

MINE DEVELOPMENT REVIEW PROCESS

887746

SNIP GOLD PROJECT

MDSC MEETING WITH PROPONENT (COMINCO LTD.)

DATE: 1988-06-21

TIME: 10:00 A.M.

PLACE: Room 435, 617 Government St. (Douglas Building), Victoria

AGENDA: Circulated Prior to Meeting

SUMMARY OF DISCUSSION

1. SUMMARY OF EXPLORATION TO DATE

- o Current objective is to drill above and below the 300 foot level, with sufficient drill spacing to move ore reserves into proven category.
- o Current Reserves - 1.1 million tonnes (24 gm/tonne average grade). Ore grade is better than anticipated in areas intensively assessed (60 gm/tonne undiluted).
- o Some structural problems encountered.
- o More drilling required to move reserves into proven category (need 200 000 tonnes at current estimated grade to justify mine @ 500 tonnes/day milling).
- o 15 percent average pyrite (dominant) and pyrotite - other sulphides total approximately 1 percent to 6 - 7 percent sulphur.
- o Gold is in native form, thus metallurgy is simple.
- o Smithers and Wrangell, Alaska are currently servicing exploration program (diesel barged from Wrangell).

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### 2. POWER/ACCESS ROAD OPTIONS

- o Comprehensive economic feasibility of hydro power extension from Bradfield Power Station indicated line is physically possible but short stretches over pass into upper Craig River will be subject to deep snow and avalanches.
- o Bradfield Station turbine capacity is available, Alaska has given support for powerline, and Americans would construct line to Alaska/B.C. border.
- o Hydro power costs amortized over reasonable life of mine not dramatically better than onsite diesel power.
- o Small, local hydro development currently under study.

### POWER COST COMPARISONS

SOURCE	CAPITAL (m)	OPERATING (¢/kwh)	FINANCE AND OPERATING (¢/kwh)
Diesel	3.535	14.8	19.9
Alaska Hydro	10.501	10.9	23.6
Onsite Hydro	6.735	8.3	18.5

- o Alaska Hydro capital costs include B.C. portion only and accounts for shared use of line by Johnny Mountain (REG) Gold Project. Finance and operating costs (23.6 ¢/kwh) includes Alaska recoup of transmission line costs.
- o Several power source alternatives studied - diesel, Alaska Hydro, small onsite hydro, gas turbine, waste wood, wind turbines.

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- o Proponents have decided to proceed with planning for the use of diesel power for the current estimated mine life.
- o Proponents have no plans for an access road from Highway #37 for the foreseeable future. The economic evaluation of the mine project will be based on fly in/fly out access (diesel fuel to be shipped from Vancouver to Wrangell, then barged to mine site.
- o Both powerline from Alaska, and access road from Highway #37 could be re-evaluated once mine is in production.

### 3. MINE PLANNING

- o Ultimate selection of mining method will be based on rock strength, width of ore body, dip. Proponent stressed need for ability to vary width and length of stoping to minimize dilution.
- o A combination of conventional and trackless methods will be utilized (50/50).
- o Two backfill options discussed:
  - utilize Johnny Mountain flats sands
  - make sand from mill tailings (preferred option)

### 4. POTENTIAL TAILINGS POND SITES

- o Four alternative sites studied (refer to attached map):
  1. Bottom of Monsoon Valley - three dykes required.
  2. Small lake on hillside.
  3. Bronson Flats - major earth works.
  4. Triangle Lake - two dykes required.

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- o Test pits, seismic lines, and preliminary study completed on three sites.
- o Alternatives 1, 2 and 4 have watershed catchment areas; alternative 3 has only surface area of pond.
- o Proponent's preferred site #1, second choice #4. A Stage II geotechnical study - addressing tailings pond issues, dams, seepage, etc., is underway.
- o Tailings pond sized for 1.5 million tonnes (i.e. for 3 million tonnes of ore) - other half of tailings would be used for backfilling stopes.
- o Waste rock also to be used to make up mine backfill requirements.

### 5. MILLSITE OPTIONS

- o Three alternative sites under study (refer to attached map)
  - Bronson Flats near tailings pond site #3.
  - Near toe of Monsoon Valley bottom tailings site (preferred tailings pond site).
  - Uphill from Monsoon Valley bottom tailings site close to mine portal (preferred mill location).

