

# Current Exploration Results

1987-1992

019894

i ) Geology - Massive sulphides are contained in 2 lenses the AB and H. The stratigraphically higher H lens contains 85% of the reserves. The host rocks, comprised of felsic volcanoclastics are folded into a syncline plunging NNW at 60°. Sulphides are structurally thickened along the fold axis. True thicknesses range from 2 to 8 meters in the AB lens and from 2 to 38 meters in the H. Ore grade mineralization extends over a vertical range of 730 meters and up to 400 meters on strike and is open to depth and on strike to the west.

Approximately 27,000 meters of drilling has been completed to date. The potential for additional reserves is excellent as there are 3 other separate massive sulphide systems on the property which have yet to be explored.

Preliminary testing suggests excellent metallurgy. Competent wall rocks should result in good underground mining conditions.

Reserves: Geological, possible, 7.8 million tonnes 1991  
probable and/or proven est. 8.2 million tonnes 1992 all probable  
Number of ~~zones~~ lenses: 2  
Number of sample points 40 drill hole penetrations  
Average grade 1.6% Cu, 1.2% Pb, 6.5% Zn, 2.75 gm/tonne Au, 109.6 gm/tonne Ag  
Average thickness 10 meters  
~~Cut-off-grade~~

Costs: Recent exploration costs,  
i.e. (relating to above) 1987-1992 \$9 million  
  
Projected exploration costs of  
program to development (if any) \$10-15 million  
  
Projected development costs  
given positive economics \*estimate \$125 million  
  
Projected operating costs  
given positive economics \*estimate \$50/tonne

\* Based on preliminary feasibility studies

Property/Project

Authors

Name : Tulsequah Chief-Big Bull Property

NTS : 104K 

John A. Greig

Claims : Crown grants and newer claims

Acreage : 7700 hectares

Commodities : Volcanogenic massive sulphide (Kuroko type) Cu, Pb, Zn, Au, Ag

Agreements

Property is 100% owned by Redfern Resources Ltd. since July 1992.

History

Past Exploration Techniques	By Whom	Amount	Type	Cost
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Past Development (if any)	By Whom	Amount	Type	Cost
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Past Production (if any)	By Whom	Tonnage(s)	Method	Grade
1951-1957				
Tulsequah Chief	Cominco	575,000 tonnes	shrinkage & open stope	1.5% Cu, 1.4% Pb, 6.9% Zn, 4.1 gm/tor. Au, 26.7 gm/tonne Ag
Big Bull	Cominco	360,000 tonnes		

Reasons for shut-down  
Low metal prices

Geology

Regional

Folded faulted and tilted basaltic-andesite flows and fragmentals with lesser felsics and sediments. Lower Carboniferous age (350 my).

Local

Massive sulphide host rocks are dacite felsic volcanoclastics tightly folded with fold axes plunging north at 60°.

Alteration/

Ore Forming Minerals

Alteration pipe extends 750 meters into the footwall and is characterized by sericite, pyrite, silicification and minor cordierite - ore forming minerals are chalcopyrite, sphalerite and galena.



N.W. Mining  
Spokane  
Handout

### TULSEQUAH CHIEF DEPOSIT

The Tulsequah Chief is a kuroko type volcanogenic massive sulphide deposit. The minesite is located in the Tulsequah River valley in northwestern British Columbia about 45 miles northeast of the deep sea port of Juneau, Alaska at an elevation of 400 feet. Cominco mined between the 1900 and 400 foot elevations in the period 1951 to 1957. The property remained dormant until 1987 when a joint venture of Redfern (40% interest) and Cominco (60%) began exploration below the 400 foot elevation.

Drilling since 1987 has indicated a reserve of 8.6 million tons of 1.6% copper, 1.2% lead, 6.5% zinc, 0.08 oz/ton gold and 3.2 oz/ton silver.

Mineralization is contained in two lenses, the lower AB lens and the stratigraphically higher H lens. The mine stratigraphy, which is comprised mainly of felsic volcanics, is folded into a syncline which plunges north-northwest at about 60°. Massive sulphides are structurally thickened along the fold axis and attenuated on the limbs. True thicknesses range from 5 to 25 feet in the AB lens and from 5 to 126 feet in the H lens. About 85% of the reserve is contained in the H lens.

