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CURRAGH RESOURCES INC.

Inter-Office Memorandum

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RE: PCXPLOR DATABASE USING NEW LOGGING CODE

DATE: 06 19 1990

A possible set of variables for Table 3 (lithology table) in the new PCXPLOR database would be as follows:

VARIABLE NAME	TYPE	NOTES
UNIT	INTEGER	numeric only code for dominant unit in logging interval
MINERAL	STRING 10	alphanumeric code for mineral descriptors for dominant unit
TEXTURAL	STRING 10	alphanumeric code for textural descriptors for dominant unit
GRADE	INTEGER	integer code for assay grade of logging interval
DESCRIPTION	STRING 50	alphanumeric code for unit, mineral descriptors, textural descriptors for all subordinate units in logging interval
CLASSIC CODE	STRING 60	alphanumeric code for logging interval - consists of combined string of UNIT+DESCRIPTION from current PCXPLOR database using the traditional Anvil District code

The above variables allow for different levels of detail during plotting and still preserve the ability to do extractions of the dominant rock type on a numeric basis.

With the alphanumeric code for mineral and textural descriptors, it will be very difficult to do a suitable extraction of information for these variables within the PCXPLOR software.

I am also enclosing a brief documentation/description of the current PCXPLOR databases we have had up and running in Whitehorse. They should prove useful in wading through the database structures.

pigage\pcxplor.mem

Dave Tenney

FARONW PC-XPLOR DATABASE

INTRODUCTION

Several PC-XPLOR databases have been designed on a trial basis for storing geological and topographic data on computer. Advantages of computer storage are ready access to all the data, ability to view and plot various subsets of the data at a range of scales, and portability of the data set.

The following databases have been set up.

FARONW.G1A	field notes database
FARONW.G5A	drill hole database
FARONW.G6A	topography base maps database
FARONW.G6B	outcrops and geology database

Data entry into these data sets is proceeding, although slowly. The different tables attached to this memo list the variables contained in each of the databases. Further details about some of the variables are discussed below.

FARONW.G1A

This database was designed to store pertinent information from field notes stations recorded during exploration geology mapping. It is tailored to the exploration history and mapping conventions established for the Anvil District. It is essentially a point database although in reality the "point" corresponds to a general outcrop area.

STATION-TABLE 1

The variables FEATURE, DIP, STRIKE, and DIRECTION all refer to the dominant phase 2 foliation/cleavage in the Anvil District. FEATURE is a string variable indicating cleavage/foliation type. Typically PS2 and CS2 will be entered here; the shorthand notation follows the conventions established for logging drill core (Pigage 1983). STRIKE, DIP, and DIRECTION record the strike and dip of the phase 2 cleavage. I have not used the right hand rule in recording this data. STRIKE measurement should generally be between 0 and 180 . DIRECTION is a string variable which defines the dip direction. Typical entries are NW, SW, N, E, etc.

The string variable FORMATION is 20 characters long. Expected entries are VANGORDA, MT MYE, ANVIL BATHOLITH, etc. LITH UNIT, LITH DESCR, and ROCK CODE correspond to similar variables in the drill hole logging database (Table 3).

ANVIL BLOCK corresponds to the major claim/geology divisions within the Anvil District. Expected entries are FARO, PLATEAU, or SWIM. NTS MAP refer to the NTS map sheet; a typical entry is 105 K/6. MAP, SHEET, and SUBSHEET are used to delineate the 1:5000 scale map sheet. MAP refers to the major divisions of the District into the different sheets; E6, F6, D6 are typical entries. SHEET corresponds to the next smaller division; typical entries are 4, 5, 3, 2. SUBSHEET corresponds to the break between east and west portions of the SHEET; expected entries, when applicable, are E 1/2 or W 1/2.

DATE is a string variable corresponding to the date the traverse was completed. Data entries are expected to be in the format MM/DD/YY.

O/C QUALTY is integer code describing the general quality of the outcrop. The following table outlines expected entries.

-1	NOT RECORDED
0	FLOAT
1	SUBCROP
2	OUTCROP - PROBABLY DISRUPTED
3	OUTCROP - ORIENTATION GOOD

PREV STNX records previous stations corresponding to this particular outcrop. It provides a "catalogue" for finding additional traverse information on the described outcrop.