### 6. ACID MINE DRAINAGE EVALUATION

- o Acid-base accounting program completed for:
  - 12 waste samples - hanging and footwell,
  - 8 ore samples - representative of variations in minerology,
  - 5 tailings samples - variations in sulphur.
- o Waste not considered an AMD problem, thus can be used for construction.

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- o Tailings not anticipated to cause problems.
- o Hotspots in ore anticipated.
- o A humidity cell program has been conducted on three ore and one tailings samples.

### 7. EFFLUENT TREATMENT STUDIES

- o Metallurgical and tailings stability testing underway. Experience of other Canadian gold projects being assessed. Pond water quality forecasting underway.
- o Process development: peroxide process anticipated to give best results, in reducing mercury to acceptable levels.
- o Simulated pond conditions - contaminant level changes with time under study.
- o Effluent treatment prior to discharge to pond not anticipated to be required.

### 8. WATER MANAGEMENT PLANNING

- o Closed pond system, no decant anticipated. Water will be reclaimed for use in processing.
- o Water will also be reclaimed for treatment prior to discharge to Bronson Creek or the Iskut River.
- o Mine drainage currently under study (300 - 500 gpm). If mine water quality is acceptable, propose to discharge directly to Bronson Creek or the Iskut River.

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### 9. DEVELOPMENT SCHEDULE

- o See attached summary - SNIP Project Schedule.
- o Stage I submission expected August 2, 1988.
- o MDRP review schedule extremely tight. Normal MDSC practice is to take decision to Cabinet which usually takes 12 weeks.
- o Possibility exists for some preliminary construction related work to be approved on "Notice of Work".
- o Proponent possibly will submit Stage I report in two sections:
  - Preliminary information on mill and tailings pond siting, and cyanide destruction (five sets of two volumes tabled).
  - Rest of Stage I submission to follow.
- o MDSC to provide proponent with list of names and addresses of MDRP agencies to receive Stage I submission directly from proponent.

### 10. SUMMARY OF MINISTRY OF ENVIRONMENT AND PARKS ISSUES

- o The following issues were summarized, and should be adequately addressed in Stage I documentation:
  - Project water balance.
  - Tailings pond siting taking into consideration geotechnical and geohydrological parameters.
  - Acid mine drainage - including waste rock piles, if any, and mine drainage.
  - Cyanide/mercury treatment.


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**11. PROPOSED SITE VISIT**

- o Agreed that key headquarters and regional MDRP reviewers should make a site visit in early August, after the Stage I report has been submitted.
- o Proponent to propose timing and organize trip. There may be up to 15 MDRP people at site visit.



Norm Ringstad  
Secretary  
Mine Development Steering Committee  
c/o Engineering and Inspection Branch  
Mineral Resources Division

