ASSESSMENT REPORTS

GEOLOGY, GEOCHEMISTRY, GEOPHYSICS, CHURN AND DIAMOND DRILLING, RESERVES PROVEN AND ~~PROBABLE~~

MAP No. 115 I 3 TYPE OF WORK:

091825

REPORT FILED UNDER	CHEVRON CANADA RESOURCES LTD.
DATE PERFORMED	1985 DATE FILED: APRIL 29, 1986
LOCATION – LAT.	62°05'N AREA: MT. NANSEN
LONG.	137°08'W
CLAIM Nos.	NAT, DAH, NITRO, CASH, NEX, NAC, ALO, ITN, ERL, MEC, ACK, EYM
WORK DONE BY	ARCHER, CATHRO AND ASSOCIATES (1981) LTD.
WORK DONE FOR	CHEVRON CANADA RESOURCES LTD.
REMARKS	

39-40 BROWN-McDADE, WEBBER_HUESTIS

ARCHER, CATHRO
& ASSOCIATES (1981) LIMITED
CONSULTING GEOLOGICAL ENGINEERS

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091825

Report on

Geological, Geochemical, Geophysical, Trench and Drill Results

from

work done between June 15 and September 27, 1985

on the

Mt. Nansen Property

located at

Latitude 62°05'N and Longitude 137°08'W

on

NTS Mapsheet 115I/3

091825

W. Douglas Eaton, B.A., B.Sc.

BOX 4127, 3125 THIRD AVENUE, WHITEHORSE, Y.T. Y1A 3S9

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This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ -73,000- .

Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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SUMMARY AND RECOMMENDATIONS

The Mt. Nansen area has seen exploration for gold placers, gold-silver veins, and porphyry copper mineralization at various times since 1912. The placer and porphyry occurrences have proven to be too low grade to be of major interest but the veins are well mineralized and exhibit good lateral and vertical continuity. There are three major vein systems, the Brown-McDade which was discovered in 1943 and the Huestis and Webber which were located shortly afterward. The veins were explored by a number of companies in the mid-1940's, late 1950's and early 1960's using surface trenching, diamond drilling and underground development. By 1965 modest reserves were proven and a mill was constructed. During the periods September, 1968 to April, 1969 and December, 1975 to May, 1976, 26,196 tons grading about 0.3 oz/ton Au and 6 oz/ton Ag were mined from underground on the Huestis and Webber veins. The mill used flotation without a cyanide circuit and both operations were suspended because of unsatisfactory gold recoveries from the refractory sulphide mineralization. Total proven and probable reserves left when operations ceased are tabulated below.

	Proven			Probable			Proven & Probable		
	Tons	oz/ton Au	oz/ton Ag	Tons	oz/ton Au	oz/ton Ag	Tons	oz/ton Au	oz/ton Ag
Huestis	40,963	0.48	8.91	44,765	0.42	8.28	85,728	0.45	9.11
Webber	30,961	0.33	20.73	27,563	0.35	17.67	58,524	0.34	19.29
Brown-McDade	20,143	0.45	6.24	20,143	0.45	6.24	40,286	0.45	6.24
	92,067	0.42	12.30	92,471	0.41	11.12	184,538	0.41	11.71

From 1977 to 1984 the property was inactive due to a complicated land position caused by multiple owners and creditors' liens. In April 1984, B.Y.G. Natural Resources Inc. began consolidation of the property and on June 12, 1985, optioned it to Chevron Canada Resources Limited. In anticipation of the agreement, Chevron staked protection claims in late April and May, 1985 and after the field season optioned claims adjoining the property from prospector G. Dickson, bringing the total land holdings to 30 mineral leases and 333 claims covering a 75 sq km area.

The 1985 exploration program was conducted between June 16 and September 27 under management of Archer, Cathro & Associates (1981) Limited and focused on potential for open pittable oxidized ores amenable to cyanide extraction. The work included geological mapping; multi-element soil geochemistry (6300 samples); VLF-EM surveys (48 km); linecutting and baseline surveys; aerial photography; excavator and bulldozer trenching (7582 m of exposed bedrock); rotary percussion drilling (1283.5 m in 17 holes); diamond drilling (949.4 m in 13 holes); retimbering of the Brown-McDade adit; limited underground sampling; metallurgical tests; environmental and geotechnical studies; and, destruction of dangerous chemicals abandoned when the mill ceased operation in 1976.

Exploration on the property to date has shown that there are three general types of lode mineralization: (1) narrow anastomosing precious metal veins cutting Paleozoic or older metamorphic rocks (Huestis and Webber Zones); (2) complex precious metal zones developed where a series of narrow quartz veins and related brecciated feldspar porphyry dykes cut Mesozoic granodiorites, metamorphic rocks or Mid-Cretaceous andesitic volcanics (Brown-McDade and Rusk Zones); and, (3) porphyry copper mineralization which

occurs within and adjacent to a Mid-Cretaceous feldspar porphyry plug (Porphyry Zone). The precious metal veins and complex zones are developed along northwest-trending faults that are periodically offset by northeast-trending cross faults and share similar mineralogy consisting of pyrite, arsenopyrite, galena, sphalerite, sulfosalts and stibnite in order of abundance. Both contain high grade, quartz-rich shoots or lenses averaging about 0.30 oz/ton Au with 2 to 25 oz/ton Ag that are surrounded by argillic and phyllic altered rocks containing low grade mineralization (0.01 to 0.1 oz/ton Au with 0.1 to 1 oz/ton Ag). The two types of mineralization differ in that the high grade shoots appear to be more abundant and continuous in the veins while the alteration and low grade mineralization forms much broader halos around the complex zones. Depth of surface oxidation varies with fracture density and exposure, ranging from greater than 75 m in highly fractured, south-facing zones to less than 15 m in less fractured, north-facing zones. Metallurgical tests conducted in 1985 and by previous operators show that cyanidation of milled oxidized mineralization yields about 98% of the gold and 40% of the silver, while flotation of milled sulphides yields 80 to 90% of the silver but less than 60% of the gold. The porphyry copper mineralization is extensive but low grade and precious metal contents in it rarely exceed 0.005 oz/ton Au and 0.1 oz/ton Ag.

The most promising target on the property is the Brown-McDade Main Zone which is 450 m long and tapers from greater than 150 m in width at the south end to about 7 m at the north end. It is developed along a northwest-trending, moderate to steep southwest-dipping fault, called the Footwall Fault, which has relatively fresh granodiorite in its footwall and a mixture of altered granodiorite and feldspar porphyry dykes on its hanging wall. The

best mineralization occurs in quartz veins cutting a 7 to 30 m wide band of intense argillic and phyllic altered rocks developed immediately in the hanging wall of the fault. Assays from trenches across this band returned up to 0.168 oz/ton Au and 1.84 oz/ton Ag across a true width of 22 m, while drill holes through it produced intersections up to 0.247 oz/ton Au and 2.10 oz/ton Ag across a true width of 32 m. Three or more hanging wall splits diverge from the Footwall Fault at a shallow angle. They exhibit similar alteration but are narrower, producing assays up to 0.109 oz/ton Au and 1.03 oz/ton Ag across 7.2 m. Oxidation depth in the zone ranges from about 15 m at the north end to greater than 75 m at the south end. Although drill data is too wide spaced to allow reliable reserve calculations, this zone appears to have excellent potential for open pit mining with a stripping ratio of about 4:1. This ratio would be reduced if low grade mineralization (0.02 to 0.04 oz/ton Au) occurring between the high grade zones proves suitable for heap leaching. EM-16 and geochemical survey results, plus information from trenches and drill holes suggests that the Brown-McDade Main Zone is offset by cross faults at both ends and these projected extensions are largely untested.

Trenching has traced the Webber Zone over a length of 700 m and shows that it consists of several subparallel, narrow, often well mineralized veins that produce assays ranging up to 0.566 oz/ton Au and 21.36 oz/ton Ag across 2.0 m. Although the grade of individual veins is good, they are generally too narrow and far apart to allow extraction by open pitting. Underground work by previous operators shows that this zone is oxidized to a depth of about 40 m.

No work was done at the Huestis Zone. Its grade and general geometry resemble the Webber Zone but mine records shown that there is little surface oxidation.

Soil samples were collected at 50 by 100 m centres over 80% of the property. They were geochemically analyzed for gold plus 30 other elements, including arsenic, lead and silver which are the principal pathfinder metals for the property. Results outlined the known zones plus numerous, previously untested targets. Six exploration trenches were cut on a few of the outlying targets and all intersected either veins or altered feldspar porphyry dykes. The best assay was 0.086 oz/ton Au and 0.07 oz/ton Ag across 2 m.

While insufficient information is available for a production decision, results of the 1985 exploration have clearly expanded upon published reserves and outlined additional targets for future exploration. The work has also demonstrated that cyanidation of oxidized mineralization gives excellent gold recovery with minimal reagent consumption.

The next stage of exploration should consist of property-wide EM-16 surveys to better define potentially mineralized structures coupled with systematic excavator or bulldozer trenching. Once mineralized zones are well defined, close spaced drilling (probably 25 m centres) will be required to establish reserves. The work should continue to focus on open pittable oxide ore and additional metallurgical testing should be done on lower grade material (0.02 to 0.04 oz/ton Au) so that cutoff grades can be calculated for potential heap leach material. Environmental studies and government liaison should be accelerated to ensure that the possibilities of non-engineering related delays are minimized.

The recently optioned Dickson Group claims should be geologically mapped and explored by grid soil geochemistry, EM-16 surveys and bulldozer trenching.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

/mc

W.D. Eaton, B.A., B.Sc.

INTRODUCTION

Exploration on the Mt. Nansen property was begun in mid-June, 1985 after an option agreement was signed on June 12 between Chevron Canada Resources Limited and the owner, B.Y.G. Natural Resources Inc. The work was managed by Archer, Cathro & Associates (1981) Limited and was directed toward evaluating potential for open pittable oxidized ores that are amenable to cyanide extraction. It focused on the previously discovered Brown-McDade and Webber Zones and included claim staking; geological mapping; multi-element soil geochemistry; VLF-EM surveys; linecutting and baseline surveying; aerial photography; excavator and bulldozer trenching; rotary percussion drilling; diamond drilling; sampling of old dumps and tailing ponds; retimbering of the Brown-McDade adit portal; and, limited underground sampling.

Metallurgical, geotechnical and environmental studies were also initiated under the direction of H. Wober of Chevron. Results of this work appear in the consultant's reports, which are included in the Appendices.

Dangerous chemicals abandoned when the mill ceased operation in 1976 were destroyed under the supervision of the District Mining Engineer, N. Prasad.

LOCATION, ACCESS AND CLAIM DATA

The property is located in west-central Yukon on NTS mapsheet 115I/3 at latitude 62°05'N and longitude 137°08'W. A 60 km gravel road connecting the property to Carmacks, the closest community, is maintained by the territorial government from April to October. Whitehorse, the main supply centre and territorial capital, is a further 175 km south by paved highway, as shown on Figure 1 on the following page. A gravel airstrip suitable for all types of bush aircraft is situated on the property but requires grading before it can be used.

Land holdings include 30 mineral leases, 143 claims more than three years old (Mt. Nansen and DD Groups), 114 claims staked in spring, 1985 (Chevron Group) and 76 claims (Dickson Group) optioned from G. Dickson in March, 1986. All are registered with the Whitehorse Mining Recorder, with the leases and Mt. Nansen, DD and Dickson Groups held in the name of Chevron Canada Resources Limited and the Chevron Group in the name of Archer, Cathro & Associates (1981) Limited on behalf of Chevron. Table 1, following, summarizes the claim data, while Figure 2, following the table, illustrates the approximate claim boundaries.

FIGURE 1

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

LOCATION MAP

MOUNT NANSEN PROPERTY

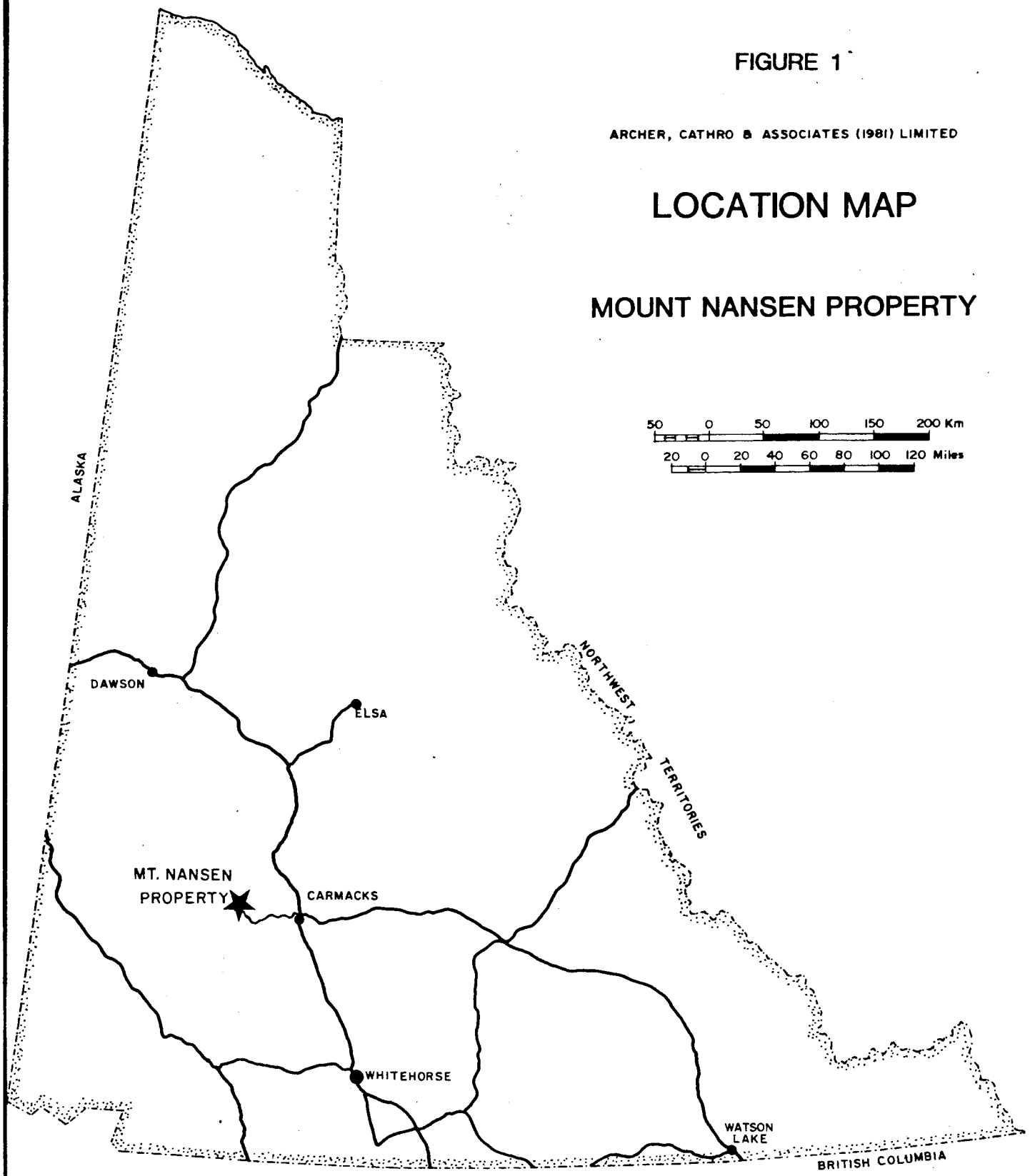


TABLE 1: CLAIM STATUS AS OF APRIL 30, 1986

Claim Name	Lease Number	Expiry Date
Mineral Leases		
Old Timer	2094	October 23, 1993
Tub	2095	October 23, 1993
Big Thing	2096	October 23, 1993
Rex	2097	October 23, 1993
Buster	2098	October 23, 1993
Glouser	2099	October 23, 1993
Buck	2100	October 23, 1993
Leroi	2173	March 18, 1995
Amalee	2174	March 18, 1995
Hope	2175	March 18, 1995
Duke	2176	March 18, 1995
Queen	2177	March 18, 1995
Senorita	2178	March 18, 1995
Rose	2491	October 9, 1998
Golden Eagle	2492	October 9, 1998
War Eagle	2493	October 9, 1998
Shamrock	2494	October 9, 1998
Nansen	2495	October 9, 1998
Spot	2496	October 9, 1998
Clarence	2497	October 9, 1998
Arlep	2498	October 9, 1998
Phyllis	2499	October 9, 1998
Lucky Thing	2500	October 9, 1998
Bluebell	2501	October 9, 1998
Rub	2502	October 9, 1998
Pub	2503	October 9, 1998
Sundog	2504	October 9, 1998
Cub	2505	October 9, 1998
Jam	2506	October 9, 1998
Pam	2507	October 9, 1998

Number of Leases - 30

TABLE 1: CLAIM STATUS (Cont'd)

Claim Name	Grant Number	Expiry Date
Mt. Nansen Group		
Dome 1-7	73537-73543	February 6, 1990
Dome 8-18	73694-73704	February 6, 1991
Dome 19	73705	February 6, 1990
Dome 20-22	73706-73708	February 6, 1991
Dome 25-28	77746-77749	February 6, 1990
Dome 33-43	77754-77764	February 6, 1990
Dome 47-62	77768-77783	February 6, 1990
Dome 63-66	77784-77787	February 6, 1990
Dome 78-84	81842-81848	February 6, 1993
Dome 86	81850	February 6, 1993
HIW Fr. 1-8	YA24813-YA24820	February 6, 1993
HIW 9	YA23835	February 6, 1993
HIW Fr. 10-11	YA23836-YA23837	February 6, 1993
HIW 12-17	YA23838-YA23843	February 6, 1993
Jeff 1-5	77798-77802	February 6, 1993
Jeff 7	77804	February 6, 1993
Joanne 1-6	74283-74288	February 6, 1990
Laura 9	93454	February 6, 1990
Number of Claims - 95		
DD Group		
DD 1-48	YA59596-YA59643	February 6, 1990
Number of Claims - 48		
Chevron Group		
EEK 1-18	YA87210-YA87227	February 6, 1991
ICT 1-36	YA86699-YA86734	February 6, 1991
ONE-1F	YA92921	February 6, 1991
ONT 1-43	YA87167-YA87209	February 6, 1991
ONT 44-51	YA92655-YA92662	February 6, 1991
TBR 1-8	YA86690-YA86697	February 6, 1991
Number of Claims - 114		
Dickson Group		
J.Bill 1-32	YA78049-YA78080	August 1, 1987
Bull 1-8	YA81420-YA81427	February 28, 1987
9-28	YA86288-YA86307	December 17, 1986
Rat 9-24	YA81436-YA81451	February 28, 1987
Number of Claims - 76		

Figure 2

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

CLAIMS, LEASES & AREA OF INFLUENCE

MOUNT NANSEN PROPERTY

PERSONNEL, CONTRACTORS AND PROGRAM CHRONOLOGY

The Nansen crew was supervised by D. Eaton and consisted of senior geologist M. Phillips, 6 to 10 junior geologists and field men, a cook and a bull cook. As the program evolved, numerous personnel adjustments were made to allow changes in focus. Appendix I lists the names, positions and addresses of individuals who worked on the property at one time or another during the program and the author's Statement of Qualifications.

Prior to the program's commencement, bids were obtained for the heavy equipment work. On this basis, two Whitehorse-based firms, Ibex Contracting Ltd. and E. Caron Diamond Drilling were chosen to do the trenching and drilling, respectively.

Other contractors included: S. Presunka who supervised EM-16 surveys; E. Stohl who retimbered the Brown-McDade adit portal; Chemex Labs and Bondar-Clegg Company Ltd. which performed geochemical analyses and assays; Hosford, Impey & Welter which conducted ground control surveys; Northwest Survey Corp. (Yukon) Ltd. which flew airphotos; Triathlon Mapping Corporation which prepared orthophotos and base maps; Lakefield Research which conducted metallurgical tests; Kilborn Engineering (B.C.) Limited which designed a metallurgical testing program done by Hazen Research (International) Inc. at Golden, Colorado; Klohn Leonoff which examined potential tailing pond and leach pad sites; and, Norecol Environmental Consultants Ltd. which began environmental base studies.

The following is a chronological summary of the work and important events.

May	Staked protection claims northwest of the Dome claim block.
May 29 & June 2	Staked additional protection claims along the east side of the Dome and DD claim block.
June 11	C. Dyson and K. Narain of Chevron, A. Archer and D. Eaton of Archer, Cathro met with R. Nendick and R. Merrifield of Kilborn Engineering at Chevron office to discuss metallurgical testing at the Mt. Nansen property.
June 12	Option agreement between B.Y.G. and Chevron finalized.
	A. Archer, D. Eaton and C. Dyson sorted through old Mt. Nansen property maps and selected those containing important field data to be copied as field maps.
June 13	C. Dyson, K. Narain and A. Archer toured Chemex Labs and decided upon the analytical techniques to be employed during the 1985 program.
June 14-15	Crew assembled in Whitehorse and organized camp supplies.
June 16	Mobilization to Mt. Nansen property.
June 17	Camp construction commenced.
June 18	First excavator trench cut.
June 19	Baseline and trench surveying begun.
June 25	First drill hole collared.
June 27-July 1	C. Dyson toured property.
July 2	EM-16 surveys commenced.
July 4	C. Dyson (Chevron) and T. Donaldson (B.Y.G.) toured property.
July 12	First phase rotary percussion drilling completed. Drill and D-6 support bulldozer left on property.

July 15	H. Wober and C. Dyson (Chevron) and R. Nendick (Kilborn Engineering) toured property and designed sampling program for metallurgical testing.
July 16	J. Mancuso, J. Bailey, J. Jewett, E. Dodson, H. Wober and C. Dyson (Chevron) reviewed program and results obtained to date with A. Archer at Archer, Cathro office in Whitehorse.
July 17	Chevron personnel and A. Archer toured property.
July 18	Phase 1 trenching completed and excavator left property.
July 19	Metallurgical samples sent to Hazen Labs and metallurgical tests began.
July 22	Soil sampling program started.
July 29	Phase II drilling begun.
August 16	A. Thompson, T. Donaldson and P. Donaldson of B.Y.G. toured property.
	Drilling temporarily suspended awaiting results.
August 29	K. Clifford and K. Castleton from Chevron discussed program with D. Eaton at Archer, Cathro office in Whitehorse.
	Drilling reactivated.
August 30	Clifford and Castleton toured property.
September 3	Retimbering and ventilation of Brown-McDade adit begun.
September 4	Excavator returned to property and trenching resumed. Bulldozer trail constructed to soil anomalies northwest of Back Creek.
September 6	High level airphotos taken.
September 8	Work on Brown-McDade adit completed.
September 9	Soil sampling completed.
September 10	Tailing pond and dump sampling and surveying began.
September 13	Low level airphotos taken.
September 17	Ripper-equipped D7E bulldozer arrived and started stripping future trench sites.

September 18	Dangerous chemicals stored at mill site destroyed.
September 19	Phase II diamond drilling completed. Tailing pond and dump sampling and surveying completed.
September 20-21	T. Harper from Klohn Leonoff examined potential tailings dam and leach pad sites using the excavator to dig test pits where required.
September 22-24	Additional EM-16 lines run to test response over selected soil geochemical anomalies.
September 23-24	J. Spots from Chevron toured property.
September 24-29	Hosford, Impey & Welter surveyors established location of airphoto markers for orthophoto preparation.
September 27	Crew and camp demobilized from property to Whitehorse.
October 3	C. Dyson, H. Wober, A. Archer and D. Eaton meet at Archer, Cathro office to review program and discuss proposed work.
October 11	J. Malich and helper from Norecol Environmental Consultants toured property and collected water samples along with M. Phillips (Archer, Cathro) and Yukon Territorial Government technical consultant K. Weagle.
October, 1985 - April, 1986	Data compilation, orthophoto and base map preparation and report writing.
November 5	Dump and tailings pond samples sent to Lakefield Research and metallurgical tests begun.
March 3	M. Phillips, helper and Norecol technician returned to property and attempted to collect additional water samples.

HISTORY

The Mt. Nansen area is the fourth oldest precious metal camp in the Yukon Territory. Placer gold was discovered in several creeks draining the area during the early 1900's but none of the discoveries was rich or large enough to sustain a long term operation. Figure P-1 in the pocket shows the location of placer workings, lode occurrences, roads and buildings.

The first lode deposit was found in 1943 by prospectors Brown and McDade. Sampling of surface trenches on their showings, plus subsequent drilling, returned sufficiently high values in gold and silver to induce Leitch Gold Mines Ltd. to form Brown-McDade Mines Ltd. and explore the ore zone underground with extensive drifting and drilling from a crosscut adit in 1946. At the same time, Conwest Explorations Ltd. explored the Webber Creek area, three kilometres to the west, and the Huestis Syndicate trenched the Huestis Zone about one and one-half kilometres west of the Brown-McDade. Underground results at Brown-McDade did not meet expectations and when the project was abandoned in 1947, all activity ceased in the area.

In 1958, interest was revived and in 1962 the Mt. Nansen Exploration Syndicate (Newmont, Noranda, Rio Tinto, Kerr Addison, Conwest and Faraday) optioned the properties. This group explored the Webber and Huestis Zones by geochemical surveys and bulldozer trenching and drilled one hole into the Webber Zone. In 1963, Mt. Nansen Mines Ltd. was formed by the syndicate and the Webber Zone was further tested by bulldozer trenching and three drill holes. Peso Silver Mines Limited acquired control of Mt. Nansen Mines Ltd. in 1964 and explored the Brown-McDade, Webber and Huestis Zones by underground development and diamond drilling between 1964 and 1967.

A production decision was made in 1967 and construction of a 200 ton/day mill was started. During the period September, 1968 to April, 1969, 18,000 tons of ore were mined and milled from the Huestis Zone with total production of only 2,482 oz Au, 76,534 oz Ag and 108,621 lb Pb. The major problems were refractory sulphide ores and the lack of a cyanide circuit to treat oxidized ores. The mine was reopened in 1975 and 8,196 tons were obtained from the Huestis Zone during the first five months of 1976 . Of this, 6,429 tons grading about 0.3 oz/ton Au, 7.0 oz/ton Ag, 1.0% Pb and 1.0% Zn were milled. Results were again unfavourable and the operation was discontinued. Since that time, the property has been relatively inactive and was transferred through several owners until it was acquired by B.Y.G. Natural Resources Inc. in April, 1984.

Reserves published in the most recent feasibility study dated December, 1983 (Ranspot, 1983) were as follows:

	Proven			Probable			Proven & Probable		
	Tons	oz/ton		Tons	oz/ton		Tons	oz/ton	
		Au	Ag		Au	Ag		Au	Ag
Huestis	40,963	0.48	8.91	44,765	0.42	8.28	85,728	0.45	9.11
Webber	30,961	0.33	20.73	27,563	0.35	17.67	58,524	0.34	19.29
Brown-McDade	20,143	0.45	6.24	20,143	0.45	6.24	40,286	0.45	6.24
	92,067	0.42	12.30	92,471	0.41	11.12	184,538	0.41	11.71

A porphyry copper occurrence lies approximately 6 km north of the precious metal veins and is partially covered by the Mt. Nansen property. This occurrence was discovered in 1969 and explored in 1970 by soil geochemistry and airborne geophysics. The claims covering the target were

optioned to Area Exploration Company, a subsidiary of Cyprus Exploration Corporation, during the period 1971 to 1975 and were explored by soil geochemistry, ground geophysical surveys and percussion and diamond drilling. This target has been inactive since 1975.

After the 1976 shutdown, the mill was left unguarded and was subsequently scavenged and vandalized. This, plus sale of some components and lack of maintenance, has left the mill and campsite in severe disrepair.

GEOMORPHOLOGY

The Mt. Nansen property lies on the eastern margin of the Dawson Range which forms the backbone of a deeply dissected peneplane known as the Yukon Plateau. This region is somewhat unique in Canadian geography as it lies northwest of the maximum advance of the Wisconsin ice sheet and, thus, escaped Pleistocene continental glaciation, as shown on Figure 3 on the following page. The result is a deeply weathered terrain characterized by broad, rounded ridge tops flanked by gentle slopes.

The major streams in the Mt. Nansen area are Nansen and Victoria Creeks which occupy wide, flat bottomed valleys that flank the property and flow south into the Nisling River, part of the Yukon River watershed. Tributary creeks have steeper gradients and form V-shaped dendritic drainages. Local elevations range from 1030 m in the larger valleys to 1500 m on ridge tops.

Soil development is generally poor, typically consisting of 5 to 10 cm of organics overlying 0 to 5 cm of white volcanic ash, 10 to 100 cm of buff to red-brown soil and 100 to 200 cm of decomposed bedrock mixed with soil. On ridge tops, the soil is residual but on hillsides it is often mixed by solifluction. The volcanic ash was derived from an eruption in the Wrangell Mountains, 200 km southeast of Mt. Nansen, about 1230 years ago. Extensive deposits of relatively homogeneous glacial outwash sand blankets the floors of the larger valleys. Outcrop is rare and is normally restricted to resistant weathering units exposed on ridge tops. Drilling on various parts of the property indicates that the zone of total oxidation ranges from 1 m to greater than 75 m in depth depending upon permeability in bedrock.

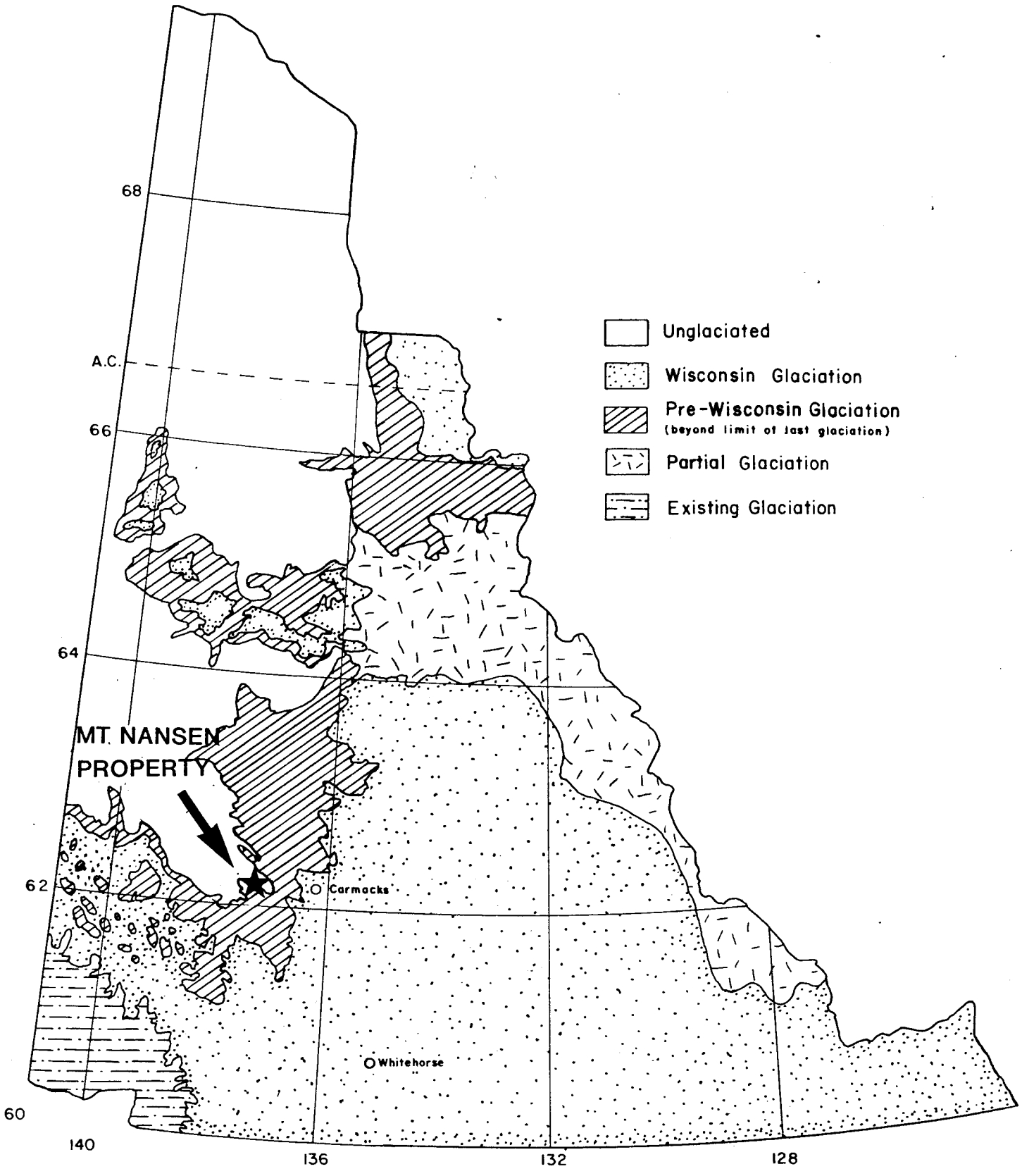


FIGURE 3: GLACIATION, DAWSON RANGE Y.T.

Permafrost is widespread, with north-facing slopes remaining frozen throughout the year and south-facing slopes thawing to a depth of 1 to 2 m by late summer. Once the insulating organic layer is removed, permafrost rapidly melts. Vegetation consists of spruce up to 30 cm in diameter along the main streams, giving way to moss, stunted black spruce and aspen on lower slopes, moss and buckbrush on upper slopes, and lichen on ridge tops.

GEOLOGY

REGIONAL SETTING

The Mt. Nansen property is located within the Yukon Crystalline Terrane (Tempelman-Kluit, 1984) which consists of Upper Paleozoic or older schists, gneisses, amphibolites and marbles; foliated Upper Triassic and unfoliated Jurassic diorite, granodiorite and syenite batholiths; and, unfoliated Mid- to Late Cretaceous, mafic to felsic volcanics, pyroclastic, subvolcanic and plutonic rocks. The Upper Paleozoic and Triassic rocks belong to an island arc that was accreted to North America during Mid-Jurassic time, while the younger igneous rocks are related to the Coast Plutonic Complex (Tempelman-Kluit, 1979).

The structural history of the area is complex and not well understood. The major structural feature is the Big Creek Fault which marks the boundary between the island arc assemblage and adjacent para-cratonic rocks belonging to the Yukon Cataclastic Terrane. This northwest-trending structure is anomalous as it appears to be a linear, steeply-dipping fault in some areas and a sinuous west-dipping thrust elsewhere. A series of northeast-trending cross faults offset the Big Creek Fault but the absence of reliable marker units and the fact that some igneous activity postdates early fault movement makes the magnitude of the offsets and exact relative motion difficult to determine. The overall impression obtained from studying the geology is that the area underwent compression and metamorphism in Jurassic times and then entered a post-orogenic extensional regime characterized by block faulting and mafic to intermediate volcanism.

PROPERTY GEOLOGY

General

The 1985 work was directed toward known mineralized zones, and no systematic property-scale mapping was done. The following descriptions are based on observations made during trench mapping, earlier property mapping (Dickinson, 1972) and recent airphoto interpretation. The resulting compilation is shown on Figure P-2 in the pocket.

Lithology

The oldest rocks belong to the Upper Paleozoic or older metamorphic assemblage that underlies most of the southern part of the property. This unit is the dominant wallrock in the Webber and Huestis Zones and occurs at the southeast end of the Brown-McDade Zone. The most common rocks are light coloured quartz-feldspar-chlorite gneiss that grade locally to quartzite. Chlorite content is normally low and where present in higher than normal amounts is concentrated in narrow bands that impart a striped appearance to the rock. Porphyroblasts of pink feldspar up to 1 cm in diameter are occasionally seen. Other rock types include: augen gneiss, which occurs in trenches near the north end of the Webber Zone; black to dark green amphibolite which is widely distributed and consists of equal amounts of plagioclase and actinolite; and, quartz-chlorite schists with minor quartz-graphite horizons, which have only been observed in trenches at the southeast end of the Brown-McDade Zone. The amphibolite is resistant weathering and is often abundant in talus. However, trenching has shown that the talus is derived from a few horizons that are normally only about 1 m wide, reaching a maximum of 15 m. Foliation within the metamorphic rocks generally strikes northeast and dips moderately to steeply to the northwest.

Most of the northern and eastern parts of the property are underlain by coarse-grained granodiorite that grades locally to quartz diorite or quartz monzonite. Although the most recent GSC maps assign these rocks a Mid-Cretaceous age, weak foliation observed in them suggests that they may belong at least in part to the Late Triassic Klotassin granodiorites. The granodiorites are medium to coarse grained and commonly exhibit pink feldspar phenocrysts up to 2 cm long. Short, stubby hornblende crystals form up to 25% of the rock. Pegmatite and aplite dykes comprised of quartz, plagioclase and orthoclase, with minor biotite and hornblende, cut the granodiorites at high angles. The granodiorite normally exhibits a greenish tinge caused by weak pervasive saussuritization and chloritization but adjacent to vein faults alteration is often much more intense, as discussed later in the Alteration section. Contacts between the granodiorite and metamorphic rocks are rarely observed but in one trench at the southeast end of the Brown-McDade Zone, the gneisses have been partially assimilated and granitized.

The youngest rocks are volcanic flows, pyroclastics, feeder dykes and plugs belonging to the Mid-Cretaceous Mt. Nansen Group. Two suites are present, one is predominantly andesitic and the other dacitic to rhyolitic.

The andesitic rocks are widespread and include porphyritic flows and breccias plus related feeders. The unit is massive and resistant weathering, often forming caps on ridge tops. When fresh, the rock has a dark green colour and consists of 1 to 2 mm white feldspar phenocrysts in a medium-grained groundmass. The volcanic breccias (agglomerates?) consist predominantly of rounded volcanic fragments up to 10 cm across with rare

gneiss and granodiorite cobbles. Faults often form contacts between volcanics and other units and the largest concentration of volcanics (north of Webber Creek) appears to have been preserved in a down-dropped block bounded on the south and east by large faults. Drilling and trenching has intersected a number of fine-grained intrusions that appear to be feeders to the volcanics. These dykes range from 0.5 to 10 m in width and average about 2 m. They are dark green and grade from aphanitic to porphyritic. The groundmass is normally a microcrystalline mixture of quartz and feldspar while the phenocrysts are andesine plagioclase with lesser amphibole and pyroxene. Magnetite is more abundant in this unit than any other rock type on the property.

Dacitic to rhyolitic volcanics are limited to a small centre on the Dickson Group; but related porphyritic intrusions are scattered across the entire property. Although this unit is not volumetrically abundant, it is highly significant as it is closely associated with porphyry copper mineralization and some precious metal veins. The rocks are typically buff to tan coloured and consist of 1 to 3 mm quartz and feldspar phenocrysts in an aphanitic to fine-grained felsic groundmass. Biotite is the only mafic mineral present, occasionally forming up to 5% of the rocks as euhedral flakes. Minor finely disseminated pyrite is ubiquitous. The unit ranges from recessive to resistant weathering depending on its degree of alteration. Most porphyry intrusions form narrow dykes but there are three larger plugs on the property. In general, the dykes are feldspar porphyries while the plugs are quartz-feldspar porphyries.

The largest plug is approximately 3.5 m long by 1.5 km wide with its long axis trending northwesterly along the north side of Discovery Creek. This plug was explored as a porphyry copper deposit and exhibits classic hypogene porphyry alteration centred on two quartz-tourmaline breccia zones, the largest of which is 300 m in diameter (Dickinson, 1972). The second plug is approximately 500 m in diameter and forms a prominent dome between the headwaters of Pony and Webber Creeks while the third is a 150 m diameter body exposed in trenches on the Dickson Group.

Dykes belonging to this unit cut all other rock types on the property and range in width from 10 cm to 12 m, averaging about 1 to 2 m. Most are orientated either northwesterly or northeasterly. In general the northwest-trending dykes exhibit brecciation with montmorillonite or kaolinite alteration while the others are unbrecciated and relatively fresh. At the Brown-McDade Zone most porphyry dykes are aligned northwest, parallel to the main fault zone and are intimately associated with the precious metal-bearing veins. It is common for dykes to grade into vein faults along strike and/or downdip. Breccia fragments within the dykes are usually well rounded and consist principally of porphyry with occasional pieces of wallrock. Flow banding is sometimes seen and chilled margins are common. In many instances breccia zones up to 25 m wide are developed in wallrocks surrounding dykes that are less than 2 m across. The wallrock breccia fragments are typically angular but rarely rotated, and contacts with enclosing fractured wallrocks are gradational.

Alteration

Table 2 on the following page lists five hypogene alteration facies seen in the trenches and drill core. Each facies is defined by an index mineral or mineral assemblage. Contacts between facies are usually transitional and supergene overprinting tends to elevate hypogene alteration to a higher facies near surface. Intensity and depth of supergene alteration depends upon fracture density and rock type.

Propylitic alteration is the weakest facies and is defined by slight saussuritization of plagioclase, chloritization of hornblende and the presence of minor epidote. Fine pyrite often wholly or partially replaces mafic minerals and interstitial calcite is locally abundant.

Argillic (clay) alteration has been subdivided into montmorillonite and kaolinite facies. Montmorillonite facies is lower grade and is characterized by soft, greenish feldspars and mafic minerals that are altered to a medium or dark green mixture of chlorite, montmorillonite and calcite. Rocks belonging to kaolinite facies exhibit a uniform strongly bleached appearance due to total destruction of mafic minerals. Kaolinite is the principal clay mineral and calcite is absent. In the supergene zone, rocks exhibiting montmorillonite facies hypogene alteration normally prograde to kaolinite facies. Argillic alteration, usually montmorillonite facies, is common in feldspar porphyry dykes and in halos surrounding vein zones. At the Huestis and Webber Zones the alteration is relatively symetric about the veins, but at the Brown-McDade Zone it is confined to the hanging wall.

TABLE 2

HYPOGENE ALTERATION FACIES

ALTERATION FACIES	INDEX MINERALS			BLEACHING
	PLAGIOCLASE	ORTHOCLASE	BIOTITE-HORNBLENDE	
FRESH				NONE
PROPYLITIC	LIGHT GREENISH TINGE SLIGHTLY SOFT	FRESH	FRESH - CHLORITE	LIGHT GREENISH TINGE
ARGILLIC-MONTMORILLONITE	SOFT GREENISH GRAY MONTMORILLONITE	FRESH	FRESH - DARK GREEN (MIXTURE OF CHLORITE MONTMORILLONITE CALCITE)	DARK GREEN SPECKLED MAFICS IN PALE GREEN MATRIX
			COLORLESS MICA — LIGHTER COLOR INCREASING KAOLINITE	SPECKLED APPEARANCE DECREASING
ARGILLIC-KAOLINITE	SOFT, EARTHY, WHITE KAOLINITE	KAOLINITE	KAOLINITE — KAOLINITE	STRONG
PHYLLIC	QUARTZ-SERICITE			LIGHT GRAY SHEEN
	INCREASING QUARTZ			
SILICIC	QUARTZ FLOODED			

Phyllic alteration occurs when the original rock-forming minerals are totally altered to an extremely fine-grained mixture of quartz and sericite. The result is a light gray, aphanitic matrix surrounding residual quartz grains that are slightly enlarged by silica overgrowths. Where this alteration is pervasive, the rock mimics quartz porphyry dykes and where it is mottled, it takes on a pseudobrecciated appearance. Phyllic alteration is the dominant facies within a 7 to 30 m wide breccia zone developed immediately in the hanging wall of the Footwall Fault at the Brown-McDade Zone, and commonly forms 0.1 to 2 m wide halos that flank the veins at the Webber Zone.

Silicic facies is the most intense alteration and occurs when the rocks are almost wholly replaced by quartz. These lensy quartz zones (veins) are tabular bodies up to 1.5 m wide and carry the highest precious metal grades. Contacts with the surrounding phyllic facies rocks are often gradational and irregular.

MINERALIZATION

Three types of mineralization have been recognized on the Mt. Nansen property:

1) narrow precious metal veins (Huestis and Webber Zones);
2) complex precious metal zones (Brown-McDade & Rusk Zones); and,
3) disseminated and stockwork porphyry copper mineralization (Porphyry Zone).

Earlier workers (Campbell, 1965; Sawyer & Dickinson, 1976; Ranspot, 1983) have described the mineralization in some detail. The following summary incorporates results of the 1985 work and briefly describes the characteristics of each type of mineralization. More details on the Brown-McDade and Webber Zones are given later in the section on 1985 Trench and Drill Results.

Narrow precious metal veins occur along anastomosing, steeply-dipping, northwest-trending faults and are best developed within the metamorphic rocks. They range from a few centimetres to 5 m in width and consist of quartz- and sulphide-rich cores that are surrounded by narrow, intense phyllic and kaolinitic facies alteration envelopes. Wallrocks within 5 m of the veins are often bleached and exhibit weak montmorillonite alteration. Higher grade precious metal values (greater than 0.1 oz/ton Au and 10 oz/ton Ag) are confined to the quartz-, sericite- and kaolinite-rich zones and values drop off rapidly to less than 0.02 oz/ton Au and/or 0.5 oz/ton Ag in the surrounding wallrocks. Depth of weathering is variable with total oxidation (aside from occasional sulphides encapsulated in quartz) ranging from greater than 30 m in the Webber Zone to less than 15 m in the Huestis Zone. The weathering appears to be deepest on south-facing and shallowest on north-

facing slopes. Primary sulphides include, in approximate order of abundance: pyrite, arsenopyrite, galena, sphalerite, sulfosalts and stibnite. No detailed work has been done to establish mineralogy in weathered ores. Neither native gold nor silver has been observed megascopically in primary or weathered ores.

Complex precious metal zones include the Brown-McDade Main Zone and the lightly explored Rusk Zone on the recently optioned Dickson Group. This type of mineralization shares many characteristics with the narrow precious metal veins but also exhibits some features that suggest an affinity with the porphyry mineralization. Mineralization and alteration in these zones is more widely distributed than occurs on the narrow vein zones, and there is a spacial, and probably genetic, link with feldspar porphyry dykes. These zones range up to 150 m or more in width.

The Brown-McDade Main Zone is developed where a northwest-trending, moderate to steep west-dipping fault cuts granodiorite and schists. Several subsidiary faults are developed in the hanging wall of the main structure (Footwall Fault) and a series of narrow (10 cm to 5 m wide) porphyry dykes have intruded along the main and subsidiary structures. The result is a 400 m long, wedge-shaped zone that pinches to a few metres in width at the north end and exceeds 150 m at the south end. The zone appears to be truncated by a north-northeast trending cross fault at the south end and slightly offset by a similar structure to the north. Brecciation is common along faults and dykes and montmorillonite to kaolinite facies alteration is widespread. The highest assays (0.1 to 1.0 oz/ton Au with 1 to 5 oz/ton Ag) are obtained from quartz-, sericite- and kaolinite-rich zones which occur immediately in the hanging wall

of the Footwall Fault or along the subsidiary structures. These zones are surrounded by well developed lower grade halos (0.01 to 0.1 oz/ton Au and 0.1 to 1 oz/ton Ag). The Brown-McDade Main Zone contains less galena and sulfosalts and more arsenopyrite and pyrite than do the Huestis and Webber Zones and this is reflected in lower average silver-to-gold ratios (8:1 at the Brown-McDade compared to 20:1 at the other zones). Oxidation of the Brown-McDade Main Zone ranges from about 15 m deep at the north end to greater than 75 m deep at the south end.

The Rusk Zone covers a 200 by 100 m area and is partially exposed by shallow bulldozer trenches. It consists of a series of shear zones that cut brecciated felsic dykes and surrounding andesitic volcanics. The shear zones exhibit a variety of orientations and do not appear to control the mineralization. No high grade mineralization has been discovered to date and most samples assay in the range of 0.01 to 0.05 oz/ton Au and 0.2 to 1.5 oz/ton Ag. Although galena and sphalerite are seen in a few spots, the zone is generally oxidized.

The porphyry copper zone is probably related to the same hydrothermal cell as the veins, but represents a deeper and hotter part of the system. The mineralization is weak (average grade of less than 0.1% Cu) but extensive, covering an area approximately 3,000 by 1,500 m. The zone exhibits classic porphyry alteration zonation, with localized silicic and potassic cores surrounded by advanced argillic and phyllic halos giving way to weak argillic and propylitic margins. Primary mineralization consists of pyrite and chalcopyrite, which are usually oxidized to limonite within 30 m of surface. Precious metal sampling has not been conducted systematically throughout the zone but preliminary indications are that the values are low, averaging less than 0.1 oz/ton Ag and 0.005 oz/ton Au.

SOIL GEOCHEMISTRY

General

Approximately 6300 soil samples were collected from a grid that covered 80% of the property. The samples were taken from B or C horizon material at 50 m intervals on compass and topofil controlled lines spaced 100 m apart. The sample lines were run perpendicular to a series of six, northwest-trending surveyed baselines that are 1000 m apart and range from 5.4 to 7.4 km in length. Sample locations are marked by 0.5 m high wooden pickets each bearing an aluminum tag inscribed with the geochem grid coordinates and sample number. Baselines are marked at 50 m intervals by 1.0 m high wooden pickets bearing aluminum tags inscribed with the geochem grid coordinates. Figure P-3 in the pocket shows sample locations and baselines with both the geochem grid and the north-south, property grid coordinates.

All samples were sent to Chemex Labs in North Vancouver where they were dried, screened to -35 mesh, crushed and analyzed for gold using a fire assay preparation and neutron activation finish. The sample splits were later run for 30 other elements using nitric aqua regia digestion and ICP analysis.

Results

Figures P-4 to 8 in the pocket illustrate gold, silver, arsenic, lead and copper results, respectively. All five metals exhibit good contrast between background and anomalous values, as illustrated on Table 3 on the following page.

TABLE 3: BACKGROUND AND THRESHOLD VALUES

Metal	Background	Weakly Anomalous	Moderately Anomalous	Strongly Anomalous
Au	5	25	50	100
Ag	0.2	1	2	4
Pb	10	50	100	200
As	30	100	200	400
Cu	15	50	100	200

The anomalous thresholds were selected after the data was examined and compared to geochemical results obtained elsewhere in the Dawson Range in similar geomorphological and geological settings. In general, arsenic and gold backgrounds and thresholds are slightly higher than regional averages and copper values slightly lower, while the response for other metals are typical for the district. No rigorous statistical analysis was performed on the geochemical data but visual examination suggests a strong positive correlation between gold, arsenic, lead and silver in the southern three-quarters of the property, but only a weak correlation in the northern quarter. Copper is moderately correlatable with gold in the northern part (Porphyry Zone) but there is no obvious relationship in the south. There is no significant correlation between copper and the other three metals.