The deposit is wide open to expansion and the potential is in the order of 12-15 million tons. The area potential is much larger as there are a number of promising targets on the property which have not yet been explored in detail.

Preliminary mineralogical studies, integrated with previous milling experience, suggest good recoveries and concentrate grades. The steep dip and competent wall rocks imply excellent underground mining conditions.

The Tulsequah Chief ranks as one of the more important undeveloped mineral reserves in Canada.

December 1991

# TULSEQUAH CHIEF PROJECT

## LONGITUDINAL PROJECTION LOOKING NNW

**WEST**

**OPEN**

**EAST**

5400 Level

5400 Level Drift

5200

OLD RESERVES - NOT MINED

5200 Level Drift

5000

88-4

88-6

4500

88-3

87-5

87-1

**OPEN**

4000

Vertical Scale

**4400 E FAULT**

88-5

88-6

88-7

91-32

88-8

91-34

89-12

89-20

89-14

89-1

89-13

89-19

3500

**OPEN**

**OPEN**

89-15

89-15

91-35

89-13

89-18

89-19

89-16

91-35

89-21

90-25

90-26

89-16

89-18

90-22

91-31

91-30

3000

**OPEN**

0 500

**FEET**

Scale in plane of mineralization  
(Zone plunges at 60°)

 H Zone: Ore Grade (North) Non Ore Grade

 H Zone: Ore Grade (South) Non Ore Grade

 AB Zone: Ore Grade Non Ore Grade



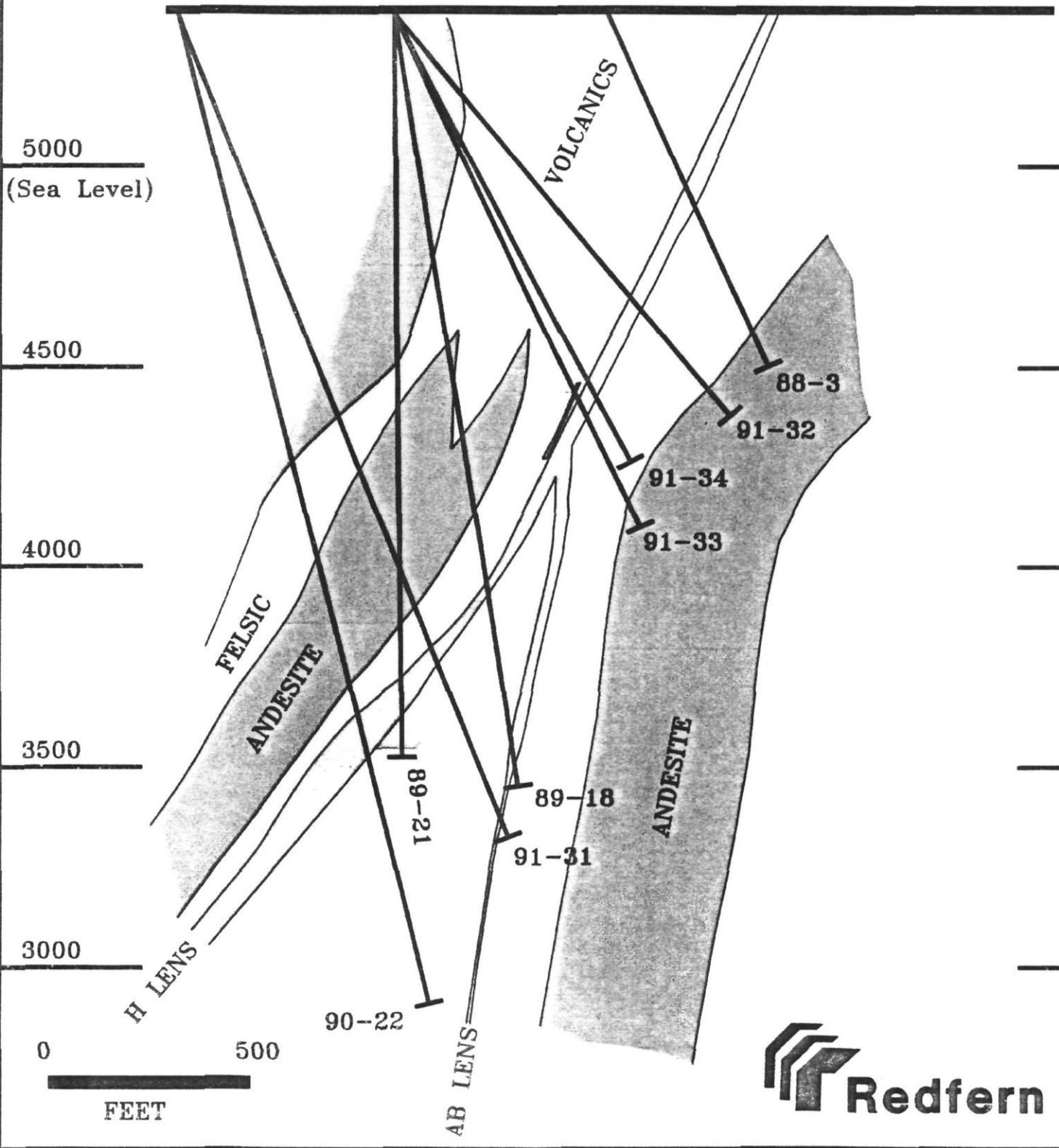
# TULSEQUAH CHIEF PROJECT

VERTICAL SECTION LOOKING TOWARDS NORTHEAST

NORTH

SOUTH

5400 LEVEL DRIFT



# TULSEQUAH CHIEF

## DRILL INDICATED RESERVES



Monthly Report - August 1978. Smithers Office - B.C.M.N.

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Tulsequah Chief

It also contains disseminated sphalerite and galena is associated with smokey quartz vein at the same location.

This summer Mattagami has tried several types of geochemical and geo-physical surveys including radem, EM, magnetometer, radon gas, and I.P. (at time of visit). These 'dykes' appear to be very interesting!