LITHOLOGY-TABLE 2

Table 2 records mineralogy/lithology information for the different rock types present at the map station. Each rock type present at the outcrop forms a separate record. ROCK NAME is a 50 character string variable for recording the general name of the unit. A typical entry for Unit 3G might be MUSCOVITE-CHLORITE-QUARTZ-PHYLLITE.

STRUCTURE TABLE

The STRUCTURE TABLE is designed to hold all structural measurements completed at an outcrop. Each measurement corresponds to a separate record. Conventions used in this table are extensions of those established in logging drill holes.

Variable TYPE clarifies each measurement as a plane (PLANE) or lineation (LIN). PHASE is an integer variable referring to the deformation phase assigned to the structural measurement. The following table lists expected entries for variable FEATURE.

LINEATION	PLANE
STRETCH	PSn
MINERAL	CSn
INTERSECTN	AXIAL PLAN
SLICKS	FAULT
FOLD AXIS	INTRUSIVE
	VEIN

Variables STRIKE/AZ, DIP/PLNGE, and DIRECTION follow the same conventions described in Table 1. DIRECTION is not required for lineation measurements because it is assumed that the AZ direction is in the direction of the lineation plunge.

Variable QUALITY is an integer defining the quality of the structural measurement:

-1	not measured
0	poor
1	moderate
2	good
3	preferred

Typical data entries for SYMMETRY are as follows:

S	S asymmetry
Z	Z asymmetry
E	fold hinge
3	fold hinge
M	symmetrical fold hinge
I	indeterminate

These entries follow the conventions established for drill core logging. Asymmetry determinations are always completed assuming the viewer/observer is looking toward the northwest.

For STRAT TOPS the expected data entries are UP or DOWN. A blank field assumes that a facing direction is not observed.

WORK-TABLE 4

Table 4 just records what sort of work was completed at the outcrop. The different variables are self-explanatory. Room is left in variable NOTES for comments.

NOTES-TABLE 5

Table 5 provides space for a 300 character description of the outcrop. This should allow reasonable space for recording pertinent observations from the field notes.

FARONW.G5A

The drill hole database contains 8 tables. It allows for capture of collar coordinates and header data, downhole deviation surveys, lithologic units, structures, assays, fault and core condition data,geotechnical information, and intervals sampled for different tests.

All downhole measurements are recorded as meters. Coordinates are reported using the UTM coordinate system. For Northings the 6 * 10 is "dropped" before the Northings is entered into the database. The coordinate 6,910,000 N, for example, would be recorded as 910,000. Allowance is made for two local coordinate systems in addition to the UTM coordinate guide.

Conventions in the different tables follow those outlined in Pigage (1983) fairly closely. Many of the variable names are self explanatory.

HEADER-TABLE 1

LOCATION is recorded in UTM coordinates. In all cases the Z-coordinate (=elevation) corresponds to the ground elevation. No allowance is made for the rod stem sticking up above the surface elevation.
RECORD corresponds to the record number of the drill hole in the PC-XPLOR database. It is included as a variable because PC-XPLOR does not allow for reporting of the record number when preparing a printed report of the drill holes in the database. In most situations TYPE defaults to DDH (short for Diamond Drill Hole). Additional possible responses are RDH (rotary drill hole) and ODH (old drill hole). For LOG DATE, I generally use the day the geologist finished logging the drill hole; the date is reported in MM/DD/YY format.

SURVEYS-Table 2

Table 2 is used to record the orientation of the drill hole at measured distances down the hole. This data is used to calculate deviations from the original orientation when projecting the drill holes onto cross-sections or plan maps. In PC-XPLOR DIP ranges from -90 to +90 . -90 is straight down and +90 is straight up. A horizontal hole would therefore have a DIP of 0.0. Provisions are made for 2 local grid azimuth orientations as well as the UTM azimuth.

LITHOLOGIES-TABLE 3

Variables in Table 3 correspond very closely to the lithologic logging practices outlined in Pigage (1983). UNIT is an 8-character string variable for recording the major lithology for an interval. Subordinate lithologies and further modifiers are contained in the variable DESCRPTION. DESCRPTION has space for 50 characters; this has proven to be more than ample for most Anvil District drill holes. ROCK CODE is an integer variable; it contains the numerical codes issued in working with the various

mine models in the District.