Anomalous values for gold, silver, arsenic and lead tend to cluster in approximately coincident north- to northwest-trending zones. The main anomalous trends are generalized on Figure P-4 and described on Table 4 on the following page. The strongest, most continuous, values lie within a broad arc that is underlain in part by the Webber and Huestis Zones. This anomaly

TABLE 4
SOIL GEOCHEMICAL ANOMALIES

Anomaly	Intensity	Length	Trend	Characteristic Metals	Comments	Au ppb	Ag ppm	Pb ppm	As ppm
A	Moderate	2.2 km	340	Au-Pb-As	Southern portion partially covers Brown-McDade Zone, consists of two parallel clusters; the western one is well defined while the eastern one has the highest values.	6750* 527**	114.0* 2.8**	5080* 306**	3430* 430**
						*All high values came from a sample probably contaminated by ore dump. **Next highest values.			
B	Moderate to strong	2.5 km	318	Au-As	Northern portion has maximum Au-As.	247	2.6	---	1150
C	Strong	3.0 km	310	Au-As (Pb-Ag)	Ag values high but anomalies are discontinuous over the length of the trend.	1050	4.0	1090	4010
D	Moderate to weak	1.4 km	322	Au-As	Anomaly D is comprised of four discrete parallel anomalies D,D1,D2,D3.				
D	Moderate	1.0 km	322	Au-As		95	---	160	380
D1	Weak	600 m	322	Au-As		49	1.2	160	490
D2	Weak	600 m	322	Au-As		162	2.4	96	900
D3	Moderate	400 m	348	Au-As		579	1.6	86	500
E	Moderate	1.6 km	310	Pb (Au-Ag-As)	Defined mainly by low gold values in north and south; defined by Pb values in the centre.	179	2.8	278	460
F	Moderate	1.0 km	330	Au-As-Ag (Pb)	Pb in southern extremity only.	122	2.8	228	670
G	Strong	1.3 km	322	Au-Ag-As-Pb	Consists of 4 parallel zones.	1520	12.6	550	630
H	Weak	500 m	327	Ag-Au		66	4.4	76	180
I	Strong	2.6 km	322	Au-Ag-Pb-As	Consists of a string of anomalies plus two more which branch off and one other which is subparallel.	3840	7.0	804	1880
J	Moderate	3.2 km	310	Au-Ag-Pb-As	Anomaly is best defined by Ag on southern portion, Au-As in central portion, and Pb in southern and northern portions.	7130	10.8	1046	930
K	Weak to Moderate	2.7 km	355 - 315	Pb-Ag (Au)	Main anomaly trends 355 while a moderately split trends 315 .	89	7.2	438	---
L	Moderate	700 m	345	As-Pb-Ag-Au	A series of 3 subparallel clusters.	969	5.6	160	260
M	Weak	1.6 m	305	Pb-As (Au)	A number of small Pb+As $\pm$ Au $\pm$ Ag clusters are obviously grouped together.	146	2.6	674	580
N	Moderate	600 m	355	Au		418	---	---	---

(Anomaly "I") extends for a distance of 2600 m before it is truncated to the north by a suspected fault running up Webber Creek and is lost under frozen overburden 800 m south of the Huestis workings. The Brown-McDade Zone (Anomaly "A") also shows up well but is not as intense or continuous because of the lack of samples from the badly disturbed soil in the main trenching area and the poor sampling conditions in heavily vegetated and frozen terrain encountered both to the north and south of the main workings. Most of the other geochemical anomalies are not associated with known mineralization and have not been explored by drilling or trenching.

The following are a few general observations concerning geochemical results and their interpretation.

(1) Several anomalous trends truncate against known or suspected faults but at present the geology is too poorly understood to reliably determine offsets.

(2) Many areas, especially those which are low lying or north facing, exhibit little or sporadic geochemical response which may be due to poor sampling caused by thick organic layers, bad frost conditions, or a blanket of glaciofluvial outwash. Thus, poor geochemical response need not necessarily preclude exploration potential.

(3) Sampling elsewhere in the Dawson Range has shown that soil taken from frost heaves is sometimes strongly enriched in metals relative to surrounding soils and underlying bedrock, suggesting that some single point anomalies may be spurious even though they are intense.

(4) The cluster of high values on Dome Creek near the mill building was examined and is due to contamination.

(5) Isolated high values obtained directly adjacent to Pony and Dome Creeks are probably due to contamination from the dumps and tailing ponds.

(6) There does not appear to be a direct association between particular rock types and general geochemical response, except northwest-trending feldspar porphyry dykes (most of which are too small to show on property scale geology maps) often produce anomalous results and the large block of volcanic rocks north of Webber Creek exhibit relatively few anomalous values. The association between porphyry dykes and vein faults was previously discussed, while geological and mineralogical evidence suggests that the volcanics are in a down-dropped block that was too high in the section to be well mineralized.

GEOPHYSICS

General

Approximately 48 kilometres of EM-16 surveys were performed over the Brown-McDade Main Zone and along its projected extensions under supervision of geophysicist S. Presunka. Readings were routinely taken for both the Seattle and Hawaii stations at 15 m intervals along lines spaced 100 m apart, with additional fill-in lines where detail was required. Results were Fraser-filtered to minimize background noise.

Results

Figure P-9 in the pocket shows contoured, Fraser-filtered results. The Brown-McDade Main Zone responds well to EM-16 and is clearly recognizable as a north to north-northwest trending anomaly. South of the zone, the contours curve toward the west, then return to the normal trend before dying out. This southerly extension is untested by drilling or trenching. To the north, the anomaly splits. Both branches were partially tested by trenches and weak to moderate mineralized faults were exposed below the conductors.

A second strong anomaly lies approximately 300 m west of the Brown-McDade anomaly and trends subparallel to it before intersecting the west branch of the Brown-McDade anomaly 1200 m north of the main workings. Two excavator trenches cut this anomaly and intersected a weakly mineralized fault zone.

A third weak, subparallel anomaly some 150 m further west was traced for a length of 300 m and coincides with a narrow mineralized quartz vein referred to by earlier workers as the Brown-McDade II Zone.

TRENCHING AND DRILLING

General

The location of 1985 trenches and drill holes is illustrated on Figure P-2, while details on work done in the Brown-McDade and Webber Zones is shown on Figures BM-1 and W-1, in the pocket.

Forty-seven trenches totalling 7,582 m were cut to bedrock, including 15 (1,935 m) in the Brown-McDade Main Zone, 7 (1,782 m) along its northerly extension, 19 (2,727 m) in the Webber Zone, and 6 (1,138) on scattered geochemical anomalies. Most trenches were dug into the floors of pre-1985 bulldozer trenches that had collapsed or not reached bedrock. Several additional trenches were started but not completed due to strongly frozen soil. With the vegetation removed, the frost will melt and it should be possible to complete these trenches during future programs. The trenching was contracted to Ibex Contracting Ltd. of Whitehorse. Work was begun with a Caterpillar 225 excavator which was later replaced with a slightly larger Insley H1500 excavator. A ripper-equipped Caterpillar D-7E bulldozer was used for a few days late in the season to strip overburden from proposed trench sites.

All drilling was done on either the Brown-McDade or Webber Zones. The Brown-McDade drilling was done with angle holes at approximately 50 m centres on lines spaced 100 m apart and consisted of 17 percussion holes totalling 1283.5 m and 6 diamond drill holes totalling 637.9 m. The Webber Zone was tested by 7 angle diamond drill holes totalling 311.5 m. Drilling was contracted to E. Caron Diamond Drilling of Whitehorse and was done with a truck-mounted Schramm rotary percussion drill using reverse circulation rods, and a wire-line equipped, skid mounted Longyear 38 diamond drill. Recovery

was generally good in spite of the intense alteration and high fracture density often encountered in the rock. A Caterpillar D-6 bulldozer was provided by the contractor for road and drill site preparation and drill moves.

Sampling and Analytical Techniques

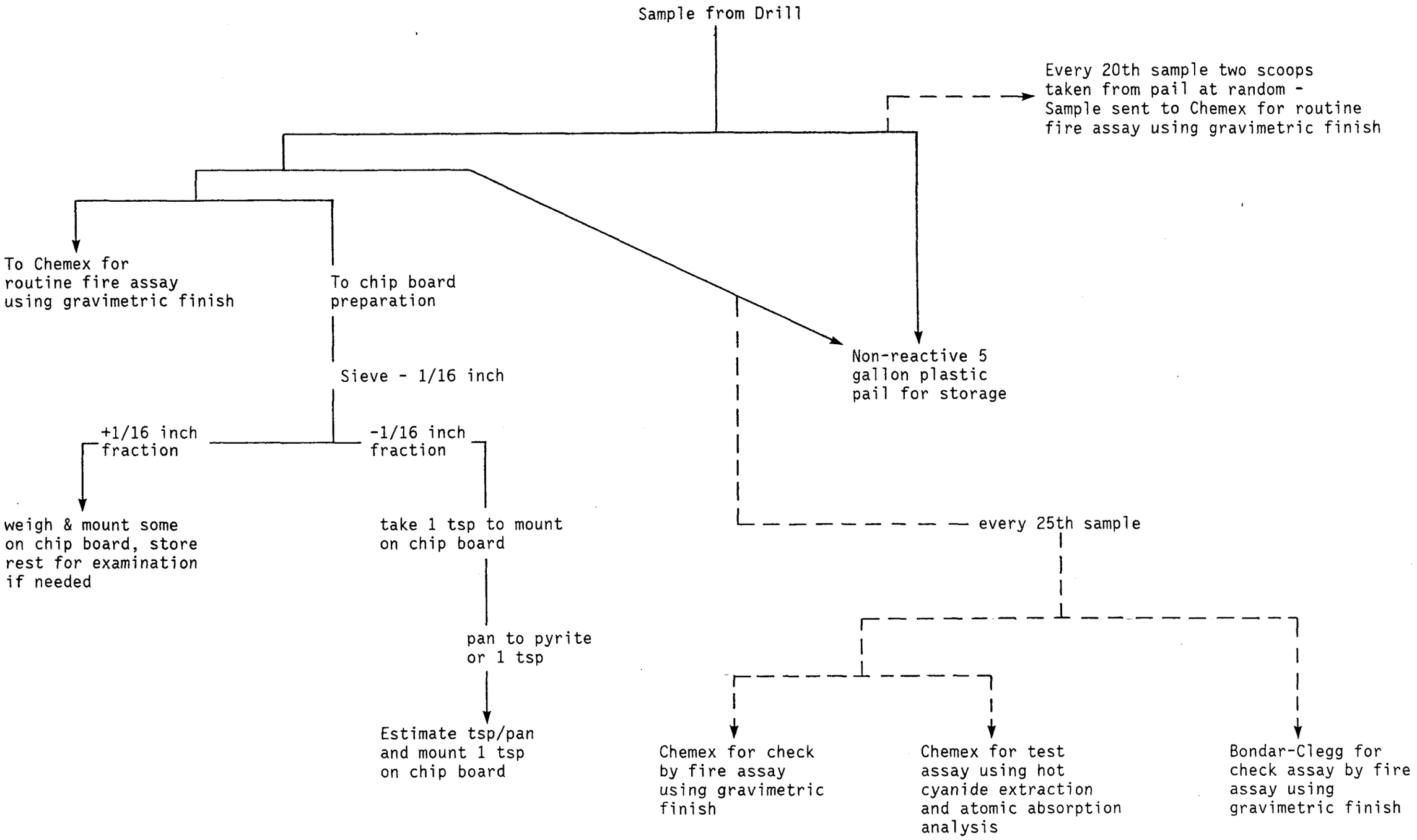
The entire length of each trench was sampled along a rib approximately 30 cm above the trench floor. Sample intervals normally ranged from 1 to 3 m in areas of suspected mineralization and 5 to 10 m elsewhere. About 5 kg was taken regardless of the interval length and care was exercised to ensure that the sample was collected uniformly across each interval.

Percussion drill cuttings were taken over 152 cm (5 foot) intervals and collected in plastic bags beneath a cyclone attached to the drill. The samples which averaged 20 to 30 kg were taken to a preparation laboratory on the property where they were split using Jones Splitters. Normally 1/8 of the sample was sent to the assay lab for standard analysis, 1/8 used for preparation of chip boards for logging purposes and the remaining 3/4 stored in non-reactive plastic pails for possible metallurgical testing. Routine check sampling was also performed and for these samples the splitting technique was modified, as shown on Table 5 on the following page.

All diamond drill core was split, with one-half submitted for assay and the other retained for logging.

Trench and drill samples were routinely sent to Chemex Labs with check rotary drill samples going to Bondar-Clegg Co. Ltd., both located in North Vancouver, B.C. Samples suspected of containing mineralization were dried and prepared for assay by primary and secondary jaw crushing, tertiary cone

TABLE 5: ROTARY CHIP PROCESSING PROCEDURES



crushing and ring pulverizing to -100 mesh. A one assay-ton split was then fire assayed for gold and silver using a gravimetric finish. The other samples were crushed, subsampled, ring pulverized to -100 mesh and geochemically analyzed for gold using a 10 gram fire assay preparation and neutron activation finish. Samples that produced high gold values from geochemical analysis were later fire assayed and, with a few exceptions, results were nearly identical.

One-quarter of every twentieth percussion sample was used for check assaying, with 1/16 sent to Chemex for routine analysis and another 1/16 sent to Bondar-Clegg for analysis by the same technique. The remaining 1/8 was sent to Chemex for a hot cyanide extraction geochemical assay method. Check assaying showed excellent reproducibility for gold and silver from duplicate samples submitted to Chemex and between Chemex and Bondar-Clegg results. Hot cyanide gold recoveries were consistently lower than fire assay results but there was not sufficient data to determine if there is a linear relationship.

Brown-McDade Results

Trenching shows the Brown-McDade Main Zone to be an area of strongly sheared and brecciated, intensely quartz, sericite and kaolinite altered rock in the hanging wall of a major shear called the Footwall Fault which strikes approximately 160° and dips 65°W. The fault is exposed for a length of 450 m before being offset by north-northeast trending cross faults at each end. It is sinosoidal in both horizontal and vertical dimensions and the alteration zone pinches and swells, ranging from 7 to 30 m in width. Rocks within the zone are a mixture of granodiorite and feldspar porphyry. The hanging wall of the Main Zone is marked by a relatively massive, manganese-stained feldspar

porphyry dyke, while the footwall consists of massive, unaltered granodiorite. A series of subparallel subsidiary faults and dykes diverge from the main structure and strike southerly into the hanging wall. These splits are narrower than the Main Zone, averaging about 3 m in width. They were traced for a distance of 350 m and are still open to the south.

Figure BM-2 in the pocket shows all assay results obtained from samples taken from the trenches in the Brown-McDade Zone, while Figure BM-1 and Table 6 summarize the significant intervals. Assays from the Main Zone range from 0.032 oz/ton Au and 0.81 oz/ton Ag across a true width of 2.7 m to 0.168 oz/ton Au and 1.84 oz/ton Ag across a true width of 22.0 m. The hanging wall splits returned assays up to 0.109 oz/ton Au and 1.03 oz/ton Ag across 7.2 m.

Wide spaced drill holes which tested the main zone downdip were able to trace the mineralization, but suggest that it is generally pinching and weakening with depth, as illustrated on Figure BM-3, a vertical longitudinal section included in the pocket, and Figures BM-4 to 12, a series of cross sections through the zone that are also in the pocket. Significant drill intersections are listed on Table 7, which follows Table 6, while complete assays are shown on the drill logs in Appendix 5. The best intersection came from Hole PDH85-4 which returned 0.247 oz/ton Au and 2.10 oz/ton Ag across a true width of 32.0 m. The depth of total oxidation is less than 25 m at the north end of the zone but progressively deepens toward the south where it exceeds 75 m. Current trench and drill data is too wide spaced to permit reserve calculations with any certainty.

TABLE 6: BROWN-McDADE ZONE TRENCH RESULTS*

Trench	From (m)	To (m)	True Width (m)	Au oz/ton	Ag oz/ton
BM85-2	36.5W	48W	10.5	0.334	1.92
BM85-3	20.5W	40W	17.9	0.120	0.95
&	63W	72W	7.2	0.109	1.03
BM85-4	24W	48W	22.0	0.168	1.84
&	74W	81W	5.2	0.045	0.49
&	97W	101W	3.2	0.066	0.31
BM85-5	20W	40W	16.5	0.148	0.91
&	109.5W	113.5W	3.2	0.040	0.72
BM85-6	43W	46.5W	3.2	0.072	2.02
BM85-8	41.5W	43W	1.4	1.178	3.40
BM85-9	25W	31W	5.5	2.107	2.31
&	48W	52W	3.2	0.048	0.10
BM85-10	21.5W	24.5W	2.7	0.106	0.82
BM85-11	10W	13W	2.7	0.070	0.47
&	212W	216W	3.2	0.040	0.74
&	257W	263W	4.8	0.056	0.18
BM85-13	9E	13E	3.2	0.042	0.23
&	15W	19W	3.2	0.067	0.41
BM85-14	6W	10W	3.2	0.089	0.47
&	12.5W	14.5W	1.6	0.043	0.28
BM85-16	73.5W	79W	4.4	0.067	0.52
BMX85-1	420W	424W	4.0	0.059	1.51
BMX85-3	176E	180E	4.0	0.061	0.23
BMX85-5	100E	101E	1.0	0.065	2.01
BMX85-6	140E	142E	2.0	0.046	1.09

*Intervals containing greater than 0.04 oz/ton Au over at least 1.0 m width.

TABLE 7: BROWN-McDADE DRILL RESULTS

Hole	From (m)	To (m)	True Width (m)	Au oz/ton	Ag oz/ton
PDH85-1	50.3	54.9	3.7	0.087	1.04
	62.5	68.6	4.9	0.243	0.96
	73.2	77.7	3.7	0.078	0.45
PDH85-1A	54.9	59.4	3.7	0.053	0.35
	65.5	70.1	3.7	0.120	0.42
DHD85-2A	116.4	119.5	2.4	0.165	0.68
PDH85-3	18.3	24.4	4.9	0.276	2.28
PDH85-4	0	9.1	7.3	0.155	2.23
	13.7	38.1	19.6	0.343	2.42
PDH85-5	12.2	18.3	4.9	0.095	1.27
	50.3	56.4	4.9	0.143	0.63
PDH85-6	9.1	12.2	2.5	0.045	0.19
	18.3	29.0	8.6	0.101	1.03
PDH85-7	54.9	64.0	7.3	0.103	0.81
PDH85-8	19.8	25.9	4.9	0.089	0.96
PDH85-9	67.1	70.1	2.4	0.084	2.19
	73.2	77.7	3.7	0.118	1.06
PDH85-10	10.7	13.7	2.4	0.171	1.64
PDH85-11	36.6	38.1	1.2	0.082	0.20
	48.8	50.3	1.2	0.054	0.77
	61.0	64.0	2.4	0.076	0.51
PDH85-11A	39.6	41.1	1.2	0.040	0.36
	42.7	44.2	1.2	0.077	0.26
PDH85-12	86.9	88.4	1.2	0.340	2.42
	112.8	114.3	1.2	0.158	0.35
DDH85-12B	76.5	82.1	5.6	0.066	0.46
	98.1	101.5	2.7	0.116	0.76
PDH85-13	79.2	83.8	3.7	0.114	0.23
DDH85-17	13.1	14.0	0.7	0.048	1.93
	32.5	34.4	2.4	0.053	0.85
DDH85-18	81.2	82.8	1.2	0.043	0.48

Attempts to trace the Brown-McDade Zone to the north were frustrating as the zone projects into a boggy creek bed flanked by well vegetated frozen hillsides. Initially, the strike of the zone was thought to swing further west, coinciding with the creek bed. Three diamond drill holes (DDH85-16 to 18) which tested this idea all intersected veins but results were disappointing, with the best assay returning 0.053 oz/ton Au and 0.85 oz/ton Ag across 2.4 m in Hole DDH85-17. Subsequent interpretation of geochemical, geophysical and trench data suggests that these holes were drilled on a hanging wall split and that the main zone persists with a more northerly strike. Only one trench (BMX85-3) cut this projected trend and it returned an assay of 0.061 oz/ton Au and 0.23 oz/ton Ag across 4.0 m at a point some 1200 m north of the main Brown-McDade workings. The other five trenches in the Brown-McDade extension area were widely scattered and all tested targets in the hanging wall. A few narrow intersections exceeding 0.03 oz/ton Au were obtained, including 0.059 oz/ton Au and 1.51 oz/ton Ag across 4.0 m in Trench BMX85-1 and 0.046 oz/ton Au and 1.09 oz/ton Ag across 2.0 m in Trench BMX85-6 .

Webber Zone Results

Trench results from the Webber Zone are listed on Table 8 on the following page and show that mineralization is erratically distributed but often high grade. The best values are confined to a series of narrow subparallel veins, as shown on Figure W-1. The main Webber vein has now been traced southeast from the portal for a distance of 700 m. Samples taken from trenches across it returned assays up to 0.566 oz/ton Au and 21.36 oz/ton Ag across 2.0 m. Other veins in the area received only preliminary exploration and most were exposed in only one or two trenches. Six of the outlying structures returned assays greater than 0.060 oz/ton Au, with the best being

TABLE 8: WEBBER ZONE TRENCH RESULTS*

Trench	From (m)	To (m)	Width (m)	Au oz/ton	Ag oz/ton
W85-1	320.5W	324.5W	4.0	0.224	1.64
&	517.3W	520W	2.7	0.084	7.18
&	647W	649W	2.0	0.052	0.21
W85-4	26W	29.5W	3.5	0.043	0.41
&	33.5W	35W	1.5	0.069	1.70
W85-5	21.5W	25.5W	4.0	0.040	1.66
W85-6	146W	148W	2.0	0.062	0.38
W85-7	201E	204.5E	3.5	0.048	1.25
&	292E	293.5E	1.5	0.132	10.90
&	323.5E	325.5E	2.0	0.330	8.17
W85-8	79W	81W	2.0	0.057	1.75
W85-9	33W	34W	1.0	0.200	12.70
W85-10	16W	17W	1.0	0.040	0.06
W85-11	6W	7W	1.0	0.452	28.30
&	263.5W	264.8W	1.3	0.402	8.46
W85-12	71W	72W	1.0	0.058	0.42
W85-13	53W	54W	1.0	0.046	0.26
&	85.5W	86.5W	1.0	0.120	0.41
&	95W	96W	1.0	0.042	0.94
W85-14	25.5W	26.5W	1.0	0.244	6.85
&	55W	60W	5.0	0.048	18.10
&	65W	72W	7.0	0.111	1.37
W85-15	19W	20W	1.0	0.099	1.41
&	47W	48W	1.0	0.050	5.07
&	51.5W	53W	1.5	0.160	4.20
&	59W	61W	2.0	0.141	0.06
&	100W	102W	2.0	0.566	21.36
W85-16	35W	40W	5.0	0.069	0.13
W85-18	26E	27.5E	1.5	0.142	6.10

*Intervals containing greater than 0.04 oz/ton over at least 1.0 m width.

0.224 oz/ton Au and 1.64 oz/ton Ag across 4 m in Trench W85-1, some 200 m southwest of the Webber vein. Unfortunately none of the veins in this area exhibit a broad halo of lower grade values; thus, tonnage potential is limited.

Drilling in the Webber Zone was restricted to seven short holes drilled above the underground workings, as shown on Figure W-1, to confirm existing reserves, explore for possible extensions, and obtain material for metallurgical tests. Cross sections are illustrated on Figures W-2 to 6 and a longitudinal section is shown on Figure W-7, all in the pocket. The results, which are summarized on Table 9 on the following page, generally confirm the earlier work. Two holes (DDH85-19 and -21) intersected well mineralized quartz veins where expected while the other four cut weak mineralization. One hole (DDH85-24) was abandoned short of its target depth and did not test the structure. The best assay obtained was 0.292 oz/ton Au and 24.20 oz/ton Ag across 1.1 m from Hole DDH85-19. None of the outlying veins were drilled in 1985.

Other Targets

Six trenches cut on previously untested geochemical anomalies all exposed one or more veins but only one assay exceeded 0.03 oz/ton Au. The work was designed to explore for broad open pittable targets and sampling was done in reconnaissance style using 5 to 10 m sample intervals. More detailed sampling will have to be done in future programs to more accurately determine the grade of the veins. The best assay, which was obtained from Trench X85-2, 400 m south of the mill, returned 0.086 oz/ton Au and 0.07 oz/ton Ag across 2.0 m. This structure may be an extension of a largely untested vein reportedly exposed during construction of the mill (Mill Vein). Previous sampling on this vein in 1967 returned assays up to 0.710 oz/ton Au and 6.00 oz/ton Ag across 1.2 m.

TABLE 9: WEBBER ZONE DRILL RESULTS

Hole	From (m)	To (m)	Width (m)	Au oz/ton	Ag oz/ton
DDH85-19	10.4	11.1	0.7	0.060	0.17
	35.5	36.6	1.1	0.292	24.20
DDH85-21	36.4	37.3	0.9	0.288	38.40
DDH85-22	25.6	26.5	0.9	0.104	0.62
DDH85-25	51.8	52.7	0.9	0.042	0.44

DUMPS AND TAILINGS PONDS SAMPLING AND SURVEYING

General

Four dumps (located below the Brown-McDade, Upper Webber, and Upper and Lower Huestis portals) and two tailings ponds were surveyed and reconnaissance sampled in order to estimate potential tonnage and grade of material in each. Before collecting the dump samples, a continuous 20 to 30 cm deep groove was dug approximately midway up the steep slope at the leading edge of each dump. Channel samples were then taken along the bottom of the grooves. The samples were collected over 10 m intervals and each weighed about 7 kg. The tailings pond samples consisted of sludge taken from 10 cm diameter holes that were augered 1 m vertically into the semi-solidified ponds. All samples were sent to Chemex Labs where they were fire assayed for gold and silver after receiving the same preparation used for trench samples.

Results

Figures BM-13, W-8, H-1, H-2 and TP-1 in the pocket illustrate the survey and assay results while Table 10 on the following page shows the range of assays obtained and the approximate average grade and estimated tonnage for each dump and the tailings ponds.

Material on the surface of the Brown-McDade dump is relatively homogeneous but the others exhibit a wider range of values that can generally be separated into low grade (waste dump) and high grade (ore dump) sections. The grade of the six tailings pond samples is relatively consistent. It should be remembered that the estimated tonnages and grades shown on Table 10 are approximations based solely on surficial information, and that much of the material is relatively unoxidized and does not respond well to cyanidation (see Appendix III).

TABLE 10: ESTIMATED GRADES AND TONNAGES FOR DUMPS AND TAILINGS PONDS

	Max. Values oz/ton Au	Ag	Min. Values oz/ton Au	Ag	Avg. Values oz/ton Au	Ag	Approx. Tons
Brown-McDade	0.224	3.82	0.04	0.36	0.142	1.71	4,276
Upper Webber	0.790	21.7	0.015	0.64	0.143	7.30	20,793
Upper Huestis	0.272	9.33	0.010	0.22	0.086	2.14	19,665
Lower Huestis	0.440	7.88	0.010	0.29	0.143	2.80	7,490
Tailings Ponds	0.316	3.62	0.186	1.78	0.218	2.22	20,000*

*estimated from mill records.

UNDERGROUND SAMPLING

Figures BM-14 and 15 in the pocket show results of sampling in the main Brown-McDade crosscut and a shorter crosscut 37 m to the south. This was done to permit comparison with nearby drill results and to obtain material for metallurgical testing. In the main crosscut two sets of chip channel samples were taken from the backs, one on either side of the crosscut, while at the other location they were taken from the south rib. The samples weighed about 5 kg each and were generally taken over 2 m intervals. They were sent to Chemex Labs where they were fire assayed for gold and silver after receiving the same preparation used for trench samples.

Results are similar from both crosscuts with the highest assays occurring in two subparallel bands, one immediately along the Footwall Fault and the other 4 to 10 m farther into the hanging wall. Rocks in the footwall zone consist of clay and mica gouge with little quartz while the hanging wall zone tends to be highly siliceous. Grades in the footwall zone are highly variable ranging from 0.066 to 0.718 oz/ton Au and exhibit little correlation between gold and silver. Hanging wall grades are more consistent, ranging from 0.076 to 0.560 oz/ton Au, with most values between 0.118 and 0.320 oz/ton Au and show a fairly consistent gold to silver ratio of about 1:8. Rocks surrounding the two zones are less intensely altered and generally contain 0.010 to 0.030 oz/ton Au and 0.10 to 0.25 oz/ton Ag. Most rocks are partially oxidized but there is a 1 m thick lens of relatively fresh massive sulphides in the hanging wall zone of the southern crosscut. In general, the geology and assays compare well with drill results, as shown on Figure BM-8.

METALLURGY

Selected samples from trenches, drill cuttings and core, underground workings, dumps and tailing ponds were submitted to Hazen Research (International) Inc. or Lakefield Research for metallurgical tests. Results of this work are given in Appendices II and III and summarized below.

Unoxidized ores on the Mt. Nansen property are refractory and the concentrates are difficult to market because of a high arsenic and antimony content. Simple gravity and flotation gives acceptable silver recovery in the range of 80 to 90% but only about 60% recovery of the gold (mill records and Ranspot, 1983). Gold recovery can be increased slightly by grinding finer but the high silica content of the ores results in an unacceptably slow throughput. Cyanidation is ineffective as the gold is apparently finely encapsulated in the sulphides.

Tests conducted by Hazen and Lakefield in 1985 confirm the difficulty in treating sulphide ore but indicates recoveries from oxidized ore using conventional grinding and cyanidation will be over 98% for gold and about 40% silver with cyanide consumption of less than 1 pound per ton. Column leach tests of 1/2 inch oxidized material returned about 90% gold recovery and 30% silver recovery in 21 days, with a similar low cyanide consumption.

CONCLUSIONS

The 1985 exploration program at the Mt. Nansen property successfully demonstrated that excellent geological potential exists for open pittable, cyanide-extractable gold mineralization within the zone of surface weathering and oxidation. The greatest promise lies within and along strike from the Brown-McDade Main Zone but there is also potential for smaller tonnages of higher grade oxide ore in and adjacent to the Webber Zone. No attempt was made in 1985 to evaluate or develop sulphide ore reserves.

Soil geochemistry, VLF-EM surveys and reconnaissance excavator trenching have proven effective in locating and evaluating previously untested targets elsewhere on the property.

Although results obtained to date are insufficient for reliable reserve calculations, they have clearly expanded upon the property's published reserves. Moreover, recognition of substantial oxide reserves, which give better gold recovery than the sulphide ores using conventional extraction techniques have significantly enhanced its commercial potential.

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PORPHYRY ZONE

TBR 85-2

TBR 85-1

X85-4

X85-3

BMX85-4

BMX85-6

BMX85-5

BMX85-3

BMX85-1

BMX85-2

WEBBER ZONE

BROWN-McDADE MAIN ZONE

HUESTIS ZONE

X85-2

25+000N

24+000N

23+000N

22+000N

21+000N

20+000N

19+000N

18+000N

17+000N

14+000E

15+000E

16+000E

17+000E

18+000E

19+000E

20+000E

21+000E

22+000E

23+000E

A B C D E F G H I J K L M N O P Q R S T U V

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

NW NE SW SE

N

Road
1985 trenches
Buildings
Portal
Underground workings
Placer workings
1985 Percussion drill hole
1985 Diamond drill hole

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WORKINGS

FIGURE No. P-1		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:10000
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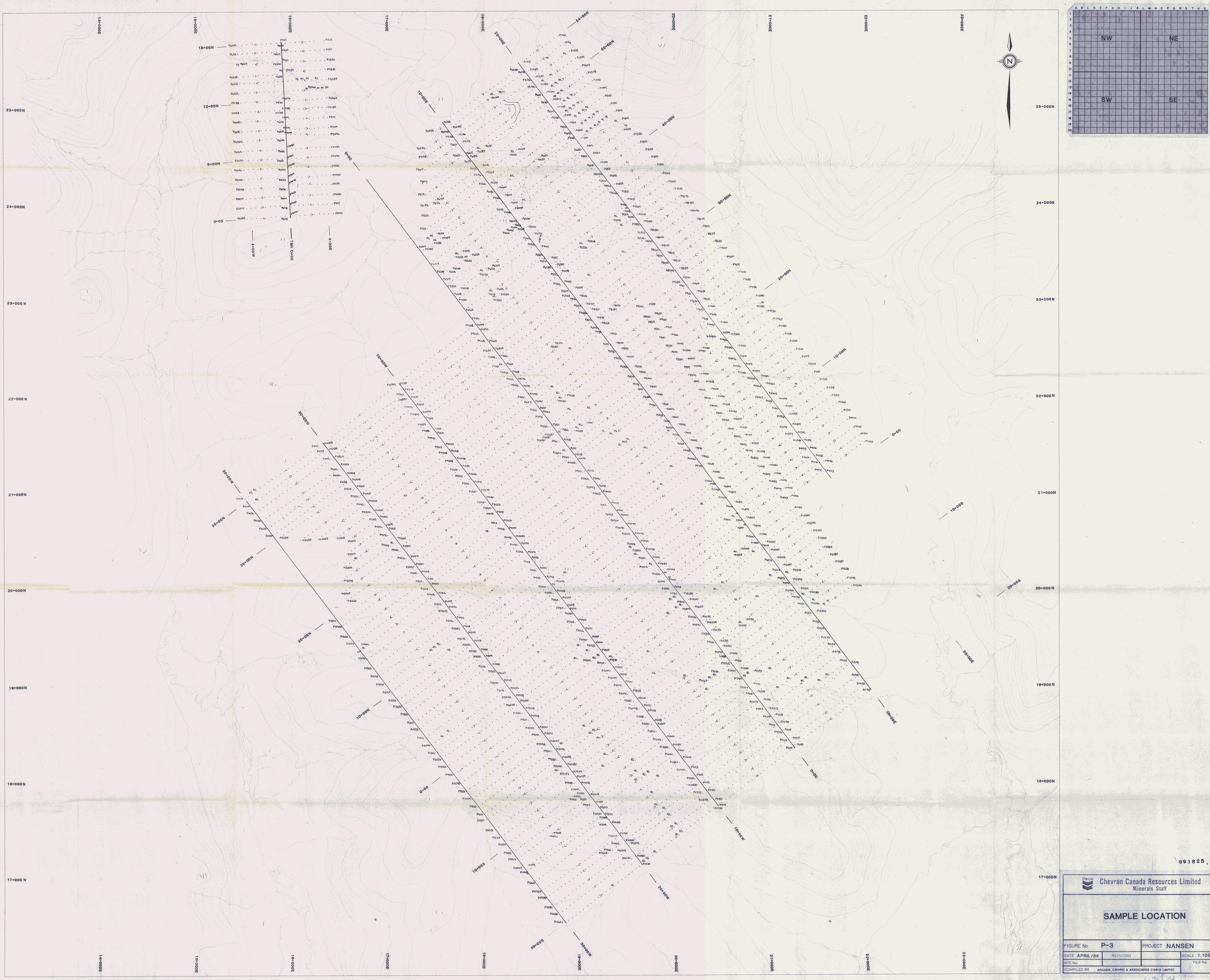
COMPILED BY: ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

1347

WB Scott M-7 21/86



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SAMPLE LOCATION

FIGURE No P-3		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:10000
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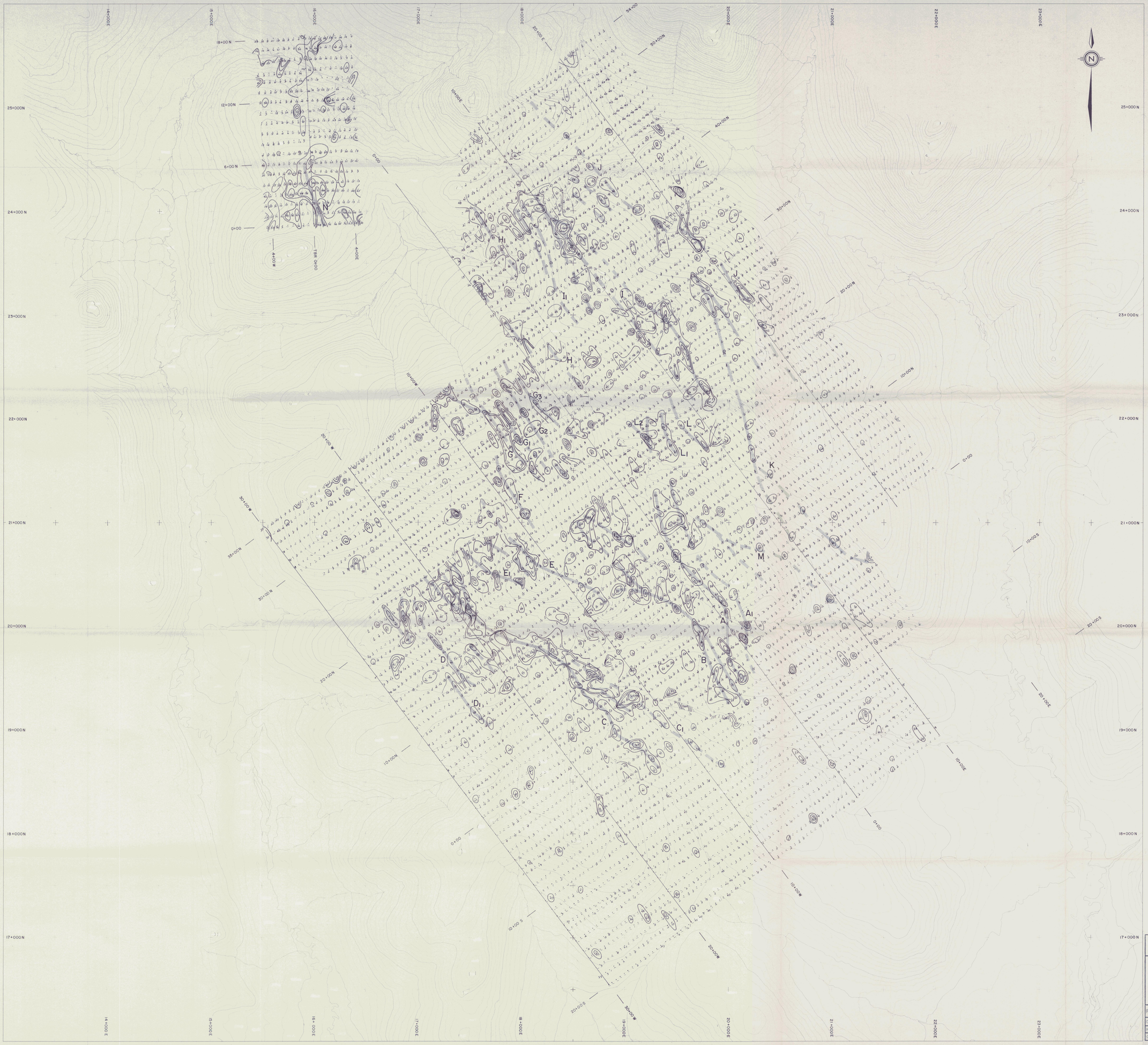

* Soil sample location with gold value in ppb

- ≥ 25 < 50
- ≥ 50 < 100
- ≥ 100

M Geochemical trends

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GOLD GEOCHEMISTRY

FIGURE No. P-4		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:10000
NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

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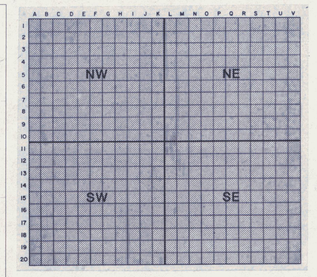
W.O.S. ch May 21/86



·04 Soil sample location with silver value in ppm

- ≥ 1 < 2
- ≥ 2 < 4
- ≥ 4

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SILVER GEOCHEMISTRY

FIGURE No. P-5		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:10000
NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

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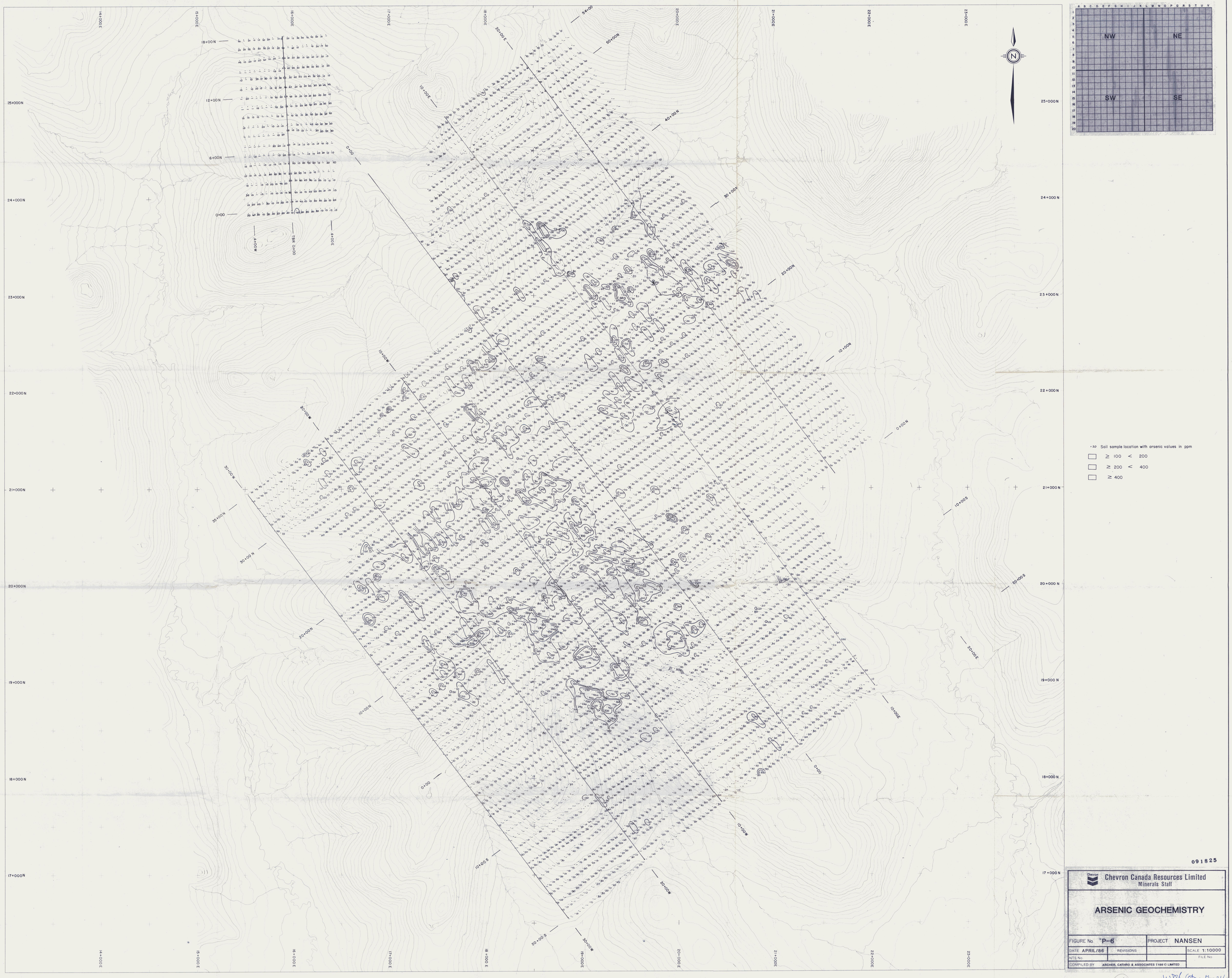

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ARSENIC GEOCHEMISTRY

FIGURE No. P-6		PROJECT NANSEN	
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NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

B51

W.R.A. May 21/86

· 23 Soil sample location with lead value in ppm

- ☐ ≥ 50 < 100
- ☐ ≥ 100 < 200
- ☐ ≥ 200

091825

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LEAD GEOCHEMISTRY

FIGURE No. P-7		PROJECT NANSEN	
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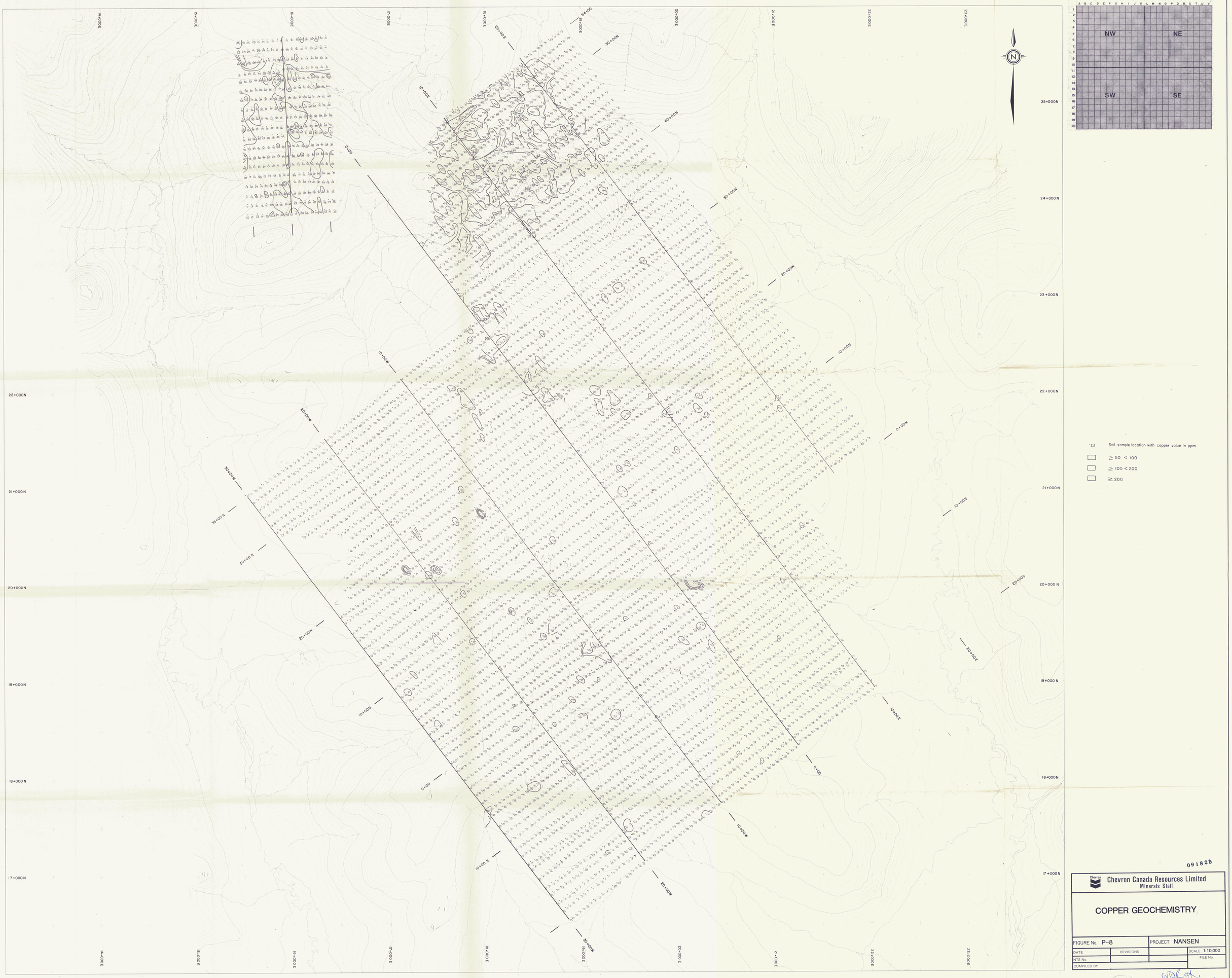
(1350) May 21/86



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COPPER GEOCHEMISTRY

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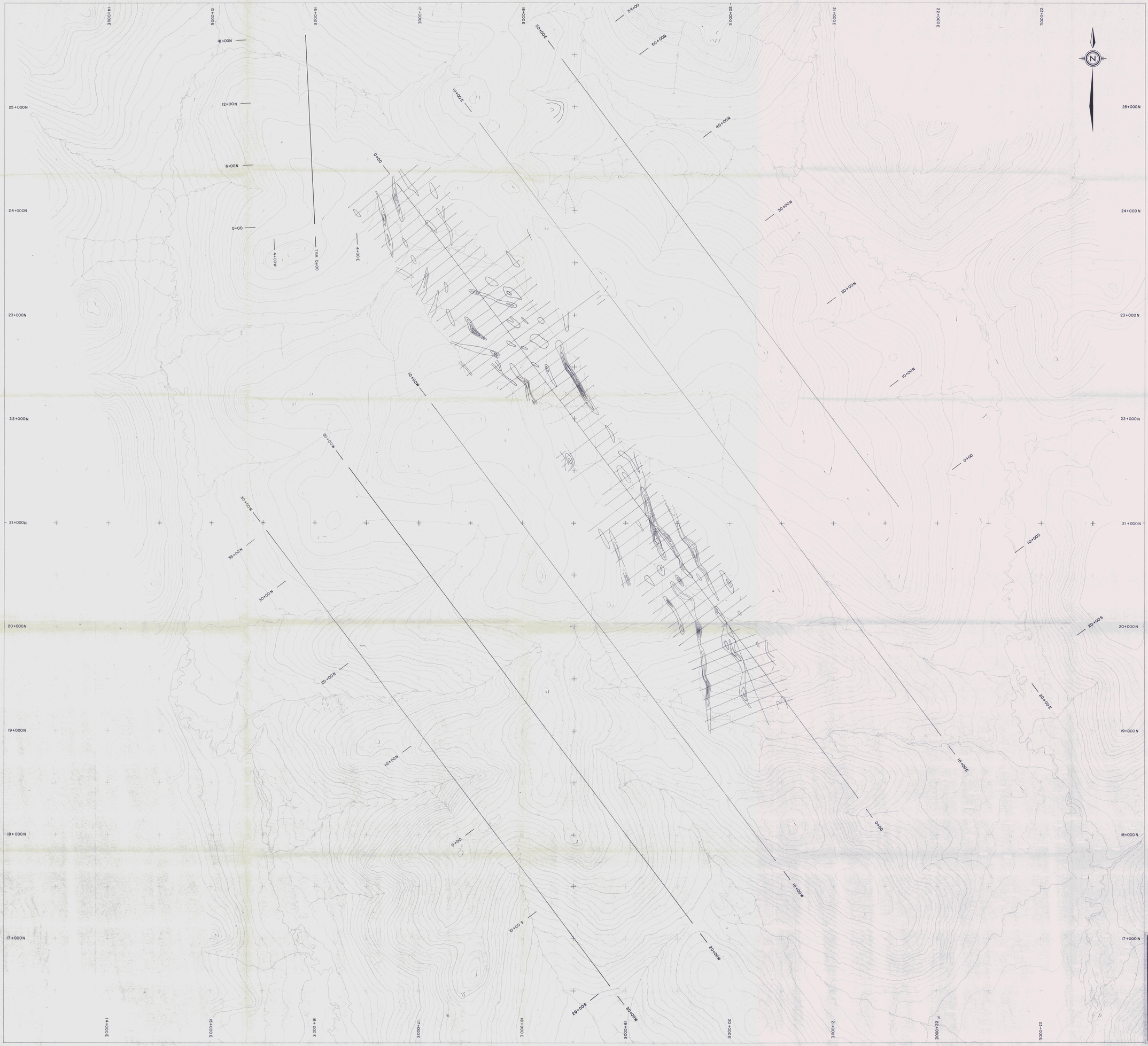
1352

May 21/86



Fraser-filtered EM-16 data contoured at 10 degree intervals (positive numbers only)

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FRASER FILTERED EM-16 RESULTS