#### Boulder Creek - Al Matson

On August 22nd I visited some skarn showings on the west side of Boulder Creek located about halfway up the creek, approximately 20 km NE of Atlin. Pyrite, pyrrhotite and chalcopyrite mineralization occurs as a banded skarn in contact with limestone and alaskite. Purple fluorite is also associated with the mineralization. Al cleaned out some of these old trenches this year.

#### Tulsequah Area

On August 23rd I visited several properties in the Tulsequah area in accompaniment with Jim Hutter, Mines Inspector - Smithers, and with Stan Hunter, Mines Inspector - Prince Rupert. We visited the old Erickson - Ashby prospect located approximately 4.8 km east of Tulsequah. High-grade pods of massive sulphides (ZnS-PbS-po) exist in sedimentary limestones and other sedimentary rocks. A nearby intrusive body is a logical source rock.

We visited the Tulsequah-Chief gold-silver mine located approximately

11.3 km north of Tulsequah (see last year's August report). Cominco is apparently sending someone in this fall to evaluate all the machinery left on the property for future sale.

We visited the Polaris-Taku gold-silver mine located approximately 8 km north of Tulsequah. Salvaging of equipment through Atlin is being carried out by Nel Higgins.

We visited the Moly-Taku molybdenum prospect located on the B.C.-Alaska border, (Mt. Ogden), approximately 25 km SE of Tulsequah. Molybdenite has been observed (not by myself) in spectacular amounts on terminal and medial moraines on the surface of an active glacier and also in fine and coarse grained quartz monzonite (observed by myself) in outcrop. Opaline quartz veinlets appear to be associated with mineralization.

The quartz monzonite is in contact with tactite. Apparently in 1967 a small diamond drill broke down after drilling 15 metres.

The area is extremely rugged and would have to have good size and grade to be economically feasible.

#### Engineer Mine

On August 24th I accompanied Jim Hutter and Stan Hunter to the old Engineer gold mine located approximately 40 km west of Atlin. No activity was going on, although core boxes were skidded in on the ice this past winter.



