

CURRAGH RESOURCES ABANDONMENT PLAN PROGRAM

TECHNICAL SESSION

MEETING NOTES

Date: February 17, 1987
Venue: Sheffield Whitehorse
Chairman: Roy Bourke (Curragh)
Attendance: See Attached List

I Introduction

The Chairman opened the meeting by welcoming all the participants and reviewing the attached agenda. He stated that the objectives for the meeting were to review the SRK reports and obtain a general consensus on the abandonment plan development program.

The Chairman reviewed the progress that Curragh has made on the Faro mine project. He stated that in general mine production is 90,000 MTD vs a projected 100,000 MTD and mill throughput is 12,000 MTD vs a projected 13,500 MTD. Markets have been secured for the next 2 years of concentrate production.

Robert Grant reviewed the background to today's meeting and Curragh's progress on abandonment planning. He made the following points.

1. Water Licence Emergency Amendment called for an investigative program.
2. Terms of reference for the investigative program were developed jointly by Curragh and regulatory agencies.
3. S.R.K. was selected to carry out the program.
4. Prior to commencing the investigative program, S.R.K. and Curragh conducted a round of consultation with all interested parties.
5. One of S.R.K.'s principal conclusions of its study was that major data gaps existed that should be filled in.
6. Curragh requested the development of a detailed development program.
7. Curragh made a proposal to Water Board that a four year development plan be carried out prior to developing details of an abandonment plan.

Robert Grant outlined Curragh's position on the abandonment issue.

1. Curragh was not prepared to assume the responsibility for implementing the original flooded abandonment scheme. Water Board agreed to remove it.
2. Decision to place tailings in Rose Creek valley has been made and everyone must live with it. The issue is to find an acceptable abandonment plan that is within Curragh's financial capabilities.
3. Present use of tailings facility is not jeopardising any abandonment options.
4. Curragh wishes to work cooperatively with all interested parties to develop a plan that all can commit to.
5. Assistance by various government agencies will contribute to a better and more timely plan.
6. Curragh believes that all abandonment options contain too high a degree of uncertainty as to their long term performance. It is not prepared to commit to any specific plan at this point.

II

R. Bourke briefly reviewed Curragh's situation with respect to water supply, mine dewatering and the performance of the tailings water treatment system.

1. With the addition of groundwater wells, it appears that the mine will not have a water supply problem this year.
2. Mine dewatering is continuing. This impacts on the performance of the tailings pond. Approximately 1,000,000 gallons per day is being pumped from the pit to the tailings pond.
3. With the exception of a couple of questionable sample results the tailings pond is meeting water licence standards.

III & IV

Andy Robertson proceeded to present the findings of his two reports. See attached outline of his presentation.

V

Curragh requested comments and questions on the presentation from the meeting participants.

Bov Van Dijken Conservation Society

1. Expressed concern as to if Curragh would be able to stick to the proposed timeframe of the development program to ensure an abandonment plan was in place as per schedule.
2. Felt that management of the program would be important to ensure quality control of the data collected.

Gerry Whitley DIAND Water Resources

1. Complimented Curragh on the presentation.
2. Wondered why we were stating that we didn't have an abandonment plan when in fact the development program could be our plan.
3. He was disturbed by an apparent contradiction presented by a statement in the development program document on p. 8 which suggests that Curragh does not have confidence in modelling. If this is so, what is the point in doing the program?
4. He liked the process Curragh was following on this issue but wanted to know how Curragh would utilize the feedback from the meeting with respect to the March 11 Water Board Hearing.
5. Does Curragh have any proposals with respect to financial instruments to implement an abandonment plan?

Ken Wile Environment Protection Service

1. Felt that there should be some form of interim abandonment plan until such time as the development program produced an abandonment plan.
2. Inquired as to the feasibility of implementing alternative D.
3. Noted that other mine facilities such as pits and waste dumps are not addressed.

John Polak Environmental Protection Service

1. Expressed concern with respect to the timeframe for finalizing the development program issues and the water licence public hearing.
2. Expressed concern as to the present acid generation in the old tailings.
3. He has heard it mentioned that Curragh is constrained by fiscal limitations. He would like to know what Curragh's fiscal limitations are.

Peri Mahling Environmental Protection Service

1. Concerned about how much time we have before old tailings impacts on groundwater. Can we afford to wait 5 years to find out what the impact is?
2. Is it possible to take a quick look right away to find out if we have time for the development program before acid generation impacts on Rose Creek?

Wayne Knapp Fisheries & Oceans

1. He would have liked to have seen all aspects of an abandonment plan addressed including the impact on the fish population.
2. Concerned about Curragh's financial capabilities.
3. Is Curragh's proposal permanently delaying the establishment of an abandonment plan?
4. He questions whether or not the licence standards were appropriate for the protection of fisheries resources in Rose Creek.

Al Von Finster Fisheries & Oceans

1. Noted that other mine facilities not addressed in the reports.
2. If habitat is lost, compensation should be considered.

Norm Barichello Renewable Resources

1. Why only a four year program?
2. Report mentions other options that are no longer applicable, what are these other options?
3. Other facilities need to be addressed.

Milos Stepanek Geo Engineering

1. What major technological advances do we expect to take place in the interim 4 year period?
2. Is the current technology adequate to develop an abandonment plan?
3. Was the stability of the embankment structures considered?

VI Curragh Responses

Program Management & Adherence to Schedule

Curragh recognizes the requirement for experienced and knowledgeable management. We are examining the possibility of a University participating in the program and providing a Ph.D. candidate to manage the project. As well, if required we have available the services of our consultant.

Sufficient time is provided in the program schedule to finalize the details and construct the test pit this year. This should ensure that the program is kept on schedule.