FIGURE No. P-9		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:10000
NTS No.			FILE No.
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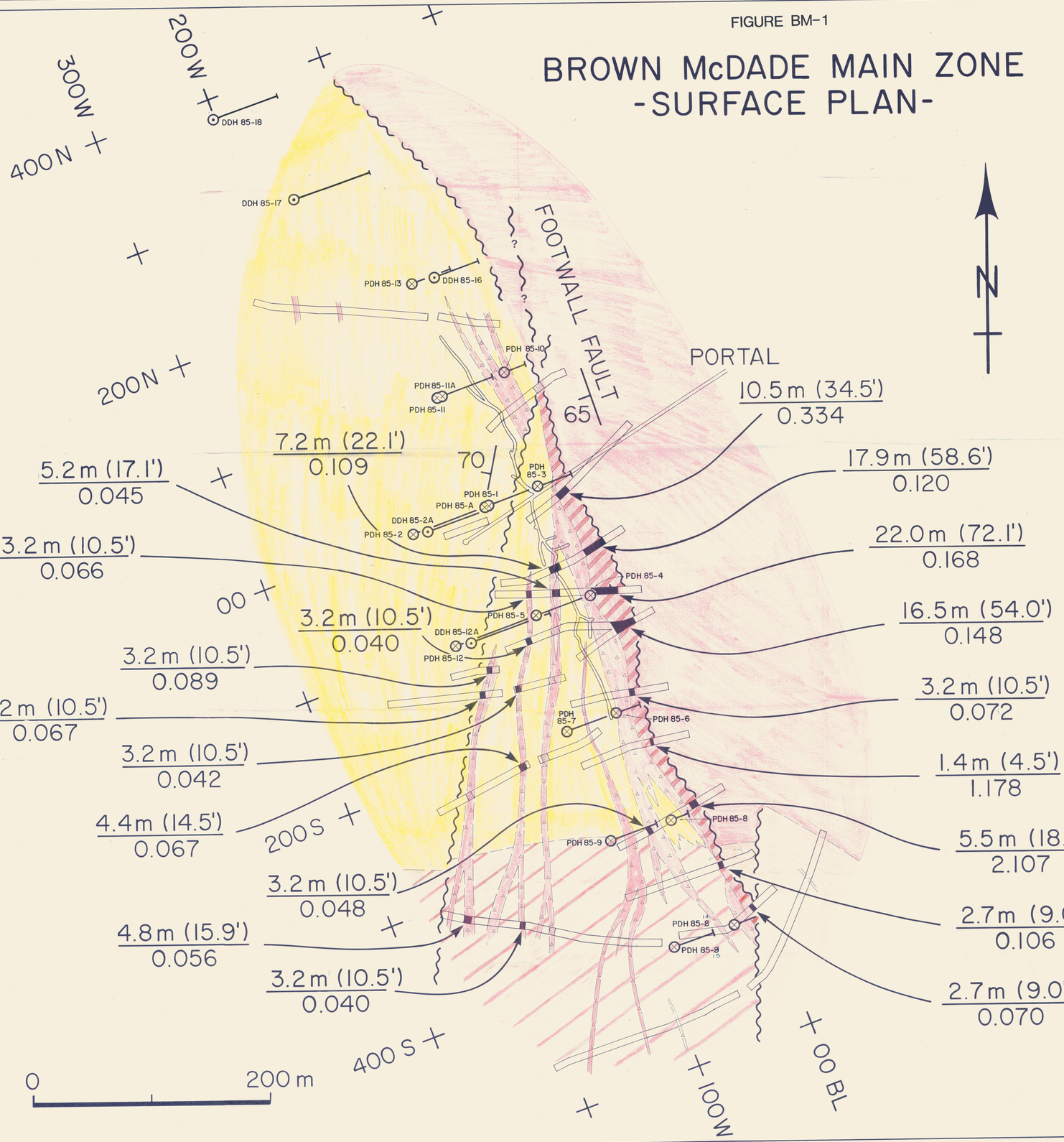
(135)

FIGURE BM-1

BROWN McDADE MAIN ZONE
-SURFACE PLAN-



HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES – IN PART HIGHLY ALTERED AND BRECCIATED

UNALTERED GRANODIORITE

CLAY-ALTERED GRANODIORITE

YUKON GROUP METAMORPHICS – FRESH / ALTERED

MINERALIZED WIDTH
>0.04 oz/ton Au
<0.04 oz/ton Au

DIAMOND DRILL HOLE

PERCUSSION DRILL HOLE

1985 EXCAVATOR TRENCH

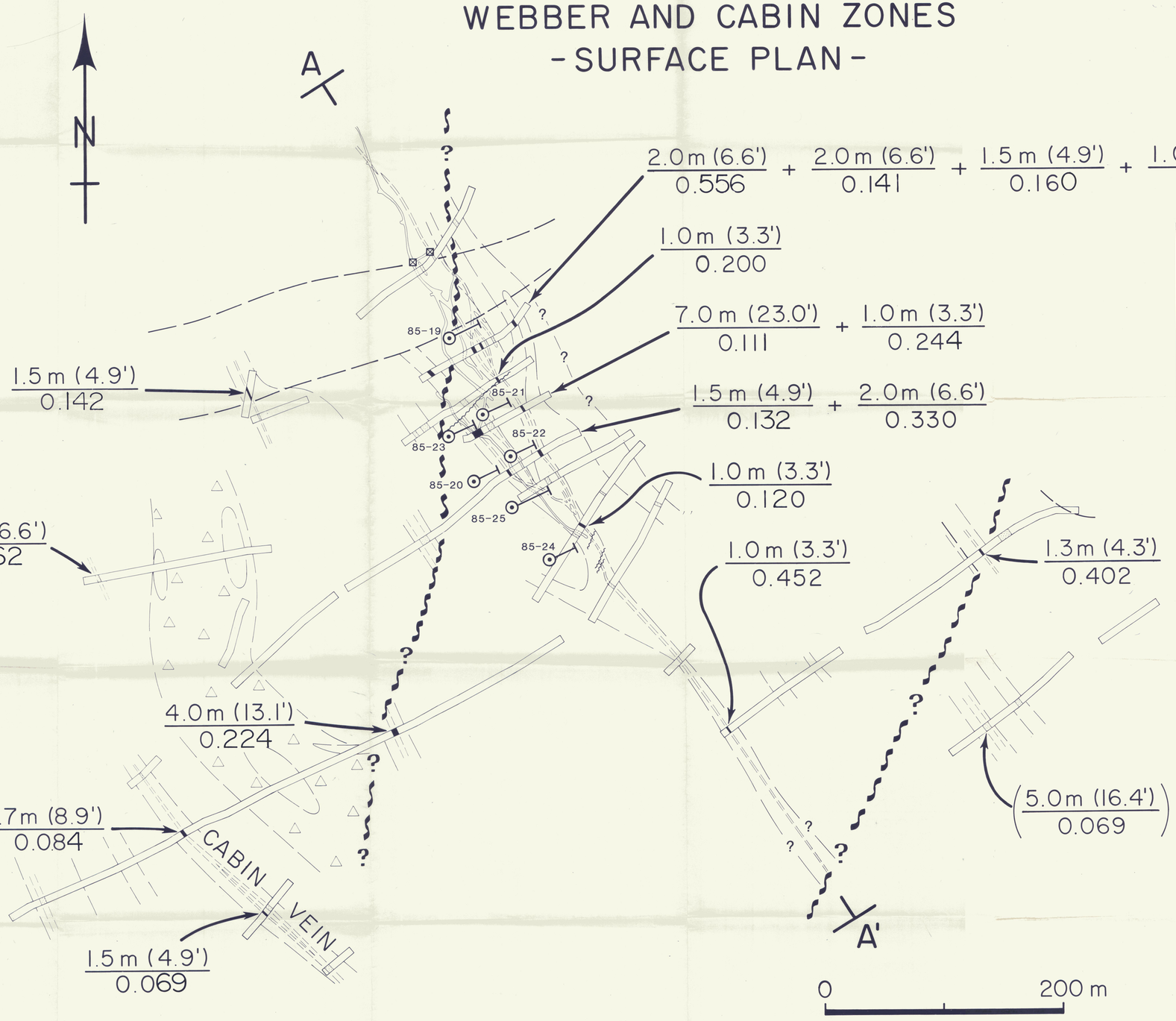
UNDERGROUND WORKINGS

FAULT ZONE

$\frac{2.7m\ (9.0')}{0.106} = \frac{\text{TRUE WIDTH}}{\text{oz/ton Au}}$

FIGURE W-1

WEBBER AND CABIN ZONES
-SURFACE PLAN-



FELDSPAR PORPHYRY
- FRESH
- ALTERED AND BRECCIATED IN PART

YUKON GROUP METAMORPHICS
- FRESH
- ALTERED
- BRECCIATED

VEIN ZONE

MINERALIZED WIDTH
- >0.07 oz/ton Au
- <0.07

1.0m (3.3') / 0.452 = TRUE WIDTH / oz/ton Au

DIAMOND DRILL HOLE

EXCAVATOR TRENCH ('85)

U/G WORKINGS

FAULT ZONE

091825

WDF Corp May 2/01

1357

20000E

20000N

19500N

20000E

100 N

50 N

50 S

100 S

150 S

200 S

250 S

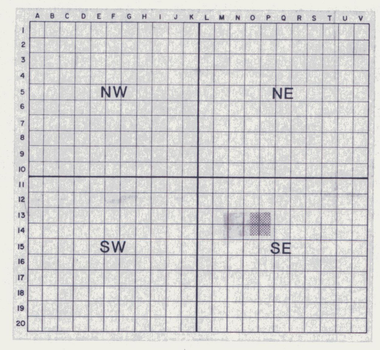
300 S

350 S

400 S

450 S

Brown-McDade grid



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Minerals Staff

TRENCH ASSAYS

BROWN McDADE ZONE

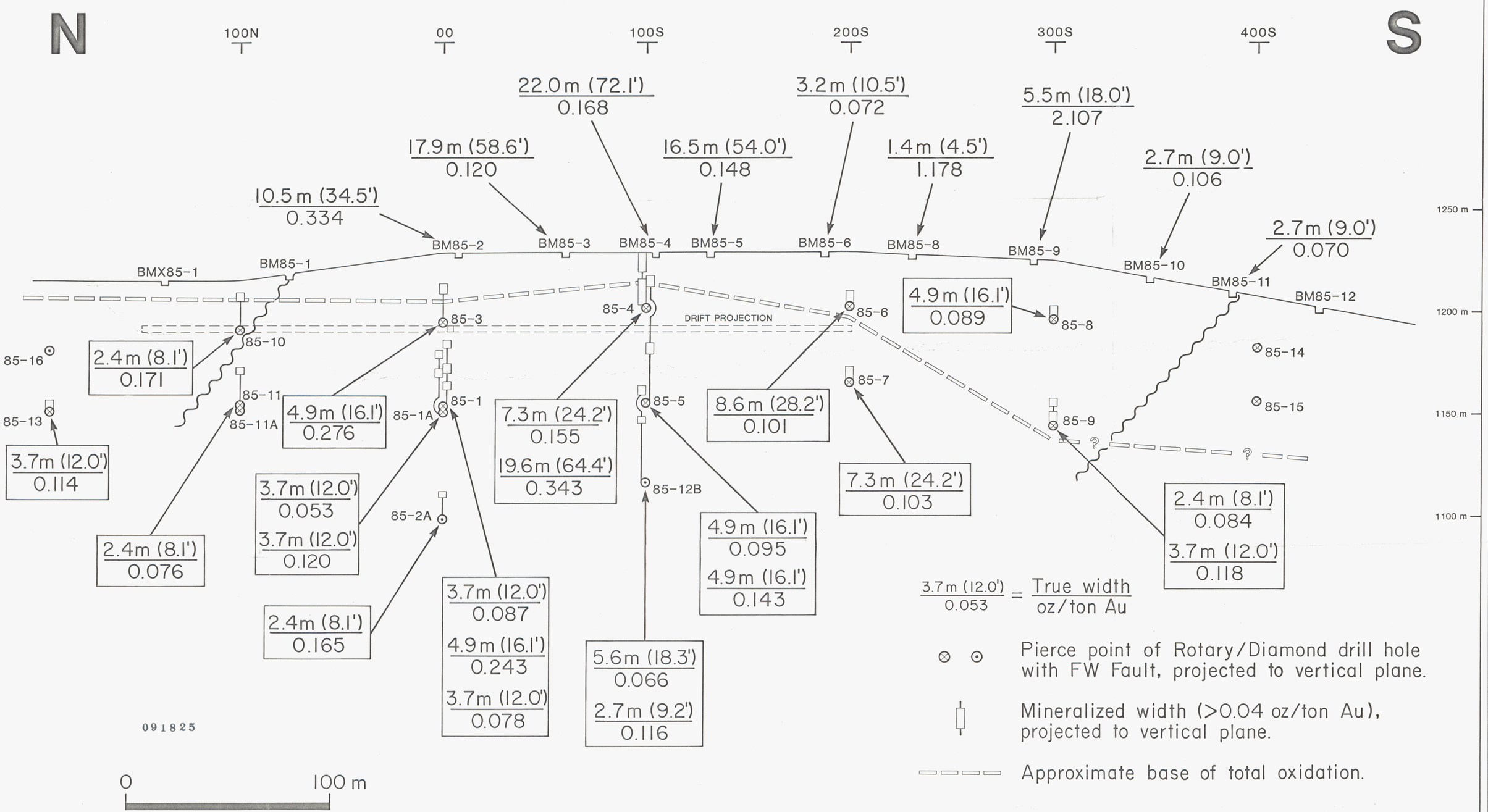
1359

FIGURE No. BM-2		PROJECT NANSEN	
DATE APRIL/86	REVISIONS		SCALE 1:500
NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

May 21/86

FIGURE BM-3

BROWN-McDADE MAIN ZONE
VERTICAL LONGITUDINAL SECTION



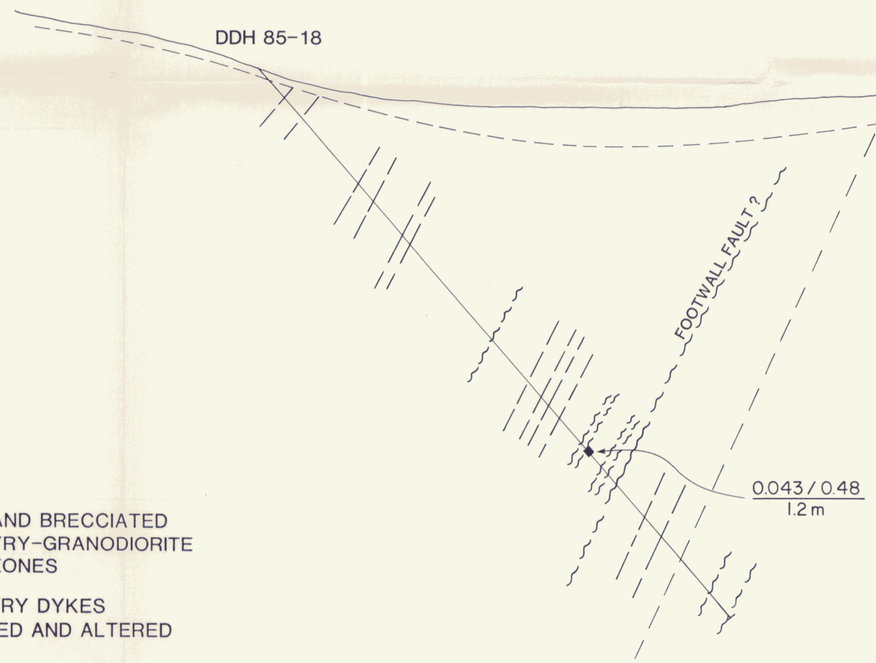
3.7 m (12.0') / 0.053 = True width / oz/ton Au

⊗ ⊙ Pierce point of Rotary/Diamond drill hole with FW Fault, projected to vertical plane.

Mineralized width (>0.04 oz/ton Au), projected to vertical plane.

Approximate base of total oxidation.

(1360) cwtogs CA. May 21/86



HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

ANDESITIC FEEDER DYKES

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

0.043 / 0.48 oz/ton Au / oz/ton Ag
1.2 m true width in metres

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May 21/86

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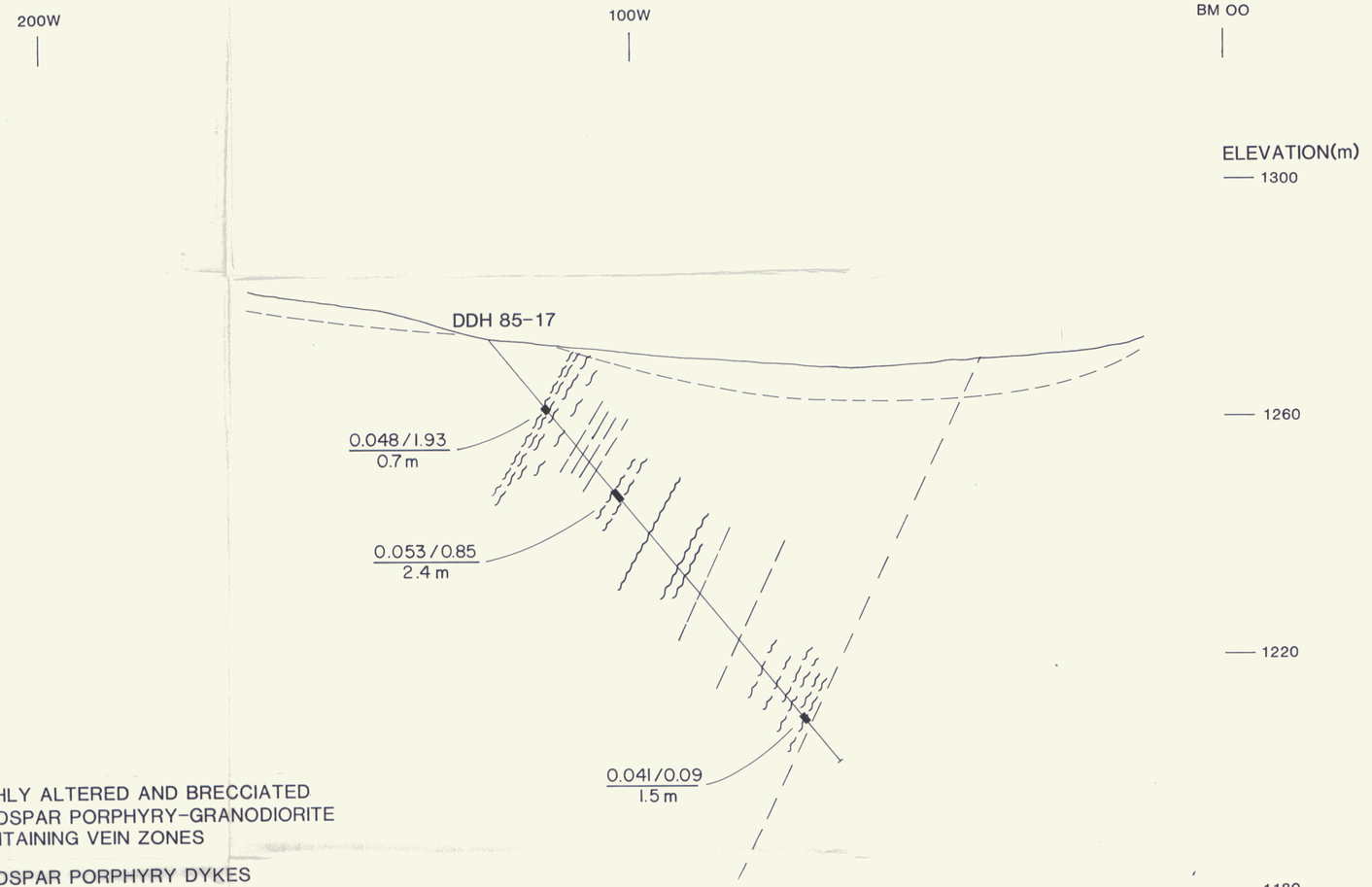
BROWN-McDADE
400N
NANSEN PROJECT

(1364)

FIGURE No. BM-4		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED



HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY–GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

ANDESITIC FEEDER DYKES

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

0.048 / 1.93
0.7 m

oz/ton Au / oz/ton Ag
true width in metres

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Chevron Canada Resources Limited
Minerals Staff

BROWN–McDADE
300N
NANSEN PROJECT

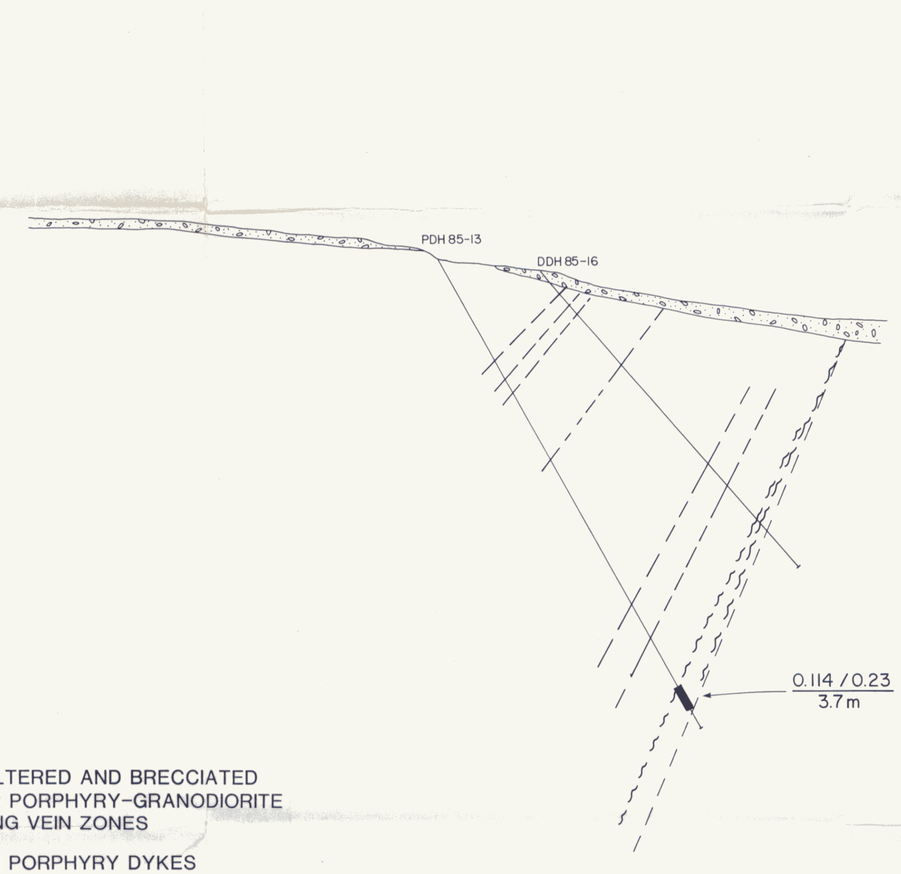
FIGURE No. BM - 5		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

200W

100W

BM 00



HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

oz/ton Au / oz/ton Ag
true width in metres

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WSOG cat
May 21/86

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BROWN-McDADE
200N
NANSEN PROJECT

13366

FIGURE No. BM-6		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

ELEVATION (m)

200W

100W

BM00

1250

1200

1150

1100

1050

PDH 85-11A

PDH 85-11

PDH 85-10

0.171 / 1.64
2.4m

0.082 / 0.20
1.2m

0.040 / 0.36
1.2m

0.077 / 0.26
1.2m

0.054 / 0.77
1.2m

0.076 / 0.51
2.4m

FAULT ?

FOOTWALL

HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

0.077 / 0.26
1.2

oz/ton Au / oz/ton Ag
true width in metres

DRIFT

0 50 m

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WDS ok
May 21/86

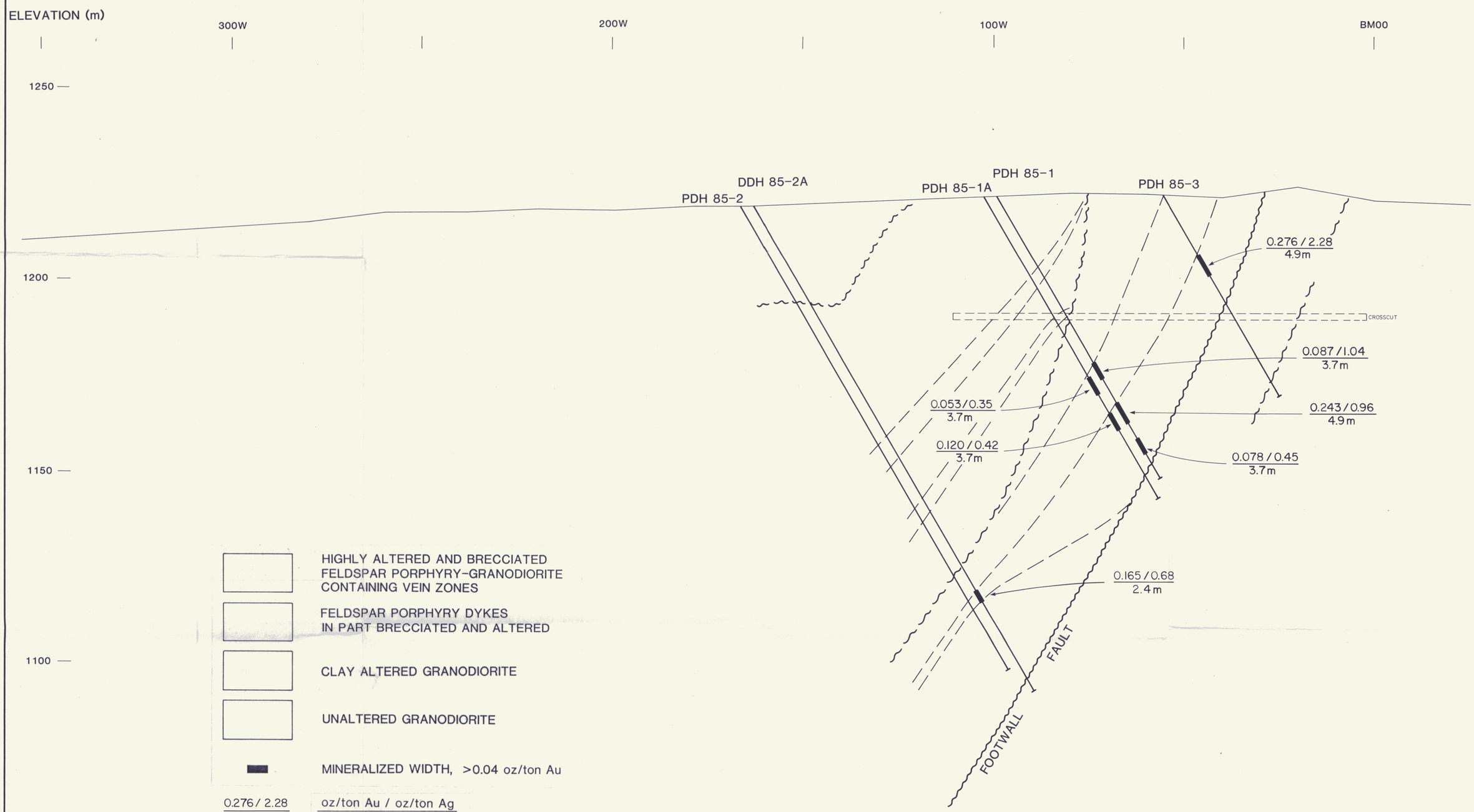
Chevron Canada Resources Limited
Minerals Staff

BROWN-McDADE
100N
NANSEN PROJECT

(1367)

FIGURE No. BM-7		PROJECT No.	
DATE	REVISIONS		SCALE 1: 500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED



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BROWN-McDADE 00

NANSEN PROJECT

FIGURE No. BM-8		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

1363

300W 200W 100W BM00

ELEVATION (m)

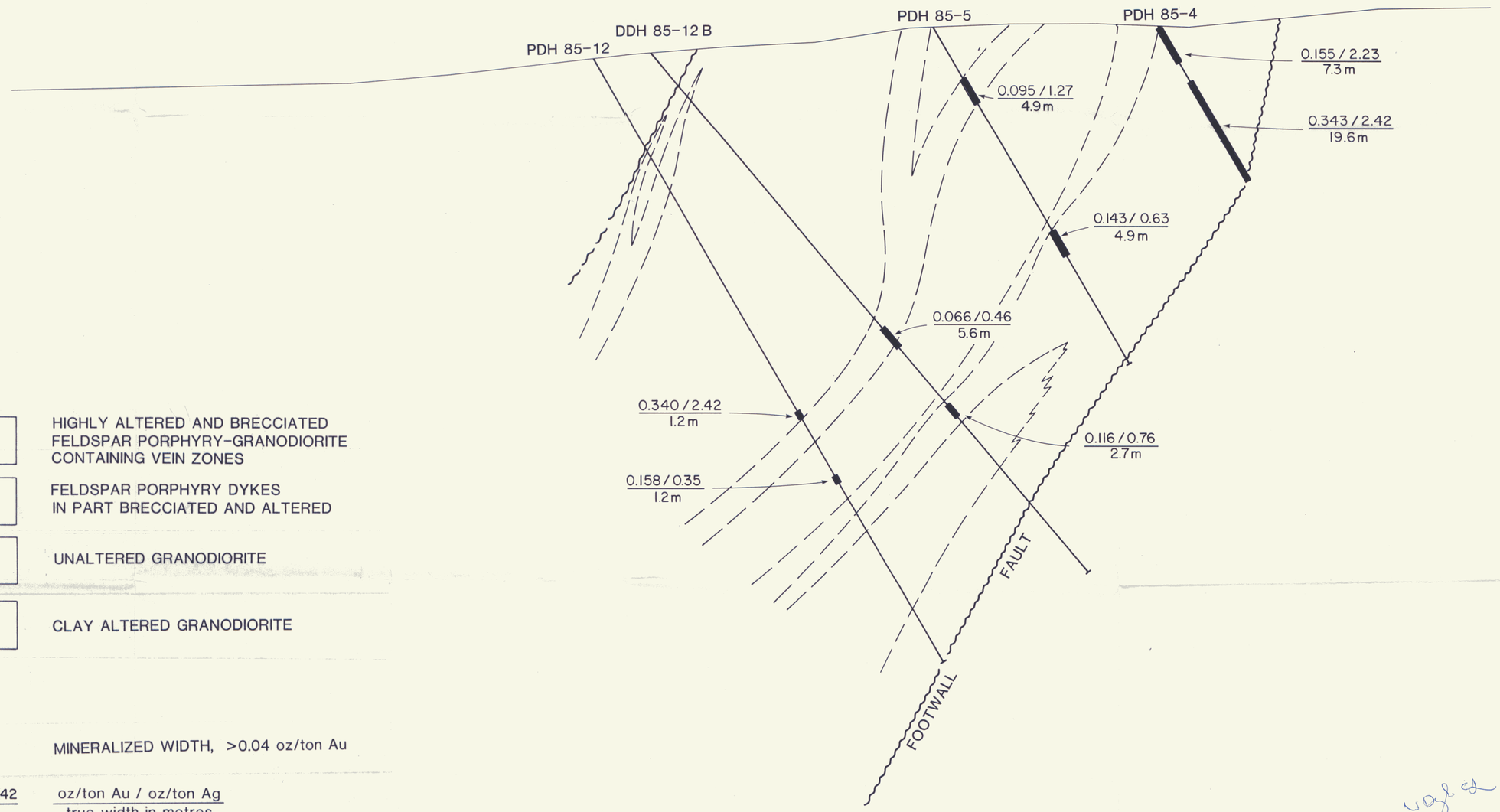
1250

1200

1150

1100

1050



HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

UNALTERED GRANODIORITE

CLAY ALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

0.340/2.42 / 1.2m — oz/ton Au / oz/ton Ag / true width in metres

0 50 m

VDyk. cd
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Minerals Staff

BROWN – McDADE
100S
NANSEN PROJECT

FIGURE No. BM-9		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

(1362)

ELEVATION (m)

200W

100W

BM00

1250

1200

1150

1100

1050

PDH 85-7

PDH 85-6

0.045 / 0.19
2.5m

0.101 / 1.03
8.6m

0.103 / 0.81
7.3m

HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

MINERALIZED WIDTH, >0.04 oz/ton Au

0.103 / 0.81
7.3m

oz/ton Au / oz/ton Ag
true width in metres

0 50m

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Chevron Canada Resources Limited
Minerals Staff

BROWN-McDADE
200S
NANSEN PROJECT

FIGURE No. BM-10		PROJECT No.	
DATE	REVISIONS		SCALE
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

300W

200W

100W

BM00

ELEVATION (m)

1250

1200

1150

1100

PDH 85-9

PDH 85-8

?

?

?

0.089 / 0.96
4.9 m

0.084 / 2.19
2.4 m

0.118 / 1.06
3.7 m

HIGHLY ALTERED AND BRECCIATED FELDSPAR PORPHYRY-GRANODIORITE CONTAINING VEIN ZONES

FELDSPAR PORPHYRY DYKES IN PART BRECCIATED AND ALTERED

CLAY ALTERED GRANODIORITE

UNALTERED GRANODIORITE

ALTERED SCHIST

MINERALIZED WIDTH, >0.04 oz/ton Au

0.118 / 1.06
3.7 m

oz/ton Au / oz/ton Ag
true width in metres

0 50 m

May 21/86
W Dyl

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Minerals Staff

BROWN-McDADE

1356

300S

NANSEN PROJECT

FIGURE No. BM - II		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		

ELEVATION (m)

300W

200W

100W

BM00

1250

1200

1150

1100

1050

PDH 85-15

PDH 85-14

0.070 / 0.47
2.7 m

FELDSPAR PORPHYRY DYKES
OFTEN ALTERED, BRECCIATED
AND WEAKLY VEINED

ALTERED SCHISTS

UNALTERED SCHISTS

0.070 / 0.47
2.7 m

oz/ton Au / oz/ton Ag
true width in metres

0 50 m

091825.

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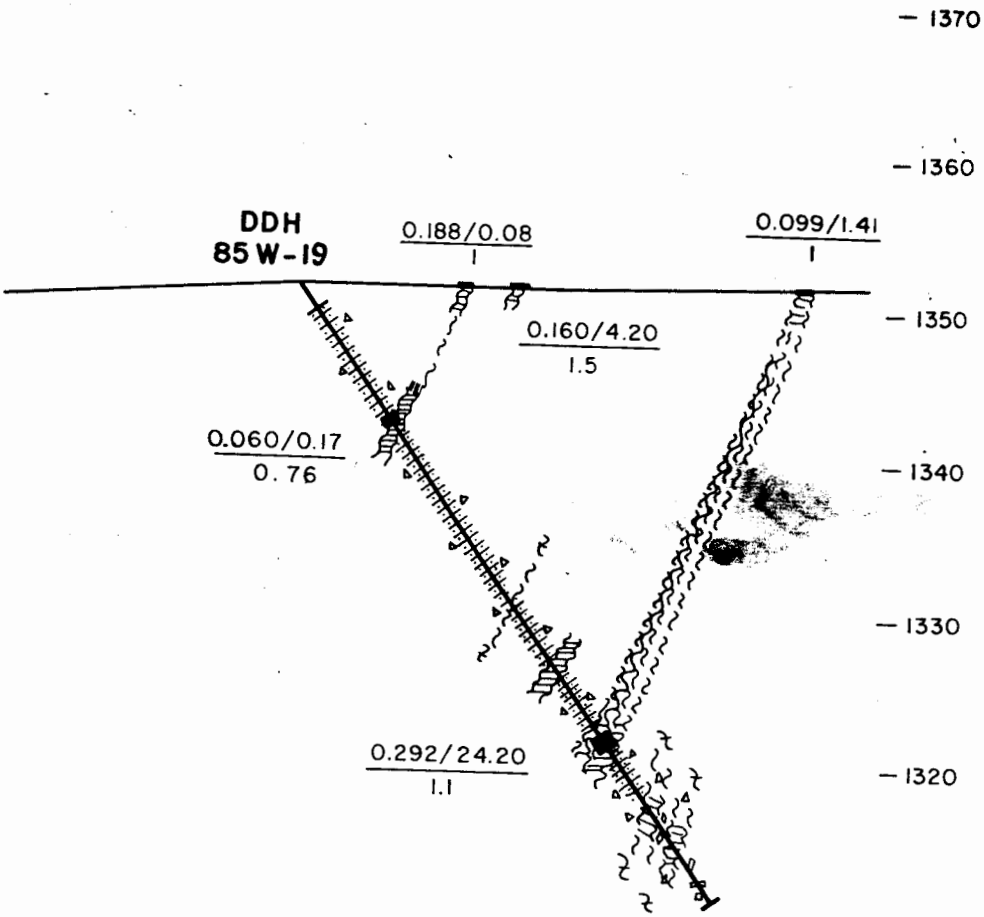
Minerals Staff

BROWN-McDADE
400S
NANSEN PROJECT

FIGURE No. BM-12		PROJECT No.	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		



0.042/0.44 / 0.9 = oz/ton Au/oz/ton Ag / m

gneiss

feldspar porphyry

gouge

breccia

fault

091825

Figure W-2

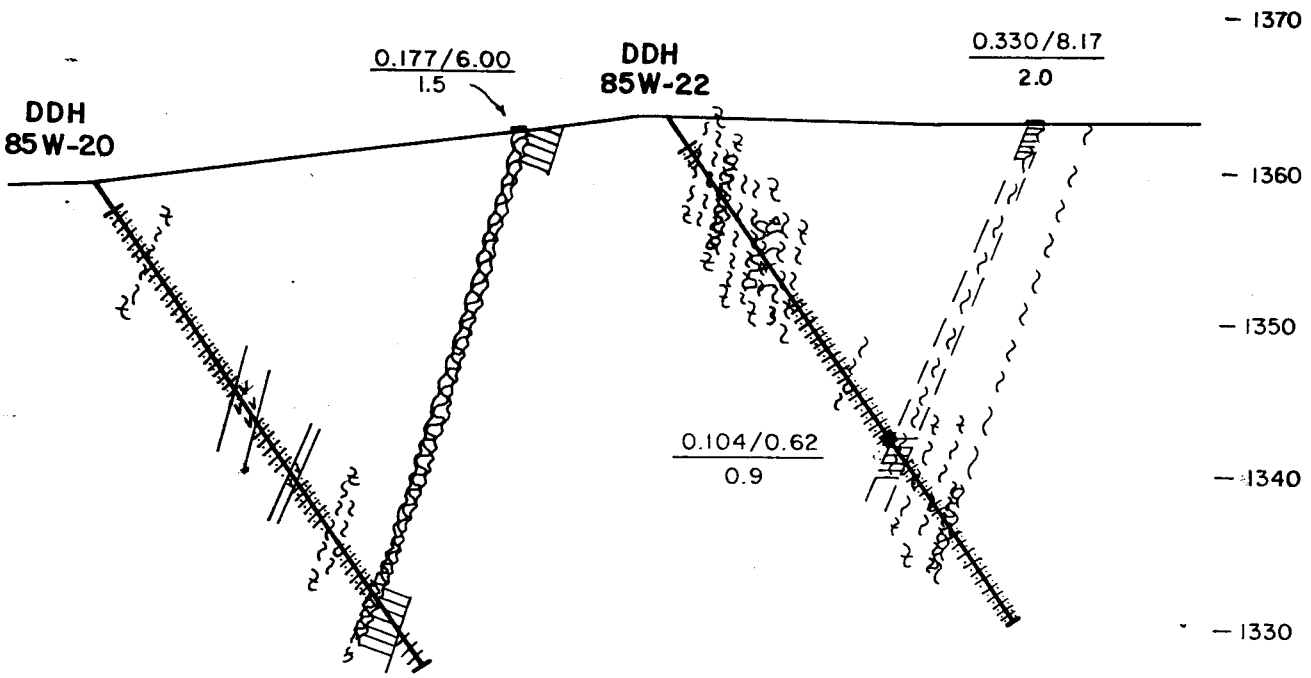
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SECTION
DDH 85-19
WEBBER ZONE
NANSEN PROJECT

SCALE 1:500

0 20 m

wpk A
oby 21/86



0.104 0.62 = oz/ton Au / oz/ton Ag
0.9 m

gneiss

andesite feeder dikes

fault

gouge

091825

Figure W-3

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SECTION

DDH 85-20 & DDH 85-22

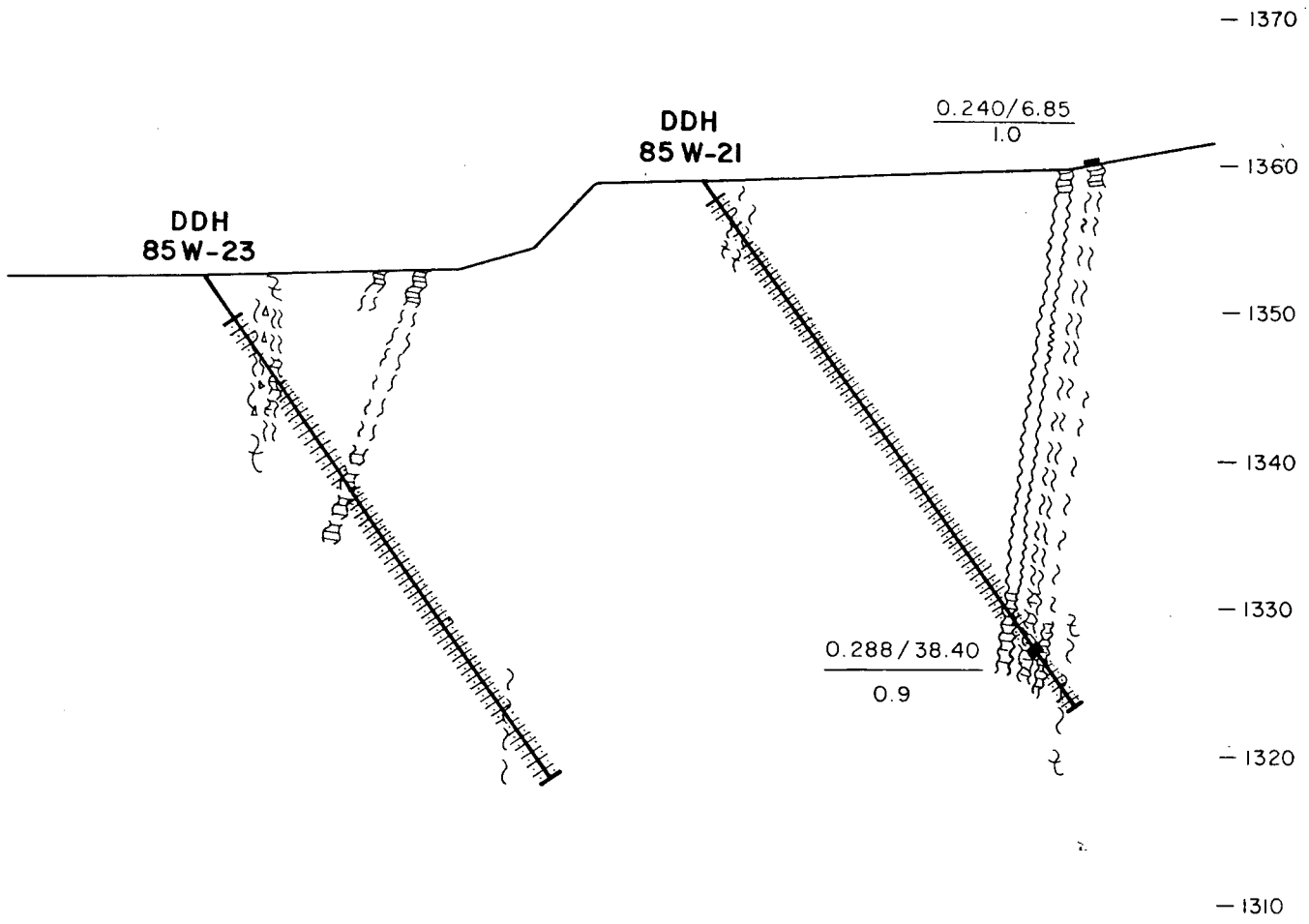
WEBBER ZONE

NANSEN PROJECT

SCALE 1:500

0 20m

WDF May 21/86



0.104/0.62 / 0.9 = oz/ton Au / oz/ton Ag / m

gneiss

breccia

fault

gouge

091825

Figure W-4

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SECTION

DDH 85-21 & DDH 85-23

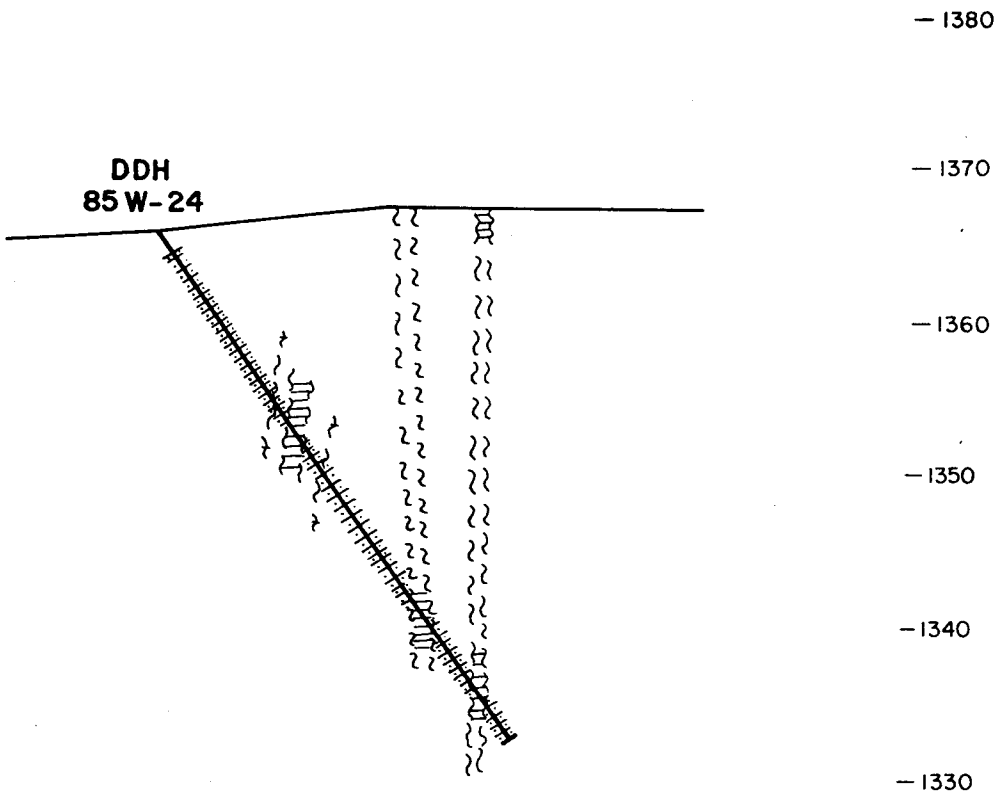
WEBBER ZONE

NANSEN PROJECT

SCALE 1:500

0 20 m

WBS
May 21/86



gneiss

fault

gouge

091825

Figure W-5

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SECTION

DDH 85-24

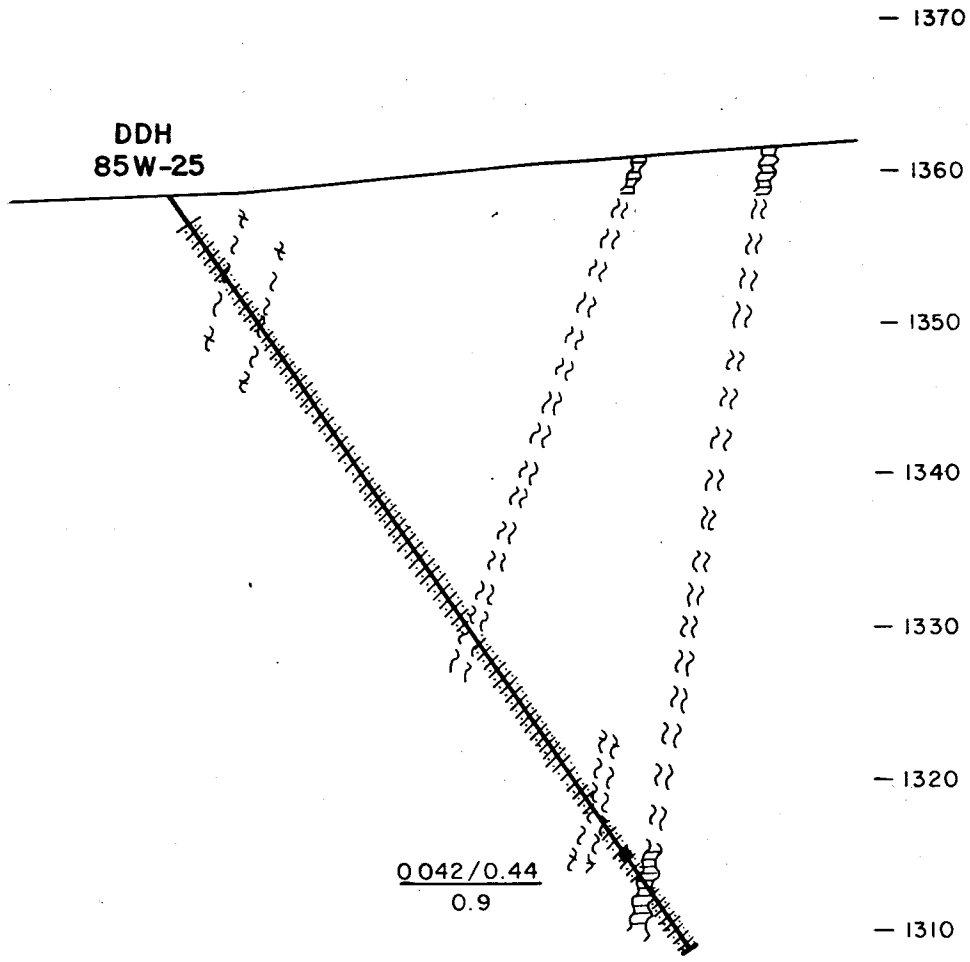
WEBBER ZONE

NANSEN PROJECT

SCALE 1:500

0 20 m

May 21/86



0.042/0.44 / 0.9 = oz/ton Au / oz/ton Ag / m

gneiss

fault

gouge

091825

Figure W-6

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SECTION

DDH 85-25

WEBBER ZONE

NANSEN PROJECT

SCALE 1:500

0 20 m

CW Dey
May 21/86

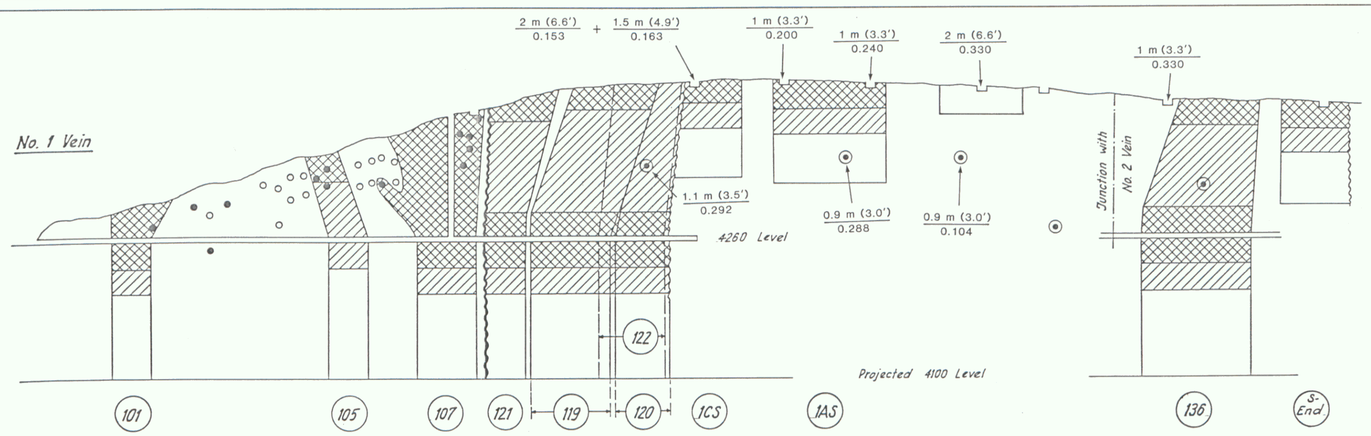
U 1825 Dump 24/84

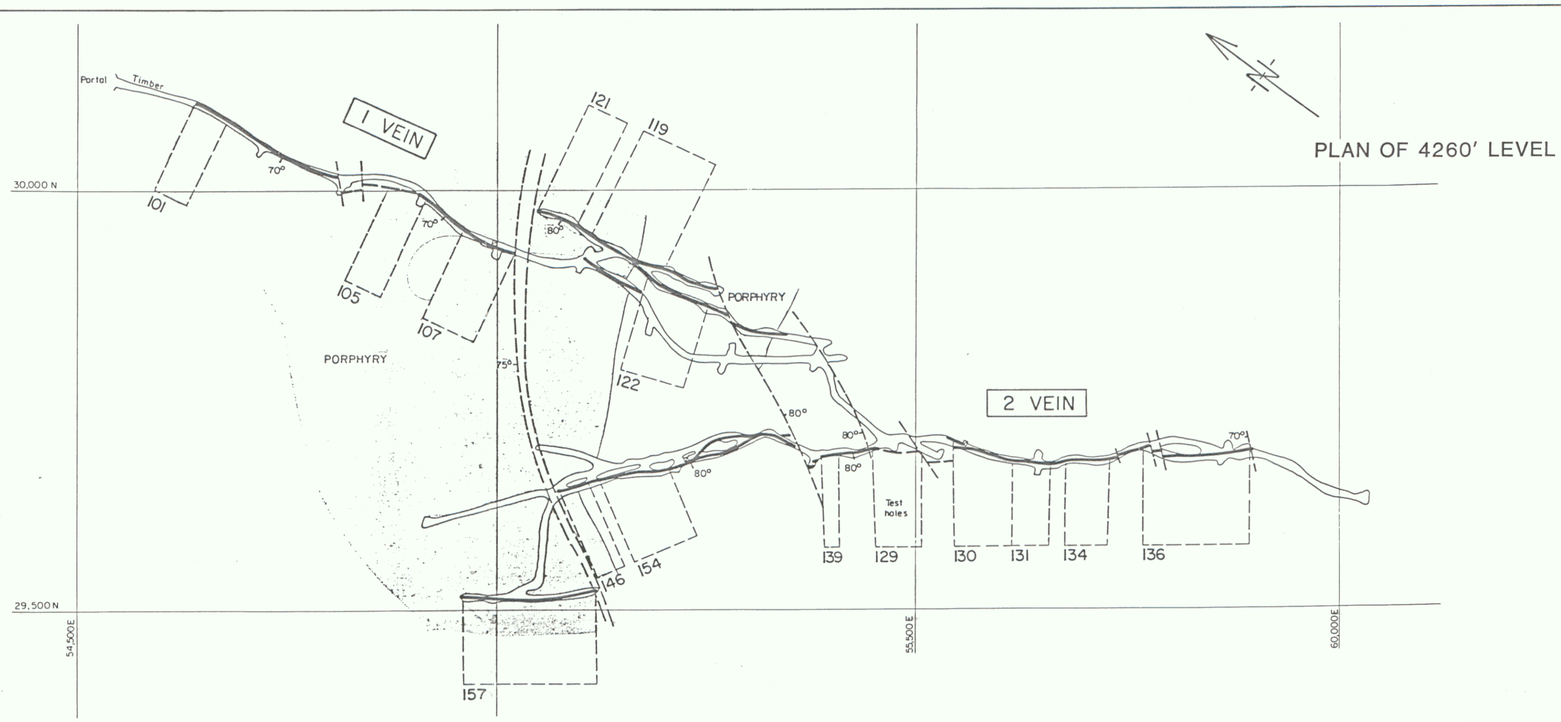
FIGURE W-7

091825

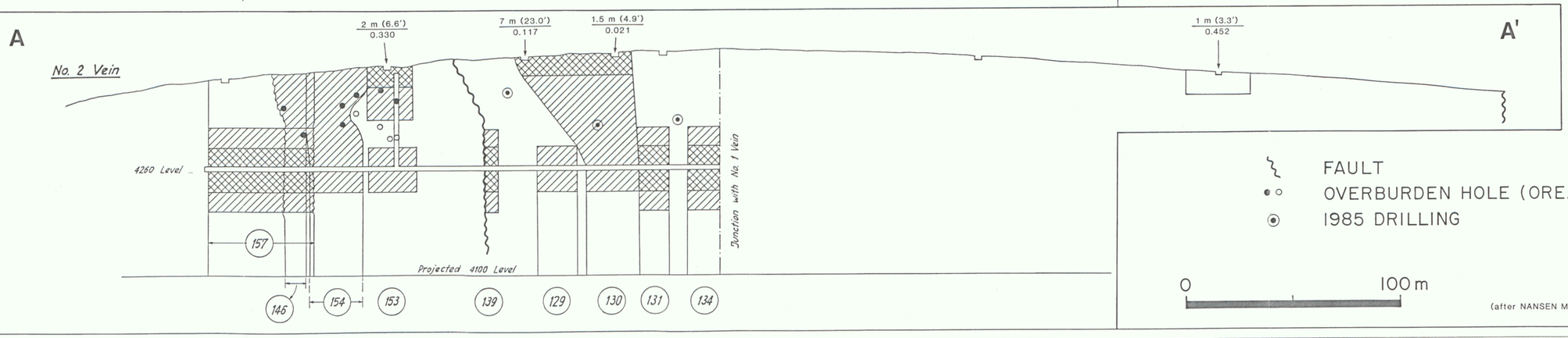
WEBBER VEINS

ORE SHOOTS AND RESERVES





PLAN OF 4260' LEVEL



PROVEN ORE:
34,057 tons -
Au = 0.30 oz/ton
Ag = 18.8

PROBABLE ORE:
30,319 tons -
Au = 0.32 oz/ton
Ag = 16.1

POSSIBLE ORE:
37,700 tons -

TOTAL PROVEN / PROBABLE ORE

64,376 tons -
Au = 0.31 oz/ton
Ag = 17.5

GRADE OF ORE SHOOTS

(1.2 m average vein width, grades in ounces per ton)