Looking westerly towards Tulsequah Chief Mine.



Scoop tram and ore car sitting outside -  
Chief Mine.

of presumed Lower Jurassic (Hazelton Group) age. The grades are very erratic with a definite structural dependence (esp. South Contact Fault). A major fault separates the East block from the Main Zone (vein). The total strike length of the mineralization was so far known for only 36.6 metres! Nevertheless, some very high grades of gold have been intersected.

A comment that was made was "Scottie has the highest cost/ton milling operation in Canada".

At the time of our visit, Scottie had mined out the best developed ore and was way behind in development. Apparently, Scottie was looking for financial assistance (partner(s)).

Rainy Hollow Area (114P)

On September 10th I visited Falconbridge's Maid of Erin property in the Rainy Hollow area, located northwest of Haines, Alaska. John Wilson and his crew were pulling out that day. The main targets were bornite (Cu + Ag) rich skarns associated with granodiorite, limestone contacts. Detailed geological mapping as well as geochemical and geophysical surveys were completed over a large area between Copper Butte and the Maid of Erin prospect. Diamond drilling was to have taken place, however, was cancelled due to budget restrictions.

On September 11th, I talked with the Noranda exploration crew who had a helicopter-supported program in the area between Three Guardsman and the Alsek River.

Tulsequah Area

1982

On September 15th I visited the Tulsequah area located 100 km south of Atlin. I examined core located at Border Lake from the following properties:

- Moly-Taku (Mo, W)
- Red Cap (Au, Mo, Cu, W)
- Erickson-Ashby (Ag, Pb, Zn)

Island Mining attempted a drill program on the Red Cap property but ran into drilling problems after 32 metres of drilling and cancelled the program.

Cominco filed a 9-10 for geophysical work on the Tulsequah-Chief massive sulphide prospect.

COMINCO-REDFERN TULSEQUAH CHIEF MASSIVE SULPHIDE DEPOSIT

NORTHWEST BRITISH COLUMBIA

M.J. CASSELMAN

COMINCO LTD.

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The Tulsequah Chief property is located near the confluence of the Tulsequah and Taku Rivers in the Coast Range Mountains of B.C., 95 km south of Atlin B.C. and 70 km northeast of Juneau, Alaska. The property was first staked in 1923 following the discovery of a high grade lens of barite, sphalerite, galena and chalcopyrite. Cominco Ltd. acquired the deposit in 1946 and placed it and the adjacent Big Bull deposit into production in 1951 at a rate of 530 tons/day. The mine was closed in 1957 due to low metal prices. Production was 625,781 tons from the Chief and 403,308 tons from the Bull at a combined average grade of 0.11 oz/t Au, 3.69 oz/t Ag, 1.59% Cu, 1.54% Pb and 7.0% Zn. At shutdown, ore reserves in the Chief were estimated at 780,000 tons at 0.07 oz/t Au, 2.9 oz/t Ag, 1.3% Cu, 1.6% Pb and 8.0% Zn.

The Tulsequah Chief deposit occurs in a northeasterly striking, west dipping sequence of Pre-Permian, submarine deposited rocks located on the west limb of a north plunging anticline. The rocks consist primarily of andesite volcanics with lesser dacite-rhyolite pyroclastics, clastics, limestone and chert. All rocks are intruded by Paleozoic, diorite and dacite, and Tertiary, rhyolite plugs, sills and dykes. The anticline is delineated by a mixed limestone, chert, clastic sequence containing Pennsylvanian-Permian fossils. This sequence occurs stratigraphically above the deposit. A major regional fault partially cuts off the west extension of the Tulsequah Chief stratigraphy.

The Tulsequah Chief deposit is located near the base of a large lenticular mass of dacite-rhyolite pyroclastics at the transition with an underlying thick sequence of andesite pyroclastics and flows. The deposit is broken into four blocks by north-south striking, steeply dipping faults, some of which may have been in part synvolcanic growth faults.

