex and vital role in the natural world. By learning a little about their biology and behavior, we can stay safer in Bear Country, avoiding situations that may harm us and to bears. This knowledge can help us enjoy bears and the places they live. It may also create a deeper appreciation of how people and bears can coexist.

ASSUMPTION OF RISKS, WAIVER and RELEASE OF CLAIMS, and INDEMNITY AGREEMENT
FOR _____
(hereinafter, the "Agreement")

BY SIGNING THIS AGREEMENT, YOU WILL WAIVE OR GIVE UP IMPORTANT LEGAL RIGHTS, INCLUDING THE RIGHT TO SUE.

PLEASE READ CAREFULLY BEFORE SIGNING

IN CONSIDERATION for _____ (the "Activity"). **I, ACKNOWLEDGE AND AGREE** on behalf of myself, my heirs, executors, administrators, personal representatives, next of kin and assigns to the following terms and conditions:

- 1.)** I am aware that my participation in this Activity involves many **RISKS AND DANGERS**, including known and unknown risks and dangers that may result in personal injury, death, property damage or loss, which may also be caused or contributed to by the **NEGLIGENCE OR CARELESSNESS** of others.
- 2.) I ASSUME AND ACCEPT, FREELY AND VOLUNTARILY, WITHOUT QUALIFICATION OR LIMITATION, ALL RISKS AND DANGERS** associated with this Activity.
- 3.) I ASSUME FULL RESPONSIBILITY** for my personal safety at all times and for obtaining, understanding and following any rules and safe practices associated with this Activity.
- 4.) I, RELEASE, WAIVE AND FULLY AND FOREVER DISCHARGE YG**, and its officers, directors, elected officials, employees, agents, successors, and assigns from all claims, liabilities, obligations, and demands of any kind or nature whatsoever, arising directly or indirectly, from any act or omission of **NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY, ANY INJURY OR DEATH TO ME, DAMAGE OR LOSS TO MY PROPERTY**, or any cause whatsoever related to my presence or participation in this Activity, and I accept that this Agreement covers and includes, but is not limited to, all unknown and unforeseen claims, injuries, permanent disability, damages and losses, and any consequences arising directly or indirectly from my presence or participation in this Activity.
- 5.)** I, shall **HOLD HARMLESS and FULLY INDEMNIFY YG**, and its officers, directors, elected officials, employees, agents, successors, and assigns from and against all claims, liabilities, demands, damages, losses, costs (including legal costs) and other expenses, arising directly or indirectly, from **MY NEGLIGENCE, GROSS NEGLIGENCE, BREACH OF CONTRACT, BREACH OF ANY STATUTORY DUTY OR OTHER DUTY**, or any claim whatsoever related to my presence or participation in this Activity.
- 6.)** This Agreement shall be interpreted and enforced in accordance with the laws in Yukon.
- 7.) I HAVE READ THIS AGREEMENT THOROUGHLY and UNDERSTAND THAT YG IS RELYING ON MY FULL RELEASE AND WAIVER OF ALL CLAIMS WHEN ALLOWING ME TO PARTICIPATE OR ENGAGE IN THIS ACTIVITY.**
- 8.) I, ACKNOWLEDGE and AGREE that ALL** the terms and conditions of this Agreement are set out herein in their ENTIRETY and that the execution of this Agreement has not been induced by, nor have I, relied upon, any representation, warranty, condition or agreement, whether written or oral, other than as expressly set out or referred to herein.

PRINT NAME: _____

SIGNATURE: _____

DATE: _____



WORKER'S REPORT OF INJURY/ILLNESS

401 Strickland Street, Whitehorse, Yukon, Y1A 5N8, **Telephone:** (867) 667-5645: **Toll free:** 1-800-661-0443, **Fax:** (867) 667-8740, **Website:** www.wcb.yk.ca

TELL US ABOUT YOU

Worker's last name		Worker's first name		Initial	☐ Male ☐ Female
Worker's mailing address _____ _____ _____		Home telephone # ()			
		Work telephone # ()			
		Cell number # ()			
		E-mail address			
Date of birth (d/m/y)		Social insurance #			
Employer's name and address (include government department if applicable) _____ _____ _____		Worker's occupation			
		Name of supervisor			
		Supervisor's telephone # ()			
		Cell number # ()			

TELL US ABOUT YOUR INJURY/ILLNESS

In your own words, what happened? _____ _____ _____					
Part of body injured (indicate left or right)				Have you hurt this part of your body before? ☐ Yes ☐ No	
Date of injury/illness (d/m/y)		If your injury/illness occurred over time, when did you first experience symptoms?			
Who did you report the injury/illness to?			When did you report the injury/illness (d/m/y)?		
What were your hours of work on the day of injury/illness? (from/to)			What equipment was being used?		
Was first aid given ☐ Yes at the work site? ☐ No		Were you doing work for your employer when the injury/illness occurred? ☐ Yes ☐ No		Did the injury/illness happen on the employer's premises? ☐ Yes ☐ No	
Did you seek medical attention beyond first aid at the work site? ☐ Yes ☐ No		If so, where?			
When?			Who treated you?		
Did you miss work after the date of injury/illness? ☐ Yes ☐ No		Have you returned to work? ☐ Yes ☐ No If Yes, when (d/m/y)?			

If you have not already done so, you need to report your injury/illness to your employer right away. You can give them a copy of this form.

ABOUT YOUR INFORMATION

I declare that the information provided is true and correct. I consent to the release from any source including the Canada Revenue Agency to the Yukon Workers' Compensation Health and Safety Board (YWCHSB) of any medical or employment information relevant to my claim. I consent to YWCHSB disclosing to healthcare providers, hospitals, physicians, my employers, other workers' compensation boards, Canada Revenue Agency and any other relevant third parties, all relevant information necessary to administer my claim in accordance with the law.

I acknowledge that the YWCHSB may collect information it considers relevant to my claim to determine benefit entitlement and that my social insurance number may be used for reporting to Canada Revenue Agency and collecting information from Canada Revenue Agency for the purpose of determining benefit entitlement in accordance with the law.

Signature _____ Date (d/m/y) _____

This information is being collected under the authority of the *Workers' Compensation Act* for the purpose of determining eligibility for benefits. YWCHSB may obtain and disclose information from this claim, to the employer for the purpose of appeal, or may disclose such information to others in accordance with the law, including the *Workers' Compensation Act*.