VEIN	No.	METRES	FEET	GOLD	SILVER
1	121	15.2	50	0.27	29.3
	107	21.3	70	0.23	12.0
	105	13.7	45	0.27	13.3
2	136	39.6	130	0.54	41.5
	139	6.1	20	0.18	17.3
	146	10.7	35	0.23	5.2
	157	48.8	160	0.31	13.8

FAULT

OVERBURDEN HOLE (ORE, NIL)

1985 DRILLING

0 100 m

(after NANSEN MINING CORPORATION, 1983)

CHEVRON CRL 44" X 60"

(1368)

BROWN-McDADE DUMP TONNAGE CALCULATIONS

CROSS-SECTIONS

Looking WEST

60

Volume: $43 m^2 \times 15 m = 645 m^3$

50

Volume: $41 m^2 \times 10 m = 410 m^3$

40

Volume: $34.5 m^2 \times 10 m = 345 m^3$

30

Volume: $37.5 m^2 \times 10 m = 375 m^3$

20

Volume: $41.5 m^2 \times 10 m = 415 m^3$

10

Volume: $23 m^2 \times 10 m = 230 m^3$

Ends of Dump

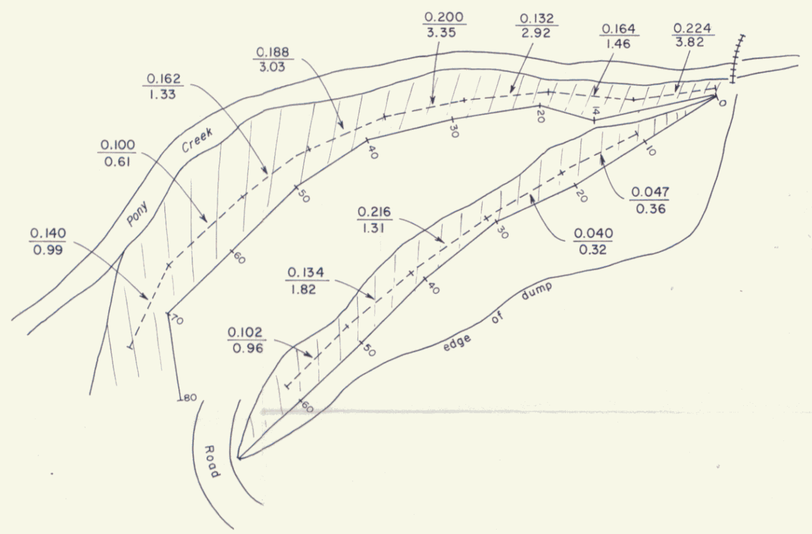
Volume: $8 m^2 \times 5 m = 40 m^3$

Volume: $22 m^2 \times 4 m = 88 m^3$

TOTAL VOLUME = $2548 m^3$

TOTAL TONNAGE = 3887.35 Tonnes

PLAN VIEW



$\frac{0.198}{2.10} = \frac{\text{oz/ton Au}}{\text{oz/ton Ag}}$

SCALE - 1:500

5 0 5 10 15 20 25 Metres

May 21/82

091825

Chevron Canada Resources Limited
Minerals Staff

ASSAY RESULTS

(1369) BROWN-McDADE DUMP

FIGURE No. BM-13		PROJECT No. NANSEN	
DATE	REVISIONS		SCALE 1:500
NTS No.			
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		

NCL-520

WEBBER DUMP TONNAGE CALCULATIONS

CROSS-SECTIONS

Looking WEST

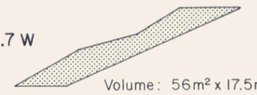
9.7 W

Volume: 48.5 m^2 x 12 m = 583 m^3

19.7 W

Volume: 103 m^2 x 15m = 1545 m^3

39.7 W



Volume: 56 m^2 x 17.5m = 980 m^3

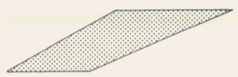
55 W

Volume: 30 m^2 x 15 m = 450 m^3

72 W

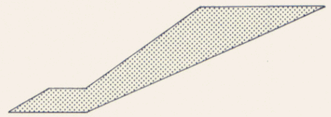
Volume: 31 m^2 x 12.5 m = 387.5 m^3

90 W



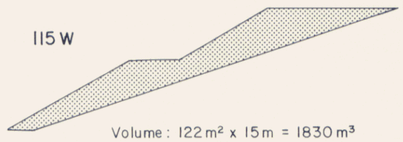
Volume: 81 m^2 x 15 m = 1215 m^3

100 W



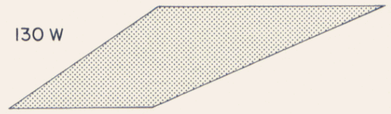
Volume: 120 m^2 x 15 m = 1800 m^3

115 W



Volume: 122 m^2 x 15 m = 1830 m^3

130 W

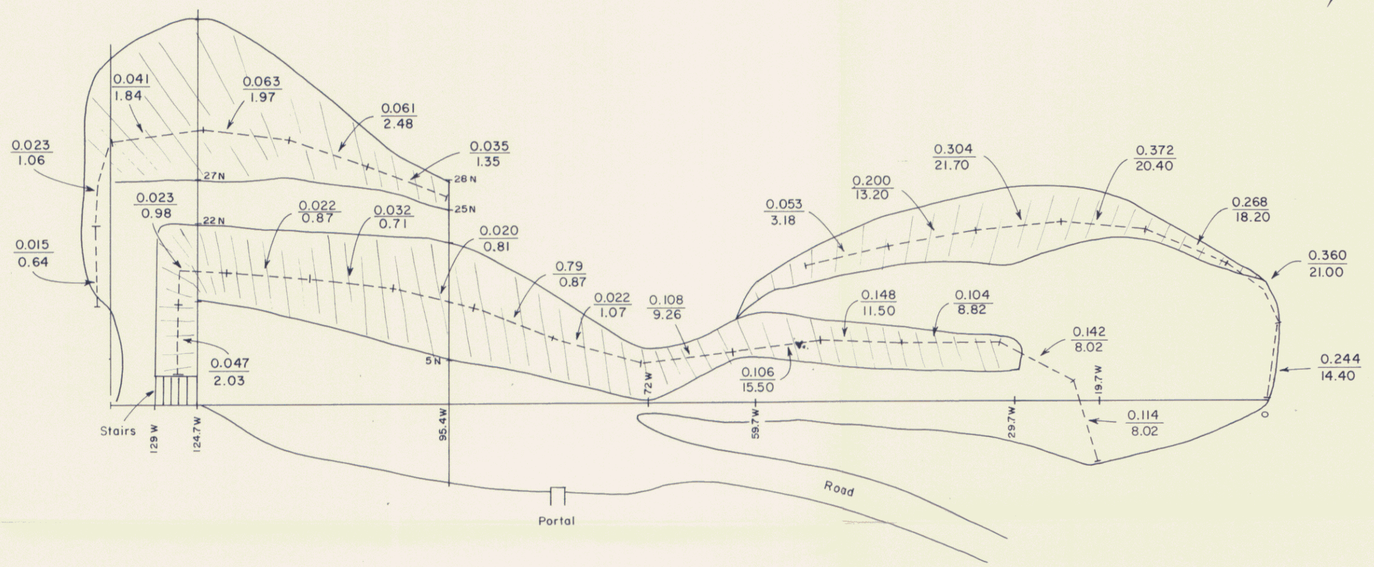


Volume: 240 m^2 x 15 m = 3600 m^3

TOTAL VOLUME = 12,390.5 m^3

TOTAL TONNAGE = 18902.78 Tonnes

PLAN VIEW



$\frac{0.198}{2.10} = \frac{\text{oz/ton Au}}{\text{oz/ton Ag}}$

SCALE – 1:500

5 0 5 10 15 20 25 Metres

091825

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ASSAY RESULTS

(1370) UPPER WEBBER DUMP

FIGURE No. W-8		PROJECT No. NANSEN	
DATE	REVISIONS		SCALE 1:500
NTS No.			
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		

NCI - 520

UPPER HUESTIS TONNAGE CALCULATIONS

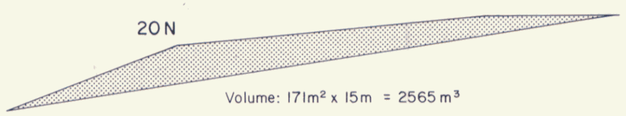
CROSS-SECTIONS

Looking SOUTH

6N

Volume: $23m^2 \times 12m = 276m^3$

20N

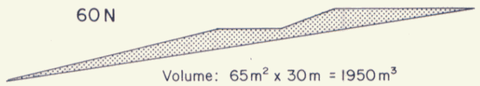


Volume: $171m^2 \times 15m = 2565m^3$

35N

Volume: $84m^2 \times 18m = 1512m^3$

60N

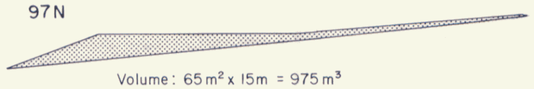


Volume: $65m^2 \times 30m = 1950m^3$

85N

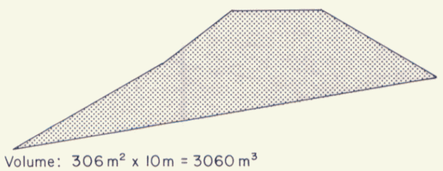
Volume: $92m^2 \times 15m = 1380m^3$

97N



Volume: $65m^2 \times 15m = 975m^3$

110N

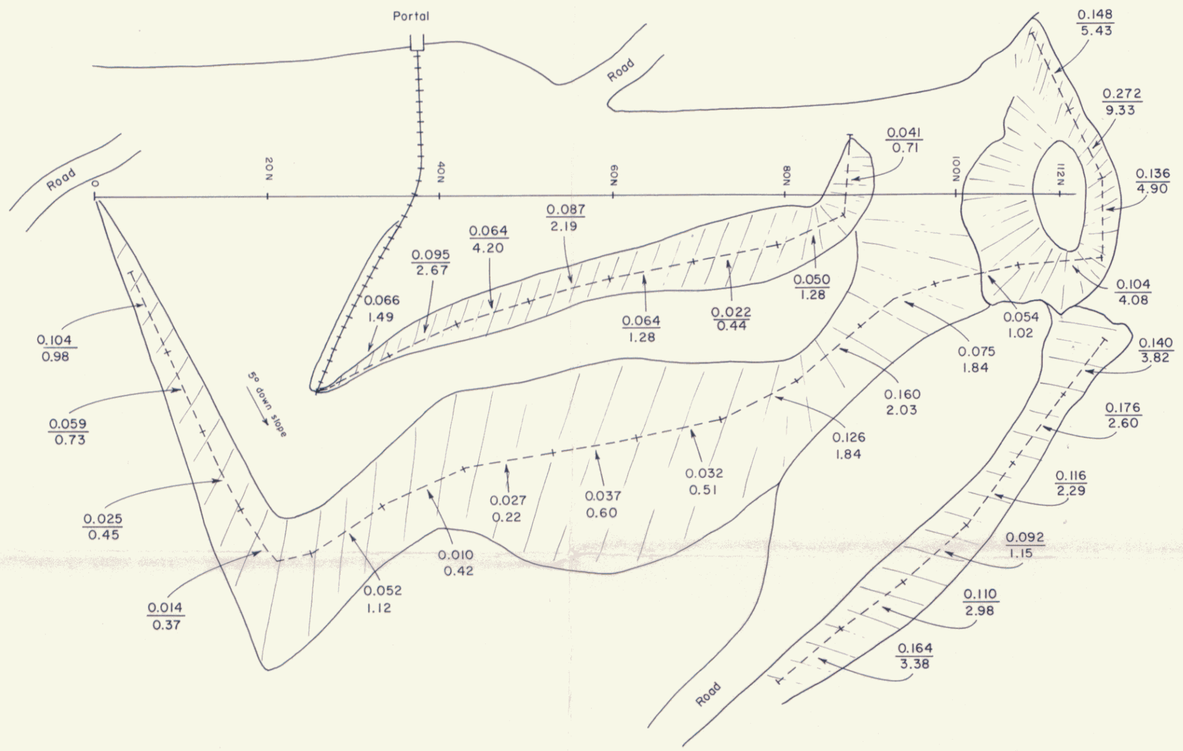


Volume: $306m^2 \times 10m = 3060m^3$

TOTAL VOLUME = $11,718m^3$

TOTAL TONNAGE = 17876.83 Tonnes

PLAN VIEW



$\frac{0.135}{2.10} = \frac{\text{oz/ton Au}}{\text{oz/ton Ag}}$

SCALE – 1:500

5 0 5 10 15 20 25 Metres

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ASSAY RESULTS

UPPER HUESTIS DUMP (1371)

FIGURE No. H-1		PROJECT No. NANSEN	
DATE	REVISIONS		SCALE 1:500
NTS No.			
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		

CROSS-SECTIONS

Looking WEST

0

Area = 26 m² x 17m = 442 m³

20

Area = 58 m² x 15m = 870 m³

40

Area = 64 m² x 24m = 1536 m³

60

Area = 39 m² x 20m = 780 m³

80

Area = 18 m² x 20m = 360 m³

Track

Area = 9.5 m² x 50m = 475 m³

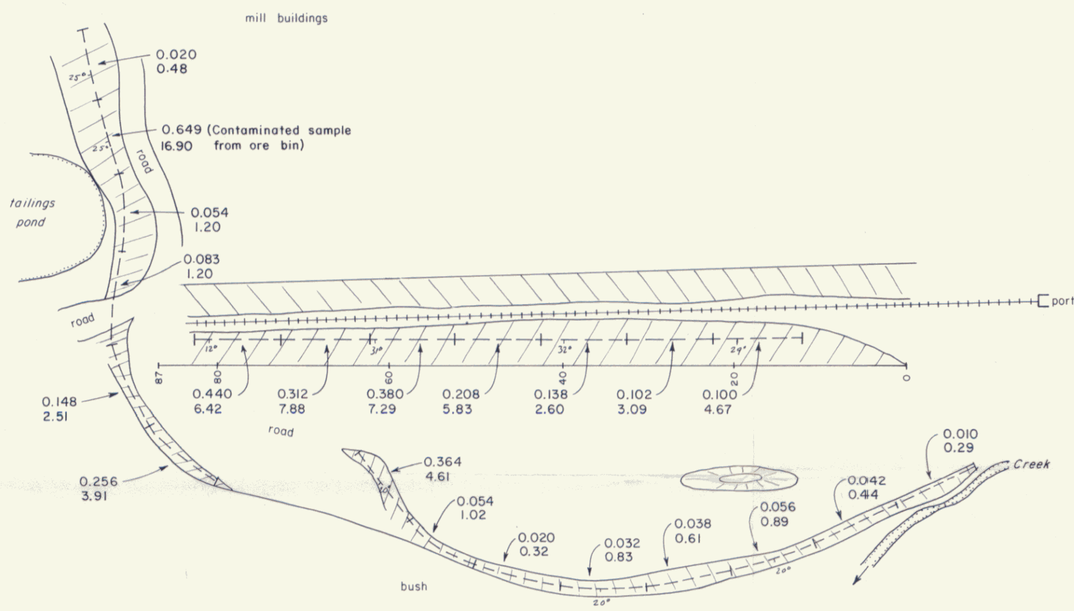
0

Area = 26 m² x 17m = 442 m³

TOTAL VOLUME = 4463 m³

TOTAL TONNAGE = 6808.54 Tonnes

PLAN VIEW



$$\frac{0.198}{2.10} = \frac{\text{oz/ton Au}}{\text{oz/ton Ag}}$$

SCALE- 1:500

5 0 5 10 15 20 25 Metres

091825 May 21/86

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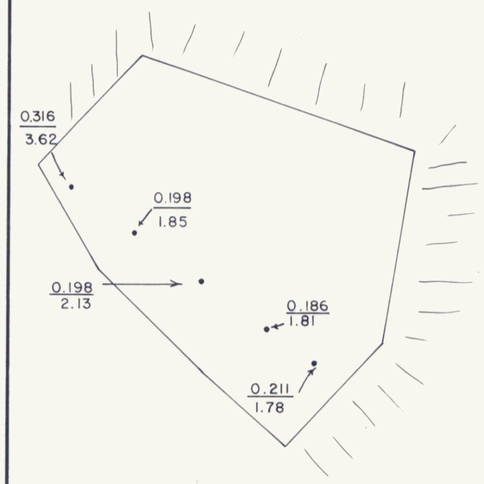
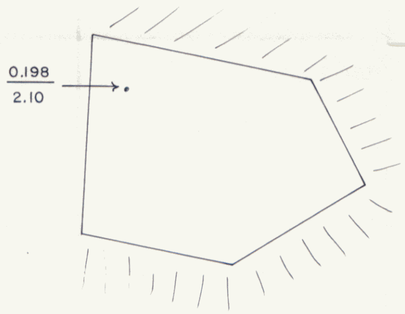
Minerals Staff

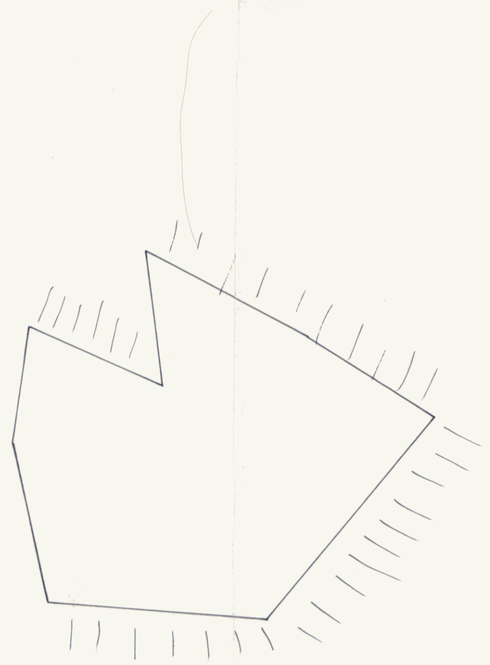
ASSAY RESULTS

LOWER HUESTIS DUMP (1372)

FIGURE No. H-2		PROJECT No. NANSEN	
DATE	REVISIONS		SCALE 1:500
NTS No.			
COMPILED BY	ARCHER, CATHRO & ASSOCIATES (1981) LIMITED		







$$\frac{0.198}{2.10} = \frac{\text{oz/ton Au}}{\text{oz/ton Ag}}$$

SCALE – 1:500

5 0 5 10 15 20 25 Metres

091825

W Dept. cpy.
May 21/86

Chevron Canada Resources Limited
Minerals Staff

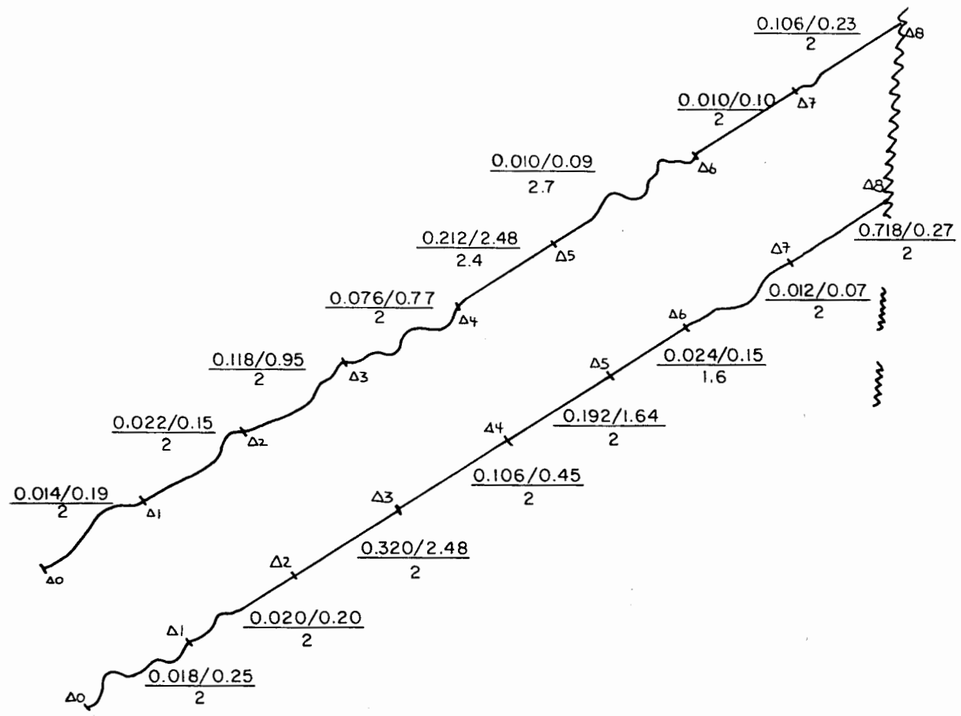
ASSAY RESULTS

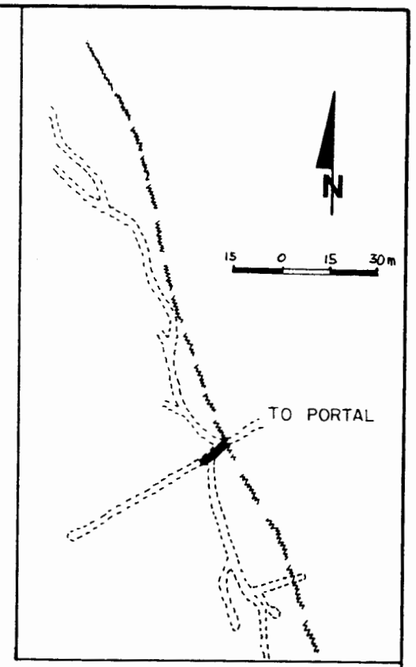
TAILINGS PONDS (1373)

FIGURE No. TP–1		PROJECT NANSEN	
DATE	REVISIONS		SCALE 1:500
NTS No.			FILE No.

COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

FOOTWALL FAULT





$\frac{0.076/0.45}{2}$ = $\frac{\text{oz/ton Au / oz/ton Ag}}{\text{m}}$

SCALE – 1:100

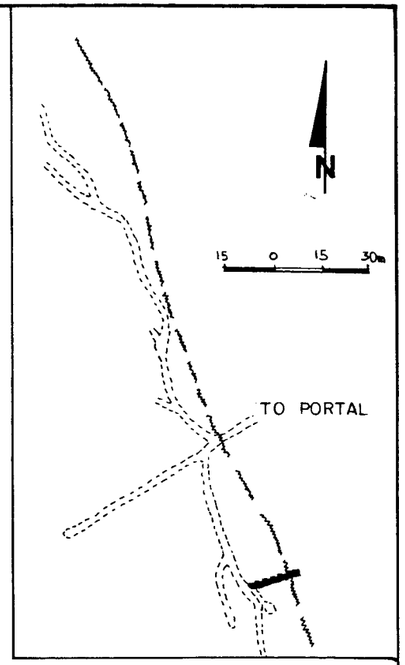
1 0 1 2 3 4 5 Metres

May 21/86 091825

Chevron Canada Resources Limited
Minerals Staff

CROSSCUT SAMPLING BROWN McDADE ZONE

FIGURE No. BM–14		PROJECT NANSEN	
DATE	REVISIONS		SCALE 1:100
NTS No.			FILE No.
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			



FOOTWALL FAULT

Δ0
Δ1 0.036/0.07 / 0.7
Δ2 0.066/5.00 / 2
Δ3 0.034/0.87 / 2
Δ4 0.012/0.15 / 2
Δ5 0.008/0.06 / 2
Δ6 0.010/0.04 / 2
Δ7 0.002/0.05 / 2
Δ8 0.008/0.08 / 2
Δ9 0.560/2.76 / 2

$\frac{0.076/0.45}{2} = \frac{\text{oz/ton Au}/\text{oz/ton Ag}}{\text{m}}$

SCALE – 1:100

1 0 1 2 3 4 5 Metres

WDyl &
May 21/81

091825

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Minerals Staff

CROSSCUT SAMPLING BROWN McDADE ZONE

FIGURE No BM-15		PROJECT NANSEN	
DATE	REVISIONS		SCALE 1:100
NTS No			FILE No
COMPILED BY ARCHER, CATHRO & ASSOCIATES (1981) LIMITED			

091825

APPENDICIES TO ACCOMPANY

NANSEN FINAL REPORT

APRIL, 1986

closed

APPENDIX I

PERSONNEL AND AUTHOR'S

STATEMENT OF QUALIFICATIONS

LIST OF PERSONNEL

NAME	ADDRESS	POSITION
T. Becker	78 Oberlin Drive, Red Deer, Alberta	Fieldman
S. Bos	R.R. #2, Dundas, Ontario	Fieldman
S. Boyce	Box 414, Westport, Ontario	Fieldman
N. Burton	5541-36 Street, Red Deer, Alberta	Surveyor
T. Carlson	118 Beechwood Avenue, Victoria, B.C.	Fieldman
D. Eaton	6106 Burns Street, Burnaby, B.C.	Project Manager
B. Fletcher	744 West 26th Avenue, Vancouver, B.C.	Fieldman
P. Gilchrist	170 Kendall Court, Penticton, B.C.	Fieldman
C. Greig	5620 Kings Road, Vancouver, B.C.	Geologist
W. Halleran	Box 793, Fort St. James, B.C.	Geologist
K. Holopainen	#3-2814 West 7th Avenue, Vancouver, B.C.	Fieldman
C. Knight	R.R.#2, Canyonview, Summerland, B.C.	Cook
D. Lister	2355 West 6th Avenue, Vancouver, B.C.	Fieldman
M. Moore	Box 4611, Whitehorse, Yukon	Cook
M. Phillips	50 Alsek Road, Whitehorse, Yukon	Geologist
T. Phillips	50 Alsek Road, Whitehorse, Yukon	Fieldman
M. Neary	133 West 20th Avenue, Vancouver, B.C.	Fieldman
A. Ogilvy	27 Alsek Road, Whitehorse, Yukon	Fieldman
J. Olsson	109 Waddington Drive, Kamloops, B.C.	Fieldman
S. Price	R.R.#2, Site 265, Courtenay, B.C.	Cook
K. Sax	Box 555, Sedgewick, Alberta	Fieldman
P. Schmidt	979 Ridgeway Street, Victoria, B.C.	Fieldman
B. Sinclair	#606 - 2020 Belwood Avenue, Burnaby, B.C.	Fieldman
M. Walls	913 - 9th Street S., Cranbrook, B.C.	Geologist
B. Wengzynowski	c/o Elvin's Equipment, Whitehorse, Yukon	Student
A. Wickens	1576 Nanton Avenue, Vancouver, B.C.	Bullcook

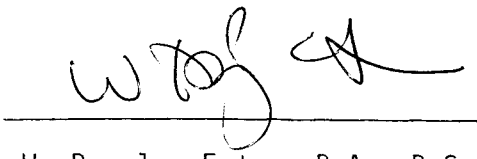
STATEMENT OF QUALIFICATIONS

I, W. Douglas Eaton, geologist, with business addresses in Whitehorse, Yukon Territory and Vancouver, British Columbia, and residential address in Burnaby, British Columbia, do hereby declare:

1. I graduated from the University of British Columbia in 1980 with a B.Sc.

2. From 1971 to the present, I have been actively engaged in mineral exploration in British Columbia and Yukon Territory and on June 1, 1981, became a partner in Archer, Cathro & Associates (1981) Limited.

3. I have personally participated in or supervised the field work reported herein and have interpreted all data resulting from this work.



W. Douglas Eaton, B.A., B.Sc.

APPENDIX II

METALLURGICAL REPORT BY

HAZEN RESEARCH (INTERNATIONAL) INC.

DATED JANUARY 14, 1986

Hazen Research
(International), Inc.
4601 Indiana St. • Golden, Colorado 80401 • U.S.A.
Telephone (303) 279-4501 • Telex 45-860

Prepared for

Chevron Canada Resources Limited
1900-1055 West Hastings Street
Vancouver, B.C.
V6E 2E9

METALLURGICAL TESTING OF YUKON GOLD AND SILVER ORES

January 14, 1986

HRI Project 6178X
Copy No. 2

METALLURGICAL TESTING OF YUKON GOLD AND SILVER ORES

Prepared by:

John C. Gathje
Project Manager

Approved by:

P. N. Thomas
Vice President

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Appendix A: Sample Data

Appendix B: Test Data Sheets

INTRODUCTION AND SUMMARY

Chevron Canada Resources Limited, Vancouver, B.C., authorized Hazen Research, Inc. to perform metallurgical testing of five ore samples from their Yukon gold property. The samples represented a low and high grade oxide ore each from surface trenching and percussion drilling, and sulfide samples from percussion drilling and underground sampling.

The initial scope of testing included agitated cyanide leach tests of the oxide drill cutting samples, bottle roll cyanide amenability and column leach tests of the oxide trench samples, and flotation and cyanidation of the sulfide ores. The scope was later changed to include bottle roll cyanide amenability testing of the oxide drill cuttings, vat leaching of the high grade trench sample, and autoclave oxidation of the sulfide ores prior to cyanidation.

Agitated cyanidation of the oxide drill cuttings for feeds of 67 to 95% passing 200-mesh achieved gold dissolutions of 90% or greater and silver dissolutions of 40 to 50%. Preaeration of the High Grade Cuttings effectively reduced cyanide consumption from 2.7 to 1.6 pounds NaCN/ton of ore.

Bottle roll amenability tests of the two oxide drill cuttings were made using minus 1/4 inch ore, and achieved gold dissolutions of 91.8 and 86.3% from the Low and High Grade ores, respectively. These were comparable to the dissolutions achieved by agitated cyanidation using ground ore.

Bottle roll amenability and column leach testing achieved comparable gold dissolutions for both trench samples. Dissolutions for low grade ore were approximately 78% at minus 1-inch, and 82 to 87% at minus 1/2-inch. Likewise, gold dissolutions of 90 to 95% were achieved from either minus 1/2- or 1-inch High Grade ore. Cyanide consumptions for both ores were less than 1 lb NaCN/ton of ore. Screening the tailings and assaying the fractions revealed significant attrition during bottle roll testing but no significant assay anomalies.

Flooded vat leaching of minus 1-inch High Grade Trench ore achieved gold and silver dissolutions of 93.2 and 37.2% respectively, which were comparable to the bottle roll and column leach tests.

Bulk sulfide flotation of the Underground Sulfide ore recovered 95 to 97% of the gold and 86 to 92% of the silver into a concentrate of 45 to 49 weight percent. Recoveries from the Sulfide Drill Cuttings were lower, averaging approximately 80% for both gold and silver and weight percentages of 17 to 19.

Cyanidation of sulfide flotation concentrates achieved overall gold recoveries (from ore feed) of 80% for the Underground Sulfide ore and less than 25% for the Sulfide Drill Cuttings. Overall gold recovery for the Sulfide Drill Cuttings was increased to 79% using an autoclave oxidation prior to cyanidation. Due to incomplete oxidation in the autoclave, a similar test using the Underground Sulfide did not increase gold recovery. Cyanide consumptions for both sulfide ores were high, ranging from approximately 6 to 11 lb NaCN/ton of ore feed.

Bond Work Index determinations gave values of 16.4 kwhr/ton for the Underground Sulfide ore and 13.4 or 13.3 for the two surface trench samples.

SAMPLES

Six sample types were received for testing on August 7, 1985. They represented high and low grade oxide ores derived from rotary-percussion drilling and surface trenching, and sulfide ores from rotary-percussion drilling and underground sampling. Each sample was assigned a number for identification. The sample identifications and analyses are given in Tables 1 and 2, respectively.

The oxide and sulfide drill cuttings were blended individually, without additional crushing, and split to provide testing and head samples. The head samples were pulverized to minus 200 mesh. The trench samples required oven drying at 100°F prior to blending. The limited quantities and coarse sizes (plus 2 inch) precluded the splitting and preparation of representative head samples. The gold and silver values given in Table 2 for the trench samples are averages for the calculated feeds from their respective tests.

A letter documenting the sample procurements was provided to Hazen and is included in Appendix A.

Table 1

Sample Identifications

HRI 30779-	Chevron Identification	Received 1/ lb	Received 1/ Ore Size
1	Low grade rotary-percussion drill cuttings; Oxide Zone	100	~1/4 inch
2	High grade rotary-percussion drill cuttings; Oxide Zone	100	~1/4 inch
3	Underground Sulfide	75	~1/4 inch
4	Low grade surface trench from Brown-McDade Zone	300	2 inch
5	High grade surface trench from Brown-McDade Zone	300	2 inch
6	High grade rotary-percussion drill cuttings; Sulfide Zone	18	~1/4 inch

1/ Samples were received on August 7, 1985.

Table 2

Sample Analyses

HRI 30779	Low Grade Cuttings -1	High Grade Cuttings -2	Underground Sulfide -3	Low Grade Trench -4 1/	High Grade Trench -5 1/	Sulfide Cuttings -6
Au, oz/t	0.055	0.167	0.103	0.051	0.453	0.250
Ag, oz/t	0.27	1.65	3.63	0.70	1.36	1.04
Zn, %			1.73			0.49
As, ppm			2235			4880
Cd, %			0.022			0.007
Pb, %			0.83			0.11
Cu, %			0.15			0.07
Sb, %			0.045			0.021
S, % sulfide						8.20
SO_4, % sulfate						2.27
S, % total			18.3			

1/ Due to the coarse ore size and limit quantities, the trench samples were not sampled for analyses. The reported values for gold and silver are averages calculated from their respective tests.

TEST PROCEDURES AND RESULTS

Testing was in accordance with a program outlined by Kilborn Engineering (B.C.) Ltd., Vancouver, Canada. It consisted of mechanically agitated cyanide leach tests made on the Low and High Grade Cuttings (oxide ore), and bottle roll amenability tests, work index tests, and column leach tests on the Low and High Grade Trench Samples. Agitated cyanide leach and flotation tests were made using the two sulfide ore samples. These tests included the cyanidation of whole ore and of flotation concentrates. As data became available, the test program was changed to include a flooded vat leach of the High Grade Trench ore, autoclave oxidation and cyanidation of flotation concentrates produced from the two sulfide ores, and bottle roll amenability tests on High and Low Grade Cuttings.

Feeds for the agitation cyanide leach tests were prepared by wet grinding the ore in a laboratory rod mill. The cyanidation was made at approximately 30% solids using mechanical agitation and a pH maintained at 10.5 or higher using hydrated lime. Intermediate liquor samplings were made to determine the gold and silver dissolution rates. Free cyanide concentrations were determined at each sampling using a silver nitrate titration, and additional sodium cyanide was added to maintain the desired level.

The leach pulps were vacuum filtered and the solids washed by water displacements. The liquors were assayed for gold and silver by atomic absorption and the solids by fire assay.

The bottle roll amenability tests were made in a similar manner. The crushed ore samples were pulped to 30% solids and cyanide leached in polyethylene bottles rolling at approximately 15 rpm. The leach tailings and replicate splits of the test feeds were screened and the fractions fire assayed for gold and silver.

Flotation tests were made by wet grinding ore in a laboratory rod mill and using a combination of a xanthate and a dithiophosphate to produce bulk sulfide concentrates.

The autoclave tests used a Parr 2-liter autoclave and flotation concentrates adjusted to pH 1 with sulfuric acid at 30% solids in a glass liner. All wetted parts were glass or titanium. Heating of the pulp in the autoclave required 20 to 30 minutes, during which a vacuum was applied to minimize incidental oxidation. Heat was applied to a temperature of 150°C and the autoclave was pressurized with oxygen to a level of 125 pounds oxygen overpressure (125 pounds above the steam pressure). The exothermic oxidation reaction provided sufficient heat to reach and maintain the goal of 180°C. A gas bleed of 2000 cc min was maintained during oxidation. At the end of two hours, the autoclave was cooled with water sprays and the pulp was filtered and the solids water washed prior to repulping for cyanidation.

Data sheets for all tests are given in Appendix B. All gold and silver solid assays are reported as oz/t (troy oz per short ton) and liquor analyses as mg/l. Reagent consumptions are reported as pounds of reagent per ton of test feed (either ore or concentrate).

Low and High Grade Oxide Cuttings Samples

Agitated Cyanide Leach Tests

Preliminary cyanide leach tests were made using the Low Grade Cuttings at a single grind size of 96% passing 200 mesh, and the High Grade Cuttings at three grind sizes ranging from 67 to 95% passing 200 mesh. The results after 24 hours of cyanidation are summarized in Table 3. Leaching the Low Grade Cuttings achieved a tailings assaying 0.003 oz Au/t and a gold dissolution of 93.3%. All three grind sizes for the High Grade Cuttings achieved experimentally identical tailings and gold dissolutions of 0.015 oz Au/t, and 89.2 to 90.4%, respectively.

Cyanide consumptions were 2 pounds of sodium cyanide per ton of Low Grade ore, and 2.7 to 3.8 pounds per ton of High Grade ore. The consumptions for the High Grade ore increased as the grind size decreased indicating a possible dependence upon the surface area exposed to cyanide attack.

Table 3

Preliminary Agitated Cyanide Leach Tests for
High and Low Grade Drill Cuttings

Test 1733	Sample	% Passing 200 mesh	24-hour Cyanidation				
			Tailings, oz/t		% Dissolutions		Consumed lb NaCN/t ore
			Au	Ag	Au	Ag	
13	High grade	67	0.016	1.02	89.9	43.3	2.7
14	High grade	90	0.015	0.95	89.2	43.0	3.6
15	High grade	95	0.015	1.00	90.4	41.2	3.8
16	Low grade	96	0.003	0.14	93.3	53.6	2.0

Leach conditions: 30% solids
72 hours with samplings at 2, 6, 12, 24, 48 hours
0.5 g NaCN/l (maintained)
pH 10.5 (with $Ca(OH)_2$)

Table 4

Agitated Cyanide Leach Tests for High Grade
Drill Cuttings Using Aeration and Lead Nitrate

Test 1733	Treatment	24-hour Cyanidation				
		Tailings, oz/t		% Dissolutions		Consumed lb NaCN/t ore
		Au	Ag	Au	Ag	
26	18-hour preaeration with washing prior to CN^-	0.018	1.03	86.5	36.7	1.6
27	18-hour preaeration with washing prior to CN^-, lead nitrate added to grind and to leach	0.021	1.03	88.5	38.6	1.4

Leach Conditions: 30% solids
48 hours with samplings at 2, 6, 12, and 24 hours
0.5 g NaCN/l (maintained)
pH 10.5 (with $Ca(OH)_2$)
ambient preaeration

Additional tests used preaeration for the High Grade cuttings prior to cyanidation, with and without the addition of lead nitrate. The results in Table 4 show slightly lower gold dissolutions and higher tailings gold assays. These variations are probably a result of experimental deviations rather than metallurgical differences. The most significant change was the reduction of the cyanide consumption to levels of 1.4 to 1.6 pounds per ton of ore.

Bottle Roll Amenability Tests

Splits of as-received Low and High Grade cuttings were each cyanide leached using bottle rolls. The tailings were screened and the fractions fire assayed for gold and silver. Replicate splits without leaching were screened and the fractions fire assayed. The gold and silver dissolutions during leaching are summarized in Table 5 and show tailings assays and percentage gold dissolutions for both ores which were similar to those obtained from the agitated leach tests. The fraction assays and percentage gold and silver distributions are given in Tables 6 and 7, respectively.

Table 5

Bottle Roll Amenability Testing of
Low and High Grade Drill Cuttings

	24-hour Cyanidation			Calculated Feed			
	% Dissolution		Consumed	oz/t		Tailings, oz/t	
Sample	Au	Ag	lb NaCN/t	Au	Ag	Au	Ag
Low Grade (Test 1751-21)	91.8	40.1	0.5	0.040	0.29	0.002	0.16
High Grade (Test 1751-22)	86.3	29.7	0.6	0.165	1.73	0.020	1.15

Table 6

Size Fractions and Assays for Low and High
Grade Drill Cutting Ore Feeds and Leach Tailings
(as-received size; no crush)

Fraction, Inch or Mesh	Low Grade Cuttings						High Grade Cuttings					
	Ore Feed			Leach Tailings			Ore Feed			Leach Tailings		
	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t
Plus 1/4 inch	0.4	0.008	0.39	0.4	0.001	0.06	1.7	0.059	0.87	1.9	0.122	0.97
1/4 x 10	11.8	0.023	0.13	11.5	0.006	0.10	20.3	0.093	1.21	20.8	0.025	0.95
10 x 28	16.0	0.024	0.14	15.6	0.004	0.06	20.0	0.079	1.02	18.9	0.018	0.72
28 x 100	21.4	0.017	0.18	19.2	0.001	0.06	19.8	0.106	0.89	16.9	0.016	0.55
100 x 200	9.3	0.040	0.25	8.1	0.001	0.11	7.3	0.215	0.97	6.1	0.011	0.49
-200	41.1	0.054	0.55	45.2	0.002	0.26	30.9	0.322	3.17	35.4	0.015	1.90
Calculated	100.0	0.036	0.33	100.0	0.002	0.16	100.0	0.172	1.69	100.0	0.020	1.15

Table 7

Size Fractions and Distributions for Low and High Grade Drill Cuttings Ore Feeds and Leach Tailings

Fraction, Inch or Mesh	Low Grade Cuttings						High Grade Cuttings					
	Ore Feed			Leach Tailings			Ore Feed			Leach Tailings		
	% Wt	% Au	% Ag	% Wt	% Au	% Ag	% Wt	% Au	% Ag	% Wt	% Au	% Ag
Plus 1/4 inch	0.4	0.1	0.5	0.4	0.2	0.2	1.7	0.6	0.9	1.9	11.8	1.6
1/4 x 10 M	11.8	7.5	4.7	11.5	27.7	7.2	20.3	11.0	14.5	20.8	26.5	17.2
10 x 28	16.0	10.6	6.8	15.6	25.0	5.9	20.0	9.2	12.1	18.9	17.4	11.9
28 x 100	21.4	10.1	11.8	19.2	7.7	7.2	19.8	12.2	10.4	16.9	13.8	8.1
100 x 200	9.3	10.3	7.1	8.1	3.2	5.6	7.3	9.1	4.2	6.1	3.4	2.6
Minus 200	41.1	61.4	69.1	45.2	36.2	73.9	30.9	57.9	57.9	35.4	27.1	58.6
Calculated	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		

Low and High Grade Oxide Trench Samples

Bottle Roll Amenability Tests

Bottle roll amenability tests were made using each of the Low and High Grade Trench samples at sizes of minus 10 mesh, 1/2 and 1 inch. The tailings were screened and the fractions assayed for gold and silver. Replicate splits of the feeds were also screened and the fractions assayed. The metallurgical results are summarized in Table 8, and fraction assays and percentage gold and silver distributions are given in Tables 9 and 10, respectively.

The data in Table 8 show that finer grinds achieved progressively lower tailings gold assays for both ore types. The tailings for the Low Grade sample decreased almost five-fold: from 0.011 oz Au/t at minus 1-inch to 0.002 oz Au/t at minus 10 mesh. The tailings assays for the High Grade sample decreased from 0.028 to 0.021 oz Au/t at minus 1/2 or 1-inch, to 0.007 oz Au/t at minus 10 mesh.

The tailings silver assays for the both ore types show minimal changes as the grinds changed.

Cyanide consumptions do not show a dependence upon the grind size and averaged 0.3 and 0.8 pound of sodium cyanide per ton of ore for the Low and High Grade samples, respectively.

The assay comparisons for the Low Grade feed and leach tailings in Table 9 show consistent results. An exception is the Low Grade minus 10- and plus 28-mesh tailings fraction for the minus 1/2 inch ore which assayed 0.029 oz Au/t compared to 0.024 oz Au/t for the same size fraction in the feed. The percentage gold and silver distributions in Table 10 do not show concentrations of either metal in particular size fractions. However, it is apparent from the weight distributions that both ores were sensitive to the mechanical action of the bottle rolls. The weight percentages of the minus 200-mesh fractions increased from approximately 25% in the feed to as high as almost 50% in the leach tailings.

Table 8

Bottle Roll Amenability Testing of
Low and High Grade Trench Samples
(24 hour cyanidation)

Test 1733	Sample	Ore Size	% Dissolution Au	% Dissolution Ag	Consumed lb NaCN/t ore	Calculated Feed oz/t Au	Calculated Feed oz/t Ag	Tailings oz Au/t 1/ Au	Tailings oz Au/t 1/ Ag
17	Low grade	10 mesh	97.5	36.2	0.3	0.046	0.68	0.002	0.42
18	Low grade	minus 1/2 inch	82.4	19.2	2/	0.051	0.53	0.008	0.42
19	Low grade	minus 1 inch	78.4	16.1	2/	0.061	0.63	0.011	0.51
20	High grade	10 mesh	98.2	55.2	0.8	0.359	1.02	0.007	0.43
21	High grade	minus 1/2 inch	94.5	36.9	0.9	0.515	1.56	0.028	0.93
22	High grade	minus 1 inch	91.4	33.0	0.6	0.413	1.32	0.021	0.83

1/ The listed tailings assays are after 168 hours of leaching. However, since the percentage dissolutions at 24 and 168 hours are similar, it is assumed that their tailings assays are identical.

2/ Indeterminate cyanide consumptions, which were not rectified by reassays.