Mineralization occurs in seven separate, conformable lenses. The lenses consist of pyrite (15-80%) with varying concentrations of sphalerite, galena, chalcopyrite, gold, silver, barite and gypsum. These lenses occur within several stratigraphic intervals along a 500 m strike length in a lithologic package known as the mineral horizon. The mineral horizon consists of altered, intercalated dacite-rhyolite tuffs, muds, cherty tuffites, and cherts intermixed with altered dacite dacite-rhyolite lapilli tuffs.

2.

Alteration in the mineral horizon consists primarily of sericite-pyrite and locally, anastomosing zones of silica veins and pervasive silicification. The alteration extends for distances up to 30 metres into the overlying dacite-rhyolite pyroclastic package, indicating hydrothermal activity continued after the main phase of sulphide deposition. The mineral horizon is underlain by a discordant alteration pipe which can be traced on surface for 1 km and occurs primarily in andesite volcanics. The pipe contains pyrite (5-25%), sericite and phlogopite zoned outward from a sericite-pyrite core through a transition zone of phlogopite-pyrite to an outer zone of pyrite. An adjacent, separate alteration pipe 400 m to the west formed slightly later at a higher stratigraphic level. No mineralization of significance has been found to date associated with this pipe.

The intimate spatial relationship of the mineralized lenses with volcanic rocks indicates that sulphide formation was an integral part of, and related to volcanism.



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CHIEF GEOLOGIST

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**News Release**

**POSITIVE FINAL FEASIBILITY FOR TULSEQUAH**

Positive results are indicated in a final feasibility study of Redfern's Tulsequah Chief deposit. The \$1.5 million feasibility was conducted by Rescan Engineering of Vancouver, B.C. with contributions by a team of recognized independent consulting mining, metallurgical and geotechnical engineers.

The study is based on an initial mineable reserve of 7.2 million tonnes grading 1.24% copper, 1.18% lead, 6.32% zinc, 2.41 grams per tonne gold and 99.33 grams per tonne silver, which is part of the overall geological reserve of 8.9 million tonnes. The full production rate will range from 800-900,000 tonnes per year resulting in a mine life of about 8.3 years. Total capital investment includes pre-production capital of \$125 million and ongoing capital costs, mainly in the first three years, of \$35 million. Capital costs will be paid out in 3.4 years with annual pre-tax operating profit averaging about \$48 million per year. On a 100% project basis, the pre-tax discounted rate of return is 24.6%. The Canadian dollar exchange rate used in the feasibility model is 73.5 cents US. Unless otherwise noted, dollar amounts in this release are in Canadian dollars.

Based on average metal prices in US dollars of \$1.00 per lb copper, \$0.60 per lb zinc, \$6.00 per ounce silver, \$395.00 per ounce gold, net smelter returns will average \$116.00 per tonne of ore milled. With operating costs of \$60 per ton milled, the average operating margin will be \$56.00 per ton. Higher grade ore will be accessed in the early years to achieve the early pay out of invested capital.

The comprehensive study envisages accessing the deposit through rehabilitation and expansion of the lowermost openings (adits) which were developed when the property was mined during the 1950's. Efficient longhole stoping will be utilized to extract 75% of the ore with mining widths up to 30 meters, while shrinkage stoping will be applied for the 25% of reserves contained in narrower zones. The adoption of a delayed paste backfill system will allow the maximum return of tailings to the mine. A production ramp will be driven to provide access to the deposit for mining at 60 meter levels, in combination with an internal vertical shaft which will allow access at 180 meter levels and permit the hoisting of crushed ore from the bottom of the shaft. All primary mine development will be confined to the non-acid generating hanging wall rocks above the steeply dipping ore zones. The grinding mills and gravity concentrator for coarse free gold will be located underground while the flotation process for the production of bulk copper (lead) concentrates and separate zinc concentrates will be located on surface. The gravity circuit will recover 35% of the gold in the ore while most of the remaining gold will report to the copper concentrate. Almost all of the silver will report to the copper concentrate.