Assays-Table 4

Assay results are stored in Table 4. This table contains variables for all elements of major interest when constructing a mine model. Some of the variables can be completed using the data manipulation features of PC-XPLOR (ZN RATIO, for example). The value -1 is entered for unanalyzed elements. Waste intervals are also entered with -1 values for all appropriate variables.

STRUCTURES-Table 5

Table 5 records planar features from the drill hole at intervals down the hole. Generally a measurement is taken about every 6 meters, although spacing may be closer if the measured feature is varying rapidly.

Pigage (1983) contains a more thorough discussion of how planar measurements are completed on drill core. Most commonly the RFE is the major planar feature measured. With amphibolite grade rocks, other planar structural elements are generally not readily visible.

The first set of variables in this table refer to the RFE. DEFN is an integer variable defining the deformation phase assumed for the RFE. DIR-RFE is assumed based on surface and/or underground mapping. For A, B, and C measurements, DIP is relative to the core axis and DIR is relative to the RFE dips as delineated in core (see the more complete discussion in Pigage, 1983). Ample space is available in COMMENTS for descriptive statements concerning the measured planar features.

By practice I have been defining late fractures as deformation phase 6 and describing them as FRCT.

FAULTS Table 6

Table 6 very closely follows the fault log as outlined in Pigage (1983). Variables are explained more completely in that discussion. The discussion also contains a set of tables detailing the notation used for the various features.

GEOTECHNICAL Table 7

Table 7 record geotechnical information. We have been using the geotechnical logging form designed by Piteau and Asssociates (Martin, 1986). Consequently the listed variables closely follow their suggestions.

Measurements are made between footage tags; each interval corresponds to a single drill run. RECOVERY, of course, refers to the amount of core measured within the designated interval. When making this measurement, the core should by mentally stored back together so spaces are not measured as core.

Ideally the amount of core cannot exceed the length of the interval. With phyllites this "rule" is often broken because the core spreads in the box as it breaks readily along the dominant foliation.

RQD for each interval measures the cumulative length of core where each piece is greater than 10cm (4 inches) long. This variable is an indicator of the quality or degree of brokeness of the core. Again, it is expected that the cumulative length will be smaller than the total length of the interval.

BREAKAGE is an integer variable describing the overall quality of the core in terms of the number of fractures or breaks. The integer code ranges from 1 to 15; the following table and pictures gives an indication of values to be entered into the database.

Degree of Breakage

Degree of Breakage is a visual and thus somewhat subjective estimation of the quality of the rock in terms of the number of fractures or breaks. General categories, numerical equivalents and qualifying descriptions are given below. Photographic illustrations of the Degree of Breakage Classifications are given in Fig.2.

CATEGORY	NUMERICAL EQUIVALENT	MEAN SPACING OF BREAKS OR DIAMETER OF FRAGMENTS (in.)	QUALITY DESCRIPTIONS
A-	1		Mostly fault gouge with/ without minor rock fragments
A	2	<1/2	Gouge and crushed rock
A+	3		Crushed rock with/without minor gouge
B-	4		Crushed rock - no gouge
B	5	1/2 to 2	Crushed rock - diameter of pieces<2 in.
B+	6		Broken rock - fracture
C-	7		Mean spacing 2 to 3 in.
C	8	2 - 4	Mean spacing 3 in.
C+	9		Mean spacing 3 to 4 in.
D-	10		Mean spacing 4 - 6 in.
D	11	4 - 8	Mean spacing 6 in.
D+	12		Mean spacing 6 to 8 in.
E-	13		Mean spacing 8 to 12 in.
E	14	>8	Mean spacing 12 to 14 in
E+	15		Mean spacing >24 in..

NOTE: Care should be taken to identify all fault/shear zones (Category A). However, for other Degrees of Breakage, the category should be averaged over the length of the core run.

WEATHERING is a string variable (5 characters long) which qualitatively indicates the degree of weathering. The variable ranges from A through F; the following table defines the categories within this range.