Table 9

Size Fractions and Assays for Low and High Grade
Trench Ore Feeds and Bottle Roll Amenability Tailings

Crush Size	Fraction Size, inch or mesh	Low Grade Trench						High Grade Trench					
		Ore Feed			Leach Tailings			Ore Feed			Leach Tailings		
		% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t
10 mesh	Plus 10 M	0.4	0.033	1.20				0.3	0.083	0.68			
	10 x 28 M	24.6	0.024	0.65	20.1	<0.002	0.17	20.3	0.099	0.62	18.9	0.015	0.39
	28 x 35 M	20.1	0.022	0.51	13.9	<0.002	0.11	19.7	0.107	0.53	13.7	0.009	0.26
	35 x 100 M	17.7	0.035	0.56	13.5	<0.002	0.12	19.5	0.125	0.53	14.5	0.005	0.21
	100 x 200 M	9.2	0.057	0.66	6.3	0.002	0.13	10.4	0.866	1.01	7.4	0.004	0.27
	Minus 200 M	28.0	0.085	1.78	46.3	0.003	0.74	29.8	0.633	2.14	45.5	0.005	0.60
	Calculated	100.0	0.046	0.93	100.0	0.002	0.42	100.0	0.344	1.08	100.0	0.007	0.43
Minus 1/2 inch	Plus 1/4 inch	15.5	0.047	0.64	18.3	0.007	0.27	17.6	0.159	0.88	14.9	0.060	0.60
	1/4 x 10 M	24.1	0.028	0.37	12.0	0.003	0.26	27.6	0.236	1.01	16.5	0.024	0.72
	10 x 28 M	15.5	0.024	0.37	14.0	0.029	0.18	13.1	0.235	0.92	8.9	0.018	0.45
	28 x 100 M	13.7	0.029	0.38	6.8	<0.002	0.11	12.3	0.484	1.03	6.8	0.008	0.28
	100 x 200 M	6.7	0.054	0.47	2.9	<0.002	0.10	5.5	2.08	1.85	3.0	0.004	0.22
	Minus 200 M	24.5	0.087	1.33	46.0	0.004	0.66	23.9	1.04	3.36	49.9	0.025	1.31
	Calculated	100.0	0.047	0.66	100.0	0.008	0.42	100.0	0.546	1.59	100.0	0.028	0.93
Minus 1 inch	Plus 1 inch	17.0	0.056	0.63	23.9	0.020	0.40	26.7	0.107	0.53	29.6	0.037	0.44
	1/2 x 1/4 inch	4.2	0.032	0.45	3.0	0.006	0.31	4.8	0.115	1.02	3.6	0.013	0.69
	1/4 x 10 M	19.6	0.031	0.67	9.1	0.021	0.31	15.9	0.188	1.08	9.7	0.013	0.90
	10 x 28 M	17.4	0.031	0.43	8.0	0.013	0.17	12.3	0.258	1.01	6.1	0.010	0.59
	28 x 100 M	13.3	0.062	0.45	6.0	0.007	0.12	10.9	0.525	1.19	4.4	0.005	0.33
	100 x 200 M	5.1	0.085	0.57	2.5	<0.002	0.08	4.4	1.60	1.10	2.2	0.003	0.23
	Minus 200 M	23.4	0.111	1.78	47.5	0.006	0.74	25.0	1.34	3.69	44.1	0.017	1.20
	Calculated	100.0	0.061	0.84	100.0	0.011	0.51	100.0	0.558	1.59	100.0	0.021	0.83

Table 10

Size Fractions and Distributions for Low and High Grade
Trench Ore Feeds and Bottle Roll Amenability Tailings

Crush Size	Fraction Size, inch or mesh	Low Grade Trench						High Grade Trench					
		Ore Feed			Leach Tailings			Ore Feed			Leach Tailings		
		% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t	% Wt	oz Au/t	oz Ag/t
10 mesh	plus 10 M	0.4	0.3	0.5				0.3	0.1	0.2			
	10 x 28 M	24.6	12.9	17.3	20.1	0.0	8.2	20.3	5.8	11.7	18.9	38.5	17.0
	28 x 35 M	20.1	9.7	11.1	13.9	0.0	3.7	19.7	6.1	9.7	13.7	16.7	8.2
	35 x 100 M	17.7	13.6	10.7	13.5	0.0	3.9	19.5	7.1	9.6	14.5	9.8	7.0
	100 x 200 M	9.2	11.5	6.6	6.3	8.3	2.0	10.4	26.1	9.7	7.4	4.0	4.6
	Minus 200 M	28.0	52.0	53.8	46.3	91.7	82.0	29.8	54.8	59.1	45.5	31.0	63.2
Minus 1/2 inch	Plus 1/4 inch	15.5	15.6	15.1	18.3	17.0	11.8	17.6	5.1	9.8	14.9	32.3	9.6
	1/4 x 10 M	24.1	14.5	13.6	12.0	4.8	7.4	27.6	11.9	17.6	16.5	14.3	12.8
	10 x 28 M	15.5	8.0	8.8	14.0	53.8	6.0	13.1	5.6	7.6	8.9	5.8	4.3
	28 x 100 M	13.7	8.5	7.9	6.8	0.0	1.8	12.3	10.9	8.0	6.8	2.0	2.1
	100 x 200 M	6.7	7.8	4.8	2.9	0.0	0.7	5.5	20.9	6.4	3.0	0.4	0.7
	Minus 200 M	24.5	45.6	49.8	46.0	24.4	72.3	23.9	45.6	50.6	49.9	45.2	70.5
Minus 1 inch	Plus 1/2 inch	17.0	15.6	12.8	23.9	42.8	18.8	26.7	5.1	8.9	27.6	51.9	15.7
	1/2 x 1/4 inch	4.2	2.2	2.3	3.0	1.6	1.8	4.8	1.0	3.1	3.6	2.4	3.2
	1/4 x 10 M	19.6	10.0	15.7	9.1	17.1	5.6	15.9	5.4	10.8	9.7	6.0	10.5
	10 x 28 M	17.4	8.9	8.9	8.0	9.3	2.7	12.3	5.7	7.8	6.1	2.9	4.3
	28 x 100 M	13.3	13.5	7.1	6.0	3.8	1.4	10.9	10.2	8.2	4.4	1.0	1.8
	100 x 200 M	5.1	7.1	3.5	2.5	0.0	0.4	4.4	12.6	3.0	2.2	0.3	0.6
	Minus 200 M	23.4	42.7	49.7	47.5	25.4	69.3	25.0	60.0	58.2	44.1	35.5	63.9

Column Leach Tests

The Low and High Grade Trench samples were each tested in columns to determine their response to heap leaching. The Low Grade ore was tested at minus 1/2 and 1 inch, and the High Grade at minus 1/2 inch. The minus 1/2-inch tests were made in columns 6 inches in diameter and approximately 5 feet high. The minus 1-inch ore was tested in an 8-inch diameter column approximately 6 feet high. Fresh leach liquor (without recycling) containing 1 g NaCN/l, and adjusted with lime to pH 11, was applied to the top of each column at the rate of 0.005 gal/sq ft/min. The pregnant liquor from each column was composited daily and assayed for gold, silver, and cyanide. The 1/2-inch ores were leached for 17 days and the 1-inch for 21 days, each followed by a 4-day washing cycle.

The column data include daily gold and silver dissolutions and cyanide consumptions. The dissolutions are based upon the calculated feeds (including gold and silver contained in the pregnant leach liquors and the final tailings). The tailings were screened and the fractions assayed in a manner similar to the tailings from bottle roll amenability tests.

The results, summarized in Table 11, show rapid gold and silver dissolutions. In each test, the majority of leachable gold and silver was solubilized during the first 5 days.

The tailings screening and assaying data are summarized in Table 12 and for the most part are consistent with expected trends of higher assays for the coarser fractions. Unlike the bottle roll tests, the weight distributions for the column tailings are comparable to the feed distributions (see Table 10).

Tailings assays and percentage dissolutions for the column leach and bottle roll amenability tests are compared in Table 13. The correlations are excellent for the Low Grade sample; both leaching techniques achieved nearly identical tailings and dissolutions. Results for the High Grade sample show a slightly higher tailings assay for the bottle roll than for the column. This was thought to be more a function of test feed sample splitting than metallurgical variances.

The bottle roll cyanide consumptions were significantly higher, particularly for the Low Grade sample, due in part to the attrition of the samples and exposure of more surface area to cyanide.

The columns percolated well and showed no signs of plugging during testing. The two minus 1/2-inch ore feeds slumped approximately 20% in height and the minus 1-inch approximately 15%. This could present problems during plant leaching, particularly if multiple lifts were used.

Flooded Vat Leach of High Grade Trench Sample

Due to climatic conditions at the proposed plant-site, Chevron was considering flooded vat leaching as an alternative to heap leaching. Minus 1-inch High Grade Trench ore feed was agglomerated with 13 pounds of Type II cement and 0.16 pound of sodium cyanide per ton of ore. The agglomerated ore containing 7.2% moisture was cured for 48 hours in an 8-inch diameter by 6-foot high column. The column was then flooded by upflowing and recycling leach liquor containing 1 g NaCN/l at a rate of 0.02 gal/sq ft/min. The pregnant liquor was sampled periodically and assayed for gold. Leaching was terminated after 7 days when the liquor assays indicated that no additional gold was being solubilized. The tailings were washed in the column by upflowing water without recycle, then screened and the fractions assayed.

The daily gold dissolutions are summarized in Table 14 and the gold and silver distributions in Table 15. The vat gold and silver dissolutions of 93.2 and 32.2% compare well with the respective bottle roll dissolutions of 91.4 and 33.0%. Likewise, the vat tailings assays of 0.027 oz Au/t and 0.90 oz Ag/t compare well with the bottle roll tailings of 0.021 oz Au/t and 0.83 oz Ag/t.

The vat operated without plugging, but was difficult to wash efficiently. Four washings were made and, as shown in Table 15, the final wash still contained 3.7% of the gold, indicating the need for a fifth and possible sixth washing.

The size fraction analyses in Table 16 show slight concentrations of gold and silver in the minus 200-mesh fraction. The percentage weight distributions show good correlation to the feed distributions given in Table 10.

Table 11

Trench Sample Column Leach Tests: Cumulative Daily Percentage
Gold and Silver Dissolutions and Cumulative Daily Cyanide Consumptions

	Low Grade Trench, 1/2"			Low Grade Trench, 1"			High Grade Trench, 1/2"		
Leaching Days	% Au	% Ag	NaCN lb/t	% Au	% Ag	NaCN lb/t	% Au	% Ag	NaCN lb/t
1				21.9	4.0	0.05			
2	61.1	10.6	0.17	61.3	12.0	0.17	55.1	24.1	0.18
3	76.4	16.5	0.25	67.7	14.5	0.21	80.9	33.0	0.27
4	79.1	18.5	0.27	70.2	15.5	0.22	86.8	34.5	0.29
5	81.1	20.3	0.29	71.8	16.4	0.23	90.3	35.5	0.31
6	82.4	21.6	0.31	73.0	17.2	0.23	92.2	36.1	0.33
7	83.2	22.5	0.32	73.9	17.8	0.23	93.3	36.6	0.34
8	83.9	23.2	0.33	74.5	18.3	0.23	94.0	37.0	0.35
9	84.5	23.8	0.34	75.1	18.8	0.25	94.5	37.3	0.38
11	85.4	24.7	0.36	75.9	19.6	0.26	95.1	37.8	0.41
13	86.0	25.4	0.36	76.6	20.3	0.28	95.5	38.2	0.44
15	86.4	26.0	0.36	77.0	21.0	0.29	95.7	38.6	0.44
17	86.9	26.5	0.36	77.4	21.5	0.29	95.9	38.9	0.44
21	87.3	26.9		77.6	21.9		96.0	39.4	
Calculated feeds, oz/t	0.047	0.66		0.048	0.65		0.493	1.38	
Assayed tailings, oz/t	0.006	0.48		0.11	0.51		0.19	0.83	

Table 12

Column Leach Tailings Size
Fractions and Analyses

Ore Type and Crush Size	Fraction, inch or mesh	% Wt	Analyses, oz/t		% Distribution	
			Au	Ag	Au	Ag
Low Grade Minus 1/2 inch (Test 1733-45)	Plus 1/4 inch	22.2	0.009	0.41	32.6	19.0
	1/4 x 10	26.9	0.004	0.27	17.6	15.2
	10 x 28	11.2	0.007	0.28	12.8	6.5
	28 x 100	12.3	0.004	0.34	8.0	8.7
	100 x 200	4.8	0.004	0.39	3.1	3.9
	Minus 200	22.6	0.007	0.99	25.9	46.7
	Calculated	100.0	0.006	0.48	100.0	100.0
Low Grade: Minus 1 inch) (Test 1733-47)	Plus 1/2 inch	23.0	0.010	0.57	20.6	25.8
	1/2 x 1/4	14.4	0.006	0.43	7.8	12.2
	1/4 x 10	19.7	0.004	0.26	7.1	10.1
	10 x 28	8.3	0.065	0.26	48.4	4.2
	28 x 100	9.7	0.004	0.27	3.5	5.2
	100 x 200	4.3	0.004	0.34	1.5	2.9
	Minus 200	20.6	0.006	0.98	11.1	39.6
	Calculated	100.0	0.011	0.51	100.0	100.0
High Grade Minus 1/2 Inch (Test 1733-46)	Plus 1/4 inch	27.3	0.020	0.42	28.6	13.9
	1/4 x 10	23.7	0.034	0.55	42.1	15.8
	10 x 28	9.0	0.010	0.69	4.7	7.5
	28 x 100	11.0	0.010	0.71	5.8	9.5
	100 x 200	4.2	0.009	0.69	2.0	3.5
	Minus 200	24.8	0.013	1.66	16.8	49.8
	Calculated	100.0	0.019	0.83	100.0	100.0

Table 13

Comparison of Bottle Roll Amenability and
Column Leach Tests; Low and High Grade Trench Samples

Ore Type	Size	Tailings, oz Au/t		% Gold Dissolution		Cyanide Consumptions, lb/ton	
		Bottle Roll	Column Test	Bottle Roll	Column Test	Bottle Roll	Column Test
Low grade	minus 1/2-inch	0.008	0.006	82.4	87.3	2.6	0.36
	minus 1-inch	0.011	0.011	78.4	77.6	2.6	0.29
High grade	minus 1/2-inch	0.028	0.019	94.5	96.0	0.9	0.44

Table 14

High Grade Trench Sample Flooded Vat,
Cumulative Daily Gold Dissolution

Leach Day	% Au Dissolution
1	24.1
2	50.4
3	64.5
4	76.2
7	93.2

Table 15

High Grade Trench Sample
Flooded Vat; Metals Distribution

Test Sample	Volume, l or wt, kg	Analyses mg/l or oz/t Au	Ag	% Distributions Au	Ag
Pregnant liquor	21.3	25.2	28.6	58.7	19.9
Wash No. 1	50.7	3.05	3.4	16.9	5.6
Wash No. 2	20	3.70	5.2	8.1	3.4
Wash No. 3	21	2.5	3.0	5.8	2.1
Wash No. 4	20	1.7	1.8	3.7	1.2
Dry tailings	66.937	0.027	0.90	6.8	67.8
Calculated feed		0.398	1.33	100.0	100.0

Table 16

High Grade Trench Flooded Vat Leach Tailings;
Size Fractions and Analyses

Fraction, inch or mesh	% Wt	Analyses, oz/t		% Distribution	
		Au	Ag	Au	Ag
Plus 1/2 inch	22.3	0.035	0.45	29.0	11.1
1/2 x 1/4 inch	15.1	0.020	0.59	11.2	9.9
1/4 x 10 m	14.9	0.022	0.85	12.2	14.0
10 x 28	9.5	0.013	0.62	4.6	6.5
28 x 100	9.5	0.009	0.54	3.2	5.7
100 x 200	4.2	0.016	0.58	2.5	2.7
Minus 200	24.5	0.041	1.85	37.3	50.1
Calculated	100.0	0.027	0.90	100.0	100.0

Sulfide Ore Samples

Underground Sulfide Bulk Flotation

Table 17 summarizes the results of five froth flotation tests made to recover the gold and silver values from the Underground Sulfide ore. Depending upon the grind size, the rougher tailings assayed 0.006 to 0.014 oz Au/t with respective gold recoveries of 94.0 to 97.4%. The silver recoveries ranged from 90.5 to 92.3%. The concentrate weight percentages were high, ranging from 44 to 49% of the ore feed.

Table 17

Bulk Sulfide Flotation of Underground Sulfide Ore

Test 1733	Rougher Concentrate % Wt	Analyses, oz/t Au	Analyses, oz/t Ag	% Recovery Au	% Recovery Ag	Flotation Feed, % Passing 270 M	Rougher Tailings, oz/t Au	Rougher Tailings, oz/t Ag
24	48.98	0.230	7.67	94.0	90.8	93	0.014	0.75
25	45.71	0.239	7.92	95.7	90.5	80	0.009	0.70
30	46.87	0.250	8.60	97.4	92.2	>95	0.006	0.64
44	45.21	0.231	8.21	96.5	92.3	>95	0.007	0.56
100	43.67	0.243		95.9		>95	0.009	0.74

Underground Sulfide Cyanidation

The Underground Sulfide ore was tested by cyanide leaching of ore (direct cyanidation) or its flotation concentrates. The concentrates were leached either as floated, with regrinding, or with ambient or autoclave preoxidation. The results are summarized in Table 18.

Direct cyanidation achieved only 42 to 49% gold dissolutions and less than 2% silver dissolutions. By comparison, cyanidation of flotation concentrates with or without regrinding achieved respective gold and silver dissolutions of approximately 81 and 55%. The higher dissolutions from the concentrates is believed to be due to higher cyanide concentrations of 1 g NaCN/l compared to less than 0.2 g NaCN/l used for direct cyanidation. The lower cyanide during direct leaching was a result of high cyanide consumptions which were later taken into account during the concentrate leach tests.

An attempt to lower cyanide consumptions was made by using ambient preoxidation of the flotation concentrate prior to cyanidation. The results, Table 18 and Test 1733-44, were encouraging; the cyanide consumptions decreased from the previous 9 lb/ton to 5.6 lb/ton.

Table 18

Agitated Cyanide Leach Tests of Underground Sulfide Ore; Direct Cyanidation, and Cyanidation of Flotation Concentrate with and without Aqueous Preoxidation

Test	Pretreatment	Flotation Concentrate					48-hour Cyanidation					Overall Recoveries, %	
		%	Analyses, oz/t		% Recovery		Tailings, oz/t		% Dissolutions		Consumed		
1733	for Cyanidation	Wt	Au	Ag	Au	Ag	Au	Ag	Au	Ag	lb NaCN/ton Ore	Au	Ag
28	1/	NA					0.053	3.54	49.6	1.3	9.0	49.6	1.3
29	1/	NA					0.066	3.77	42.0	0.8	9.5	42.0	0.8
30A	2/	46.87	0.250	8.60	97.4	92.2	0.036	3.38	84.1	61.1	9.8	81.9	56.3
30B	3/	46.87	0.250	8.60	97.4	92.2	0.042	3.59	82.9	59.6	8.2	80.7	55.0
44	4/	38.93	0.264	9.22	94.8	89.3	0.038	2.60	86.6	69.1	5.6	82.1	61.7
100	5/	43.67	0.243	6.26	95.5	86.8	0.072	1.50	82.0	88.9	24.1	78.3	77.2

1/ Tests 28 and 29 were direct cyanidation of ore ground to minus 325 and 400 mesh respectively, and without any pretreatment.
2/ Cyanidation of rougher concentrate (no regrind).
3/ Cyanidation of rougher concentrate after regrinding to minus 400 mesh.
4/ Cyanidation of cleaner concentrate after ambient preoxidation.
5/ Cyanidation of cleaner concentrate after autoclave oxidation.

Autoclave oxidation was also tested as a means to improve the gold dissolutions from flotation concentrates, and a single autoclave preoxidation test produced mixed results. The overall gold dissolution was slightly lower, 78.3% compared to 80% or higher without autoclaving, but the silver dissolution of 77.2% was higher than the 55% achieved without autoclave oxidation.

The most notable effect of the autoclave oxidation was the very large increase in cyanide consumption from the previous levels of 5.6 to 9.8 lb/ton ore to 24.1 lb/ton ore. The cause for this increase is not known, but was not due to solubles generated during autoclaving since the autoclave slurry was washed thoroughly prior to cyanidation. It was observed that the pulp changed color during cyanidation from a dark to a reddish brown and the change appeared to be concurrent with the addition of lime to maintain pH. The color change indicates a possible change in composition of the pulp, which in turn appears to have resulted in the excessive cyanide consumption.

The decreased gold dissolutions and increased cyanide consumption may have been due to incomplete oxidation of the sulfides during autoclaving. The solids after autoclaving contained 47% sulfide sulfur. In retrospect, a high bleed rate should have been used to insure sufficient oxygen.

Sulfide Drill Cuttings Flotation and Cyanidation

The results of similar tests using the Sulfide Drill Cuttings are given in Table 19. Gold and silver recoveries were both approximately 80% by flotation and less than 30 and 60%, respectively by cyanidation. Autoclave oxidation of the flotation concentrate prior to cyanidation increased the overall gold recovery to 79.1%.

The cyanidation of a flotation tailings (Test 1733-102B) achieved approximately 9% additional gold dissolution (overall) and 13% additional silver.

Table 19

Agitated Cyanide Leach Tests of Sulfide Drill Cuttings;
Cyanidation of Flotation Cleaner Concentrate

Test 1733	Pretreatment for Cyanidation	Flotation Concentrate % Wt	Analyses, oz/t Au	Analyses, oz/t Ag	% Recovery Au	% Recovery Ag	48-hour Cyanidation Tailings, oz/t Au	Tailings, oz/t Ag	% Dissolutions Au	% Dissolutions Ag	Consumed NaCN/ton Ore	Overall Recoveries, % 4/ Au	Overall Recoveries, % 4/ Ag
49	1/	18.90	0.960	3.76	79.6	78.5	0.650	2.60	32.3	30.9	8.0	25.7	24.3
102A	2/	17.76	1.237	5.58	81.7	81.7	0.912	1.48	26.3	73.5	6.9	21.5	60.0
101	3/	17.33	1.112	0.77	80.2	40.7 4/	0.019	0.08	98.6	91.2	10.8	79.1	37.1
Flotation Tailings													
102B		82.24	0.060	0.27	18.3	18.3	0.031	0.08	47.9	69.9	15.0	8.8 (30.3) 5/	12.8 (72.8) 5/

1/ Ambient preoxidation.
2/ None.
3/ Autoclave oxidation.
4/ Low recovery due to anomalous assays which were not rectified by reassaying.
4/ Combined recoveries from flotation and cyanidation of flotation concentrate.
5/ Combined recoveries from cyanidation of concentrate and tailings.

Bond Work Index Determinations

Bond Work Index determinations were made for the Underground Sulfide and two trench samples by wet grinding in a calibrated ball mill. The indices, Table 20, ranged from 16.4 kwhr/ton for the sulfide ore to 13.3 and 13.4 kwhr/ton for the two trench samples.

Table 20

Bond Work Indices

Sample	K80, μ		Index
	Feed	Product	kwhr/t
Underground Sulfide	1586	52	16.4
Low Grade Sulfide	1259	68	13.4
High Grade Trench	1214	67	13.3

APPENDIX A

Sample Data

ARCHER, CATHRO
& ASSOCIATES (1981) LIMITED
CONSULTING GEOLOGICAL ENGINEERS

Box 4127, 3125 Third Avenue
Whitehorse, Y.T. Y1A 3S9 (403) 667-4415

July 19, 1985.

Mr. Helmut Wober,
Chevron Canada Resources Limited,
1900 - 1055 West Hastings Street,
Vancouver, B.C.
V6E 2E9

We have collected metallurgical test samples from seven environments as described in the attached report. As per telephone instructions from Roger Nendick, these samples (contained in 18 white 5 gallon pails) have been sent directly to Hazen Research (International) Inc. in Golden, Colorado by Canadian Freightways Limited. Individual sample descriptions were enclosed in the containers.

Yours truly,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

A.R. Archer

/mjm

cc: C. Dyson
R. Nendick ✓
J. Jewett

1016 - 510 West Hastings Street, Vancouver, B.C. V6B 1L8 (604) 688-2568

Hazen Research
(International), Inc.

METALLURGICAL TEST SAMPLES

Nansen Project
July 16, 1985

A total of seven sample groups have been obtained as follows.

1 - COMPOSITE OF HIGH GRADE ROTARY-PERCUSSION DRILL HOLE CUTTINGS FROM OXIDE ZONE

Sample Description: Consists of two pails labeled high grade drill, each pail contains a composite comprised of splits from eleven oxidized intervals from four percussion drill holes as follows.

Hole #	Sample #	From	To	oz/ton Au	oz/ton Ag
Hole 3	N30173	60'	65'	0.208	1.97
Hole 3	N30176	75'	80'	0.228	2.72
Hole 4	N30431	0'	5'	0.156	2.08
Hole 4	N30433	10'	15'	0.248	3.32
Hole 4	N30434	15'	20'	0.130	1.66
Hole 4	N30443	60'	65'	0.120	0.95
Hole 5	N30533	40'	45'	0.160	2.66
Hole 5	N30534	45'	50'	0.082	0.93
Hole 5	N30536	55'	60'	0.094	0.81
Hole 6	N30601	60'	65'	0.128	0.51
Hole 6	N30604	75'	80'	0.140	1.12
Average Grade				0.154	1.70

Approximate Wt: 50 lb. in each pail

Comment: The material in the pails has not been homogenized.

2 - COMPOSITE OF LOW GRADE ROTARY-PERCUSSION DRILL HOLE CUTTINGS FROM OXIDE ZONE

Sample Description: Consists of two pails low grade drill, each pail contains a composite comprised of splits from seven oxidized intervals from four percussion drill holes as follows.

Hole #	Sample #	From	To	oz/ton Au
Hole 3	N30172	55'	60'	0.026
Hole 4	N30439	40'	45'	0.025
Hole 4	N30444	65'	70'	0.040
Hole 5	N30535	50'	55'	0.044
Hole 6	N30595	30'	35'	0.079
Hole 6	N30599	50'	55'	0.030
Hole 6	N30600	55'	60'	0.034
Average Grade				0.040

Approximate Wt: 50 lb. in each pail

Comment: The material in the pails has not been homogenized.

3 - COMPOSITE OF HIGH GRADE ROTARY-PERCUSSION DRILL HOLE CUTTINGS FROM SULPHIDE ZONE

Sample Description: One plastic bag in a pail labeled high grade drill. Consists of a composite of sulphide-bearing samples from deepest intersections as follows.

Hole #	Sample #	From	To	oz/ton Au
Hole 1	N30042	205'	210'	0.451
Hole 1	N30043	210'	215'	0.158
Hole 1	N30044	215'	220'	0.152
Average Grade				0.253

Approximate Wt: 18 lb.

Comment: The sample bag is in a pail that is also labeled crosscut samples.

4 - SAMPLES FROM BROWN-MCDADE CROSSCUT

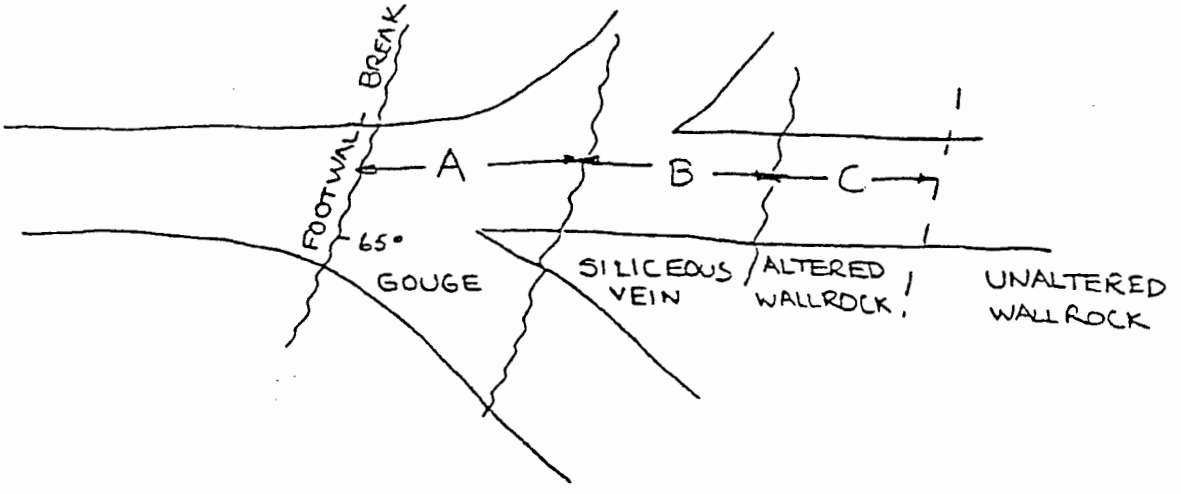
Sample Description: Three chip channel samples in plastic bags in a pail labeled crosscut samples. Individual bags are labeled A, B and C and each weighs about 15 pounds.

A - A 22 foot chip sample consisting of altered gougy rock between the footwall break and a siliceous vein zone.

B - A 16 foot chip channel sample of siliceous vein material directly in hanging wall of A above.

C - A 14 foot chip channel sample of altered hanging wall.

All samples were taken along the left wall near the back.



See Map "A" attached for original (1947) sample data.

5 - SULPHIDE-RICH VEIN FROM BROWN-MCDADE DRIFT FACE

Sample Description: Channel sample of pyrite, arsenopyrite and minor tetrahedrite in a pail labeled sulphide underground.

Material Sampled: Nearly massive partly oxidized sulphides with about 10% quartz from face where previous sampling returned 0.22 oz/ton Au across 2.5 ft. Mixture of arsenopyrite and pyrite. Minor malachite suggests tetrahedrite is also present. The drift face was sealed before sampling. See Map "B" attached for original sample data.

Approximate Wt: 75 to 100 lb. (1 pail)

6 - SAMPLES FROM HIGHER GRADE PORTIONS OF SURFACE TRENCHES ON BROWN-MCDADE ZONE

Sample Description: Six pails, each labeled high grade trench, from each of six trench intervals. Maximum fragment diameter two inches.

Trench #	Sample #	Interval (m)	oz/ton Au	Pail #
Trench 3	P25	28 to 32	0.096	1
Trench 3	P36	66 to 69	0.146	2
Trench 4	P45	24 to 27	0.168	3
Trench 5	P64	31.5 to 34	0.112	4
Trench 5	P60	20 to 23	0.184	5
Trench 9	P126	25 to 27	0.284	6

Approximate Wt: 300 lb. or 50 lb/pail

Comment: Sample descripton sheet is in Pail 6.

7 - SAMPLES FROM LOWER GRADE PORTIONS OF SURFACE TRENCHES ON BROWN-MCDADE ZONE

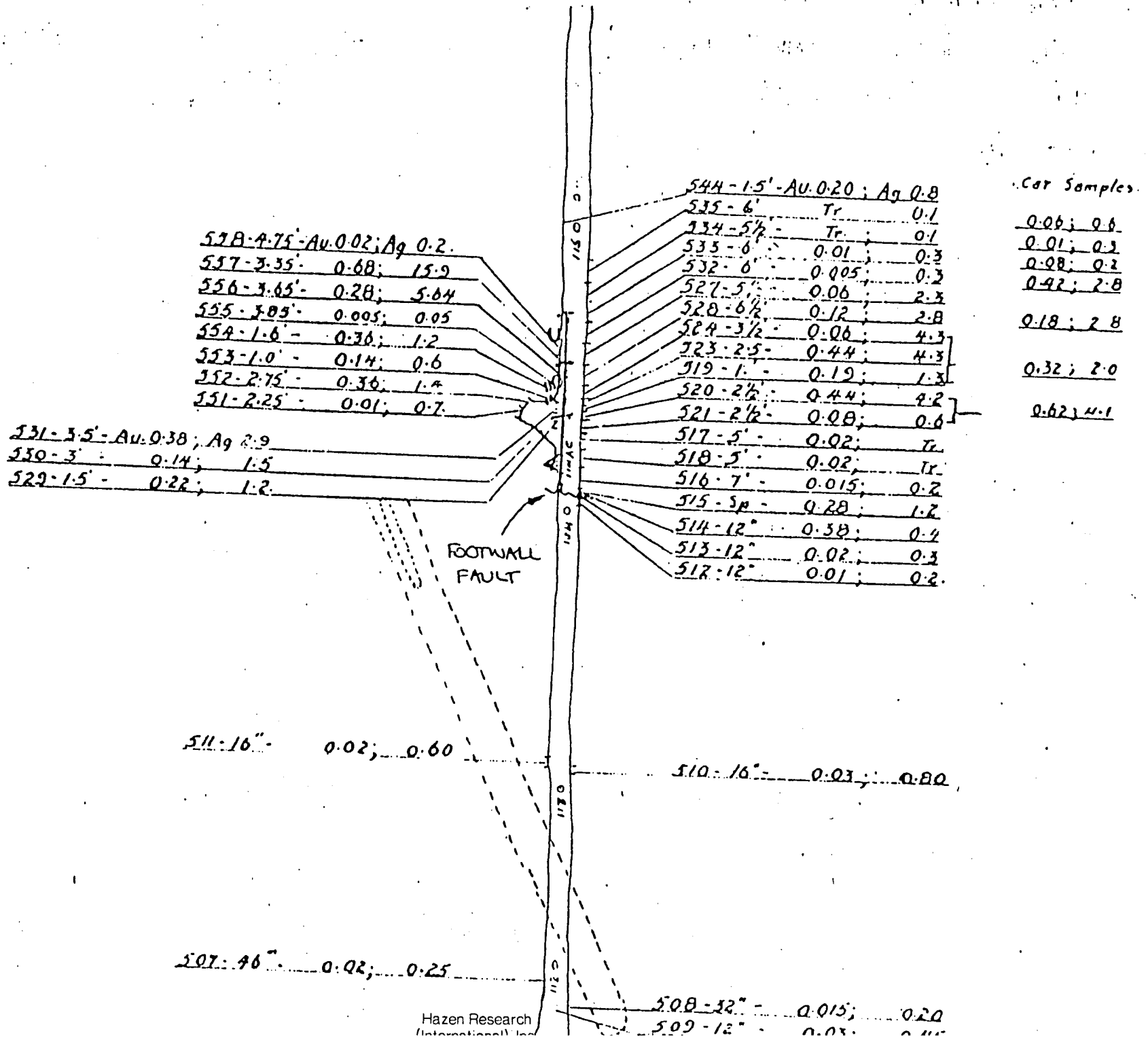
Sample Description: Six pails, each labeled low grade trench, from each of six trench intervals. Maximum fragment diameter two inches.

Trench #	Sample #	Interval (m)	oz/ton Au	Pail #
Trench 2	P10	31 to 33	0.039	1
Trench 3	P23	20.5 to 24	0.041	2
Trench 4	P46	27 to 30	0.043	3
Trench 5	P66	38 to 40	0.042	4
Trench 6	P87	37.5 to 39.5	0.039	5
Trench 9	P126	31 to 34	0.031	6
Average Grade			0.039	

Approximate Wt: 300 lb. or 50 lb/pail

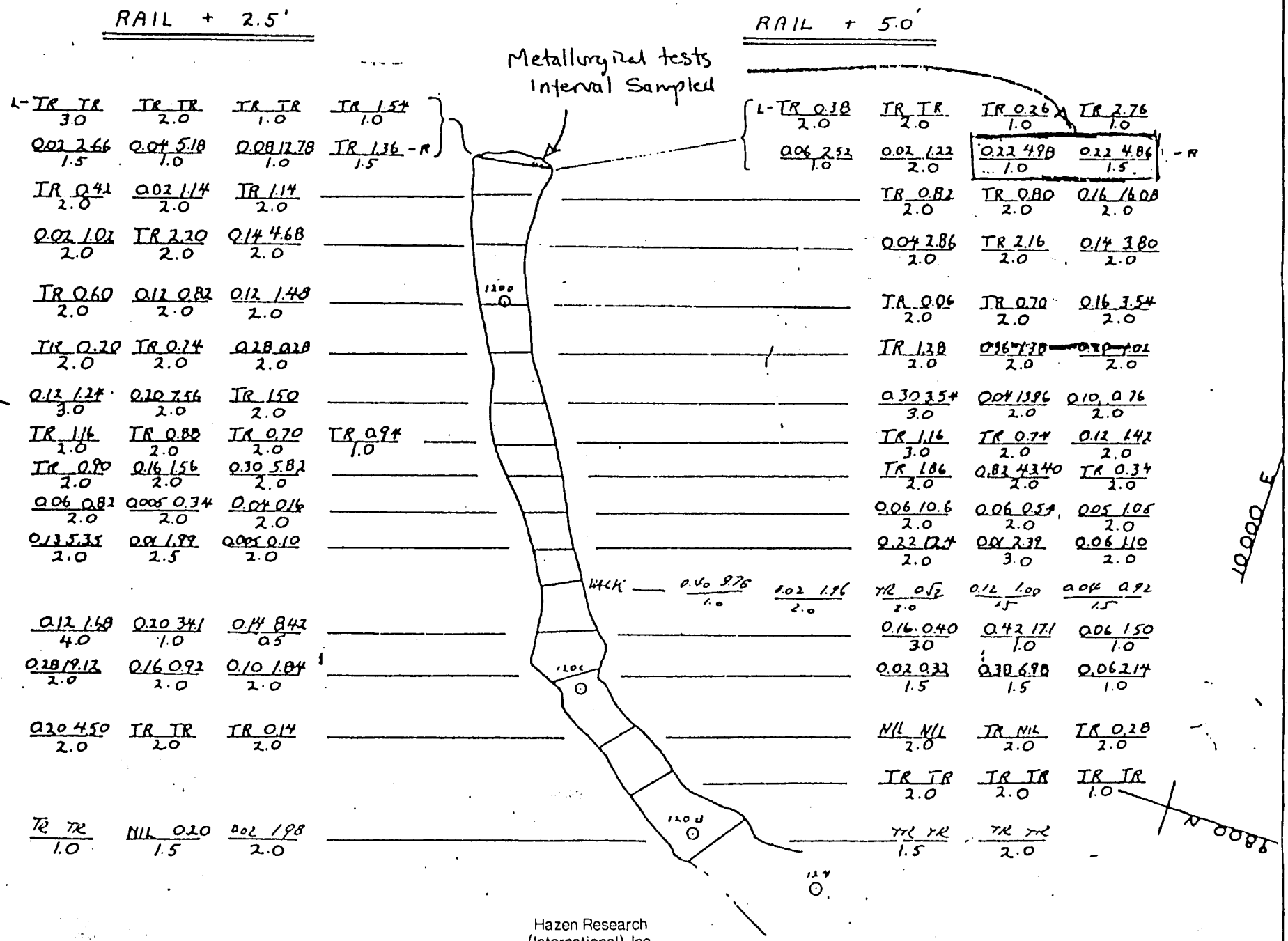
Comment: Sample description sheet in Pail 6.

MAP A



Hazen Research (International) Inc

MAP B


RAIL + 2.5'
RAIL + 5.0'
Metallurgical tests
Interval Sampled
L-TR TR 3.0 | TR TR 2.0 | TR TR 1.0 | TR 1.54 1.0
0.02 2.66 1.5 | 0.04 5.18 1.0 | 0.08 12.78 1.0 | TR 1.36 - R 1.5
TR 0.42 2.0 | 0.02 1.14 2.0 | TR 1.14 2.0
0.02 1.02 2.0 | TR 2.20 2.0 | 0.14 4.68 2.0
TR 0.60 2.0 | 0.12 0.82 2.0 | 0.12 1.48 2.0
TR 0.20 2.0 | TR 0.24 2.0 | 0.28 0.28 2.0
0.12 1.24 3.0 | 0.20 7.56 2.0 | TR 1.50 2.0
TR 1.16 2.0 | TR 0.88 2.0 | TR 0.70 2.0 | TR 0.94 1.0
TR 0.80 2.0 | 0.16 1.56 2.0 | 0.30 5.82 2.0
0.06 0.82 2.0 | 0.005 0.34 2.0 | 0.04 0.16 2.0
0.13 5.35 2.0 | 0.01 1.89 2.5 | 0.005 0.10 2.0
0.12 1.68 4.0 | 0.20 3.41 1.0 | 0.14 8.42 0.5
0.28 19.12 2.0 | 0.16 0.92 2.0 | 0.10 1.84 2.0
0.30 4.50 2.0 | TR TR 2.0 | TR 0.14 2.0
TR TR 1.0 | NIL 0.20 1.5 | 0.02 1.98 2.0
L-TR 0.38 2.0 | TR TR 2.0 | TR 0.26 1.0 | TR 2.76 1.0
0.06 2.52 1.0 | 0.02 1.22 2.0 | 0.22 4.98 1.0 | 0.22 4.86 1.5 - R
TR 0.82 2.0 | TR 0.80 2.0 | 0.16 16.08 2.0
0.04 2.86 2.0 | TR 2.16 2.0 | 0.14 3.80 2.0
TR 0.06 2.0 | TR 0.70 2.0 | 0.16 3.54 2.0
TR 1.28 2.0 | 0.96 7.30 2.0 | 0.12 1.02 2.0
0.30 3.54 3.0 | 0.04 13.96 2.0 | 0.10 0.76 2.0
TR 1.16 3.0 | TR 0.74 2.0 | 0.12 1.42 2.0
TR 1.86 2.0 | 0.82 43.40 2.0 | TR 0.34 2.0
0.06 10.6 2.0 | 0.06 0.54 2.0 | 0.05 1.06 2.0
0.22 12.24 2.0 | 0.01 2.39 3.0 | 0.06 1.10 2.0
WICK 0.40 9.76 1.0 | 0.02 1.96 2.0 | TR 0.52 2.0 | 0.12 1.00 1.5 | 0.04 0.92 1.5
0.16 0.40 3.0 | 0.42 17.1 1.0 | 0.06 1.50 1.0
0.02 0.33 1.5 | 0.30 6.98 1.5 | 0.06 2.14 1.0
NIL NIL 2.0 | TR NIL 2.0 | TR 0.28 2.0
TR TR 2.0 | TR TR 2.0 | TR TR 1.0
TR TR 1.5 | TR TR 2.0
1200
1205
1200 J
1214
10000 E
N 9988

APPENDIX B

Test Data Sheets

Objective: Cyanidation for recovery of gold and silver.

Test No. 1733-13
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 67% passing 200 mesh

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	0	2	6	12	24	48	72
pH, initial	6.3	10.3	10.3	10.3	10.5	10.5	10.2
adjusted	10.6	10.8	10.8	10.5	10.5	10.2	10.3
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	30	32	32
Net Pulp Wt, g	3333	3351	3315	3268	3274	3149	3099
NaCN, g/l		0.19	0.45	0.48	0.38	0.35	0.35
Reagent Additions,							
Ca(OH)2, g	2.46	0.29	0.30	0.12		0.27	
NaCN, g	1.26	0.76	0.21	0.04	0.39	0.34	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		5.0	5.5	6.1	6.4	6.4	6.9
NaCN		1.6	1.9	2.2	2.7	3.7	4.4

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	1.21	6.3	47.8	23.3
6 hour aliquot	50	1.84	9.6	72.6	35.5
12 hour aliquot	50	2.15	10.6	84.5	39.1
24 hour aliquot	50	2.24	11.5	89.9	43.3
48 hour aliquot	50	2.36	12.7	91.5	46.0
72 hour aliquot	50	2.35	12.7	91.1	46.0
72 hour F/W (3)	2800	1.72	9.2	90.9	45.4
72 hour solids	993.45	0.016	1.02		
Calculated feed		0.175	1.87		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold and silver.

Test No. 1733-14
Project: 6178I
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 90% passing 200 mesh

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	0	2	6	12	24	48	72
pH, initial	6.9	10.3	10.3	10.5	10.5	10.3	10.3
adjusted	10.6	10.7	11.0	10.5	10.5	10.8	
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	31	32	32
Net Pulp Wt, g	3333	3345	3336	3291	3269	3149	3069
NaCN, g/l		0.08	0.51	0.55	0.39	0.35	0.36
Reagent Additions,							
Ca(OH)2, g	2.39	0.22	0.47			0.23	
NaCN, g	1.29	1.30	0.15		0.29	0.36	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		4.8	5.2	6.2	6.2	6.2	6.6
NaCN		2.2	2.8	2.9	3.6	4.4	5.1

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	1.06	3.5	37.3	14.0
6 hour aliquot	50	1.95	8.6	69.2	34.6
12 hour aliquot	50	2.34	9.8	82.7	39.4
24 hour aliquot	50	2.50	10.6	89.2	43.0
48 hour aliquot	50	2.68	11.2	92.3	43.9
72 hour aliquot	50	2.73	11.9	92.7	45.8
72 hour F/W (3)	2775	1.98	8.4	92.3	44.5
72 hour solids	997.26	0.015	0.95		
Calculated feed		0.195	1.71		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold and silver.

Test No. 1733-15
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 95% passing 200 mesh

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	0	2	6	12	24	48	72
pH, initial	6.9	10.2	10.3	10.5	10.5	10.3	10.3
adjusted	10.6	10.8	10.8	10.5	10.5	10.8	
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	30	31	32
Net Pulp Wt, g	3333	3358	3346	3352	3336	3181	3099
NaCN, g/l		0.08	0.53	0.54	0.35	0.26	0.34
Reagent Additions,							
Ca(OH)2, g	2.47	0.34	0.23			0.23	
NaCN, g	1.30	1.31	0.15		0.24	0.58	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		5.0	5.6	6.1	6.1	6.1	6.6
NaCN		2.2	2.7	2.9	3.8	4.7	5.6

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	1.05	4.4	41.5	16.9
6 hour aliquot	50	1.88	9.2	74.8	35.6
12 hour aliquot	50	2.18	9.9	88.4	39.1
24 hour aliquot	50	2.20	10.3	90.4	41.2
48 hour aliquot	50	2.36	11.3	92.4	43.0
72 hour aliquot	50	2.40	11.8	92.5	44.1
72 hour F/W (3)	2825	1.72	8.6	91.4	44.3
72 hour solids	996.60	0.015	1.00		
Calculated feed		0.175	1.79		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold and silver.

Test No. 1733-16
Project: 61781
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 96% passing 200 mesh

Sample: Low Grade Drill Cuttings, HRI 30779-1

Time, hr	0	2	6	12	24	48	72
pH, initial	7.9	10.2	10.2	10.5	10.3	10.1	10.1
adjusted	10.8	10.8	10.8	10.8	10.7	10.8	
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	29	28	28	29	30
Net Pulp Wt, g	3333	3371	3393	3506	3514	3373	3311
NaCN, g/l		0.25	0.57	0.52	0.43	0.46	0.43
Reagent Additions,							
Ca(OH)2, g	3.15	0.34	0.31	0.12	0.39	0.39	
NaCN, g	1.32	0.82			0.23	0.17	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		6.3	7.0	7.6	7.9	8.7	9.4
NaCN		1.5	1.5	1.6	2.0	2.4	2.9

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	0.29	1.0	44.4	24.2
6 hour aliquot	50	0.46	1.6	72.0	39.6
12 hour aliquot	50	0.51	1.8	84.9	47.4
24 hour aliquot	50	0.55	2.0	93.3	53.6
48 hour aliquot	50	0.59	2.2	96.2	56.6
72 hour aliquot	50	0.59	2.2	95.7	56.3
72 hour F/W (3)	3025	0.43	1.6	93.4	54.8
72 hour solids	994.94	0.003	0.13		
Calculated feed		0.046	0.29		
Assayed feed		0.055	0.27		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-17
Project: 61781
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: Minus 10 mesh

Sample: Low Grade Trench, HRI 30779-4

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	8.3	10.0	10.5	10.2	10.2	10.1	10.1	10.3	10.3
adjusted	11.4	10.5	10.5	10.8	10.6	10.6	10.6	10.6	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	29	29	29	30	31	33	33	34	32
Net Pulp Wt, g	3333	3333	3343	3188	3042	2933	2857	2775	3012
NaCN, g/l		0.94	0.99	0.81	0.88	0.76	0.84	1.00	0.80
Reagent Additions,									
NaOH, g	5.00	1.39		0.40	0.40	0.40		0.40	
NaCN, g	2.33	0.20	0.02	0.40	0.24	0.46	0.30		
Reagent Consumptions, lb reagent/ton feed									
NaOH		10.5	13.4	13.4	14.2	15.1	15.9	15.9	16.8
NaCN		0.2	0.3	1.1	1.7	2.9	3.6	3.7	4.0

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	201	0.59	3.3	0.043	0.24	92.8	35.5
48 hour aliquot	100	0.61	3.3	0.045	0.25	97.5	36.2
72 hour aliquot	38	0.61	3.5	0.044	0.25	95.7	37.4
96 hour aliquot	38	0.64	3.7	0.045	0.26	96.7	38.1
120 hour aliquot	37	0.64	3.9	0.044	0.27	95.1	39.2
144 hour aliquot	38	0.66	3.9	0.044	0.26	95.6	38.4
168 hour aliquot	38	0.58	3.4	0.045	0.26	96.7	38.6
168 hour solids	954.00	0.002	0.42				
Calculated feed		0.046	0.68				

Tailings Fractions

	% Wt	Assays, oz/t		% Distributions	
10 X 20 mesh	20.1	<0.002	0.17	0.0	8.2
20 X 35 mesh	13.9	<0.002	0.11	0.0	3.7
35 X 100 mesh	13.5	<0.002	0.12	0.0	3.9
100 X 200 mesh	6.3	0.002	0.13	8.3	2.0
minus 200 mesh	46.3	0.003	0.74	91.7	82.2

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-18
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: Minus 1/2 inch

Sample: Low Grade Trench, HRI 30779-4

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	8.3	9.6	10.0	10.1	10.0	10.0	10.2	10.4	10.5
adjusted	11.1	12.0	10.6	10.6	10.6	10.6	10.7	10.7	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	31	31	31	31	31
Net Pulp Wt, g	16747	16615	16605	16451	16324	16166	16125	16022	15943
NaCN, g/l		0.83	1.00	1.00	0.97	1.00	0.89	0.88	0.75
Reagent Additions,									
NaOH, g	5.00	6.48	2.00	1.60	1.60	2.40	1.60	1.20	
NaCN, g	11.75	1.97			0.34		1.23		
Reagent Consumptions, lb reagent/ton feed									
NaOH		2.0	4.6	5.4	6.1	6.7	7.7	8.3	8.8
NaCN		0.8	0.8	0.8	1.0	1.0	1.5	2.0	2.6

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	201	0.58	1.5	0.039	0.10	78.1	19.1
48 hour aliquot	100	0.61	1.5	0.042	0.10	82.4	19.2
72 hour aliquot	59	0.61	1.7	0.042	0.12	82.2	21.6
96 hour aliquot	58	0.64	1.7	0.043	0.11	85.4	21.5
120 hour aliquot	58	0.64	1.7	0.043	0.11	85.6	21.5
144 hour aliquot	58	0.64	1.7	0.043	0.11	85.2	21.4
168 hour aliquot	58	0.64	1.7	0.043	0.11	85.1	21.4
168 hour solids	4981.20	0.008	0.42				
Calculated feed		0.051	0.53				

Tailings Fractions

	% Wt	Assays, oz/t Au	Assays, oz/t Ag	% Distributions Au	% Distributions Ag
plus 1/4 inch	18.3	0.007	0.27	17.0	11.8
1/4 X 10 mesh	12.0	0.003	0.26	4.8	7.4
10 X 28 mesh	14.0	0.029	0.18	53.8	6.0
28 X 100 mesh	6.8	<0.002	0.11	0.0	1.8
100 X 200 mesh	2.9	<0.002	0.10	0.0	0.7
minus 200 mesh	46.0	0.004	0.66	24.4	72.3

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-19
Project: 6178I
Date: Aug '85
Page: 1 of 1

Grind: Minus 1 inch

Water: tap

Sample: Low Grade Trench, HRI 30779-4

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	8.2	9.6	10.9	10.6	10.2	10.3	10.3	10.5	10.4
adjusted	11.0	11.0	10.9	10.6	10.7	10.7	10.7	10.7	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	31	31	31	31	31
Net Pulp Wt, g	16666	16697	16670	16500	16370	16136	16080	15980	15914
NaCN, g/l		0.97	0.87	0.87	0.96	0.99	0.87	0.97	0.67
Reagent Additions,									
NaOH, g	5.00	6.76			1.20	1.20	1.20	0.40	
NaCN, g	11.67	0.35			0.45	0.11	1.44	0.33	
Reagent Consumptions, lb reagent/ton feed									
NaOH		2.0	4.7	4.7	4.7	5.2	5.7	6.1	6.3
NaCN		0.1	0.7	0.7	0.3	0.4	1.0	1.1	2.6

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	201	0.62	1.4	0.042	0.10	69.4	15.0
48 hour aliquot	100	0.70	1.5	0.048	0.10	78.4	16.1
72 hour aliquot	127	0.72	1.7	0.049	0.12	80.4	18.2
96 hour aliquot	65	0.72	1.9	0.048	0.13	79.7	20.1
120 hour aliquot	65	0.74	1.9	0.050	0.13	81.9	20.1
144 hour aliquot	65	0.74	1.9	0.050	0.13	81.6	20.0
168 hour aliquot	129	0.74	1.9	0.050	0.13	81.6	20.0
168 hour solids	5000.00	0.011	0.51				
Calculated feed		0.061	0.63				

Tailings Fractions

	% Wt	Assays, oz/t Au	Assays, oz/t Ag	% Distributions Au	% Distributions Ag
plus 1/2 inch	23.9	0.020	0.40	42.8	18.8
1/2 X 1/4 inch	3.0	0.006	0.31	1.6	1.8
1/4 X 10 mesh	9.1	0.021	0.31	17.1	5.6
10 X 28 mesh	8.0	0.013	0.17	9.3	2.7
28 X 100 mesh	6.0	0.007	0.12	3.8	1.4
100 X 200 mesh	2.5	<0.002	0.08	0.0	0.4
minus 200 mesh	47.5	0.006	0.74	25.4	69.3

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks: Reassays did not resolve discrepancies in cyanide consumptions.