Post-it™ Fax Note	7671	Date	July 27	# of pages	2
To	Mitch Whalquist	From	T. Chandler		
Co./Dept.	BCGS	Co.	Redfern		
Phone #	952-0481	Phone #	278-3028		
Fax #	952-0381	Fax #	278-8837		

Trading Symbol: RFR,  
listed Toronto Stock Exchange

- 2 -

In a major step to minimize environmental impacts, Redfern will spend approximately \$2 million each year to remove iron sulphides (pyrite) from tailings so that the 30% of the tailings, which are not utilized as backfill and must be stored in a surface impoundment, will not be acid generating. If necessary, the company will quarry and mill locally available limestone to further neutralize the impounded tailings. The pyrite so removed by the flotation process will be returned to the mine and flooded to prevent any acid formation in the future. Furthermore, abandoned stopes from earlier mining activities will be backfilled with sulphide - reduced paste fill.

During full production annual metal shipments will average 57,000 ounces of gold, 2.3 million ounces of silver, 22 million pounds of copper and 113 million pounds of zinc. Approximately 140,000 dry metric tonnes per year of concentrate will be trucked to Skagway, Alaska for storage and shipment to smelters. Discussions are underway for the placement of concentrates under long term contracts with copper and zinc smelters in Asia, Europe and North America.

Economic analysis in the feasibility study is based on the year round utilization of a 160 km Canadian access road to be constructed from the minesite to the existing road at Atlin, B.C., under the B.C. Mining Right-Of-Way Act. An alternative access option which contemplates the seasonal use of barges on the Taku River, from its confluence with the Tulsequah River to its outlet at the ocean near Juneau, Alaska, is currently being surveyed to determine its viability.

Changes to the feasibility study are anticipated as a result of ongoing optimization and modifications. Studies are in progress which are designed to further enhance profitability and maximize project returns. An alternative mining layout is being drawn which calls for crushed ore to be transported from the upper portions of the ore deposit via conveyors located in the mining ramp, instead of being hoisted up the shaft via a skip conveyance system. This alternative could result in a substantial reduction and/or postponement of the \$35 million of capital cost following start-up. In addition, recent bench-scale lab work has been successful in reducing the lead in the bulk concentrate by gravity methods thereby upgrading the copper content of the bulk concentrate to +25% copper (from 20%) and concomitantly yielding a saleable lead concentrate at 50% lead. Both concentrates will be high in precious metal values. Locked-cycle tests are now being conducted to verify these results which, if valid, will result in even higher net smelter returns.

A much longer life mining operation can be contemplated as the Tulsequah Chief deposit is wide open at depth and on strike. Excluded portions of the present 8.9 million tonne geological reserve may also become mineable during periods of higher metal prices. Potential for discovery of additional reserves in new deposits is high within the 150 sq. km. project area.

As stipulated under the former Mine Development Assessment Process and recently superseding Environmental Assessment Act, the Company initiated environmental baseline surveys in May, 1994 and began other permit related studies to allow application for a mine development certificate and associated operating permits by the fall of this year. The Company has completed the initial public consultation and government agency review of the Pre-Application for Mine Certificate and expects to receive shortly the Terms of Reference for preparation of the Project Report (formerly Mine Development Certificate Application). The permit process has progressed on schedule and Redfern is confident that the Project Report will be complete for submission in October, 1995. A ministry decision on the application is expected by April, 1996 on completion of final public consultation and government and stakeholder review.

**REDFERN RESOURCES LTD.**

per:



John A. Greig  
President

## Jones, Larry EM:EX

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**From:** Lefebure, Dave EM:EX  
**Sent:** Friday, August 01, 2003 10:01 AM  
**To:** Alldrick, Dani EM:EX; de Groot, Laura EM:EX; Desjardins, Pat EM:EX; Diakow, Larry EM:EX; Gib McArthur (E-mail); Grant, Brian EM:EX; Jamie Pardy (E-mail); Jones, Larry EM:EX; Lefebure, Dave EM:EX; Legun, Andrew EM:EX; Lett, Ray EM:EX; Logan, Jim EM:EX; Massey, Nick EM:EX; Mihalynuk, Mitch EM:EX; Nelson, JoAnne EM:EX; Nixon, Graham EM:EX; Schiarizza, Paul EM:EX; Schroeter, Tom EM:EX; Simandl, George EM:EX; Webster, Ian EM:EX; Wilcox, Allan EM:EX; Lane, Bob; Mike Cathro (E-mail); Terry David (E-mail); Wojdak, Paul; Fred Hermann (E-mail); Greg McKillop (E-mail)  
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**Subject:** Tulsequah Chief Exploration update

## Tulsequah Chief Property Visit

On July 21 and 22, 2003 Paul Wojdak and I spoke with staff on site, went underground and examined some of the recent exploration drill core. Tulsequah Chief is one of the candidates for the next major metal mine in the province.