DEGREE OF WEATHERING

The degree of weathering or oxidation of the rock core is used to define the upper boundary of unweathered bedrock and to delineate faults and other zones of intense weathering. The degree of weathering is estimated visually to give a qualitative feel for this parameter. The classification for degree of weathering is as follows:

A - Residual Soil - original fabric destroyed.
B - Completely Weathered - original fabric and relict structures remain, but rock is decomposed and friable.
C. Highly Weathered - rock is discoloured and strength is signigicantly reduced by weathering.
D - Moderately Weathered - rock is discoloured, but rock strength only slightly affected, discontinuities weathered.
E - Slightly weathered - rock strength unchanged - weathering on joints only
F - Fresh and unweathered

JOINT # and JOINT FREQ are used to define the number of natural joints or fractures in each core run. JOINT FREQ can be calculated from JOINT # and INTERVAL

JOINT FREQ = JOINT # / INTERVAL

SAMPLES-Table 8

Table 8 records all samples taken from each drill hole. The different variables in Table 8 allow for indicating the rock type sampled, which department collected the sample, and why the sample was collected. DATE for the sampling should be recorded in format MM/DD/YY.

FARONW. G6A

This database was designed to contain digitized information from the 1:5000 scale topographic maps of the Anvil District. The maps form the base for all exploration geology mapping completed after 1983. The database contains two tables. Table 1 stores all the text information, and Table 2 stores the digitized coordinates for each record in Table 1

BASE MAP - TABLE 1

Table 1 contains all pertinent information required to locate and plot the different features digitized from the topographic maps. The variables in this table fairly closely follow the conventions and variables established by GEMCOM for their PC-MINE software.

POLYGON is a 64-character string variable describing the feature being digitized and stored in the base map database. CLOSED is a logical variable describing whether the polygon is open or closed. An open polygon is one forming a line in which the beginning and end points are not the same (i.e. it does not form a "closed" traverse). RECORD is an integer variable used to keep track of record numbers in the database. The number inserted here is incremented by one for each new record entered into the database. STATUS defines the current status of the record. Expected values for this integer variable are:

-1	not recorded
0	deleted
1	valid
2	mined out

VALUE and CODE follow very closely the formats outlined for PC-MINE polygons. For VALUE I have been entering the elevation of the topographic contour line being digitized. For all other features the entry remains -1 (no entry). CODE is a 4-character string variable used to classify the future being digitized. Entries used in the FARONW database are:

CODE	FEATURE
TOP1	heavy topographic contour line(25m)
TOP2	light topographic contour line (5m)
STRM	stream
ROAD	road
BORD	map border
COOR	UTM grid coordinate lines
CLRG	clearing

LINE STYLE and PEN are variables used to control the plotting appearance of the record. Values are tailored to PC-MINE/PC-XPLOR software and a multi-pen plotter. For LINE STYLE the following values are expected.

LINE STYLE	EXPLANATION

-1	not entered
1	solid
2	dashed
3	doffed

PEN refers to the pen number in the plotter. The following values are generally used in the FARONW database.

PEN	COLOUR	FEATURE
-1		no entry
1	black	contour, building, survey station, map border
2	blue	streams
3	green	coordinates
4	red	roads, cut lines, clearings

Date refers to the date that this perticular record was digitized. Format for recording the data is MM/DD/YY.

The remaining variables in Table 1 are used as geographic location indices. ANVIL BLK refers to the general area within the Anvil District. Expected entries are FARO, PLATEAU, or SWIM. MAP is the major map sheet for the feature being digitized; a typical entry is D6. SHEET refers to the particular subarea of the major map sheet. In most instances this will be an integar, for example 4. SUBSHEET refers to either the west or east half of the map sheet. Expected entries for SUBSHEET are E 1/2 or W 1/2. Together MAP, SHEET, and SUBSHEET fully describe the 1:5000 base map being digitized, for example E6 4 W 1/2. NTS MAP refers to the particular NTS map sheet being used. A typical entry is 105 K/6.

POINTS - Table 2

Table 2 contains the actual points being digitized. All entries use UTM coordinates. Only Northings and Eastings are entered; elevations for each point are not recorded.

FARONW. G6B

This database is designed to contain outcrop outlines, geological contacts, and faults. The overall design is nearly identical to that described for FARONW. G6A. Table 1 also allows 50 characters for comments. Typical data entries for CODE are listed below.

CODE	feature
O/C	outcrop
S/C	subcrop
FLT	fault
CNT	geological contact