Objective: Cyanidation for recovery of gold.

Test No. 1733-20
Project: 617BX
Date: Aug '85
Page: 1 of 1

Grind: Minus 10 mesh

Water: tap

Sample: High Grade Trench, HRI 30779-5

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	7.6	9.6	10.7	10.4	10.3	10.3	10.3	10.4	10.5
adjusted	11.1	10.3	10.7	11.3	10.7	10.7	10.6	10.7	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	29	29	30	32	33	35	36	37	31
Net Pulp Wt, g	3333	3353	3231	3042	2898	2796	2720	2638	3155
NaCN, g/l		0.90	1.00	0.90	0.81	0.77	0.81	0.74	NA
Reagent Additions,									
NaOH, g	2.14	3.85		0.80	0.40	0.40	0.40	0.40	
NaCN, g	2.33	0.33		0.20	0.36	0.41	0.33		
Reagent Consumptions, lb reagent/ton feed									
NaOH		4.4	12.3	12.3	14.0	14.8	15.6	16.5	17.3
NaCN		0.4	0.8	1.2	2.1	3.1	3.8	4.8	NA

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	196	5.18	8.3	0.352	0.56	98.2	55.2
48 hour aliquot	100	5.25	8.5	0.358	0.58	99.7	56.6
72 hour aliquot	38	5.32	8.9	0.355	0.59	98.9	57.8
96 hour aliquot	38	5.50	8.9	0.354	0.57	98.8	56.1
120 hour aliquot	38	5.59	9.4	0.353	0.59	98.4	57.7
144 hour aliquot	38	5.59	9.4	0.345	0.58	96.3	56.4
168 hour aliquot	38	4.26	7.2	0.351	0.59	97.9	57.7
168 hour solids	970.20	0.007	0.43				
Calculated feed		0.359	1.02				

Tailings Fractions

	% Wt	Assays, oz/t Au	Assays, oz/t Ag	% Distributions Au	% Distributions Ag
10 X 20 mesh	18.9	0.015	0.39	38.5	17.0
20 X 35 mesh	13.7	0.009	0.26	16.7	8.2
35 X 100 mesh	14.5	0.005	0.21	9.8	7.0
100 X 200 mesh	7.4	0.004	0.27	4.0	4.6
minus 200 mesh	45.5	0.005	0.60	31.0	63.2

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-21
Project: 6178X
Date: Aug '85
Page: 1 of 1

Grind: Minus 1/2 inch

Water: tap

Sample: High Grade Trench, HRI 30779-5

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	7.2	8.9	9.6	10.0	9.8	10.0	10.1	10.2	10.5
adjusted	10.6	10.6	10.6	10.6	10.7	10.7	10.6	10.7	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	29	29	30	30	30	30	30
Net Pulp Wt, g	16666	16780	17209	17018	16882	16751	16701	16598	16538
NaCN, g/l		0.98	0.80	1.00	0.85	0.90	0.86	0.87	0.93
Reagent Additions,									
NaOH, g	5.00	9.59	2.80	2.40	3.20	2.40	2.00	2.40	
NaCN, g	11.67	0.24	2.40		1.78	1.17	1.64		
Reagent Consumptions, lb reagent/ton feed									
NaOH		2.0	5.8	7.0	7.9	9.2	10.2	11.0	11.9
NaCN		0.1	0.9	0.9	1.6	2.1	2.7	3.3	3.1

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	201	6.83	8.1	0.486	0.58	94.5	36.9
48 hour aliquot	100	7.09	8.7	0.505	0.62	98.1	39.7
72 hour aliquot	65	6.80	8.9	0.483	0.63	94.0	40.4
96 hour aliquot	66	6.80	9.0	0.481	0.63	93.4	40.7
120 hour aliquot	65	6.80	9.0	0.481	0.64	93.6	40.7
144 hour aliquot	65	6.93	9.0	0.489	0.63	95.0	40.6
168 hour aliquot	132	6.90	9.0	0.487	0.63	94.6	40.6
168 hour solids	5000.00	0.028	0.93				
Calculated feed		0.515	1.56				

Tailings Fractions

	% Wt	Assays, oz/t Au	Assays, oz/t Ag	% Distributions Au	% Distributions Ag
plus 1/4 inch	14.9	0.060	0.60	32.3	9.6
1/4 X 10 mesh	16.5	0.024	0.72	14.3	12.8
10 X 28 mesh	8.9	0.018	0.45	5.8	4.3
28 X 100 mesh	6.8	0.008	0.28	2.0	2.1
100 X 200 mesh	3.0	0.004	0.22	0.4	0.7
minus 200 mesh	49.9	0.025	1.31	45.2	70.5

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-22
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: Minus 1 inch

Sample: High Grade Trench, HRI 30779-5

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	6.9	9.2	9.6	9.9	9.8	9.9	10.0	10.3	10.4
adjusted	10.3	10.5	10.6	10.6	10.7	10.9	10.8	10.6	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	31	31	31	31	31	31
Net Pulp Wt, g	16666	16628	16628	16384	16266	16125	16084	15982	15918
NaCN, g/l		0.99	0.89	1.00	0.88	0.89	0.89	1.02	0.49
Reagent Additions,									
NaOH, g	5.00	5.80	2.80	2.00	2.40	2.80	2.00	0.80	
NaCN, g	11.67	0.12	1.26		1.35	1.22	1.22		
Reagent Consumptions, lb reagent/ton feed									
NaOH		2.0	4.3	5.4	6.2	7.2	8.3	9.1	9.4
NaCN		0.1	0.6	0.6	1.1	1.7	2.1	2.1	4.4

	wt, g or vol, ml	Analyses (1) Au	Analyses (1) Ag	oz/ton in sol'n Au	oz/ton in sol'n Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	5						
24 hour aliquot	201	5.56	6.4	0.377	0.43	91.4	33.0
48 hour aliquot	100	5.84	6.7	0.394	0.45	95.6	34.4
72 hour aliquot	61	5.86	6.9	0.395	0.46	95.8	35.3
96 hour aliquot	61	5.86	7.1	0.392	0.47	95.1	36.1
120 hour aliquot	60	5.86	7.1	0.393	0.48	95.3	36.1
144 hour aliquot	60	5.86	7.3	0.392	0.49	94.9	37.0
168 hour aliquot	122	5.86	7.3	0.391	0.49	94.9	37.0
168 hour solids	5000.00	0.021	0.83				
Calculated feed		0.413	1.32				

Tailings Fractions

	% Wt	Assays, oz/t Au	Assays, oz/t Ag	% Distributions Au	% Distributions Ag
plus 1/2 inch	29.6	0.037	0.44	51.9	15.7
1/2 X 1/4 inch	3.9	0.013	0.69	2.4	3.2
1/4 X 10 mesh	9.7	0.013	0.90	6.0	10.5
10 X 28 mesh	6.1	0.010	0.59	2.9	4.3
28 X 100 mesh	4.4	0.005	0.33	1.0	1.8
100 X 200 mesh	2.2	0.003	0.23	0.3	0.6
minus 200 mesh	44.1	0.017	1.20	35.5	63.9

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold and silver after preaeration.

Test No. 1733-26
Project: 6178I
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 67% passing 200 mesh

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	Aeration	0	2	6	12	24	48
pH, initial	6.1	10.4	10.5	10.5	10.5	10.5	10.3
adjusted	9.7	10.6					
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	30	31	32	33
Net Pulp Wt, g	3333	3333	3333	3283	3209	3093	3063
NaCN, g/l			0.41	0.46	0.45	0.39	0.29
Reagent Additions,							
Ca(OH)2, g	4.23	0.22					
NaCN, g		1.26	0.21	0.10	0.10	0.25	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2			8.9	8.9	8.9	8.9	8.9
NaCN			0.6	0.8	1.1	1.6	2.5

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
preaer. liquor	2700	<0.01			
2 hour aliquot	50	1.15	5.9	47.3	23.6
6 hour aliquot	50	1.68	7.7	68.6	30.6
12 hour aliquot	50	2.02	8.8	81.1	34.5
24 hour aliquot	50	2.23	9.7	86.5	36.7
48 hour aliquot	50	2.29	10.3	89.5	39.2
48 hour F/W (3)	2940	1.56	7.1	89.1	39.4
48 hour solids	1000.83	0.018	1.03		
Calculated feed		0.165	1.70		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: Preaeration was for 18 hours at ambient temperature. After prearation the pulp was filtered washed with two water displacements of 250 ml each. The washed solids were repulped in fresh water prior to cyanidation.

Objective: Cyanidation for recovery of gold and silver after preaeration: Lead nitrate added during grinding and at start of cyanidation.

Test No. 1733-27
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: 67% passing 200 mesh

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	Aeration	0	2	6	12	24	48
pH, initial	6.0	10.1	10.5	10.5	10.5	10.4	10.3
adjusted	10.1	10.5					
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	31	31	33	33
Net Pulp Wt, g	3333	3333	3339	3277	3201	3090	3063
NaCN, g/l			0.44	0.46	0.47	0.40	0.31
Reagent Additions,							
Ca(OH)2, g	4.58	0.10					
NaCN, g		1.26	0.14	0.10	0.11	0.22	
Pb(NO3)2, g	0.50	0.50					
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2			9.3	9.3	9.3	9.3	9.3
NaCN			0.5	0.7	0.8	1.4	2.2

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
preaeration	2745	<0.01			
2 hour aliquot	50	1.45	6.5	61.4	25.9
6 hour aliquot	50	1.87	8.0	78.4	31.5
12 hour aliquot	50	2.11	9.4	87.1	36.4
24 hour aliquot	50	2.21	10.3	88.5	38.6
48 hour aliquot	50	2.23	10.9	90.2	41.1
48 hour F/W (3)	2620	1.64	8.0	86.9	39.6
48 hour solids	1004.64	0.021	1.03		
Calculated feed		0.160	1.70		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: Preaeration was for 18 hours at ambient temperature. After prearation the pulp was filtered washed with two water displacements of 250 ml each. The washed solids were repulped in fresh water prior to cyanidation.

Objective: Cyanidation for recovery of gold and silver.

Test No. 1733-28
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: minus 325 mesh

Sample: Underground Sulfide, HRI 30779-3

Time, hr		0	2	6	12	24	48
pH, initial		5.6	11.9	11.5	11.3	11.4	10.8
adjusted		10.6					
Temperature		amb	amb	amb	amb	amb	amb
% Solids		31	30	31	31	33	33
Net Pulp Wt, g		3333	3397	3338	3255	3134	3062
NaCN, g/l			0.07	0.07	0.06	0.18	0.21
Reagent Additions,							
Ca(OH)2, g		40.48					
NaCN, g		1.26	1.02	1.05	1.05	0.67	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2			79.1	79.1	79.1	79.1	79.1
NaCN			2.1	4.1	6.2	7.8	9.0

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	0.01	<0.2	0.6	0.0
6 hour aliquot	50	0.01	<0.2	0.6	0.0
12 hour aliquot	50	0.14	<0.2	8.5	0.0
24 hour aliquot	50	0.51	<0.2	29.4	0.0
48 hour aliquot	50	0.96	1.6	53.9	2.6
48 hour F/W (3)	2650	0.66	0.6	49.6	1.3
48 hour solids	1023.87	0.053	3.54		
Calculated feed		0.105	3.59		
Assayed feed		0.103	3.63		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold.

Test No. 1733-29
Project: 6178I
Date: Aug '85
Page: 1 of 1

Grind: minus 400 mesh

Water: tap

Sample: Underground Sulfide, HRI 30779-3

Time, hr	0	2	6	12	24	48
pH, initial	5.6	12.1	11.8	11.4	11.4	11.3
adjusted	11.0					
Temperature	amb	amb	amb	amb	amb	amb
% Solids	31	30	31	32	33	33
Net Pulp Wt, g	3333	3407	3346	3270	3169	3135
NaCN, g/l		0.04	0.06	0.06	0.14	0.16
Reagent Additions,						
Ca(OH)2, g	40.69					
NaCN, g	1.26	1.10	1.04	1.06	0.79	
Reagent Consumptions, lb reagent/ton feed						
Ca(OH)2		78.6	78.6	78.6	78.6	78.6
NaCN		2.3	4.3	6.3	8.0	9.5

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	0.01	<0.2	0.6	0.0
6 hour aliquot	50	0.01	<0.2	0.6	0.0
12 hour aliquot	50	0.07	<0.2	3.9	0.0
24 hour aliquot	50	0.44	<0.2	23.3	0.0
48 hour aliquot	50	0.92	0.8	48.4	1.2
48 hour F/W (3)	2540	0.64	0.4	42.0	0.8
48 hour solids	1035.55	0.066	3.77		
Calculated feed		0.114	3.80		
Assayed feed		0.103	3.63		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Bulk sulfide flotation for recovery of gold and silver.

Test No. 1733-24
Project: 6178I
Date: Aug' 85
Page: 1 of 1
Water: tap

Grind: 93% passing 270 mesh

Sample: Underground sulfide, HRI 30779-3

Operation	Grind	Cond	Rough
Cell	Rod	1000	1000
Time, minutes	30	1	10
pH	5.5	5.5	5.2
Temp, C	amb	amb	amb
% Solids	60	30	30

Reagent, lb/t:

AI 325		0.05	0.05
AP 208		0.05	0.05
MIBC		0.03	0.02
AF 65			0.02

	Dry Wt, g	Wt %	Analyses (1) Au	Analyses (1) Ag	Distributions, % (2) Au	Distributions, % (2) Ag
Ro Conc	460.53	48.98	0.230	7.67	94.0	90.8
Ro Tail	479.74	51.02	0.014	0.75	6.0	9.2
Calc'd	940.27	100.00	0.120	4.14	100.0	100.0
Assy'd			0.103	3.63		

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Bulk sulfide flotation for recovery of gold and silver.

Test No. 1733-25
Project: 6178I
Date: Aug' 85
Page: 1 of 1
Water: tap

Grind: 80% passing 270 mesh

Sample: Underground sulfide, HRI 30779-3

Operation	Grind	Cond	Rough
Cell	Rod	1000	1000
Time, minutes	20	1	10
pH	5.3	5.3	
Temp, C	amb	amb	amb
% Solids	60	30	30

Reagent, lb/t:

AX 325		0.05	0.05
AP 208		0.05	0.05
MIBC		0.04	
AF 65			

	Dry Wt, g	Wt %	Analyses (1) Au	Analyses (1) Ag	Distributions, % (2) Au	Distributions, % (2) Ag
Ro Conc	425.53	45.71	0.239	7.92	95.7	90.5
Ro Tail	505.48	54.29	0.009	0.70	4.3	9.5
Calc'd	931.01	100.00	0.114	4.00	100.0	100.0
Assy'd			0.103	3.63		

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Bulk sulfide flotation for recovery of gold and silver. Concentrate used for cyanidation tests.

Test No. 1733-30
Project: 6178X
Date: Aug' 85
Page: 1 of 1
Water: tap

Grind: >95% passing 270 mesh

Sample: Underground sulfide, HRI 30779-3

Operation	Grind	Cond	Rough
Cell	Rod	1000	1000
Time, minutes	35	1	10
pH	5.5	5.5	5
Temp, C	amb	amb	amb
% Solids	60	30	30
Reagent, lb/t:			
AI 325		0.05	0.05
AP 208		0.05	0.05
MIBC		0.03	0.03
AF 65			

	Dry Wt, g	Wt %	Analyses (1) Au	Analyses (1) Ag	Distributions, % (2) Au	Distributions, % (2) Ag
Ro Conc	439.29	46.87	0.250	8.60	97.4	92.2
Ro Tail	497.91	53.13	0.006	0.64	2.6	7.8
Calc'd	937.20	100.00	0.120	4.37	100.0	100.0
Assy'd			0.103	3.63		

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks: Concentrate was split into thirds for a head and two cyanidation tests. The concentrate assayed 0.278 oz Au/t and 8.21 oz Ag/t. The concentrate assays used for the flotation calculations was the average of the assayed value and the values calculated from the leach tests.

Objective: Cyanidation for recovery of gold and silver from rougher flotation concentrate without a regrind.

Test No. 1733-30A
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind:

Sample: Rougher concentrate without regrind.

Time, hr	0	2	6	24	48
pH, initial	6.0	10.5	10.2	9.5	9.0
adjusted	10.9		10.7	10.7	
Temperature	amb	amb	amb	amb	amb
% Solids	15	15	15	18	20
Net Pulp Wt, g	993	987	930	814	725
NaCN, g/l		0.07	0.08	0.86	0.57

Reagent Additions,

Ca(OH)2, g	0.44			0.07	
NaCN, g	0.43	0.36	0.98	0.12	

Reagent Consumptions,
lb reagent/ton feed

Ca(OH)2		6.1	6.1	6.1	7.1
NaCN		5.1	10.0	16.5	20.9

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	0.18	0.6	13.6	1.2
6 hour aliquot	50	0.59	18.6	42.3	34.1
24 hour aliquot	50	1.32	38.5	82.6	62.3
48 hour aliquot	50	1.44	42.0	84.2	63.5
48 hour F/W (3)	1090	0.70	19.5	84.1	61.1
48 hour solids	144.10	0.036	3.38		
Calculated feed		0.226	8.69		
Assayed feed		0.278	8.21		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold and silver from rougher flotation concentrate after regrinding to minus 400 mesh.

Test No. 1733-30B
Project: 6178X
Date: Aug '85
Page: 1 of 1
Water: tap

Grind: >98% passing 400 mesh

Sample: Rougher concentrate with regrinding to minus 400 mesh.

Time, hr	0	2	6	24	48
pH, initial	5.8	10.5	10.2	10.2	9.5
adjusted	10.7		10.8	11.0	
Temperature	amb	amb	amb	amb	amb
% Solids	15	15	16	18	20
Net Pulp Wt, g	995	991	935	835	746
NaCN, g/l		0.09	0.08	1.04	0.75
Reagent Additions,					
Ca(OH)2, g	0.45			0.07	
NaCN, g	0.43	0.35	1.03		
Reagent Consumptions, lb reagent/ton feed					
Ca(OH)2		6.1	6.1	6.1	7.0
NaCN		4.8	9.6	14.6	17.5

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
2 hour aliquot	50	0.14	0.4	9.4	0.7
6 hour aliquot	50	0.51	10.8	32.5	18.8
24 hour aliquot	50	1.34	36.7	75.9	56.9
48 hour aliquot	50	1.57	41.0	82.7	59.4
48 hour F/W (3)	1078	0.80	20.9	82.9	59.6
48 hour solids	148.53	0.042	3.59		
Calculated feed		0.246	8.89		
Assayed feed		0.278	8.21		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Bulk sulfide flotation for recovery of gold and silver. Concentrate was reground to minus 325 mesh and cyanide leached after a 40 hour ambient preoxidation.

Test No. 1733-44
Project: 6178X
Date: Sept '8
Page: 1 of 2
Water: tap

Grind: >95% passing 270 mesh

Sample: Underground Sulfide: HRI 30779-3

Operation	Grind	Cond	Rougher	Clnr 1
Cell	Rod	1000	1000	1000
Time, minutes	35	1	10	10
pH	5.5	5.5	5.0	5.2
Temp, C	amb	amb	amb	amb
% Solids	60	30	30	15
Reagent, lb/t:				
AX 325		0.05	0.05	0.05
AP 208		0.05	0.05	0.05
MIBC		0.05	0.02	
AF 65		0.02	0.01	

	Dry Wt, g	Wt %	Analyses (1) Au	Ag	Distributions, % (2) Au	Ag
1CC	366.78	38.93	0.264	9.22	94.8	89.3
1CT	59.15	6.28	0.029	1.93	1.7	3.0
RT	516.24	54.79	0.007	0.56	3.5	7.7
Calc'd	942.17	100.00	0.108	4.02	100.0	100.0
Assy'd			0.103	3.63		
RC		45.21	0.231	8.21	96.5	92.3

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold and silver from flotation cleaner concentrate after ambient preaeration.

Test No. 1733-44
Project: 6178X
Date: Sept '85
Page: 2 of 2
Water: di

Grind: minus 325 mesh

Sample: Underground Sulfide: cleaner concentrate.

Time, hr	aeration	0	4	12	24	48	96
pH, initial	7.2	7.4	9.9	10.1	9.5	10.1	9.7
adjusted	7.2	11.5	11.2	10.7	11.0	11.5	
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	29	28	28	29	29	31
Net Pulp Wt, g		1276	1299	1310	1274	1264	1200
NaCN, g/l			0.88	0.98	1.77	1.64	1.60
Reagent Additions,							
Ca(OH)2, g	2.81	0.34	0.39	0.15	0.35	0.30	
NaCN, g		2.20	1.02	0.88	0.20	0.92	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		15.3	17.2	19.3	20.1	22.0	23.7
NaCN			7.5	12.3	13.1	14.4	19.8

	g or ml	Analyses (1) Au	Ag	Zn	Fe	Dissolutions, % (2) Au	Ag
preaer liquor	1310	<0.01	<0.06	5.9	<0.1		
4 hour aliquot	50	2.34	47.0	92.7	5.2	65.7	37.8
12 hour aliquot	50	2.82	72.1	211	1.2	83.7	60.7
24 hour aliquot	50	2.80	78.3	321	0.4	84.3	66.4
48 hour aliquot	50	2.76	78.3	255	0.4	86.6	69.1
96 hour aliquot	50	2.75	94.6	255	0.4	85.2	79.8
96 hour F/W (3)	1355	1.60	47.8	130	0.4	85.6	71.8
96 hour solids	366.78	0.038	2.60				
Calculated feed		0.264	9.22				

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: Preaeration was made at ambient temperature with strong agitation and air sparging for 40 hours.

Objective: Bulk sulfide flotation for recovery of gold and silver. Concentrate used for cyanidation after ambient preoxidation.

Test No. 1733-49
Project: 6178X
Date: Sept '8
Page: 1 of 2
Water: tap

Grind: 93% passing 270 mesh

Sample: Sulfide Drill Cuttings: HRI 30779-6

Operation	Grind	Cond	Rougher	Clnr 1
Cell	Rod	1000	1000	1000
Time, minutes	30	1	10	10
pH	6.2	6.3	6.9	7.3
Temp, C	amb	amb	amb	amb
% Solids	60	30	30	15
Reagent, lb/t:				
AX 325		0.05	0.05	0.05
AP 208		0.05	0.05	0.05
MIBC		0.04	0.01	
AF 65		0.01	0.01	0.01

	Dry Wt, g	Wt %	Analyses (1) Au	Ag	Distributions, % (2) Au	Ag
1CC	190.14	18.90	0.960	3.76	79.6	78.5
1CT	50.99	5.07	0.225	0.98	5.0	5.5
RT	764.71	76.03	0.046	0.19	15.4	16.0
Calc'd	1005.84	100.00	0.228	0.90	100.0	100.0
Assy'd			0.250	1.04		
RC		23.97	0.805	3.17	84.6	84.0

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold and silver from flotation cleaner concentrate after ambient preaeration.

Test No. 1733-49
Project: 6178X
Date: Sept '85
Page: 2 of 2
Water: di

Grind: >95% passing 270 mesh

Sample: Sulfide Drill Cuttings; cleaner concentrate.

Time, hr	aeration	0	4	12	24	48	168
pH, initial	8.4	9.5	10.8	11.2	10.5	10.5	11.5
adjusted	9.7	10.8				11.0	
Temperature	amb	amb	amb	amb	amb	amb	amb
% Solids	30	29	29	28	31	38	19
Net Pulp Wt, g		659	659	677	616	505	1005
NaCN, g/l			0.38	1.46	0.85	0.32	3.50
Reagent Additions,							
Ca(OH)2, g	2.04	0.11				1.60	
NaCN, g		0.92	0.75	0.26	0.48	4.48	
Reagent Consumptions, lb reagent/ton feed							
Ca(OH)2		21.5	22.6	22.6	22.6	22.6	39.4
NaCN			7.8	10.1	16.5	24.3	42.4

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
preaer liquor	895	<0.01	<0.06		
4 hour aliquot	0				
12 hour aliquot	0				
24 hour aliquot	0				
48 hour aliquot	20	1.78	7.29	9.0	9.4
168 hour F/W (3)	1930	1.03	3.85	32.3	30.9
168 hour solids	190.14	0.650	2.60		
Calculated feed		0.960	3.76		
Assayed feed					

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: Preaeration was made at ambient temperature with strong agitation and air sparging for 62 hours.

Objective: Bulk sulfide flotation for recovery of gold and silver.
Concentrate used for autoclave oxidation and cyanidation.

Test No. 1733-100
Project: 6178X
Date: Oct '85
Page: 1 of 2
Water: tap

Grind: >95% passing 270 mesh

Sample: Underground sulfide, HRI 30779-3

Operation	Grind	Cond	Rougher	Clnr 1
Cell	Rod	1000	1000	1000
Time, minutes	35	1	10	10
pH	6.0	6.0	5.8	6.2
Temp, C	amb	amb	amb	amb
% Solids	60	30	30	15

Reagent, lb/t:

AX 325	0.05	0.05	0.05
AP 208	0.05	0.05	0.05
MIBC	0.03	0.03	
AF 65			0.02

	Dry Wt, g	Wt %	Analyses (1) Au	Ag	Distributions, % (2) Au	Ag
1CC	409.66	43.67	0.243	6.26	95.4	86.8
1CT	59.94	6.39	0.009	0.74	0.5	1.5
RT	468.40	49.94	0.009	0.74	4.1	11.7
Calc'd	938.00	100.00	0.111	3.15	100.0	100.0
Assy'd			0.103	3.63		
RC		50.06	0.213	5.56	95.9	88.3

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold and silver from flotation cleaner concentrate after autoclave preoxidation.

Test No. 1733-100
Project: 6178X
Date: Oct '85

Water: di

Grind: >95% passing 270 mesh

Sample: Cleaner concentrate from Underground Sulfide sample.

Time, hr	0	19	24	48	96	120
pH, initial	3.1	7.6	9.8	8.0	10.2	9.9
adjusted	11.0	11.4	11.4	12.0	11.0	
Temperature	amb	amb	amb	amb	amb	amb
% Solids	18	18	17	19	21	21
Net Pulp Wt, g	1208	1210	1220	1146	1024	997
NaCN, g/l		1.08	0.83	0.00	0.33	0.25
Reagent Additions,						
Ca(OH)2, g	1.64	1.08	0.50	1.12	0.08	
NaCN, g	1.88	2.00	2.03	4.30	1.03	
Reagent Consumptions, lb reagent/ton feed						
Ca(OH)2		15.4	25.6	30.3	40.8	41.6
NaCN		7.5	28.6	55.2	93.1	103.3

	g or ml	Analyses (1) Au	Ag	sulfide sulfur, %	Dissolutions, % (2) Au	Ag
preaer liquor	4560	<0.01	<0.06			
19 hour aliquot	0					
24 hour aliquot	50	1.64	69.9		48.3	80.1
48 hour aliquot	50	2.92	80.0		82.0	88.9
96 hour aliquot	50	3.31	89.6		85.1	91.2
120 hour F/W (3)	1240	2.02	52.4		84.7	87.6
120 hour solids	212.70	0.072	1.50	47.4		
Calculated feed		0.469	12.05			
Assayed feed						

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: The autoclave oxidation was made at 180 degrees centigrade, 2 hours, an oxygen overpressure of 125 psig, initial pH 0.9 adjusted with 19.9 grams of sulfuric acid. Initial emf was +270 mv; final +480 mv referenced to standard calomel electrode. Pulp was filtered and water washed prior to cyanidation.

Objective: Bulk sulfide flotation for recovery of gold and silver.
Concentrate used for autoclave oxidation and cyanidation.

Test No. 1733-101
Project: 6178X
Date: Oct '85
Page: 1 of 2
Water: tap

Grind: >95% passing 270 mesh

Sample: Sulfide Drill Cuttings: HRI 30779-6

Operation	Grind	Cond	Rougher	Clnr 1
Cell	Rod	1000	1000	1000
Time, minutes	35	1	10	10
pH	6.1	6.1	7.4	7.4
Temp, C	amb	amb	amb	amb
% Solids	60	30	30	15

Reagent, lb/t:

AI 325		0.05	0.05	0.05
AP 208		0.05	0.05	0.05
MIBC		0.02		
AF 65			0.02	0.02

	Dry Wt, g	Wt %	Analyses (1) Au	Analyses (1) Ag	Distributions, % (2) Au	Distributions, % (2) Ag
1CC	170.50	17.33	1.112	0.77	80.2	40.7
1CT	53.29	5.42	0.236	0.88	5.3	14.5
RT	760.17	77.25	0.045	0.19	14.5	44.8
Calc'd	983.96	100.00	0.240	0.33	100.0	100.0
Assy'd			0.250	1.04		
RC		22.75	0.903	0.80	85.5	55.2

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks: Low calculated silver feed was not resolved.

Objective: Cyanidation for recovery of gold and silver from flotation cleaner concentrate after autoclave preoxidation.

Test No. 1733-101
Project: 6178X
Date: Oct '85
Page: 1 of 2
Water: di

Grind: >95% passing 270 mesh

Sample: Cleaner concentrate from Sulfide Drill Cuttings.

Time, hr	0	19	24	48	96	120
pH, initial	2.8	7.6	9.8	11.2	11.0	10.9
adjusted	11.4	11.5	11.4			
Temperature	amb	amb	amb	amb	amb	amb
% Solids	18	16	14	15	17	12
Net Pulp Wt, g	821	900	1002	969	869	1164
NaCN, g/l		0.05	0.83	2.53	1.53	0.79

Reagent Additions,

Ca(OH)2, g	29.30	7.33	2.14		
NaCN, g	1.48	1.52	2.24	0.31	

Reagent Consumptions,
lb reagent/ton feed

Ca(OH)2	406.4	508.0	537.7	537.7	537.7
NaCN	20.0	31.7	43.2	55.0	62.4

	g or ml	Analyses (1) Au	Ag	sulfide sulfur, %	Dissolutions, % (2) Au	Ag
preaer liquor	3390	<0.01	<0.06			
19 hour aliquot	0					
24 hour aliquot	50	7.35	4.9		97.0	93.5
48 hour aliquot	50	7.20	4.8		97.0	93.5
96 hour aliquot	50	7.75	5.0		97.6	91.4
120 hour F/W (3)	1340	3.95	2.5		98.6	91.2
120 hour solids	144.20	0.019	0.08	3.2		
Calculated feed		1.315	0.91			

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks: The autoclave oxidation was made at 180 degrees centigrade, 2 hours, an oxygen overpressure of 125 psig, pH adjusted to 0.9 with 12.3 grams of sulfuric acid. Initial emf was +260 mv; final +520 mv referenced to standard calomel electrode. Pulp was filtered and water washed prior to cyanidation.

Objective: Bulk sulfide flotation for recovery of gold and silver. Cleaner and rougher tailings were combined for cyanidation.

Test No. 1733-102
Project: 6178X
Date: Oct '85
Page: 1 of 2
Water: tap

Grind: >95% passing 270 mesh

Sample: Sulfide Drill Cuttings: HRI 30779-6

Operation	Grind	Cond	Rougher	Clnr 1
Cell	Rod	1000	1000	1000
Time, minutes	35	1	10	10
pH	7.1	7.1	7.1	
Temp, C	amb	amb	amb	amb
% Solids	60	30	30	15
Reagent, lb/t:				
AX 325		0.05	0.05	0.05
AP 208		0.05	0.05	0.05
MIBC		0.02	0.01	
AF 65			0.02	

	Dry Wt, g	Wt %	Analyses (1) Au	Analyses (1) Ag	Distributions, % (2) Au	Distributions, % (2) Ag
1CC	174.28	17.76	1.237	5.58	81.7	81.7
1CT+RT	807.00	82.24	0.060	0.27	18.3	18.3
Calc'd	981.28	100.00	0.269	1.21	100.0	100.0
Assy'd			0.250	1.04		

(1) Solids analyses are reported as oz/t for gold and silver.
(2) Distributions are based upon the calculated feeds.

Remarks:

Objective: Cyanidation for recovery of gold and silver from flotation cleaner concentrate.

Test No. 1733-102A
Project: 6178X
Date: Oct '85
Page: 1 of 1
Water: tap

Grind: as floated

Sample: Sulfide Drill Cuttings: cleaner concentrate.

Time, hr	0	19	24	48	96	120
pH, initial	9.7	9.7	11.3	11.3	11.0	10.4
adjusted	11.2	11.2				
Temperature	amb	amb	amb	amb	amb	amb
% Solids	21	22	22	24	29	30
Net Pulp Wt, g	830	800	797	721	607	587
NaCN, g/l		0.05	2.58	4.06	2.62	1.35
Reagent Additions,						
Ca(OH)2, g	0.64	0.44				
NaCN, g	1.48	1.58	1.33			
Reagent Consumptions, lb reagent/ton feed						
Ca(OH)2		7.3	12.4	12.4	12.4	12.4
NaCN		16.6	16.7	23.4	33.6	38.7

	g or ml	Analyses (1) Au	Ag	Sulfide Sulfur, %	Dissolutions, % (2) Au	Ag
19 hour aliquot	0					
24 hour aliquot	50	1.83	23.7		15.4	44.3
48 hour aliquot	50	2.92	38.1		22.8	66.0
96 hour aliquot	50	3.95	48.4		26.3	72.1
120 hour F/W (3)	722	2.09	26.3		26.3	73.5
120 hour solids	174.28	0.912	1.48	43.7		
Calculated feed		1.237	5.58			

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Cyanidation for recovery of gold and silver from combined flotation cleaner and rougher tailings.

Test No. 1733-102B
Project: 6178X
Date: Oct '85
Page: 1 of 1
Water: tap

Grind: as floated

Sample: Sulfide Drill Cuttings: combined cleaner and rougher tailings.

Time, hr	0	19	24	48	96	120
pH, initial	8.7	10.0	10.9	10.8	10.7	10.5
adjusted	11.2	11.2	11.2		11.0	
Temperature	amb	amb	amb	amb	amb	amb
% Solids	29	30	30	31	33	32
Net Pulp Wt, g	2752	2700	2699	2579	2409	2509
NaCN, g/l		0.65	2.96	2.20	1.32	1.29
Reagent Additions,						
Ca(OH)2, g	3.36	0.96	0.75		0.13	
NaCN, g	4.23	4.64			1.05	
Reagent Consumptions, lb reagent/ton feed						
Ca(OH)2		8.3	10.7	12.6	12.6	12.9
NaCN		7.4	8.1	12.0	16.1	18.3

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
19 hour aliquot	0				
24 hour aliquot	50	0.38	2.63	43.7	67.7
48 hour aliquot	50	0.41	2.82	45.3	69.8
96 hour aliquot	50	0.47	3.12	48.1	71.7
120 hour F/W (3)	2200	0.33	2.14	47.9	69.9
120 hour solids	807.00	0.031	0.08		
Calculated feed		0.060	0.27		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

LOW GRADE TRENCH: Minus 1/2 inch

Tailings: dry 42.37 pounds

Test: 1733-45
Date: Sep '85

calculated: 0.047 oz Au/t, 0.657 oz Ag/t

assayed: 0.006 oz Au/t, 0.48 oz Ag/t

Date	Day	Pregnant Liquor: milliliters	pH	NaCN g/l	Au mg/l	Ag mg/l	Cumulative Dissolutions (1): Gold milli-oz/t	Gold %	Silver milli-oz/t	Silver %	Cyanide lb/t (2)
5 Sep	0										
	1										
	2	2378	9.9	0.30	7.90	19.30	28.5	61.1	69.7	10.6	0.17
	3	3328		0.76	1.40	7.63	35.6	76.4	108.2	16.5	0.25
	4	2105	10.0	0.90	0.40	4.21	36.9	79.1	121.6	18.5	0.27
10 Sep	5	2680	10.0	0.92	0.22	2.91	37.8	81.1	133.5	20.3	0.29
	6	2738	9.9	0.92	0.15	2.04	38.4	82.4	142.0	21.6	0.31
	7	2653	10.0	0.97	0.10	1.50	38.8	83.2	148.0	22.5	0.32
	8	2712	10.0	0.97	0.08	1.07	39.1	83.9	152.4	23.2	0.33
	9	2882	10.1	0.96	0.07	0.90	39.4	84.5	156.3	23.8	0.34
16 Sep	11	5489	10.1	0.96	0.05	0.69	39.8	85.4	162.1	24.7	0.36
	13	5800	10.2	1.00	0.03	0.52	40.1	86.0	166.7	25.4	0.36
	15	5881	10.3	1.00	0.02	0.43	40.3	86.4	170.5	26.0	0.36
	17 (3)	6190	10.3	1.00	0.02	0.37	40.5	86.9	174.0	26.5	0.36
	21 (4)	5318	10.3	0.55	0.02	0.34	40.7	87.3	176.7	26.9	

(1) Percentage dissolutions are based upon the calculated feeds.
(2) Cumulative lb NaCN per ton of dry ore feed.
(3) End of leach and beginning of washing.
(4) Wash liquor.

HIGH GRADE TRENCH: Minus 1/2 inch | Tailings: dry | 40.42 pounds | Test: 1733-46 | Date: Sep '85 | Page: 1 of 1

calculated: 0.493 oz Au/t, 1.382 oz Ag/t | assayed: 0.019 oz Au/t, 0.83 oz Ag/t

Date	Day	Pregnant Liquor: milli-liters	pH	NaCN g/l	Au mg/l	Ag mg/l	Cumulative Dissolutions (1): Gold milli-oz/t	Gold %	Silver milli-oz/t	Silver %	Cyanide lb/t (2)
5 Sep	0										
	1										
	2	2476	9.7	0.35	69.0	84.60	271.8	55.1	333.2	24.1	0.18
	3	3394		0.76	23.6	22.80	399.2	80.9	456.3	33.0	0.27
	4	2141	9.6	0.90	8.50	5.94	428.2	86.8	476.6	34.5	0.29
10 Sep	5	2746	9.6	0.93	3.96	3.22	445.5	90.3	490.6	35.5	0.31
	6	2799	9.6	0.93	2.11	1.87	454.9	92.2	499.0	36.1	0.33
	7	2704	9.9	0.96	1.25	1.55	460.3	93.3	505.6	36.6	0.34
	8	2749	9.8	0.96	0.81	1.23	463.8	94.0	511.0	37.0	0.35
	9	2875	9.9	0.91	0.56	1.01	466.4	94.5	515.6	37.3	0.38
16 Sep	11	5418	10.0	0.95	0.35	0.74	469.4	95.1	522.0	37.8	0.41
	13	5580	10.1	0.95	0.21	0.63	471.3	95.5	527.6	38.2	0.44
	15	5598	10.4	1.00	0.11	0.61	472.3	95.7	533.0	38.6	0.44
	17	5598	10.4	1.00	0.08	0.49	473.0	95.9	537.4	38.9	0.44
	19	5171	10.8	1.00	0.05	0.43	473.4	95.9	540.9	39.1	0.44
	21 (3)	5625	10.7	1.00	0.04	0.34	473.8	96.0	544.0	39.4	0.44
	25 (4)	13157	10.9		0.04	0.39	474.6	96.2	552.1	39.9	

(1) Percentage dissolutions are based upon the calculated feeds.
(2) Cumulative lb NaCN per ton of dry ore feed.
(3) End of leach and beginning of washing.
(4) Wash liquor.

LOW GRADE TRENCH: Minus 1 inch | Tailings: dry | 68.91 pounds | Test: 1733-47 | Date: Sep '85 | Page: 1 of 1

calculated: 0.048 oz Au/t, 0.653 oz Ag/t | assayed: 0.011 oz Au/t, 0.51 oz Ag/t

Date	Day	Pregnant Liquor: milliliters	pH	NaCN g/l	Au mg/l	Ag mg/l	Cumulative Dissolutions (1): Gold milli-oz/t	Gold %	Silver milli-oz/t	Silver %	Cyanide lb/t (2)
5 Sep	0										
	1	1001	9.6	0.20	11.40	28.0	10.6	21.9	26.2	4.0	0.05
	2	4980	10.5	0.62	4.10	11.2	29.7	61.3	78.2	12.0	0.17
	3	6574		0.91	0.50	2.69	32.8	67.7	94.7	14.5	0.21
	4	4206	10.2	0.97	0.30	1.61	34.0	70.2	101.0	15.5	0.22
10 Sep	5	5311	10.4	0.97	0.16	1.28	34.8	71.8	107.4	16.4	0.23
	6	5417	10.2	0.99	0.11	1.01	35.4	73.0	112.5	17.2	0.23
	7	5231	10.4	1.00	0.08	0.79	35.8	73.9	116.3	17.8	0.23
	8	5258	10.5	1.00	0.06	0.69	36.1	74.5	119.7	18.3	0.23
	9	5681	10.5	0.94	0.05	0.63	36.4	75.1	123.1	18.8	0.25
16 Sep	11	10550	10.5	0.98	0.04	0.52	36.8	75.9	128.2	19.6	0.26
	13	10886	10.5	0.97	0.03	0.47	37.1	76.6	133.0	20.3	0.28
	15	11031	10.7	0.99	0.02	0.43	37.3	77.0	137.4	21.0	0.29
	17 (3)	11567	10.7	1.00	0.02	0.30	37.5	77.4	140.6	21.5	0.29
	21 (4)	10432	10.6	0.44	0.01	0.28	37.6	77.6	143.4	21.9	

(1) Percentage dissolutions are based upon the calculated feeds.
(2) Cumulative lb NaCN per ton of dry ore feed.
(3) End of leach and beginning of washing.
(4) Wash liquor.

Objective: Bottle roll amenability.

Test No. 1751-21
Project: 6178X
Date: Nov '85
Page: 1 of 1
Water: tap

Grind: as received with no additional crushing

Sample: Low Grade Drill Cuttingss, HRI 30779-1

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	6.9	10.7	10.0	10.5	10.9	11.4	11.3	11.3	11.9
adjusted	12.3	11.8	11.8	11.8	12.2	12.2	12.1	12.2	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	29	29	30	30	30	31	30
Net Pulp Wt, g	6662	6649	6786	6728	6668	6585	6523	6435	6593
NaCN, g/l		0.93	0.86	0.96	0.97	0.98	0.99	0.97	0.94
Reagent Additions,									
Ca(OH)2, g	7.50	2.63	3.00	5.00	5.00	3.00	3.00	3.00	
NaCN, g	4.69								
Reagent Consumptions, lb reagent/ton feed									
Ca(OH)2		7.6	10.2	13.3	18.3	23.4	26.4	29.5	32.5
NaCN		0.3	0.5	0.0	0.0	0.0	0.0	0.1	0.0

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	50	0.38	1.58	65.9	37.2
24 hour aliquot	50	0.51	1.64	91.8	40.1
48 hour aliquot	50	0.53	1.77	95.2	43.2
72 hour aliquot	50	0.53	1.77	95.0	43.1
96 hour aliquot	50	0.53	1.89	94.3	45.6
120 hour aliquot	50	0.53	1.89	94.1	45.4
144 hour aliquot	37	0.57	1.95	99.9	46.4
168 hour aliquot	50	0.52	1.83	95.5	45.6
168 hour F/W (3)	6210	0.38	1.34	95.0	45.4
168 hour solids	1977.30	0.002	0.16		
Calculated feed		0.040	0.29		
Assayed feed		0.055	0.27		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

Objective: Bottle roll amenability.

Test No. 1751-22
Project: 6178X
Date: Nov '85
Page: 1 of 1

Grind: as received with no additional crushing

Water: tap

Sample: High Grade Drill Cuttings, HRI 30779-2

Time, hr	0	4	24	48	72	96	120	144	168
pH, initial	7.6	11.1	10.2	10.6	11.3	11.6	11.6	11.4	12.0
adjusted	12.5		11.9	11.8	12.2	12.3	12.2	12.3	
Temperature	amb	amb	amb	amb	amb	amb	amb	amb	amb
% Solids	30	30	30	31	31	31	32	32	32
Net Pulp Wt, g	6692	6680	6613	6549	6487	6404	6346	6259	6340
NaCN, g/l		0.94	0.86	0.98	0.98	0.99	0.99	0.96	1.00
Reagent Additions,									
Ca(OH)2, g	7.50	1.39	3.00	5.00	5.00	3.00	3.00	3.00	
NaCN, g	4.65		0.68					0.26	
Reagent Consumptions, lb reagent/ton feed									
Ca(OH)2		7.5	8.9	11.9	16.9	21.8	24.8	27.8	30.8
NaCN		0.3	0.6	0.8	0.8	0.8	0.8	1.0	0.9

	g or ml	Analyses (1) Au	Analyses (1) Ag	Dissolutions, % (2) Au	Dissolutions, % (2) Ag
4 hour aliquot	50	1.45	5.87	59.8	23.0
24 hour aliquot	50	2.11	7.61	86.3	29.7
48 hour aliquot	50	2.21	8.04	90.1	31.2
72 hour aliquot	50	2.25	8.04	91.4	31.1
96 hour aliquot	50	2.28	8.70	91.9	33.4
120 hour aliquot	50	2.29	8.91	92.2	34.1
144 hour aliquot	40	2.25	9.13	89.9	34.6
168 hour aliquot	50	2.22	8.91	91.2	34.7
168 hour F/W (3)	6305	1.45	5.87	87.9	33.7
168 hour solids	2004.00	0.020	1.15		
Calculated feed		0.165	1.73		
Assayed feed		0.167	1.65		

(1) Solids analyses for gold and silver are reported as oz/t.
Liquor analyses are reported as mg/l.
(2) Dissolutions are based upon the calculated feeds.
(3) Combined final pregnant and wash liquors.

Remarks:

SCREEN ANALYSIS

Sample: Test 1733-13, Leach tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.50	0.3	0.3	99.7
100	8.27	4.2	4.5	95.5
150	28.09	14.2	18.7	81.3
200	27.69	14.0	32.7	67.3
270	19.00	9.6	42.3	57.7
400	18.39	9.3	51.6	48.4
Pan	95.48	48.4		
Total	197.42	100.0		

Sample: Test 1733-14, Leach tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.06	0.0	0.0	100.0
100	0.20	0.1	0.1	99.9
150	3.17	1.6	1.7	98.3
200	15.91	8.0	9.7	90.3
270	25.85	13.0	22.7	77.3
400	30.10	15.2	37.9	62.1
Pan	122.91	62.1		
Total	198.20	100.0		

SCREEN ANALYSIS

Sample: Test 1733-15, Leach tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.06	0.0	0.0	100.0
100	0.17	0.1	0.1	99.9
150	1.19	0.6	0.7	99.3
200	8.69	4.4	5.1	94.9
270	22.95	11.6	16.7	83.3
400	31.28	15.8	32.5	67.5
Pan	133.74	67.5		
Total	198.08	100.0		

Sample: Test 1733-16, Leach tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.80	0.4	0.4	99.6
100	1.39	0.7	1.1	98.9
150	2.01	1.0	2.1	97.9
200	3.68	1.9	4.0	96.0
270	9.96	5.0	9.0	91.0
400	28.23	14.3	23.3	76.7
Pan	151.53	76.7		
Total	197.60	100.0		

SCREEN ANALYSIS

Sample: Test 1733-24, Rougher tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.03	0.0	0.0	100.0
100	0.03	0.0	0.0	100.0
150	0.07	0.1	0.1	99.9
200	1.15	1.3	1.4	98.6
270	4.83	5.6	7.0	93.0
400	15.57	18.0	25.0	75.0
Pan	64.67	75.0		
Total	86.35	100.0		

Sample: Test 1733-25, Rougher tailings.

Tyler Mesh	Direct Weight grams	Direct Weight %	Cumulative Weight, % Retained	Cumulative Weight, % Passing
65	0.00	0.0	0.0	100.0
100	0.00	0.0	0.0	100.0
150	0.95	1.0	1.0	99.0
200	6.19	6.4	7.4	92.6
270	12.54	12.9	20.3	79.7
400	18.26	18.8	39.1	60.9
Pan	59.10	60.9		
Total	97.04	100.0		

APPENDIX III

METALLURGICAL REPORT BY

LAKEFIELD RESEARCH

DATED JANUARY 15, 1986

An Investigation of

THE RECOVERY OF GOLD AND SILVER

from samples

submitted by

CHEVRON CANADA RESOURCES LIMITED

Report No. 1

Project No. L.R. 3075

NOTE:

This report refers to the samples as received.

The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of Lakefield Research.

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED

January 15, 1986

I N T R O D U C T I O N

In a letter dated November 12, 1985, Mr. C.V. Dyson of Chevron Canada Resources Limited requested testwork on twenty-two samples. The purpose of the testwork was to investigate the recovery of gold and silver by cyanidation.