NR:sf

Attachments

1988-07-13

**MINE DEVELOPMENT REVIEW PROCESS**

**SNIP GOLD PROJECT**

**MEETING WITH MDSC**

LIST OF PARTICIPANTS

<u>NAME</u>	<u>AFFILIATION</u>	<u>PHONE</u>
Ray Crook	MDSC/MEMPR	356-2230
Norm Ringstad	MDSC/MEMPR	356-2229
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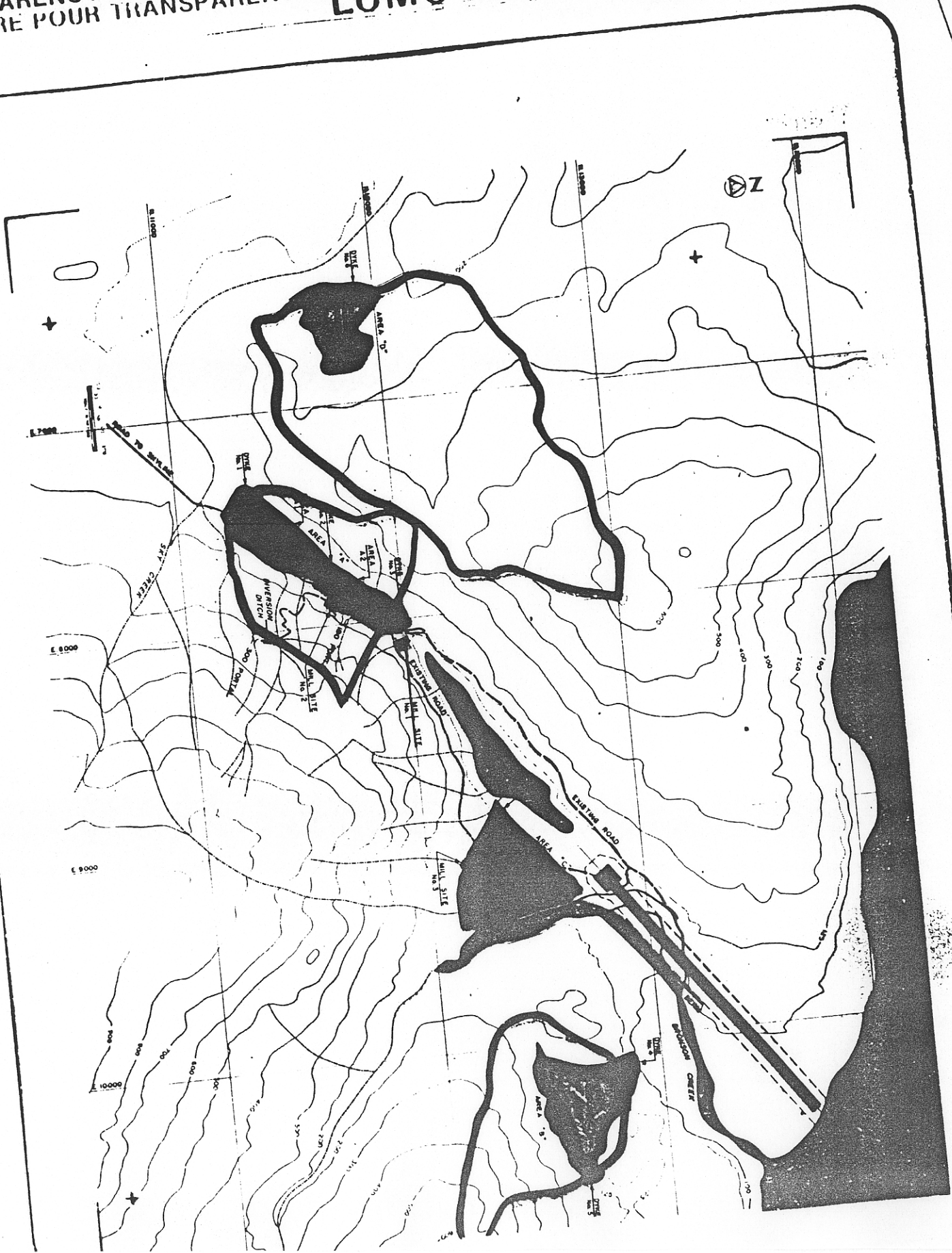


SPARENCY MOUNTS  
URE POUR TRANSPARENTS

STAEDTLER  
LUMOCOLOR



NO:991 AV



## SNIP PROJECT SCHEDULE.

JUNE 10, 1988	-	START STAGE II GEOTECHNICAL PROGRAM
JUNE 23, 1988	-	CONFIRM PRELIMINARY ORE RESERVES
JUNE 30, 1988	-	FINALIZE CAPITAL COST ESTIMATE
JULY 4, 1988	-	FINALIZE OPERATING PLANS.
JULY 8, 1988	-	COMPLETE ECONOMIC EVALUATION
JULY 15, 1988	-	OWNER'S APPROVAL IN PRINCIPLE
JULY 18, 1988	-	COMMENCE DETAILED DESIGN
JULY 29, 1988	-	COMPLETE STAGE II GEOTECHNICAL PROGRAM
AUGUST 2, 1988	-	SUBMIT STAGE I REPORT TO MDSC
SEPTEMBER 16, 1988	-	MDSC APPROVAL IN PRINCIPLE
SEPTEMBER 19, 1988	-	START TAILINGS DYKE CONSTRUCTION
JANUARY 8, 1989	-	START MINE DEVELOPMENT
MAY 1, 1989	-	START SITE CONSTRUCTION
JULY 14, 1989	-	START MINE PRODUCTION
SEPTEMBER 29, 1989	-	START MILL PRODUCTION.