### Executive Highlights

- **For the first time since 1994 a major exploration program is underway on the Tulsequah Chief property of Redcorp Ventures Ltd.**
- **Two underground drill holes intersected massive sulphide mineralization that could point the way to a new mineral resource in a very accessible location. This would improve the profitability of any mine development.**
- **Based on the geology and mineral potential of the Tulsequah Chief area, a new discovery would not be a surprise.**
- **The estimated possible mine life of 9 years could be extended significantly as the result of more exploration on the site before or after any mining development.**

### Background

- Redfern Resources Ltd., a wholly owned subsidiary of Redcorp Ventures Ltd., is carrying out a \$1.5M drill exploration program on the Tulsequah Chief property this summer and fall. The property is located 100 kilometres south of Atlin in northwest BC and is only accessible by helicopter or small boat. The program objective is to identify new ore resources which will be easily accessible and contribute the viability of the proposed mine.

View of property showing old mine workings and Tulsequah River.



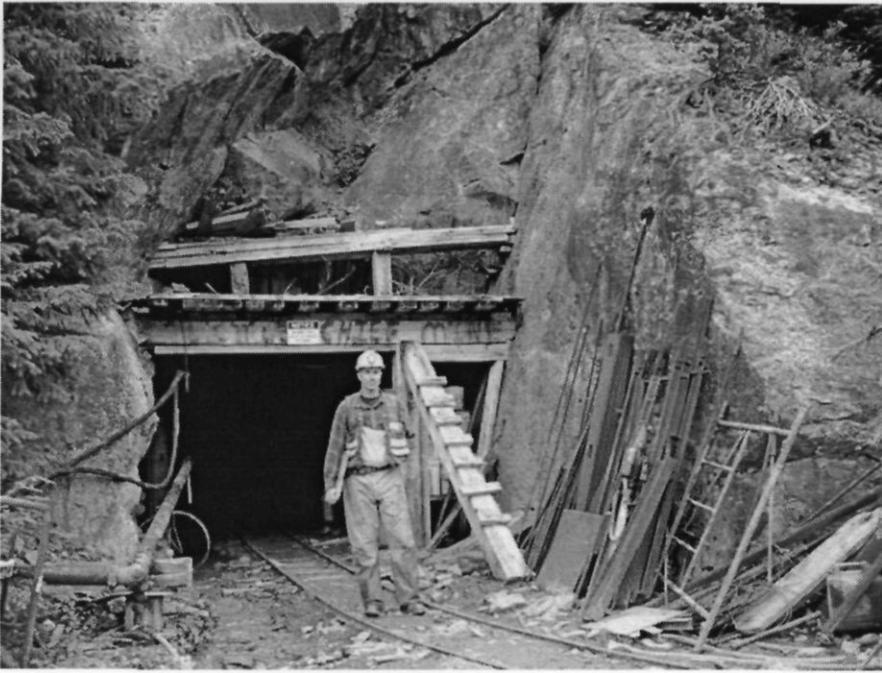
- The major underground drilling program has had some early success intersecting 8.1m of predominantly pyrite-facies massive sulphide mineralization grading 0.55% copper, 2.56% zinc, 1.26 gpt gold and 19.7 gpt silver in one hole and 9.56m of similar mineralization grading 1.5% copper, 0.41% zinc, 1.7 g/t gold and 17.2 g/t silver approximately 50m down dip in another hole.

View of cut drill core showing start of massive pyrite mineralization towards the bottom (TCU03073).



- Drilling is expected to last until the end of October.

Bob Carmichael of Redcorp at portal to 5400 level. Tulsequah Chief was mined from 1951 to 1957.



*David Lefebvre*

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