LAKEFIELD RESEARCH

R.S. Salter

Manager

I. Jackman

Project Engineer

Experimental Work by: L. Pquette

SUMMARY

1. Head Analyses

A representative fraction was removed from each sample for analysis:

Sample No.	Gold g/t Au	Silver g/t Ag	Sulphide S % $S^{=}$	Sulphate S % $SO_4^{=}$
P10957	10.9	118.	4.28	0.16
P10958	7.44	58.9	3.04	0.16
P10959	8.07	67.7	3.45	0.17
P10960	6.77	54.8	3.09	0.14
P10961	7.48	57.0	2.79	0.15
P10962	7.19	65.0	3.19	0.05
W85-7	13.2	109	1.12	0.74
W85-9	6.60	684	0.47	0.39
W85-11	53.2	3442	0.93	0.42
BM85-2	48.3	245	0.54	0.24
BM85-4	21.9	164	0.96	0.87
BM85-9	87.8	63.7	0.71	0.65
Comp. 1	4.96	81.2	2.15	9.79
Comp. 2	1.22	28.1	0.34	1.33
Comp. 3	9.42	551	0.48	2.49
Comp. 4	1.88	16.3	1.60	0.42
Comp. 5	4.61	87.4	1.89	1.90
Comp. 6	13.7	150.	3.67	0.93
Comp. 7	1.36	22.5	1.00	0.32
Comp. 8	4.04	27.2	0.80	5.50
P10490	9.81	567	1.58	8.42
P941	9.24	1177	0.51	0.80

Summary - Continued

2. Cyanidation Testwork

The extraction of gold and silver by cyanidation was investigated. Size analyses performed on selected residues indicated a fineness of grind of 98 % minus 200 mesh. The tests were performed using mechanical agitation and air sparging. The cyanide concentration was maintained at 1 g/L NaCN and the pH at 11 throughout the 24-hour leach period. The results are summarized in Table No. 1.

Table No. 1 - Cyanidation Results

Test No.	Sample	Reag. Cons.,kg/t		% Recovery		Residue, g/t		Head(Calc.),g/t	
		NaCN	CaO	Au	Ag	Au	Ag	Au	Ag
1	10957	1.59	1.23	12.9	34.2	10.4	77.9	11.9	118
2	10958	1.00	0.96	9.0	40.2	6.98	36.8	7.67	61.5
3	10959	1.49	1.13	8.6	41.8	7.25	41.8	7.94	71.8
4	10960	0.95	1.03	9.8	37.6	6.22	37.2	6.89	59.6
5	10961	2.14	1.24	10.7	46.5	6.90	32.5	7.73	60.8
6	10962	2.00	1.41	8.5	36.5	6.63	44.1	7.24	69.4
7	W85-7	4.01	1.30	66.4	72.6	4.57	33.5	13.6	122
8	W85-9	3.98	0.94	80.7	47.1	1.33	355	6.91	671
9	W85-11	5.78	1.47	60.7	72.3	22.7	1119	57.8	4044
10	BM85-2	3.53	1.07	89.6	70.6	4.51	77.2	43.3	262
11	BM85-4	3.11	1.83	86.2	51.4	2.56	75.6	18.6	156
12	BM85-9	1.90	0.87	85.6	59.1	9.21	22.7	54.8	53.3
13	Comp. 1	3.50	4.89	85.9	32.0	0.87	52.0	6.17	76.4
14	Comp. 2	1.19	1.97	73.2	69.1	0.43	11.3	1.60	36.6
15	Comp. 3	3.77	0.80	74.2	57.4	2.89	257	11.2	551
16	Comp. 4	1.33	1.46	32.4	49.7	0.88	9.9	1.30	19.7
17	Comp. 5	3.67	2.23	60.5	41.4	2.01	48.2	5.09	82.3
18	Comp. 6	2.64	0.99	24.0	32.1	7.31	107	9.62	158
19	Comp. 7	2.04	1.60	37.4	49.1	1.13	10.9	1.81	21.4
20	Comp. 8	3.49	2.10	81.5	22.4	0.90	20.2	4.86	26.1
21	P10490	4.77	0.99	70.5	54.7	3.23	294	11.0	649.
22	P941	3.57	1.45	84.6	76.3	1.52	317.	9.88	1339.

TAILINGS PONDS | HIGH GRADE TRENCH SAMPLES | DUMPS | BM X CUT | WEBBER DRILL CORE

The gold and silver recoveries ranged form 9-90 % and 22-76 % respectively. The recovery of gold was higher from the more oxidized samples indicated by the higher sulphate and lower sulphide sulphur head analyses. There was some discrepency in a few of the gold head assays between the calculated and direct assays particularly samples BM85-9 and Composite 6. This may have been due to the presence of free gold in the samples.

SAMPLE PREPARATION

On November 12, 1985, six samples (< 1 kg each) were received at Lakefield Research and given our Reference Number 8525819. A head sample and test charge were riffled out of each sample.

A second shipment of six samples (~30 kg each) was received on November 20, 1985 and given our Reference Number 8525849. Each sample was crushed to minus 6 mm and 3/4 was riffled out and stored. The remaining quarter was further crushed to minus 10 mesh. A head sample and test charge were prepared.

On December 9, 1985, a final shipment of 10 samples (2-3 kg each) was received and given our Reference Number 8525916. Each sample was crushed to minus 10 mesh from which a head sample and test charge were prepared.

The sample numbers corresponding to the eight composites received are given below:

Composite	Sample No.	
1	P17756-63	BROWN-McDADE
2	P17770-76	UPPER WEBBER (Low Grade)
3	P17777-82	UPPER WEBBER (High Grade)
4	P17830-37	UPPER HUESTIS (Low Grade)
5	P17846-51	UPPER HUESTIS (High Grade)
6	P17852-58	LOWER HUESTIS (High Grade)
7	P17860-65	UPPER HUESTIS (Low Grade)
8	P17963-65	BROWN-McDADE CROSS-CUT

DETAILS OF TESTS

Test No. 1

Purpose: To investigate the recovery of gold and silver from Sample 10957 by cyanidation.

Procedure: The sample was pulped with water in a two litre pail. NaCN and lime were added and the cyanidation was carried out using mechanical agitation and an air sparge in one 24 hour stage. The pulp was filtered and the residue washed three times with water.

Feed: 400 g sample 10957.

Solution Volume: 800 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 20 minutes/400 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	0.84	0.35	0.80	0.27	0.40	0	0.40	0.27	11.2-10.5
2-4	0.42	0.20	0.40	0.15	0.76	0	0.04	0.15	11.2-11.0
4-6	0.04	0	0.04	0	0.80	0	0	0	11.0-10.8
6-24	0	0.08	0	0.06	0.62	0	0.18	0.06	11.1-10.3
Total	1.30	0.63	1.24	0.48	0.62	0	0.62	0.48	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 1.59 CaO: 1.23

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	2000 mL	0.30	7.92	12.9	34.2
24 h Residue	391.1 g	10.4	77.9	87.1	65.8
Head (Calc.)	391.1 g	11.9	118	100.0	100.0

Test No. 1 - Continued

Screen Analyses

24 Hour Cyanide Residue

Mesh Size (Tyler)	% Retained		% Passing
	Individual	Cumulative	Cumulative
+ 100	0.1	0.1	99.9
150	0.4	0.5	99.5
200	1.7	2.2	97.8
270	5.5	7.7	92.3
400	13.8	21.5	78.5
- 400	78.5	100.0	-
Total	100.0	-	-

Test No. 2

Purpose: To investigate the recovery of gold and silver from sample 10958 by cyanidation.

Procedure: As for test No. 1.

Feed: 500 g sample 10958.

Solution Volume: 1000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 25 minutes/500 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	1.05	0.35	1.00	0.27	0.52	0	0.48	0.27	11.0-10.4
2-4	0.51	0.20	0.48	0.15	1.00	0	0	0.15	11.2-11.0
4-6	0	0	0	0	1.00	0	0	0	11.0-10.8
6-24	0	0.08	0	0.06	0.99	0.01	0.01	0.05	11.1-10.6
Total	1.56	0.63	1.48	0.48	0.99	0.01	0.49	0.47	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 1.00 CaO: 0.96

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	1880 mL	0.18	6.45	9.0	40.2
24 h Residue	490.5 g	6.98	36.8	91.0	59.8
Head (Calculated)	490.5 g	7.67	61.5	100.0	100.0

Test No. 3

Purpose: To investigate the recovery of gold and silver from sample 10959 by cyanidation.

Procedure: As for test No. 1.

Feed: 600 g sample 10959

Solution Volume: 1200 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/600 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	1.26	0.50	1.20	0.38	0.65	0	0.55	0.38	11.0-10.4
2-4	0.58	0.30	0.55	0.23	1.00	0	0.20	0.23	11.2-11.1
4-6	0.21	0	0.20	0	1.20	0	0	0	11.1-10.9
6-24	0	0.08	0	0.06	1.07	0	0.13	0.06	11.1-10.3
Total	2.05	0.88	1.95	0.67	1.07	0	0.88	0.67	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 1.49 CaO: 1.13

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	1840 mL	0.22	9.65	8.6	41.8
24 h Residue	591.4 g	7.25	41.8	91.4	58.2
Head (Calculated)	591.4 g	7.94	71.8	100.0	100.0

Test No. 4

Purpose: To investigate the recovery of gold and silver form sample 10960 by cyanidation.

Procedure: As for test No. 1.

Feed: 600 g sample 10960

Solution Volume: 1200 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/600 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	1.26	0.50	1.20	0.38	0.73	0	0.47	0.38	11.0-10.4
2-4	0.49	0.30	0.47	0.23	1.20	0	0	0.23	11.3-11.3
4-6	0	0	0	0	1.13	0	0.07	0	11.3-11.2
6-24	0.07	0	0.07	0	1.18	0	0.02	0	11.2-10.6
Total	1.82	0.80	1.74	0.61	1.18	0	0.56	0.61	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 0.95 CaO: 1.03

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	2000 mL	0.20	6.63	9.8	37.6
24 h Residue	592.0 g	6.22	37.2	90.2	62.4
Head (Calculated)	592.0 g	6.89	59.6	100.0	100.0

Test No. 5

Purpose: To investigate the recovery of gold and silver from sample 10961 by cyanidation.

Procedure: As for test No. 1.

Feed: 600 g sample 10961.

Solution Volume: 1200 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/600 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	1.26	0.60	1.20	0.46	0.58	0	0.62	0.46	11.1-10.6
2-4	0.65	0.25	0.62	0.19	1.16	0	0.04	0.19	11.3-11.0
4-6	0.04	0	0.04	0	1.19	0	0.01	0	11.0-10.8
6-24	0	0.10	0	0.08	0.60	0	0.59	0.08	11.1-10.4
Total	1.95	0.95	1.86	0.73	0.60	0	1.26	0.73	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 2.14 CaO: 1.24

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	1810 mL	0.27	9.20	10.7	46.5
24 h Residue	589.2 g	6.90	32.5	89.3	53.5
Head (Calculated)	589.2 g	7.73	60.76	100.0	100.0

Test No. 6

Purpose: To investigate the recovery of gold and silver from sample 10962 by cyanidation.

Procedure: As for test No. 1.

Feed: 500 g Sample 10962

Solution Volume: 1000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 25 minutes/500 g at 50 percent solids in a laboratory pebble mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	1.05	0.60	1.00	0.46	0.47	0	0.53	0.46	11.0-10.6
2-4	0.56	0.25	0.53	0.19	0.83	0	0.17	0.19	11.3-11.0
4-6	0.18	0	0.17	0	1.00	0	0	0	11.0-10.7
6-24	0	0.10	0	0.08	0.72	0.04	0.28	0.04	11.0-10.7
Total	1.79	0.85	1.70	0.73	0.72	0.04	0.98	0.69	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 2.00 CaO: 1.41

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	2000 mL	0.15	6.20	8.5	36.5
24 h Residue	490.0 g	6.63	44.1	91.5	63.5
Head (Calculated)	490.0 g	7.24	69.41	100.0	100.0

Test No. 7

Purpose: To investigate the recovery of gold and silver from sample W85-7 by cyanidation.

Procedure: The sample was pulped with water in a 10 litre pail. NaCN and lime were added and the cyanidation was carried out using mechanical agitation and an air sparge in one 24 hour stage. 290 mLs percol 156 and 8 grams of lime were added after the 24 hours and the pulp was filtered and the residue washed three times with water.

Feed: 2000 g sample W85-7.

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	2.30	4.00	1.75	0.18	0.07	3.82	1.68	11.0-10.2
2-4	4.02	0.70	3.82	0.53	2.02	0.11	1.98	0.49	11.0-10.8
4-6	2.08	0.20	1.98	0.15	3.76	0.14	0.24	0.12	11.0-10.8
6-24	0.25	0.20	0.24	0.15	2.62	0.17	1.38	0.12	11.0-10.6
Total	10.56	3.40	10.04	2.58	2.62	0.17	7.42	2.41	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 4.01 CaO: 1.30

Test No. 7 - Continued

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	10320 mL	1.67	16.4	66.4	72.6
24 h Residue	1910.8 g	4.57	33.5	33.6	27.4
Head (Calculated)	1910.8 g	13.6	122	100.0	100.0

Screen Analyses

24 Hour Cyanide Residue

Mesh Size (Tyler)	% Retained		% Passing
	Individual	Cumulative	Cumulative
+ 100	0.1	0.1	99.9
150	0.4	0.5	99.5
200	1.7	2.2	97.8
270	5.5	7.7	92.3
400	10.3	18.0	82.0
- 400	82.0	100.0	-
Total	100.0	-	-

Test No. 8

Purpose: To investigate the recovery of gold and silver form sample W85-9 by cyanidation.

Procedure: As for test No. 7 but 230 mLs Percol 156 and 8 grams of lime was added to aid in filtration.

Feed: 2000 g sample W85-9

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	1.30	4.00	0.99	0.26	0.09	3.74	0.90	11.0-10.4
2-4	3.94	0.80	3.74	0.61	2.28	0.09	1.72	0.61	11.0-10.8
4-6	1.81	0.20	1.72	0.15	3.64	0.09	0.36	0.15	11.0-10.9
6-24	0.38	0.20	0.36	0.15	2.21	0.11	1.79	0.13	11.1-10.7
Total	10.34	2.50	9.82	1.90	2.21	0.11	7.61	1.79	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.98 CaO: 0.94

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	7230 mL	1.43	81.0	80.7	47.1
24 h Residue	1851.6 g	1.33	355	19.3	52.9
Head (Calculated)	1851.6 g	6.91	671	100.0	100.0

Test No. 9

Purpose: To investigate the recovery of gold and silver from sample W85-11 by cyanidaiton.

Procedure: As for test No. 7 but 10 grams of lime was added to aid in filtration.

Feed: 2000 g sample W85-11

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	2.40	4.00	1.82	0.16	0.89	3.84	0.93	11.0-10.2
2-4	4.04	0.70	3.84	0.53	1.28	0.17	2.72	1.25	11.2-10.8
4-6	2.86	0.40	2.72	0.30	2.56	0.23	1.44	0.24	11.1-10.8
6-24	1.52	0.40	1.44	0.30	1.73	0.34	2.27	0.19	11.2-10.6
Total	12.63	3.90	12.00	2.85	1.73	0.34	10.27	2.61	-

Regent Consumption (kg/t of cyanide feed) NaCN: 5.78 CaO: 1.47

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	7160 mL	8.70	726	60.7	72.3
24 h Residue	1777.1 g	22.7	1119	39.3	27.7
Head (Calculated)	1777.1 g	57.75	4044	100.0	100.0

Test No. 10

Purpose: To investigate the recovery of gold and silver from sample BM85-2 by cyanidation.

Procedure: As for test No. 7 but 10 grams of lime was added to aid in filtration.

Feed: 2000 g Sample BM85-2

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	1.50	4.00	1.14	0.24	0.09	3.76	1.05	11.1-10.2
2-4	3.96	0.70	3.76	0.53	3.12	0.10	0.88	0.52	11.2-10.8
4-6	0.93	0.40	0.88	0.30	3.98	0.15	0.02	0.25	11.1-10.8
6-24	0	0.40	0	0.30	2.42	0.38	1.56	0.07	11.2-10.8
Total	9.10	3.00	8.64	2.27	2.42	0.38	6.22	1.89	-

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	7020 mL	9.75	46.5	89.6	70.6
24 h Residue	1763.4 g	4.51	77.2	10.4	29.4
Head (Calculated)	1763.4 g	43.32	262.3	100.0	100.0

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.53 CaO: 1.07

Test No. 11

Purpose: To investigate the recovery of gold and silver from sample BM85-4 by cyanidation.

Procedure: As for test No. 7 but 10 grams of lime was added to aid in filtration.

Feed: 2000 g sample BM85-4

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	4.21	4.00	3.20	0.24	0.22	3.76	2.98	11.2-10.7
2-4	3.96	0.60	3.76	0.46	3.46	0.24	0.54	0.44	11.2-11.0
4-6	0.57	0	0.54	0	3.42	0.21	0.58	0.03	11.0-11.0
6-24	0.61	0	0.58	0	2.91	0.15	1.09	0.06	11.0-10.8
Total	9.35	4.81	8.88	3.66	2.91	0.15	5.97	3.51	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.11 CaO: 1.83

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	7200 mL	4.27	21.3	86.2	51.4
24 h Residue	1918.4 g	2.56	75.6	13.8	48.6
Head (Calculated)	1918.4 g	18.59	155.5	100.0	100.0

Test No. 12

Purpose: To investigate recovery of gold and silver from sample BM85-9 by cyanidation.

Procedure: As for test No. 7 but 10 grams of lime was added to aid in filtration.

Feed: 2000 g sample BM85-9

Solution Volume: 4000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 60 minutes/2 kg at 65 percent solids in a laboratory ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	4.21	1.80	4.00	1.37	1.46	0.16	2.54	1.21	11.2-10.8
2-4	2.67	0.40	2.54	0.30	3.58	0.21	0.42	0.25	11.1-10.9
4-6	0.44	0.20	0.42	0.15	4.00	0.26	0	0.10	11.0-11.0
6-24	0	0	0	0	3.41	0.15	0.59	0.11	11.0-10.8
Total	7.32	2.40	6.96	1.82	3.41	0.15	3.55	1.67	-

Regent Consumption (kg/t of cyanide feed) NaCN: 1.90 CaO: 0.87

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	6500 mL	13.1	8.80	83.2	57.4
24 h Resaidue	1866.3 g	9.21	22.7	16.8	42.6
Head (Calculated)	1866.3 g	54.8	53.3	100.0	100.0

Test No. 13

Purpose: To investigate the recovery of gold and silver from Composite 1 by cyanidation.

Procedure: The sample was pulped with water in a four litre pail. NaCN and lime were added and the cyanidation was carried out using mechanical agitation and an air sparge in one 24 hour stage. 5 grams of lime was added to aid in filtration. The pulp was filtered and the residue washed three times with water.

Feed: 1000 g minus 10 mesh Composite 1

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	5.20	2.00	3.95	0.06	0.04	1.94	3.91	11.4-10.6
2-4	2.04	0.80	1.94	0.61	1.35	0.06	0.65	0.59	11.3-11.0
4-6	0.68	0	0.65	0	1.68	0.04	0.32	0.02	11.0-10.9
6-24	0.34	0.20	0.32	0.15	1.57	0.04	0.43	0.15	11.2-10.4
Total	5.16	6.20	4.91	4.71	1.57	0.04	3.34	4.67	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.50 CaO: 4.89

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	2830 mL	1.79	8.25	85.9	32.0
24 h Residue	955.3 g	0.87	52.0	14.1	68.0
Head (Calculated)	955.3 g	6.17	76.44	100.0	100.0

Test No. 14

Purpose: To investigate the recovery of gold and silver from Composite 2 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 2

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	2.10	2.00	1.60	1.42	0.05	0.58	1.55	11.2-10.9
2-4	0.61	0	0.58	0	1.61	0.03	0.39	0.02	11.0-10.8
4-6	0.41	0.50	0.39	0.38	1.89	0.03	0.11	0.38	11.3-11.1
6-24	0.12	0	0.11	0	1.90	0.03	0.10	0	11.1-10.5
Total	3.24	2.60	3.08	1.98	1.90	0.03	1.18	1.95	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 1.19 CaO: 1.97

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3320 mL	0.35	7.53	73.2	69.1
24 h Residue	990.2 g	0.43	11.3	26.8	30.9
Head (Calculated)	990.2 g	1.60	36.55	100.0	100.0

Test No. 15

Purpose: To investigate the recovery of gold and silver from Composite 3 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 3.

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	0.70	2.00	0.53	0.19	0.01	1.81	0.52	11.4-10.4
2-4	1.90	0.30	1.81	0.23	1.43	0	0.57	0.24	11.2-11.0
4-6	0.60	0	0.57	0	1.49	0	0.51	0	11.0-10.8
6-24	0.54	0.08	0.51	0.06	1.21	0.04	0.79	0.02	11.0-11.0
Total	5.14	1.08	4.89	0.82	1.21	0.04	3.68	0.78	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.77 CaO: 0.80

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	5380 mL	1.51	63.0	74.2	57.4
24 h Residue	977.4 g	2.89	257	25.8	42.6
Head (Calculated)	977.4 g	11.20	603.7	100.0	100.0

Test No. 16

Purpose: To investigate the recovery of gold and silver from Composite 4 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 4

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	1.50	2.00	1.14	0.98	0	1.02	1.14	11.2-10.5
2-4	1.07	0.30	1.02	0.23	2.00	0	0	0.23	11.2-11.0
4-6	0	0	0	0	2.00	0	0	0	11.0-10.8
6-24	0	0.10	0	0.08	1.70	0	0.30	0.08	11.0-10.8
Total	3.17	1.90	3.02	1.45	1.70	0	1.32	1.45	-

Regent Consumption (kg/t of cyanide feed) NaCN: 1.33 CaO: 1.46

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	5020 mL	0.083	1.93	32.4	49.7
24 h Residue	991.2 g	0.88	9.9	67.6	50.3
Head (Calculated)	991.2 g	1.30	19.68	100.0	100.0

Test No. 17

Purpose: To investigate the recovery of gold and silver from Composite 5 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 5

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	2.20	2.00	1.67	0.05	0.03	1.95	0.64	11.4-10.3
2-4	2.04	0.40	1.95	0.30	1.30	0	0.70	0.33	11.2-10.8
4-6	0.74	0.08	0.70	0.06	1.84	0	0.16	0.06	11.0-10.8
6-24	0.17	0.20	0.16	0.15	1.22	0	0.78	0.15	11.3-10.4
Total	5.06	2.88	4.81	2.18	1.22	0	3.59	2.18	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.67 CaO: 2.23

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3510 mL	0.86	9.50	60.5	41.4
24 h Residue	979.9 g	2.01	48.2	39.5	58.6
Head (Calculated)	979.9 g	5.09	82.26	100.0	100.0

Test No. 18

Purpose: To investigate the recovery of gold and silver from Composite 6 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 6

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	1.30	2.00	0.99	0.16	0.03	1.84	0.96	11.4-10.6
2-4	1.94	0	1.84	0	1.41	0	0.59	0.03	11.1-11.0
4-6	0.62	0	0.59	0	2.00	0	0	0	11.1-11.0
6-24	0	0	0	0	1.80	0	0.20	0	11.0-10.7
Total	4.66	1.30	4.43	0.99	1.80	0	2.63	0.99	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 2.64 CaO: 0.99

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3710 mL	0.62	13.7	24.0	32.1
24 h Residue	995.8 g	7.31	107	76.0	67.9
Head (Calculated)	995.8	9.62	157.5	100.0	100.0

Test No. 19

Purpose: To investigate the recovery of gold and silver from Composite 7 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 7

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	1.40	2.00	1.06	1.10	0	0.90	1.06	11.1-10.5
2-4	0.95	0.40	0.90	0.30	1.29	0	0.71	0.30	11.1-10.8
4-6	0.75	0.10	0.71	0.08	1.76	0	0.24	0.08	11.0-10.9
6-24	0.25	0.20	0.24	0.15	1.83	0	0.17	0.15	11.2-11.0
Total	4.05	2.10	3.85	1.59	1.83	0	2.02	1.59	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 2.04 CaO: 1.60

Tset No. 19 - Continued

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3520 mL	0.19	2.96	37.4	49.1
24 h Residue	991.0 g	1.13	10.9	62.6	50.9
Head (Calculated)	991.0 g	1.81	21.41	100.0	100.0

Screen Analyses

24 Hour Cyanide Residue

Mesh Size (Tyler)	% Retained		% Passing Cumulative
	Individual	Cumulative	
+ 100	0.1	0.1	99.9
150	0.1	0.2	99.8
200	0.8	1.0	99.0
270	4.3	5.3	94.7
400	11.5	16.8	83.2
- 400	83.2	100.0	-
Total	100.0	-	-

Test No. 20

Purpose: To investigae the recovery of gold and silver from Composite 8 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite 8

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	1.60	2.00	1.22	0.12	0	1.88	1.22	11.0- 9.6
2-4	1.98	0.80	1.88	0.61	1.22	0	0.78	0.61	11.3-10.8
4-6	0.82	0.10	0.78	0.08	2.00	0	0	0.08	11.0-10.9
6-24	0	0.20	0	0.15	1.24	0	0.76	0.15	11.2-10.7
Total	4.90	2.70	4.66	2.06	1.24	0	3.42	2.06	-

Reagent Consumption (kg/t of cyanide feed) NaCn: 3.49 CaO: 2.10

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3880 mL	1.00	1.85	81.5	22.4
24 h Residue	980.0 g	0.90	20.2	18.5	77.6
Head (Calculated)	980.0 g	4.86	26.05	100.0	100.0

Test No. 21

Purpose: To investigate the recovery of gold and silver from Composite P10490 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite P10490.

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	0.90	2.00	0.68	0.05	0.01	1.95	0.67	11.0-10.1
2-4	2.05	0.30	1.85	0.23	0.62	0.01	1.38	0.23	11.0-10.8
4-6	1.45	0.10	1.38	0.08	1.38	0.05	0.62	0.04	11.2-11.0
6-24	0.65	0	0.62	0	1.20	0	0.80	0.05	11.0-10.6
Total	6.25	1.30	5.95	0.99	1.20	0	4.75	0.99	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 4.77 CaO: 0.99

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3760 mL	2.05	94.0	70.5	54.7
24 h Residue	996.6 g	3.23	294	29.5	45.3
Head (Calculated)	996.6 g	10.96	648.6	100.0	100.0

Test No. 22

Purpose: To investigate the recovery of gold and silver from Composite P941 by cyanidation.

Procedure: As for test No. 13.

Feed: 1000 g minus 10 mesh Composite P941

Solution Volume: 2000 mL Pulp Density 33 % solids

Solution Composition: 1.0 g/L NaCN

pH Range: 11.0 with $Ca(OH)_2$

Grind: 30 minutes/kg at 65 percent solids in a lab ball mill.

Reagent Balance:

Time	Added, Grams				Residual		Consumed		pH
	Actual		Equivalent		Grams		Grams		
Hours	NaCN	$Ca(OH)_2$	NaCN	CaO	NaCN	CaO	NaCN	CaO	
0-2	2.10	1.50	2.00	1.14	0.11	0.02	1.89	1.12	11.1-10.4
2-4	1.99	0.30	1.89	0.23	1.13	0.04	0.87	0.21	11.0-10.8
4-6	0.92	0.10	0.87	0.08	1.75	0	0.25	0.12	11.1-11.0
6-24	0.26	0	0.25	0	1.45	0	0.55	0	11.0-10.7
Total	5.27	1.90	5.01	1.45	1.45	0	3.56	1.45	-

Reagent Consumption (kg/t of cyanide feed) NaCN: 3.57 CaO: 1.45

Metallurgical Results

Product	Amount	Assays, mg/L, g/t		% Distribution	
		Au	Ag	Au	Ag
24 h Preg+Wash	3860 mL	2.16	264.0	84.6	76.3
24 h Residue	996.9 g	1.52	317	15.4	23.7
Head (Calculated)	996.9 g	9.88	1339.2	100.0	100.0

LAKEFIELD RESEARCH
A Division of Falconbridge Limited
Lakefield, Ontario
January 15, 1986 / slk

APPENDIX IV

ENVIRONMENTAL OVERVIEW BY

NORECOL ENVIRONMENTAL CONSULTANTS LTD.

DATED NOVEMBER, 1985

PRELIMINARY ENVIRONMENTAL OVERVIEW
FOR THE
NANSEN PROPERTY

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November, 1985

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1.0 INTRODUCTION

1.1 Background

The Nansen Property is located in Yukon Territory approximately 45 km west of the community of Carmacks and 10 km southeast of Mount Nansen. Access is by road from Carmacks. The project area lies in the Dawson Range and elevations range from 945m to 1525m. Drainage from the site flows into two moderate sized tributaries of the Nisling River, namely Victoria and Nansen creeks. The Nisling River empties into the Yukon River via the Donjek and White rivers.

The first exploration of the Nansen property occurred in 1946 on the Brown - McDade Zone. More recent exploration occurred between 1964 and 1966 resulting in a mine and mill operating on the Huestis Zone in 1968/69 and 1976. Exploration on the property has continued and three zones explored in 1985 appear to have the following exploration/ production priority: Brown-McDade, Webber and Huestis. The property is surrounded by active placer claims, several of which occur on the Nansen property. The property is currently owned by BYG and is optioned to Chevron/Archer Cathrow.

Some environmental information has been collected in the area on fish, water chemistry, bottom fauna and acid generation potential (Davidge, 1984; Environmental Protection Service, 1979). Chevron authorized Norecol Environmental Consultants Ltd. to undertake a site investigation in October of 1985, which included setting

up a water quality sampling program, collection of samples for acid generation tests, and a site reconnaissance to assess the environmental concerns associated with establishing a mine at the property.

The preliminary plans indicated mining by open pit and underground methods and establishment of a 300 TPD mill to prepare the ore on-site. Gold extraction will be by heap leaching with cyanide. Some sulphide deposits also occur in the area but recovery is uncertain.

1.2 Study Objectives

The objectives of this study were to:

- undertake a reconnaissance level site visit to review site conditions, determine potential environmental issues and data requirements;
- initiate a water quality sampling program;
- provide an outline of the government mine development review process for Yukon; and
- recommend additional technical studies and a schedule to phase with the exploration and development plans.

2.0 GOVERNMENT ENVIRONMENTAL REQUIREMENTS

2.1 General Discussion of the Environmental Review Process in Yukon

Yukon is characterized by having a very flexible system of review processes. There are two operational processes developing mines are obliged to pass through. These processes are the Land Use Committee (LUC) and Regional Environmental Review Committee (RERC) and the Yukon Territory Water Board. The RERC is a non-regulatory process but provides input to the LUC which is a regulatory body, whereas the water board has regulatory powers for establishing water licences and waste discharge requirements. The following description of the processes presents the current procedures involved. The Federal Government is exploring the possibility of passing more power and responsibility to the Territorial government which would significantly influence the current practices. The timing of such changes is unknown but would probably not affect the Nansen project. In addition to these changes, the Order-In-Council of 1984 changing the Federal Environmental Review Process gave Boards the power to refer projects to Federal Environmental Review. However, this last change is not well understood in Yukon and it seems unlikely that the Water Board would ask RERC to review a project.

2.1.1 Yukon Territory Water Board

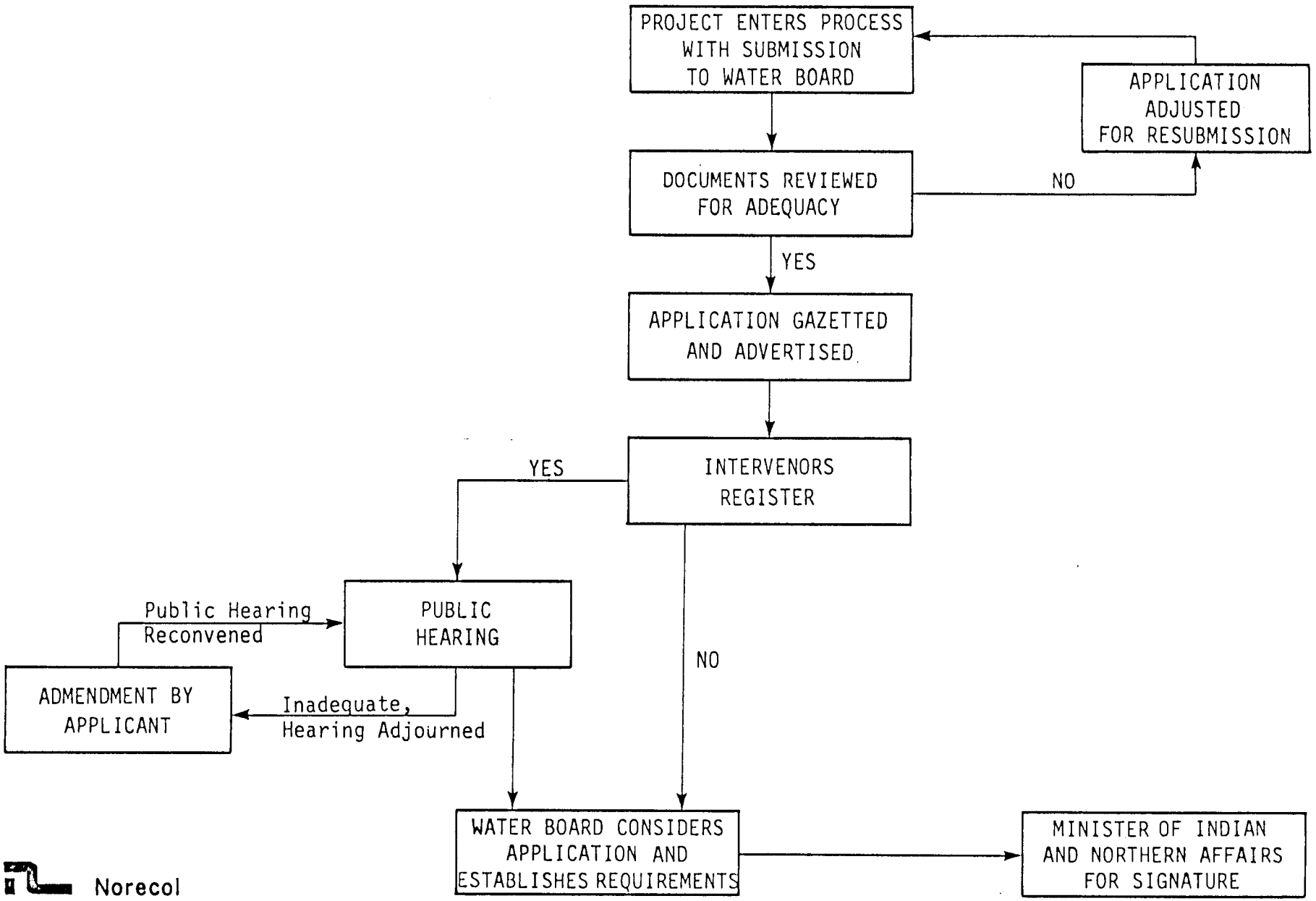
The Water Board consists of nine appointed members which rule on water usage and waste water discharges in

Yukon. The process is begun with the submission of documentation to the Water Board. The documentation includes a Mining Questionaire and an environmental assessment relating specifically to water resources associated with the mine development. The environmental assessment should provide specific information regarding acquisition and discharge of water along with details of treatment plans for waste water. This information should then be related to the potential effects on aquatic resources of the area.

Upon submission, the documentation is reviewed for adequacy by the Technical Advisor to the Water Board as well as by Environmental Protection Service (including Fisheries and Oceans) and Water Rights - Water Resources of Indian and Northern Affairs. The remainder of the process is shown in Figure 1.

The only operations that are not required to prepare submissions to the Water Board are those that would have no discharge and would use less than 50,000 g/d of water. All other operations must obtain water licences and/or discharge permits. Discharge permit levels would be those given in the Metal Mining Liquid Effluent Regulations and Guidelines or may include other conditions or limits as determined by the Water Board. The Water Board process should be expected to require an average of approximately 90 days to complete. We were advised that it would be best to enter both the RERC (by submission of the Initial Environmental Evaluation) and the Water Board process concurrently.

FIGURE 1 YUKON TERRITORY WATER BOARD REVIEW PROCESS



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While the attached figure (Figure 1) illustrates the process, it should be emphasized that the process is very flexible and the attached describes the usual pathways.

2.1.2 Regional Environmental Review Committee

The RERC is chaired by the Regional Manager of Land Resources of Indian and Northern Affairs. The other members of the committee represent Fisheries and Oceans (two members, functionally one member). Environment Canada (Environmental Protection Service), Mineral Resources (YTG), Department of Energy Mines and Petroleum Resources and the Department of Renewable Resources (YTG). In addition, there are a number of other agencies with advisor or observer status to the committee.

The RERC was established to carry out the Federal Environmental Assessment and Review Process in Yukon. However, this committee does not serve a specific regulatory function, but serves to provide technical guidance to developers. That is, it does not issue permits or approvals although it has input to the approval of Land Use Permits. This committee has had no official contact with the Water Board.

Land Use Permits are handled through the Land Use Unit of Land Resources of Indian and Northern Affairs. A Land Use Permit for surface facilities (i.e. roads, tailing ponds, leach pads, mill etc.) is not required for claims and leases that are owned or optioned. A Land Use Permit is required if surface facilities are to be built on Crown Land or a lease or claim owned by another party.

Land Use employes an advisory committee made up of the same members of the RERC. The RERC process is initiated by either the submisssion of a Land Use Permit Application which is screened and referred to the RERC, referrals by the Water Board (which is unlikely), or by direct submission of an initial Fact Sheet or Project Disclosure to RERC. In the latter case the committee will review the submission and determine the need for an Initial Environmental Evaluation (IEE). If it is determined that an IEE is required, then terms of reference can be determined with the assistance of the RERC. The usual requirements include the following areas:

- engineering detail on any road access, such as schedule, type, design criteria, construction methods, etc.
- a geotechnical terrain evaluation, including identification of terrain hazards, permafrost areas, difficult construction areas and gravel sources
- fisheries habitat and population investigations
- wildlife investigations
- investigate present use, including guides/ outfitters, trappers and land claims
- heritage resources
- environmental mitigation, such as stream crossings, wet areas, permafrost, drainage control during construction, etc.

Upon review of the IEE the RERC will either suggest proceeding through the normal regulatory process, will request further information to fill in certain areas, or require additional work if non-mitigatable impacts are identified.

The process would likely be accelerated by the submission of a Fact Sheet or Disclosure to RERC followed with concurrent submission of an IEE and Land Use Permit Application to the appropriate groups. Review of the application and IEE will normally require up to one and one-half months. The other alternative is to start the IEE through the collection of key seasonal field data in anticipation of the RERC requirements. The RERC review process, like that of the Water Board, is very flexible.

2.2 Review Process for the Mount Nansen Project

The size and the timing of the Nansen Project is as yet unknown and will depend on exploration results. Mineral extraction may be leaching or conventional milling and floatation or both. Based on a preliminary review of the site and discussions with regulatory agencies it is thought that the project should be reviewed by RERC and the Water Board. No Land Use Permit is required for this project because the property is already serviced by a road and the claims and leases are in place and in good standing. However, it is advisable to obtain a Surface Lease for all surface facilities since it is possible that a Surface Lease could be issued to another party even though Chevron has optioned the claims or leases issued under the Yukon Quartz Mining Act. Leases issued under the Quartz Act bestow rights to minerals on that property whereas a Surface Lease gives exclusive right to use surface lands.

The suggested process is to submit a disclosure to the RERC. The subsequent submission of the IEE should be made concurrent with Application to the Water Board. It is apparent that early and relatively frequent discussions with these groups would be advantageous to avoid surprises or delays later in the process.

The project will likely be somewhat controversial if leaching is pursued as a mineral extraction procedure. However, with proper project planning and liaison with agencies the project should proceed with only minor delays during the review process. This will require that Chevron carry out enough background work on the leaching process and associated environmental concerns to be viewed as the local experts. In this way Chevron will be able to maintain the lead in providing information pertaining to the leaching process. This will be critical in avoiding delays due to a lack of understanding of the leaching process and potential environmental impacts.

The most sensitive environmental issues are likely water related (water quality, water management and waste management). However, other concerns will also have to be addressed as outlined later in the report. Because a new process is being considered for this mine, some education of government agencies involved should be anticipated, although it is not apparent that any significant delays should be anticipated as long as Chevron is fully prepared upon entering the review process. Discussions with the Water Board and RERC should commence at an early stage and would be useful even prior to the submission of any documents, including the preliminary disclosure.

3.0 RESULTS OF FALL 1985 PROGRAM

3.1 Water Quality

Eleven surface water sampling locations and one adit water sampling location were established (Figure 2):

A1 - Lower Huestis Adit.
N1 - Nansen Creek, 1.0km upstream of Webber Creek.
N2 - Nansen Creek, 1.2km from mouth.
W1 - Webber Creek, 0.6km from mouth (drains Webber Zone).
C1 - Cabin Creek, 0.3km from mouth (drains Huestis Zone).
V1 - Victoria Creek, 0.8km upstream of Back Creek.
V2 - Victoria Creek, approximately 5km from mouth.
M1 - Minnesota Creek, 0.2km from mouth.
B1 - Back Creek, 0.2km from mouth.
P1 - Pony Creek, tributary to Back Creek, 0.6km from mouth (drains Brown-McDade Zone).
D1 - Dome Creek, 3.5km from mouth (drains Huestis Zone and old mill and tailings area).
D2 - Dome Creek, 0.4km from mouth.

Water quality samples were collected on October 11, 1985. Partial analysis of samples was carried out and included all characteristics that must be analyzed soon after collection plus total metals. Analysis for dissolved metals has been reserved for a later date. Analytical results of these samples are shown in Table 1. The water in the area was generally found to be relatively soft and slightly alkaline. Whereas Site A1 and D1 are hard, very alkaline, highly conductive and

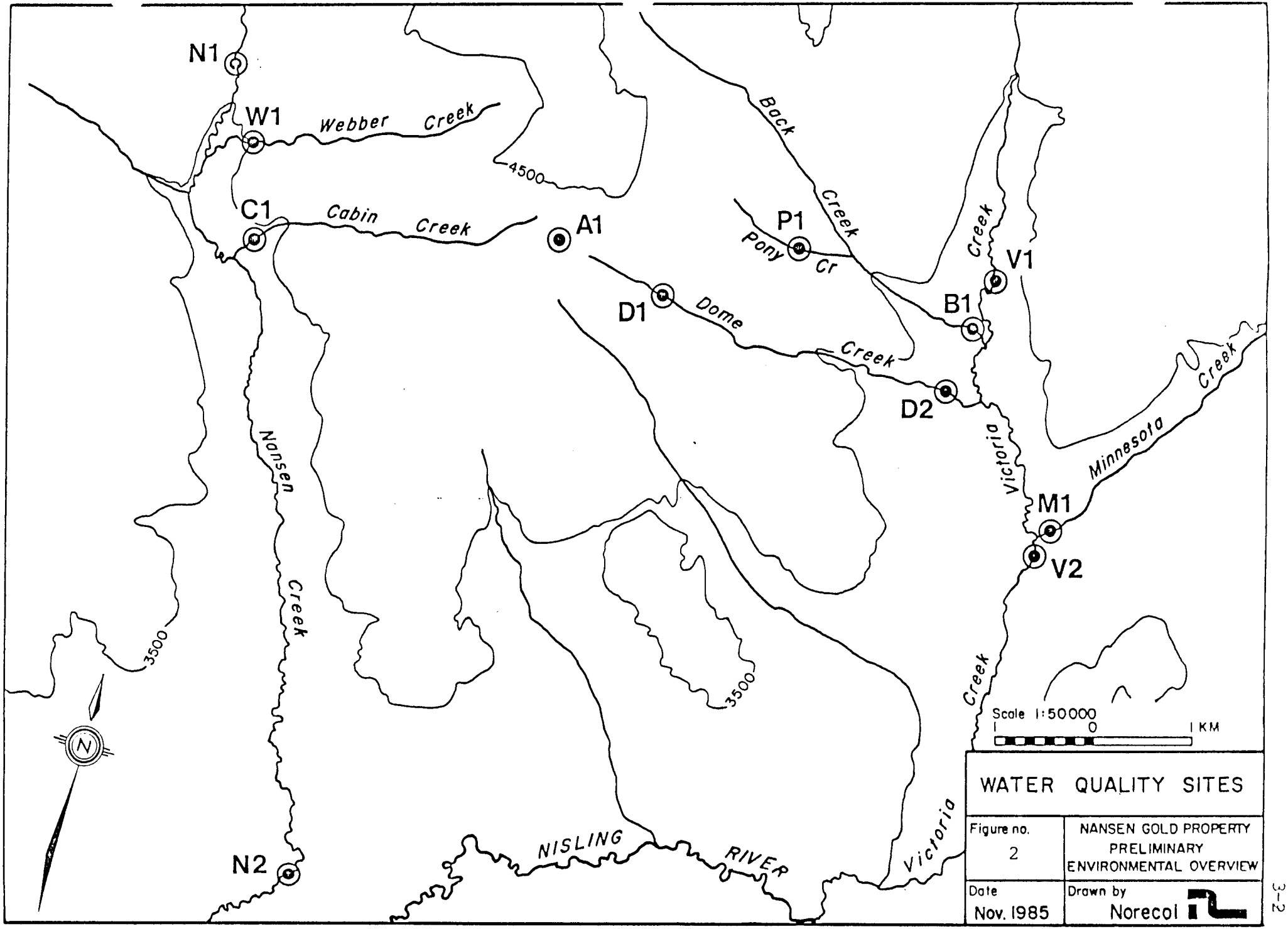
N1
W1
Webber Creek
4500
C1
Cabin Creek
A1
P1
Pony Cr
Back Creek
Creek
V1
B1
D1
Dome Creek
D2
Victoria
Minnesota Creek
M1
V2
Nansen Creek
3500
3500
Creek
N
Scale 1:50000
0
1 KM
N2
NISLING RIVER
Victoria
WATER QUALITY SITES
Figure no. 2
NANSEN GOLD PROPERTY
PRELIMINARY
ENVIRONMENTAL OVERVIEW
Date
Nov. 1985
Drawn by
Norecol

TABLE 1

ANALYTICAL RESULTS FOR WATER SAMPLES FROM MOUNT NANSEN PROJECT

Sampling Date: October 11, 1985

ANALYTICAL PARAMETER	SITE A1	SITE B1	SITE C1	SITE D1	SITE D2	SITE M1	SITE N1	SITE N2	SITE P1	SITE V1	SITE V2	SITE W1
Temperature (°C)	0	0	0	0	0	0	0	0	0	0	0	0
pH	7.3	7.3	7.2	7.3	7.0	6.9	7.5	7.8	7.5	7.7	7.5	7.1
Alkalinity ($mgCaCO_3/L$)	192	67	28	236	58	22	50	55	89	69	61	43
Turbidity (NTU)	6	48	4.5	30	3.7	2.5	5.5	5.5	5.2	0.8	9	5.8
Conductance (µmhos/cm)	660	150	67	1200	350	51	126	136	264	140	125	150
Total Solids (mg/L)	782	248	112	1435	370	96	144	144	269	120	154	170
Suspended Solids (mg/L)	1	57	<1	14	<1	<1	7	4	1	2	16	<1
EDTA-Hardness ($mgCaCO_3/L$)	535	94	39	963	212	24	72	77	162	83	69	83
Sulfate (mg/L)	334	31	15	694	156	<1	29	25	82	11	17	44
Ammonia (mgN/L)	0.063	0.053	0.011	0.342	0.010	0.006	0.006	<0.005	0.081	<0.005	<0.005	0.005
Nitrate (mgN/L)	0.092	0.021	0.013	0.117	0.015	0.030	0.035	0.023	0.037	0.044	0.037	0.011
Nitrite (mgN/L)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Phosphorus (mgP/L)	0.026	0.113	0.008	0.077	0.017	0.006	0.014	0.014	0.017	0.008	0.024	0.008
Total Cyanide (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TOTAL METALS: (mg/L)												
Ag	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
As	0.062	0.024	0.004	0.072	0.019	<0.001	0.002	0.002	0.016	<0.001	0.004	0.005
Ba	0.023	0.12	0.041	0.072	0.046	0.048	0.056	0.042	0.050	0.067	0.071	0.033
Cd	0.0070	0.0004	<0.0002	0.0021	<0.0002	<0.0002	<0.0002	<0.0002	0.0089	<0.0002	<0.0002	<0.0002
Cu	0.0022	0.0063	0.0019	0.0031	0.0014	0.0028	0.0083	0.0077	0.19	0.0015	0.0028	0.0011
Fe	0.85	4.14	0.78	8.8	1.04	0.83	0.64	0.54	1.42	0.12	0.77	1.18
Hg (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pb	<0.001	0.0035	<0.001	0.0017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zn	1.19	0.0093	0.0009	0.65	0.013	0.0015	0.0030	0.0022	0.95	0.0010	0.0026	0.0010

high in total solids. Pony Creek has been used for drinking water during the 1985 exploration of the Mt. Nansen project and may be used again in 1986. The Minnesota Creek area is being considered for a camp and the creek would be used as a water supply. Therefore, the water quality results for Pony Creek (Site P1) and Minnesota Creek (Site M1) have been compared to the drinking water standards (Appendix I). These results for Pony Creek indicate that turbidity and cadmium levels are slightly higher than recommended levels, whereas iron is more than four times the recommended level. Minnesota Creek water quality characteristics measured indicate that the water is within acceptable limits for drinking water with the exception of iron. The maximum limit for iron is 0.3mg/l, whereas the level found in Minnesota Creek was 0.83mg/l. The 0.3mg/l level is established for aesthetic reasons (staining) and is not a health consideration.

Water quality at all other sites was compared to levels recommended for the protection of aquatic life (Appendix I). Zinc and arsenic were found to exceed levels for the protection of aquatic life at Site A1 and D1, and the level for copper was exceeded at Site B1, N1 and N2. All sites had moderate to high levels of iron. Previous water quality studies in the area found that during mill operation (1976) the tailings pond discharge on Dome Creek had high levels of cyanide, arsenic, copper and zinc (Environmental Protection Service, 1979). Almost a year after milling operations had ceased the discharge contained lower levels of all the above parameters except zinc.

3.2 Wildlife

The terrain in the study area is very uniform and is generally of low capability for wildlife. Woodland caribou occur further up Victoria Creek, a few sheep occur near Mount Nansen, and moose are found downstream of the property. There are plans to introduce buffalo in an area about 15 km downstream on the Nisling River.

3.3 Fisheries

Fisheries information for the area is extremely limited. Arctic grayling have been captured in Victoria Creek (Environmental Protection Service, 1979). This is apparently the only species occurring in Nansen and Victoria creeks, but this is unsubstantiated. Both streams have moderate fish habitat capability and could support other fish species.

3.4 Acid Generation

Eight rock samples were collected on October 11, 1985 in order to conduct tests on the potential of these materials to generate acid. The source of this rock, type of material, and assay analysis results are shown in Table 2.

Total sulfur analysis provides an accurate measure of the maximum potential acid which could be generated if all the sulfur is available in a form to be converted to acid. Because the test results are used to calculate the maximum acid generation potential of the samples it is not necessary to consider the method of sulfur

TABLE 2
ACID NEUTRALIZATION POTENTIALS

Sample Number	Source	Material	Percent Sulfur	Acid And Base In Tons/1000 Tons: Acid Generation Potential	Acid Consuming Potential ($CaCO_3$ equivalent)	Net Acid Potential (Acid-Base)
1	Huestis Zone (upper audit)	Ore	7.56	236.9	38.10	198.80
2	Huestis Zone	Ore	16.90	529.4	3.50	525.90
3	Webber Zone	Wall Rock	0.11	3.3	8.68	-5.38
4	Webber Zone	Wall Rock (with pyrite)	0.84	25.8	57.60	-31.80
5	Brown-McDade Zone	Marginal Ore	0.38	11.8	20.70	-8.90
6	Brown-McDade Zone	Wall Rock	0.09	2.6	19.80	-17.20
7	Brown-McDade Zone (hanging wall)	Marginal Ore	0.46	14.3	6.20	8.10
8	Huestis Zone (lower audit)	Tailings	4.53	141.8	30.20	111.60

conversion, the rate of release of sulfur or the forms of sulfur present. These other considerations may be important for specific samples which indicate they have a net potential to generate acid, based on the preliminary acid-base accounts.