Delays in completing the S.R.K. study does not reflect poor management or inattention by Curragh. Instead, the delays are due to a later than anticipated start due to delay in sale of the mine and the requirement to prepare the proposed development program.

Is the development plan an abandonment plan?

Curragh does not consider its development plan proposal an abandonment plan in terms of its water use licence. However, in light of the data gaps, it is proposing that the development program replace a specific abandonment plan until such time as one is developed.

Modelling

Curragh does not place much faith in modelling using the currently available data. The development program is aimed specifically at obtaining more accurate data to allow more realistic and meaningful modelling to be undertaken in the last year of the program. Nevertheless, modelling inherently suffers from considerable limitations and must be applied with due caution.

Process with respect to Water Board Hearing

Notes on the meeting will be circulated to all participants, Curragh does not anticipate that the finalization of the detail of the abandonment program is essential before March 11. Water Board will primarily be evaluating the general aspects of Curragh proposal and its reasonableness in light of the circumstances.

Interim Abandonment Plan

Curragh believes it has the time to complete the development program before the old tailings produce unacceptable impacts on Rose Creek.

Curragh believes, that it should not implement any abandonment measures before there is a reasonable assurance that they will be effective. Premature implementation of inadequate measures could prejudice the implementation of an adequate plan due to Curragh's financial limitations.

Concern for Present Acid Generation in Old Tailings

Insufficient data exists on the extent of the contaminant plume development to estimate the extent of plume development and the consequential impact on Rose Creek as a result of 4 more years of tailings surface oxidation. Current groundwater monitoring, while limited, does not indicate substantial contamination as a result of acid drainage. The determination of the extent of acid product migration and an estimate of the effects of the next few years of oxidation on the environment would require an acceleration of the tailings and groundwater baseline investigation and an additional modelling effort. This baseline work could be rescheduled to year one of the abandonment plan development program and an additional provision made for the cost of the additional modelling.

Abandonment Plan for Other Facilities

Curragh acknowledges that a final abandonment plan should include such issues as the pits, dumps and reservoir. These will be addressed in the final abandonment plan that is proposed at the conclusion of phase one of the development program.

Technical and Financial Feasibility of Abandonment Alternative

Technically, all the alternatives were implementable. The effectiveness of the various alternatives in achieving desired environmental protection, without maintenance and in the long term will be in doubt until the development program is completed. The fiscal ability of Curragh Resources to implement abandonment measures, if it were to shut down tomorrow, would be limited. These limits are expected to reduce as Curragh generates capital reserves as a result of successful resources recovery.

Curragh has previously proposed an environmental trustee fund based on a contribution of \$.25/tonne of concentrate shipped.

Why only a four year program

The timeframe for the development program was determined by the shortest period during which sufficient data could be gathered to develop a realistic abandonment plan. Three years of test plot monitoring was considered to be the minimum. Monitoring of the test plots could continue beyond this period and probably would but this would be beyond the proposed development program.

Some abandonment options are not applicable to Faro

Because the location and design of the tailings facility are a fait accompli, many options available to a new project are not applicable: such as site selection to avoid Rose Creek erosion, obtain better foundation conditions for seepage control, construct less permeable and more stable containment embankments, and provide for easy economical flooding.

Expected Technological Developments

The effectiveness of soil covers, particularly special covers such as covers with saturated or frozen zones incorporated are very poorly understood. Thus, the only secure current technology to prevent acid generation is water cover. At Faro, water cover has been demonstrated to have a number of potentially adverse impacts. There is, therefore no obvious secure solution to acid generation control based on current technology. A considerable amount of research is proposed by industry and regulatory authorities alike on acid generation in the next few years, as demonstrated by the RATS program amongst others. This research should add considerably to the technology in the understanding of the effectiveness of alternative covers and in acid generation and containment migration modelling.

Stability of Embankment Structures

The stability of existing embankment structures were not evaluated to any significant depth by S.R.K. Detailed stability evaluations will be undertaken for the structures that will remain as part of the Abandonment Plan developed by the development program.

VII

A discussion period followed Curragh's responses. Topics included those addressed in V & VI. Some discussion was held on financial assistance available for the development program. Environment Canada indicated that it would not be able to provide much assistance outside of carrying out some collection and analysis of samples. The RATS program was suggested as a possible source of funding as well as DRIE.

VIII

Curragh thanked all the participants for attending and requested that they provide Curragh with their comments and suggestions on the reports and presentation as soon as possible.

ATTENDEES

NAME	ORGANIZATION
Roy D. Bourke	Manager, Processing - Curragh
Walter A. Bilawich	Coordinator Special Projects - Renewable Resources
Andrew M. Robertson	Steffen Robertson & Kirsten
Robert Grant	Curragh - Government Relations
Al Foster	Water N.A.P.
Ken Wile	Environment Protection, Whitehorse
Peri Mehling	Environment Protection, Vancouver
George MacKenzie-Grieve	Environment Protection, Whitehorse
Gerry Whitley	INAC, Water Resources
Naresh Prasad	INAC, Mining Inspector
Bob Van Dijken	Yukon Conservation Society
Brian Campion	Anton, Campion, MacDonald
Joe Ganske	Northern Affairs Program
Bud McAlpine	Northern Affairs, Water Resources
Milos Stepanek	Geo Engineering
Colin MacDonald	DIAND - Mining Eng.
Rod Hill	YTG, Energy & Mines Branch
John Polak	Environment Protection, Whitehorse
Dave Arseneault	Yukon Conservation Society
Al Von Finster	Fisheries & Oceans
Wayne Knapp	Fisheries & Oceans
Gord Zealand	Fisheries & Oceans
Fred Privett	Northern Affairs
Cam Ogilvy	DIAND Northern Affairs
Norm Barichello	Renewable Resources