Calcium carbonate equivalent analyses are a direct measure of the ability of the pulverized rock samples to neutralize a measured amount of acidic solution. Because the samples are pulverized and then treated with acid and heat to complete the reaction the neutralization potential (calcium carbonate equivalent) is a maximum value.

Results from the assay analyses provide an accurate account of the maximum acid neutralization potential (calcium carbonate equivalent). The net acid generation potential numbers which are reported were calculated by subtracting the acid consuming potential from the acid generation potential (Acid - Base = Net Acid Generation Potential).

Results indicate that ore and tailings from the Huestis Zone (Site 1,2 and 8) have considerable acid generation potential. The marginal ore from the Brown-McDade Zone (hanging wall) has a low acid generation potential. The remaining samples exhibited acid consuming properties.

Previous studies on acid generation potential of mine tailings showed that the tailings from the abandoned Mount Nansen Mine had the ability to consume acid, had little or no oxidation potential, and remained alkaline (Davidge, 1984). These tests were carried out using

different procedures compared to those used for the present analysis. The tailing material has been shown to have potential for reprocessing and may require some further analysis for acid generation potential.

3.5 Other Observations

Other observations made during Norecol field studies are as follows:

- the area has low forestry value.
- Victoria and Nansen creeks have no sport fishing potential, but the Nisling River may support limited angling.
- iron precipitates were observed in streams fed by the Huestis adit and in Webber Creek.

4.0 POTENTIAL ENVIRONMENTAL ISSUES

Since no upgrading of the present access road is required the major environmental concerns occur at the mine site. The concerns at the mine site will be primarily related to waste and water management. It has been our experience that mine site impacts can usually be mitigated with the technology available. The potential for acid generation is also a concern of unknown proportion that will require further definition. Location of the proposed facilities at the mine site to facilitate environmental protection is important and should be investigated in conjunction with engineering considerations at an early stage. Often the most practical and cost effective environmental protection involves appropriate siting of mine facilities.

One potential environmental issue will involve location of the leaching pads and/or tailings ponds from an engineering and environmental control perspective. If cyanide is used in the mill process, then excess effluent should be recycled to the mill or be destroyed in the mill process, rather than discharged to the surface water system. Other wastes, such as garbage from the camp, will need to be controlled. The potential for acid mine drainage should also be investigated and may be a significant concern judging by the amount of iron staining occurring in the area. Materials handling and reclamation will likely be the key to mitigation of acid generation.

Water management will be a key to environmental protection. Quality and quantity of groundwater discharges will need to be investigated. Sufficiently detailed hydrological investigations should be undertaken to develop an overall water management plan for a 1:200 year event (ditches, ponds and diversions). Winter low flows in the creeks may be an important consideration for water supply and engineering designs.

5.0 RECOMMENDED TECHNICAL STUDIES

5.1 Introduction

A number of technical studies will be required on the environmental resources and to provide engineering detail to satisfy government requirements. However, since this was previously an operating mine, it is unclear at this time whether or not all environmental studies, including studies like heritage resources, need to be conducted for the approval of the Regional Environmental Review Committee (RERC). This section addresses the major environmental studies that we expect will be required for the mine site. We have assessed the expected requirements based on the site visit and our experience on satisfying government requirements. The work is broken down into the various field seasons so that it can follow a natural, phased progression.

5.2 Winter Work

Winter work would consist of water quality sampling of surface sites in February/March. This would provide water quality data during baseflow and during a period when placer operations are inactive. Water sample analysis would be conducted in the same manner and for the same characteristics as occurred in October. Sample sites should be expanded to include Discovery Creek and, if possible, sediment samples should be taken at all sites. Samples for dissolved metal analyses would be held for analysis at a later date. Review agencies should be contacted and existing information gathered

early in the new year to determine if on site wildlife work is required. In this way, winter wildlife work could be carried out in conjunction with water sampling if there is a need to collect additional information. Pertinent existing fisheries and wildlife information would be obtained and reviewed over the winter and filed at Norecol.

5.3 Spring/Summer Work

Hydrology - this is a key area for environmental control and engineering design. A regional hydrological analysis and detailed discharge measurements of the creeks should be developed. Key periods are freshet in the spring and low flows in the late summer/fall. Measurements for a stage discharge curve are required along with a comprehensive regional analysis of climate. Information on snow accumulation and precipitation would also be helpful.

Groundwater - several selected samples for groundwater quality should be taken and an assessment made on the quantity of groundwater expected during mining.

Water Quality - a seasonal water quality progam should be continued. Samples during spring freshet would be required along with an early summer sampling and would then give a total of four samplings, which should be adequate to satisfy government requirements. Water sampling should also include Discovery Creek and sediment samples should be obtained at all sampling sites either during the winter or later in the summer.

Water quality analysis would include an assessment of the effects of nutrient additions from any blasting, the effects of additions of groundwater sources and effects on water quality with changes or reductions in water flows. Potential effects from acid generation and any discharges of effluent will require consideration.

Fisheries - the fisheries program would consist of an overview of the property and Nisling River along with sampling of fish in Victoria and Nansen creeks. The fish sampling program would determine fish presence, species composition and population characteristics (i.e., length, weight, age and growth) and general fisheries habitat capability. The program would be designed to be directly appplicable in level of detail to that required by the government. Sampling should commence during early May to assess spring spawning occurring in the area.

Soils/Terrain - a reconnaissance level terrain/soils investigation would be helpful in planning mine site development and environmental management plans. The soils information would be useful for reclamation planning.

Waste Management - included in this are an environmental review of the leaching facility design and/or tailings pond design and control, a review of the waste dumps, garbage disposal etc. Additonal acid generation potential tests should be undertaken to provide additional information on the likelihood of acid generation from the mine. Toxicity of the tailings and leachate effluent should be assessed.

Water Management - will include a detailed plan (1:10,000 scale) of the water management structures. The hydrologic analysis will be required as input.

5.4 Fall Work

The proposed fall program will provide any essential information for completion of data requirements on wildlife and fisheries resources. A fall field trip would consist of fisheries and wildlife assessments and possible water sample collection from one or two groundwater sites.

Fall fisheries studies would focus on fall spawning fish and would only be necessary if fall spawning fish species were captured during the summer study. Victoria and Nansen creeks would be sampled and surveyed to identify fall spawning locations and gather additional seasonal information.

We recommend that site investigations on wildlife be undertaken only after review of existing information and discussion with review agencies, where the need for further data gathering is established.

6.0 GENERAL APPROACH AND SCHEDULE

For successful approval it is important to schedule and coordinate the engineering and environmental studies. Information collected during the environmental work, such as on fisheries and wildlife values, water quality, terrain/soils mapping, etc. should be used early in the initial engineering siting and preliminary design work. This will help avoid delays by ensuring an environmentally acceptable engineering design. The engineering information, such as the plant site location, mill process, leach pad location and design and/or tailings pond location is essential in a report of this nature. The best results for obtaining environmental approvals are achieved when the two studies are scheduled together and follow an integrated cooperative approach.

Although some environmental information has already been collected on the Nansen project, seasonal data are required for a complete report. Field data are normally required to be collected for a minimum period of one year for many environmental parameters. Seasonal fisheries, water quality and wildlife studies are important in this regard.

Completion of the report in the late fall or winter of 1986 is dependent on the collection of critical seasonal data for water quality, hydrology, wildlife and fisheries. The Water Board and RERC should be approached as soon as possible so the terms-of-reference can be agreed upon in advance of the 1986 field season.

7.0 WINTER 1986 WORK COST ESTIMATES

Work recommended for winter 1986 would include water and sediment sampling in the mine site area in early to mid-March. A wildlife reconnaissance of the mine area and access road would be conducted only if required by the government. The costs for the water and sediment sampling are estimated below.

Preparation, travel, field work*

C. Schmidt 24 hrs at $50/hr	=	$1,200.00
Travel Expenses (hotel, equipment etc.)	=	160.00
Air Cargo	=	250.00
		$1,610.00

Lab Analysis

Water - 13 sites @ 225/sample	=	$2,925.00
Sediment - 13 sites @ 160/sample	=	2,080.00
		$5,005.00

Reporting

J. Malick	8 hrs @ $60/hr	=	$480.00
C. Schmidt	12 hrs @ $50/hr	=	600.00
Word processing	8 hrs @ $30/hr	=	240.00
Drafting	6 hrs @ $30/hr	=	180.00
Report production, courier etc.		=	200.00
	TOTAL		$1,700.00

* Helicopter time from Whitehorse or Carmacks to the Nansen area and return are to be provided by Chevron

Canada Resources Limited. No air fare between Whitehorse and Vancouver has been included since this cost is included in the Bear-Totem trip which would occur just prior to or immediately following the visit to the Nansen area.

REFERENCES

Environmental Protection Service. 1979. Water Chemistry and Biological Conditions in the Watershed Near Mount Nansen Mines Ltd., Yukon Territory. Environmental Protection Branch, Yukon. Regional Program Report: 79-12

Davidge, D. 1984. Oxidation of Yukon Mine Tailings. Environmental Protection Service, Yukon Branch. Regional Program Report: 84-15

APPENDIX 1

WATER QUALITY GUIDELINES

GUIDELINES FOR THE PROTECTION OF FRESHWATER AQUATIC LIFE (WATER QUALITY SOURCE BOOK)

PARAMETER	LEVEL			REFERENCE
ALDRIN + HEOD (DIELDRIN)	LE	0.001	μg/L	INTERNATIONAL JOINT COMMISSION, 1977
ALKALINITY, as $CaCO_3$	GT	20	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
ALUMINIUM, as Al	LE	0.100	mg/L	GREAT LAKES WATER QUALITY BOARD,1976
AMMONIA, UN-IONIZED, as NH_3	LE	0.02	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
ARSENIC, as As	LE	0.05	mg/L	ENVIRONMENT CANADA, 1979
BERYLLIUM, as Be	LE	0.011	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
γ– BHC, (LINDANE)	LE	0.01	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
CADMIUM, as Cd	LE	0.2	μg/L	ENVIRONMENT CANADA, 1979
CHLORDANE, TOTAL	LE	0.01	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
CHROMIUM, as Cr	LE	0.04	mg/L	ENVIRONMENT CANADA, 1979
COPPER, as Cu	LE	0.005	mg/L	GREAT LAKES WATER QUALITY BOARD, 1976
CYANIDE, as CN	LE	0.005	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
DDT, TOTAL	LE	0.001	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
DIAZINON	LE	0.08	μg/L	GREAT LAKES WATER QUALITY BOARD, 1976
α– ENDOSULFAN	LE	0.003	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
β– ENDOSULFAN	LE	0.003	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
ENDRIN	LE	0.002	μg/L	INTERNATIONAL JOINT COMMISSION, 1977
GUTHION	LE	0.005	μg/L	GREAT LAKES WATER QUALITY BOARD, 1976
HEPTACHLOR	LE	0.001	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
IRON, as Fe	LE	0.300	mg/L	GREAT LAKES WATER QUALITY BOARD, 1976
LEAD, as Pb	LE	0.03	mg/L	ENVIRONMENTAL STUDIES BOARD, 1973, EPA.R3.73.033
MALATHION	LE	0.1	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
MERCURY, TOTAL, as Hg	LE	0.1	μg/L	ENVIRONMENT CANADA, 1979
p,p′– METHOXYCHLOR	LE	0.03	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
MIREX	LE	0.001	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
NICKEL, as Ni	LE	0.025	mg/L	GREAT LAKES WATER QUALITY BOARD, 1976
OXYGEN, DISSOLVED, as O_2	GE	4.0	mg/L	ENVIRONMENT CANADA, IWD., TECH. BULL. 67, 1972
PARATHION	LE	0.008	μg/L	GREAT LAKES WATER QUALITY BOARD, 1976
pH	GE	6.5		INTERNATIONAL JOINT COMMISSION, 1977
	LE	9.0		
PHENOLIC SUBSTANCES, as PHENOL	LE	0.001	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
PHOSPHATE, TOTAL, as P	LT	0.025	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
POLYCHLORINATED BIPHENYLS	LE	0.001	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
SUSPENDED SOLIDS	LE	25	mg/L	ENVIRONMENTAL STUDIES BOARD, 1973, EPA.R3.73.033
SULPHIDE, as H_2S	LE	0.002	mg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
SURFACTANTS, as MBAS	LE	0.5	mg/L	LITTLE, 1977
CAMPHECHLOR (TOXAPHENE)	LE	0.005	μg/L	US. ENVIRONMENTAL PROTECTION AGENCY, 440/9-76-023
ZINC, as Zn	LE	0.030	mg/L	GREAT LAKES WATER QUALITY BOARD, 1976

GUIDELINES FOR CANADIAN DRINKING WATER QUALITY (1978) - SUMMARY OF RECOMMENDED LIMITS

Parameter	Maximum Acceptable Concentration*	Objective Concentration*	Basis**	Page
Aldrin + Dieldrin	0.0007	$\leq 5 \times 10^{-8}$	H	50
Antimony	—	≤0.0002	H	41
Arsenic	0.05	≤0.005	H	41
Asbestos	—	—	—	41
Barium	1.0	≤0.1	H	42
Boron	5.0	≤0.01	H	42
Cadmium	0.005	≤0.001	H	42
Carbaryl	0.07	$\leq 5 \times 10^{-4}$	H	50
Chlordane (Total)	0.007	$\leq 5 \times 10^{-8}$	H	50
Chloride	250	<250	A	54
Chromium	0.05	≤0.0002	H	43
Colour (TCU)	15	<15	A	21
Copper	1.0	<1.0	A	54
Cyanide	0.2	≤0.002	H	43
DDT (Total)	0.03	$\leq 5 \times 10^{-8}$	H	50
Diazinon	0.014	$\leq 1 \times 10^{-6}$	H	50
Dieldrin + Aldrin	0.0007	$\leq 5 \times 10^{-8}$	H	50
Endrin	0.0002	$\leq 5 \times 10^{-8}$	H	50
Fluoride	1.5	1.0***	H & A	36
Hardness	—	—	—	57
Heptachlor + Heptachlor Epoxide	0.003	$\leq 5 \times 10^{-8}$	H	50
Iron	0.3	<0.05	A	54
Lead	0.05	≤0.001	H	43
Lindane	0.004	$\leq 1 \times 10^{-7}$	H	50
Manganese	0.05	<0.01	A	55
Mercury	0.001	≤0.0002	H	44
Methoxychlor	0.1	$\leq 5 \times 10^{-8}$	H	50
Methyl Parathion	0.007	$\leq 1 \times 10^{-6}$	H	50
Nitrate (as N)	10.0	≤0.001	H	44
Nitrilotriacetic Acid (NTA)	0.05	≤0.0002	H	49
Nitrite (as N)	1.0	≤0.001	H	45
Odour	—	Inoffensive	A	22
Parathion	0.035	$\leq 1 \times 10^{-6}$	H	50
Pesticides (Total)****	0.1	—	H	49
pH	6.5 – 8.5	—	A	22
Phenols	0.002	<0.002	A	55
Selenium	0.01	≤0.002	H	45
Silver	0.05	≤0.005	H	46
Sodium	—	—	—	46
Sulphate	500	<150	H & A	46
Sulphide (as H_2S)	0.05	<0.05	A	55
Taste	—	Inoffensive	A	22
Temperature (°C)	15	<15	A	23
Total Dissolved Solids	500	—	A	57
Total Organic Carbon	—	—	—	58
Toxaphene	0.005	$\leq 5 \times 10^{-8}$	A	50
Trihalomethanes	0.35	≤0.0005	H	52
Turbidity (NTU)	5	<1	H & A	23
Uranium	0.02	≤0.001	H	47
Zinc	5.0	<5.0	A	56
2, 4-D	0.1	≤0.001	H	50
2, 4, 5-TP	0.01	≤0.001	H	50

* Unless indicated otherwise, the maximum acceptable and objective concentrations are specified in mg/L.

** Maximum acceptable and objective concentrations have been established on the basis of either aesthetic (A) or health (H) considerations.

*** In areas where the annual mean maximum temperature is below 10°C, the objective is 1.2 mg/L.

**** The "total pesticides" limit applies to water in which more than one of the pesticides listed in this Table is present, in which case, the sum of their concentrations should not exceed 0.1 mg/L.

APPENDIX V

DRILL LOGS

NANSEN PROJECT

HOLE No. PDH 85-1 ZONE BROWN-McDADE MAIN

STARTED JUNE 25, 1985 FINISHED JUNE 28, 1985

ZONE COORDINATES 0.00N, 99.40W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION

COLLAR DIP -60° ACID TEST DIP NA

TOTAL DEPTH 85.3m / 280' LOGGED BY D. EATON

NANSEN PROJECT

HOLE PDH 85-1

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		OVERBURDEN					T					2.0	1.52 (5)	N30001	0.002		0.01	
	5	Granodiorite: predominently tan coloured but locally grey-green. Medium to coarse grained. Tan colour corresponds to moderately clay altered rock – this alteration may be supergene. Grey-green rocks are intensely propylitically altered – this is probably hypogene alteration. Rocks often exhibit weak to moderate manganese stain on fractures		LEACHED CAP			2					1.0	1.52 (5)	N30002	0.001		0.01	
	10						2					1.0	1.52 (5)	N30003	0.001		<0.01	
	15						2					0.5	1.52 (5)	N30004	<0.001		<0.01	
	20				T		2					2.0	1.52 (5)	N30005	<0.001		<0.01	
	25						T					0.5	1.52 (5)	N30006	<0.001		<0.01	
	30						2				manganese oxides 5	0.5	1.52 (5)	N30007	<0.001		<0.01	
	35				T		2					0.5	1.52 (5)	N30008	0.003		0.06	
	40						T					1.0	1.52 (5)	N30009	0.001		0.01	
	45				T		1					1.5	1.52 (5)	N30010	<0.001		0.01	
	50				T		T					1.5	1.52 (5)	N30011	0.001		0.01	
	55				T		1					2.5	1.52 (5)	N30012	0.001		0.01	
	60				2		2					3.0	1.52 (5)	N30013	0.001		0.01	
	65				1		T					1.0	1.52 (5)	N30014	<0.001		<0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-1

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Granodiorite: as previously described, rocks still largely oxidized but some sulphide showing up.		TRANSITION ZONE	3		T					2.0	1.52 (5)	N30015	<0.001		0.03	
	75				40		1					2.5	1.52 (5)	N30016	0.002		0.03	
	80				1		T					1.0	1.52 (5)	N30017	0.005		0.09	
	85	One chip consists of grey quartz fragments in a sericite matrix with 10% pyrite - probably narrow vein			30		1					6.0	1.52 (5)	N30018	0.005		<0.01	
	90				5		T					0.5	1.52 (5)	N30019	0.001		0.01	
	95				4		1					3.0	1.52 (5)	N30020	0.001		<0.01	
	100				5		3					0.5	1.52 (5)	N30021	<0.001		<0.01	
	105				5		T					2.0	1.52 (5)	N30022	<0.001		0.01	
	110				7		T					2.0	1.52 (5)	N30023	0.001		<0.01	
	115	Porphyry: tan coloured, fine grained, intensely sericitized and clay altered. Minor quartz veinlets.			2		T					2.0	1.52 (5)	N30024	0.004		<0.01	
	120	Granodiorite: tan to white, medium grained, strongly clay altered. Only the quartz grains are unaltered. Mafic totally destroyed.			T		T					0.5	1.52 (5)	N30025	0.002		<0.01	
	125				1		T					1.0	1.52 (5)	N30026	0.001		<0.01	
	130				1		T					0.5	1.52 (5)	N30027	0.001		<0.01	
	135				3		T					0.5	1.52 (5)	N30028	0.001		<0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-1

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Granodiorite: strongly altered as described previously.			3		1					0.5	1.52 (5)	N30029	0.001		<0.01	
	145				5		1					2.0	1.52 (5)	N30030	<0.001		<0.01	
	150				2		1					0.5	1.52 (5)	N30031	0.001		<0.01	
	155	Mixture Granodiorite & Porphyry: as described above and below.			90		1					1.5	1.52 (5)	N30032	0.003		0.08	
	160	Porphyry: tan to white intensely sericitized and clay altered feldspar porphyry commonly silicified as described below.			60		1					3.0	1.52 (5)	N30033	0.002		0.08	
	165				80		T					12.0	1.52 (5)	N30034	0.104		0.71	
	170	Grey quartz vein chips containing up to 50% pyrite are abundant.		TRANSITION ZONE	40		T					20.0	1.52 (5)	N30035	0.058		1.29	
	175				70							8.0	1.52 (5)	N30036	0.098		1.12	
	180				80							32.0	1.52 (5)	N30037	0.026		0.87	
	185				10		T					4.0	1.52 (5)	N30038	0.003		0.13	
	190				95							4.0	1.52 (5)	N30039	0.011		0.10	
	195				60							10.0	1.52 (5)	N30040	0.005		0.11	
	200				15							20.0	1.52 (5)	N30041	0.010		0.12	
	205	Most fragments consist of medium to dark grey quartz with some medium grained euhedral pyrite.			60		5					12.0	1.52 (5)	N30042	0.467		1.66	
	210																	

NANSEN PROJECT

HOLE PDH 85-1

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Grey quartz: as before			80							45.0	1.52 (5)	N30043	0.158		1.11	
	215	Grey quartz containing relatively unoxidized pyrite gives way to clear to light grey quartz and quartz breccia. Most chips are strongly oxidized and pitted.			75							12.0	1.52 (5)	N30044	0.152		0.64	
	220				80							12.0	1.52 (5)	N30045	0.196		0.44	
	225	Porphyry: white, fine grained intensely sericitized and clay altered.			98				2			6.0	1.52 (5)	N30046	0.008		0.13	
	230				40		T					3.0	1.52 (5)	N30047	0.004		0.02	
	235				30		T					12.0	1.52 (5)	N30048	0.008		0.26	
	240				60							16.0	1.52 (5)	N30049	0.077		0.51	
	245	Minor grey quartz veinlets with pyrite.			60							15.0	1.52 (5)	N30050	0.085		0.49	
	250				60		T					4.0	1.52 (5)	N30051	0.073		0.35	
	255				70							9.0	1.52 (5)	N30052	0.011		0.13	
	260				50		1					3.0	1.52 (5)	N30053	0.014	—	0.10	
	265				10		1					10.0	1.52 (5)	N30054	0.038		0.60	
	270	Mixture Porphyry and Granodiorite: as described above and below.			15		2					8.0	1.52 (5)	N30055	0.022		0.11	
	275	Granodiorite: intensely propylitically altered with abundant epidote, chlorite & carbonate. Medium grained medium green-grey colour			15		1					7.0	1.52 (5)	N30056	0.005		0.07	
	280																	

TRANSITION ZONE

NANSEN PROJECT

HOLE No. PDH 85-1A ZONE BROWN-McDADE

STARTED JULY 10, 1985 FINISHED JULY 11, 1985

ZONE COORDINATES 0.11 N / 102.9 W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1268.20 m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 91.4m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-1A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: argillic altered granodiorite with minor feldspar porphyry float.					2					0.5	1.52 (5)	P501	0.001		0.04	
	5	Granodiorite: weak to moderately argillic altered granodiorite. Alteration probably in part supergene. Tan to light grey colour, medium to coarse grained. Minor chlorite survives in some chips.					T					0.5	1.52 (5)	P502	0.001		<0.01	
	10						1					0.5	1.52 (5)	P503	<0.001		<0.01	
	15				T		T					0.5	1.52 (5)	P504	<0.001		<0.01	
	20				1		1					0.5	1.52 (5)	P505	<0.001		0.01	
	25				1		T					0.5	1.52 (5)	P506	0.002		0.04	
	30				T		1					0.5	1.52 (5)	P507	0.001		0.01	
	35				T		1					0.5	1.52 (5)	P508	<0.001		0.01	
	40				5	2	1					0.5	1.52 (5)	P509	<0.001		<0.01	
	45	Mixture of Granodiorite & Porphyry: as described above and below.					1					0.5	1.52 (5)	P510	0.001		<0.01	
	50	Porphyry: medium brown to tan, fine grained, clay altered feldspar phenocrysts rare, no quartz. Matrix serricitized and clay altered.			T		1					0.5	1.52 (5)	P511	0.004		<0.01	
	55	Granodiorite: intensely propylitic to weakly argillic altered granodiorite. Chlorite more common than above porphyry. Also abundant light brown carbonate. Usually tan colored.			1		3					0.5	1.52 (5)	P512	0.001		<0.01	
	60				1		3					0.5	1.52 (5)	P513	0.001		<0.01	
	65				10		3					0.5	1.52 (5)	P514	0.001		<0.01	
	70																	

LEACHED CAP

NANSEN PROJECT

HOLE PDH 85-1A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Granodiorite: as previously described.		LEACHED CAP	4		2					0.5	1.52 (5)	P515	0.001		<0.01	
	75				1		2					0.5	1.52 (5)	P516	<0.001		<0.01	
	80	Mixture of Granodiorite & Porphyry: as described above and below.			T		3					0.5	1.52 (5)	P517	<0.001		<0.01	
	85	Porphyry: tan fine grained intensely sericitized and argillic altered dyke.			T		1					0.5	1.52 (5)	P518	0.002		<0.01	
	90	Mixture of Porphyry and Granodiorite: as described above and below.			T		1					0.5	1.52 (5)	P519	<0.001		<0.01	
	95	Granodiorite: weak to moderately argillic altered tan coloured, medium to coarse grained granodiorite. Alteration strongest along side porphyry dykes.			-		1					0.5	1.52 (5)	P520	<0.001		<0.01	
	100				4		1					0.5	1.52 (5)	P521	<0.001		0.06	
	105				T		1					0.5	1.52 (5)	P522	0.001		<0.01	
	110	Mixture of Granodiorite and Porphyry: as described above and below.		TRANSITION ZONE	35		3					0.5	1.52 (5)	P523	0.003		0.05	
	115	Porphyry: tan to light grey fine grained. Pervasively sericitized and argillic altered.			50		3					2	1.52 (5)	P524	0.004		0.13	
	120	Granodiorite: medium grey-green to tan. Pervasively propylitic altered with a local weak argillic overprint. Dark colour due to abundant chlorite after hornblende.					1					1	1.52 (5)	P525	<0.001		0.01	
	125				T		2					0.5	1.52 (5)	P526	0.002		<0.01	
	130				5		1					1.5	1.52 (5)	P527	0.002		0.01	
	135				20		1					1	1.52 (5)	P528	0.001		0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-1A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Granodiorite : as described above except changes from predominently tan coloured to grey-green.		TRANSITION ZONE	2		2					1	1.52 (5)	P529	0.002		<0.01	
	145				2		2					1	1.52 (5)	P530	0.002		<0.01	
	150				T		T					1.5	1.52 (5)	P531	0.001		<0.01	
	155				T		T					1	1.52 (5)	P532	0.005		<0.01	
	160												1.52 (5)	P533	0.002		0.03	
	165	Weak argillic alteration to accompany pervasive propylitic alteration.			2		1					0.5	1.52 (5)	P534	0.001		0.06	
	170	Mixture of Granodiorite & Porphyry : as described above and below.			2		3					1	1.52 (5)	P535	0.002		0.06	
	175	Porphyry: white to tan, fine grained, feldspar phenocrysts all clay altered, quartz phenocrysts absent. Matrix sericitized and/or clay altered. Sulphides and pitting rare.			2		2					2	1.52 (5)	P536	0.002		<0.01	
	180			HYPOGENE ZONE	80		2					0.5	1.52 (5)	P537	0.028		0.18	
	185	Minor chips of grey quartz suggests narrow vein was cut.			85		1					0.5	1.52 (5)	P538	0.120		0.58	
	190				60		2					0.5	1.52 (5)	P539	0.010		0.28	
	195				70		1					0.5	1.52 (5)	P540	0.018		1.37	
	200				70		T					0.5	1.52 (5)	P541	0.002		0.18	
	205				70		1					0.5	1.52 (5)	P542	0.009		0.16	
	210																	

NANSEN PROJECT

HOLE PDH 85-1A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Porphyry: as previously described.		TRANSITION ZONE	90		-					1	1.52 (5)	P543	0.015		0.22	
	215				90		-					0.5	1.52 (5)	P544	0.168		0.39	
	220	Chips of dark grey-green pyrite-rich (up to 50%) quartz suggests narrow vein zone present. Pyrite coarse average 1mm diameter. Fine dark mineral occurs interstitially, may be arsenopyrite.			97							1	1.52 (5)	P545	0.116		0.48	
	225				80							0.5	1.52 (5)	P546	0.076		0.39	
	230				80							0.5	1.52 (5)	P547	0.031		0.29	
	235				60							0.5	1.52 (5)	P548	0.008		0.07	
	240											0.5	1.52 (5)	P549	0.009		0.09	
	245				10		T					5	1.52 (5)	P550	0.007		0.01	
	250				7		T					3	1.52 (5)	P551	0.004		0.11	
	255				40		T					2	1.52 (5)	P552	0.003		0.06	
	260				15		T					2	1.52 (5)	P553	0.013		0.14	
	265				65		T					3	1.52 (5)	P554	0.028		0.37	
	270	Mixture of Porphyry & Granodiorite: as described above and below.			15		T					2	1.52 (5)	P555	0.003		0.05	
	275	Granodiorite: medium to dark green, medium to coarse grained granodiorite. Moderate to strong propylitic alteration with abundant epidote and chlorite.			15		T					2	1.52 (5)	P556	0.002		0.06	
	280																	

NANSEN PROJECT

HOLE PDH 85-1A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	280	Granodiorite: as before but with propylitic alteration gradually weakening away from the contact.		HYPOGENE ZONE	5							1	1.52 (5)	P557	0.002		<0.01	
	285				15							1	1.52 (5)	P558	0.007		0.04	
	290				3							0.5	1.52 (5)	P559	0.001		<0.01	
	295				1							0.5	1.52 (5)	P560	0.001		<0.01	
	300																	

NANSEN PROJECT

HOLE No. PDH 85-2 ZONE BROWN-MCDADE MAIN

STARTED JUNE 28 /85 FINISHED JULY 12/85

ZONE COORDINATES 0.00N / 166.80W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION

COLLAR DIP -60° E ACID TEST DIP NA

TOTAL DEPTH 140.2m/460' LOGGED BY D. EATON

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: mixture of granodiorite with porphyry and vein material from up hill.		LEACHED CAP	20		1					1	1.52 (5)	N30061	0.094		0.07	
	5				T		1					1	1.52 (5)	N30062	0.005		0.03	
	10				1		T					1	1.52 (5)	N30063	0.002		0.01	
	15				T		5					1	1.52 (5)	N30064	0.003		0.01	
	20	Granodiorite: tan coloured medium grained, argillically altered granodiorite.			1		5					1	1.52 (5)	N30065	0.002		<0.01	
	25				T		1					1	1.52 (5)	N30066	0.003		<0.01	
	30				T		2					1	1.52 (5)	N30067	0.001		<0.01	
	35						5					2	1.52 (5)	N30068	0.002		<0.01	
	40				T		3					1	1.52 (5)	N30069	0.001		<0.01	
	45	Porphyry: tan coloured fine grained, argillically altered porphyry with local pitting and rare grey quartz vein chips.					1					2	1.52 (5)	N30070	0.015		0.01	
	50				T		1					2	1.52 (5)	N30071	0.004		0.03	
	55				T		2					0.5	1.52 (5)	N30072	0.004		<0.01	
	60				T		4					0.5	1.52 (5)	N30073	0.002		<0.01	
	65	Mixture of Porphyry & Altered Granodiorite: as described below.					2					0.5	1.52 (5)	N30074	0.002		0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Granodiorite: tan to light grey, medium grained granodiorite exhibiting intense propylitic to moderate argillic alteration		LEACHED CAP	T		2					0.5	1.52 (5)	N30075	0.002		<0.01	
	75				T		4					0.5	1.52 (5)	N30076	0.005		<0.01	
	80				T		2					0.5	1.52 (5)	N30077	0.006		<0.01	
	85				T		4					0.5	1.52 (5)	N30078	0.001		<0.01	
	90	Fault zone: major obstacle to drilling, most rock broken to sand size fragments.					4					0.5	3.05 (10)	N30079	0.001		<0.01	
	95																	
	100	Granodiorite; predominently medium grey-green, medium to coarse grained granodiorite. Exhibits weak to moderate propylitic alteration. Occasional fragments are tan coloured and exhibit weak argillic alteration.			T		5					0.5	3.05 (10)	N30082	0.001		<0.01	
	105																	
	110				T		3					0.5	1.52 (5)	N30083	0.001		<0.01	
	115				T		2					1	1.52 (5)	N30084	0.001		<0.01	
	120				T		3					1	1.52 (5)	N30085	<0.001		<0.01	
	125				1		4					1	1.52 (5)	N30086	0.001		<0.01	
	130				1		4					0.5	1.52 (5)	N30087	0.001		<0.01	
	135				1		3					0.5	1.52 (5)	N30088	0.001		<0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Granodiorite: as described on previous page.	+	TRANSITION ZONE	2		T					0.5	1.52 (5)	N30089	0.003		<0.01	
	145		+		2		1					0.5	1.52 (5)	N30090	<0.001		<0.01	
	150		+		1		1					0.5	1.52 (5)	N30091	0.005		<0.01	
	155		+		T		T					0.5	1.52 (5)	N30092	0.002		<0.01	
	160		+		1		T					0.5	1.52 (5)	N30093	0.002		<0.01	
	165		+		T		1					0.5	1.52 (5)	N30094	0.002		<0.01	
	170		+		T		T					0.5	1.52 (5)	N30095	<0.001		<0.01	
	175		+		T		T					0.5	1.52 (5)	N30096	0.003		<0.01	
	180		+		T		T					0.5	1.52 (5)	N30097	0.002		<0.01	
	185		+		T		1					0.5	1.52 (5)	N30098	0.001		<0.01	
	190		+		T		T					0.5	1.52 (5)	N30099	0.001		<0.01	
	195	Granodiorite: alteration increases toward contact from propylitic to weak to moderate argillic. Change marked by colour change from green to brown.	+		2		2					0.5	1.52 (5)	N30100	<0.001		<0.01	
	200		+		1		1					0.5	1.52 (5)	N30101	<0.001		0.01	
	205	Porphyry: tan, fine grained porphyry dyke.			T		1					0.5	1.52 (5)	N30102	<0.001		<0.01	
	210																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Granodiorite: tan colored medium grained, exhibits weak argillic alteration.			30		5					1	1.52 (5)	N30103	0.003		<0.01	
	215				70		5					0.5	1.52 (5)	N30104	<0.001		<0.01	
	220	Mixture of Argillic altered Granodiorite and Porphyry porphyry tan and fine grained.			20		1					0.5	1.52 (5)	N30105	0.001		<0.01	
	225	Granodiorite: medium grey-green, weakly propylitically altered. medium grained granodiorite.			40		1					0.5	1.52 (5)	N30106	0.001		<0.01	
	230				50		T					0.5	1.52 (5)	N30107	0.001		<0.01	
	235	Granodiorite with Minor Porphyry: granodiorite is tan to light grey and exhibits weak to moderate argillic alteration. The porphyry occurs as scattered chips suggesting a swarm of narrow dykes. Characteristically tan, fine grained and argillic to sericitic altered.		TRANSITION ZONE	35		T					0.5	1.52 (5)	N30108	0.001		<0.01	
	240				60		5					1	1.52 (5)	N30109	0.001		<0.01	
	245				10		3					1	1.52 (5)	N30110	0.001		<0.01	
	250				T		7					0.5	1.52 (5)	N30111	0.001		<0.01	
	255				15		7					1	1.52 (5)	N30112	0.001		0.01	
	260				15		4					0.5	1.52 (5)	N30113	0.004		<0.01	
	265				20		2					1	1.52 (5)	N30114	0.001		<0.01	
	270				5		2					1	1.52 (5)	N30115	<0.001		<0.01	
	275				7		3					1	1.52 (5)	N30116	0.001		<0.01	
	280																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	280	Mixture of Altered Granodiorite and Porphyry: as previously described			5		1					1	1.52 (5)	N30117	0.001		<0.01	
	285				20		2					1	1.52 (5)	N30118	0.002		<0.01	
	290				1		T					0.5	1.52 (5)	N30119	<0.001		<0.01	
	295				5		T					0.5	1.52 (5)	N30120	0.001		<0.01	
	300				10		T					1	1.52 (5)	N30121	0.001		<0.01	
	305				75		T					1	1.52 (5)	N30122	0.001		<0.01	
	310	Granodrorite: light to medium grey-green, medium to coarse grained granodiorite exhibiting strong propylitic to weak argillic alteration.		TRANSITION ZONE	25		2					2	1.52 (5)	N30123	0.001		<0.01	
	315				15		3					2	1.52 (5)	N30124	<0.001		<0.01	
	320				15		3					2	1.52 (5)	N30125	<0.001		<0.01	
	325				25		5					3	1.52 (5)	N30126	0.001		<0.01	
	330				5		1					0.5	1.52 (5)	N30127	<0.001		<0.01	
	335				15		4					0.5	1.52 (5)	N30128	<0.001		<0.01	
	340				20		3					0.5	1.52 (5)	N30129	<0.001		<0.01	
	345				10		3					0.5	1.52 (5)	N30130	0.001		<0.01	
	350																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	350	Granodiorite: mottled, medium grained, strongly argillic altered granodiorite		TRANSITION ZONE	85		2					2	1.52 (5)	N30131	0.005		0.03	
	355				90		5					2	1.52 (5)	N30132	0.002		0.03	
	360	Mixture of Granodiorite & Porphyry: as described above and below.			2		T					1	1.52 (5)	N30133	<0.001		<0.01	
	365	Porphyry: tan, fine grained, exhibits pervasive sericitic to argillic alteration. Locally siliceous			1		T					0.5	1.52 (5)	N30134	0.001		<0.01	
	370				10		3					0.5	1.52 (5)	N30135	0.020		0.11	
	375				85		3					3	1.52 (5)	N30136	0.034		0.30	
	380				60		1					3	1.52 (5)	N30137	0.002		0.05	
	385				15		1					2	1.52 (5)	N30138	0.001		0.02	
	390				50		4					2.5	1.52 (5)	N30139	0.001		0.01	
	395				25		T					2	1.52 (5)	N30140	0.009		0.02	
	400				50							3	1.52 (5)	N30141	0.001	—	0.03	
	405				50		T					4	1.52 (5)	N30142	0.001		0.05	
	410				95		T					5	1.52 (5)	N30143	0.002		0.03	
	415	Mixture of Granodiorite & Porphyry: porphyry as described above. Granodiorite pervasively argillic altered			70		T					6	1.52 (5)	N30144	0.001		0.01	
	420																	

NANSEN PROJECT

HOLE PDH 85-2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	420	Mixture of Granodiorite & Porphyry : as described above. Probably a dyke swarm.		TRANSITION ZONE	80		T					5	1.52 (5)	N30145	0.003		0.04	
	425				70		10					5	1.52 (5)	N30146	0.009		<0.01	
	430				60		3					5	1.52 (5)	N30147	0.001		<0.01	
	435				60		T					8	1.52 (5)	N30148	0.002		0.01	
	440				70		T					5	1.52 (5)	N30149	0.001		0.01	
	445	Granodiorite : light grey, medium to coarse grained, ranges from weak propylitic to weak argillic altered.			60		T					6	1.52 (5)	N30150	0.001		0.01	
	450				60		T					2	1.52 (5)	N30151	<0.001		<0.01	
	455				60		T					3	1.52 (5)	N30152	0.001		<0.01	
140.21	460																	

NANSEN PROJECT

HOLE No. PDH 85-3 ZONE BROWN-McDADE

STARTED JULY 2, 1985 FINISHED JULY 4, 1985

ZONE COORDINATES 0.00 N / 55.80 W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1268.08 m

COLLAR DIP -60° E ACID TEST DIP —

TOTAL DEPTH 61.0 m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-3

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	5	Granodiorite: intensely clay and sericite altered. All matics totally destroyed to produce leucocratic rock. Only quartz stable. Medium to coarse grained. Probably not totally supergene as closely resembles altered granodiorite in footwall of vein. Minor manganese stains on some chips.			T		T					0.5	1.52 (5)	N30161	0.001		<0.01	
	10				T		T					0.5	1.52 (5)	N30162	<0.001		<0.01	
	15				T		T					0.5	1.52 (5)	N30163	<0.001		<0.01	
	20	Leucocratic porphyry: fine grained argillic altered to siliceous porphyry with minor manganese staining					T					0.5	1.52 (5)	N30164	<0.001		<0.01	
	25				T		T					0.5	1.52 (5)	N30165	<0.001		<0.01	
	30	Mixture of leucocratic and dark porphyry		LEACHED CAP	T		T					0.5	1.52 (5)	N30166	<0.001		0.01	
	35	Dark massive porphyry: predominently soft, dark grey, fine grained rock with rare phenocrysts. Minor granodiorite fragments interspersed. Manganse staining common on fractures. Too fine grained to determine exacting mineralogy and alteration. Minor hematite staining on chips.					T					0.5	1.52 (5)	N30167	0.003		0.21	
	40						T					0.5	1.52 (5)	N30168	0.018		0.16	
	45						T					0.5	1.52 (5)	N30169	0.002		0.07	
	50				T		T					0.5	1.52 (5)	N30170	0.001		0.06	
	55						T					0.5	1.52 (5)	N30171	0.001		0.03	
	60				T		4					0.5	1.52 (5)	N30172	0.026		0.60	
	65	Quartz vein: rock exhibits pervasive silicification accompanied by intense argillic alteration. Pits are common and are usually totally leached. Some chips of blue-grey quartz.					5					0.5	1.52 (5)	N30173	0.208		1.97	
	70				T		1					0.5	1.52 (5)	N30174	0.372		1.33	

NANSEN PROJECT

HOLE PDH 85-3

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Quartz vein : as above		LEACHED CAP	T		-					0.5	1.52 (5)	N30175	0.296		3.09	
	75				T		2					0.5	1.52 (5)	N30176	0.228		2.72	
	80	Quartz vein fragments mixed with lesser argillic altered and sericitized granodiorite.			T		2					0.5	1.52 (5)	N30177	0.037		0.42	
	85	Altered porphyry: strongly argillic altered and sericitized. Phenocrysts are medium grained and clay altered while matrix is generally sericitized and aphanitic. Rock is leucocratic		TRANSITION ZONE	25		1					1	1.52 (5)	N30178	0.011		0.08	
	90				45		T					1	1.52 (5)	N30179	0.003		0.05	
	95				95		T					6	1.52 (5)	N30180	0.005		0.11	
	100				10		2					3	1.52 (5)	N30181	0.011		0.14	
	105				10		T					3	1.52 (5)	N30182	0.001		<0.01	
	110	Footwall Fault																
	115	Granodiorite: medium to coarse grained, grey to greenish grey colour. Weak saussentization of plagioclase and widespread chloritic alteration of hornblende.			4		T					6	1.52 (5)	N30183	<0.001		<0.01	
	120				60		2					2	1.52 (5)	N30184	0.001		<0.01	
	125				5		2					2	1.52 (5)	N30185	<0.001		<0.01	
	130				4		1					1	1.52 (5)	N30186	<0.001		<0.01	
	135				40		3					2	1.52 (5)	N30187	<0.001		<0.01	
	140				40		1					2	1.52 (5)	N30188	<0.001		0.01	

NANSEN PROJECT

HOLE PDH 85-3

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Granodiorite: as before		TRANSITION ZONE	20		5					1	1.52 (5)	N30189	0.001		<0.01	
	145	Granodiorite with minor pinkish potassium feldspar rich chips probably from a narrow pegmatite dyke			10		7					2	1.52 (5)	N30190	0.001		<0.01	
	150	Granodiorite: medium to coarse grained which chloritized mafics and saussaritized plagioclase. Some residual hornblende particularly in heavy fraction.			5		2					0.5	1.52 (5)	N30191	<0.001		<0.01	
													1.52 (5)	N30192	0.012		0.15	
	160				5		1					0.5	1.52 (5)	N30193	0.004		0.07	
	165				3		1					0.5	1.52 (5)	N30194	0.003		0.02	
	170				10		2					1	1.52 (5)	N30195	0.002		0.01	
	175				20		7					1.5	1.52 (5)	N30196	0.001		0.01	
	180	Porphyry or vein with Granodiorite: granodiorite ranges from propylitically altered to intensely sericitized. Vein or porphyry is represented by one fragment of tan coloured, leucocratic and highly siliceous rock.			30		3					4	1.52 (5)	N30197	0.029		0.42	
	185				90		1					1	1.52 (5)	N30198	0.002		0.01	
	190	Granodiorite: medium grained mafics chloritized and plagioclase weakly saussaritized Sulphides nearly fresh only faint limonite coatings on some grains.			30		2					0.5	1.52 (5)	N30199	0.003		0.01	
	195				6		0.5					1	1.52 (5)	N30200	0.009		0.01	
	200																	

NANSEN PROJECT

HOLE No. PDH 85-4 ZONE BROWN - McDADE

STARTED JULY 4, 1985 FINISHED JULY 4, 1985

ZONE COORDINATES 100.11S / 46.40W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1272.24

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 38.1 m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-4

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden			T		1					0.5	1.52 (5)	N304-31	0.156		2.08	
	5	Mixture of Porphyry and Granodiorite : intensely clay and sericite altered with little or no relic textures to define original rock type. Quartz veins abundant ranging from white to nearly black.			1		1					0.5	1.52 (5)	N304-32	0.248		4.78	
	10				T		2					0.5	1.52 (5)	N30433	0.244		3.32	
	15				T		2					0.5	1.52 (5)	N30434	0.130		1.66	
	20												1.52 (5)	N30435	0.057		0.60	
	25												1.52 (5)	N30436	0.092		0.93	
	30	Hangingwall Porphyry : strongly manganese stained weak to moderately clay altered feldspar porphyry		LEACHED CAP	3		1					0.5	1.52 (5)	N30437	0.014		0.11	
	35				T		2					0.5	1.52 (5)	N30438	0.010		0.11	
	40				T		2					0.5	1.52 (5)	N30439	0.025		0.26	
	45	Mixture of Porphyry and Granodiorite : clay and sericite alteration pervasive, quartz flooding and veining abundant			T		2					0.5	1.52 (5)	N30440	0.264		1.94	
	50				2	1	1					0.5	1.52 (5)	N30441	1.161		6.27	
	55				2		2					0.5	1.52 (5)	N30442	1.130		5.91	
	60						3					0.5	1.52 (5)	N30443	0.120		0.95	
	65				1		2					0.5	1.52 (5)	N30444	0.040		0.32	
	70																	

NANSEN PROJECT

HOLE PDH 85-4

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70			LEACHED CAP	T		1					0.5	1.52 (5)	N30445	0.304		6.27	
	75	Chips include fragments of nearly massive fine grained sulphides in this interval and the following one		TRANSITION ZONE	95		1					16	1.52 (5)	N30446	0.280		2.60	
	80				88		T	5	2			40	1.52 (5)	N30447	0.200		3.04	
	85				50		2		1			8	1.52 (5)	N30448	0.033		0.58	
	90				50		3					4	1.52 (5)	N30449	0.067		0.34	
	95				30								1.52 (5)	N30450	0.074		0.41	
	100	From this point down results may be questionable as hole drilled with standard rods and a tricone bit. Maybe significant contamination from higher in hole.											1.52 (5)	N30451	0.360		2.24	
	105												1.52 (5)	N30452	0.348		2.11	
	110												1.52 (5)	N30453	0.388		1.94	
	115												1.52 (5)	N30454	0.336		2.22	
	120												1.52 (5)	N30455	0.380		1.60	
	125																	

NANSEN PROJECT

HOLE No. PDH85-5 ZONE BROWN-McDADE

STARTED JULY 5, 1985 FINISHED JULY 5, 1985

ZONE COORDINATES 100.00S / 94.71W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1270.49m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 83.2m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-5

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	5	Overburden: mixture of porphyry and granodiorite float			T		5					0.5	1.52 (5)	N30525	0.023		0.21	
					1		1					0.5	1.52 (5)	N30526	0.028		0.11	
	10	Granodiorite: pervasively clay altered, medium grained granodiorite. Mafics totally destroyed imparting leucocratic appearance. Weak limonite and weak to moderate manganese staining common.					T					0.5	1.52 (5)	N30527	0.006		0.03	
	15				T		1					0.5	1.52 (5)	N30528	0.008		0.16	
	20						T					0.5	1.52 (5)	N30529	0.003		0.09	
	25				T		1					0.5	1.52 (5)	N30530	0.001		0.04	
	30				T		1					0.5	1.52 (5)	N30531	0.010		0.03	
	35	Mixture granodiorite & porphyry chips: granodiorite as above; porphyry is tan, fine grained and exhibits argillic, sericitic and silicic alteration.			1		2					0.5	1.52 (5)	N30532	0.001		0.02	
	40	Mixture porphyry & quartz vein: as described above and below.			3	T	2					0.5	1.52 (5)	N30533	0.160		2.66	
	45	Quartz Vein: tan to grey fine grained to chalcedonic quartz with abundant pits.			5		5					0.5	1.52 (5)	N30534	0.082		0.93	
	50	Porphyry: argillic altered manganese stained porphyry with minor, tan to clear quartz vein chips. Quartz veins contain pits.			5		2					0.5	1.52 (5)	N30535	0.044	–	0.58	
	55				2		2					2	1.52 (5)	N30536	0.094		0.89	
	60	Granodiorite: pervasively and intensely clay altered granodiorite. Typically medium grained with totally destroyed mafics. Manganese is abundant, forming a thick coat on many fragments.			5		2					0.5	1.52 (5)	N30537	0.013		0.21	
	65				4		1					0.5	1.52 (5)	N30538	0.013		0.11	
	70																	

LEACHED CAP

NANSEN PROJECT

HOLE PDH 85-5

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Granodiorite: as described on previous page.		LEACHED CAP	T		1					0.5	1.52 (5)	N30539	0.004		0.08	
	75				1		1					0.5	1.52 (5)	N30540	0.009		0.13	
	80				T		1					0.5	1.52 (5)	N30541	0.001		0.06	
	85				1		1					0.5	1.52 (5)	N30542	0.008		0.05	
	90				1		3					0.5	1.52 (5)	N30543	0.001		0.04	
	95				1		1					0.5	1.52 (5)	N30544	0.003		0.05	
	100				1		1					0.5	1.52 (5)	N30545	0.001		0.03	
	105				2		2					0.5	1.52 (5)	N30546	0.001		0.02	
	110				1		1					0.5	1.52 (5)	N30547	0.003		0.02	
	115				25		1					0.5	1.52 (5)	N30548	0.001		0.01	
	120				2		2					0.5	1.52 (5)	N30549	0.006		0.05	
	125	Porphyry: fine grained leucocratic rock exhibiting pervasive argillic and sericitic alteration plus intense silicification of matrix near quartz veins. Phenocrysts are rare and inevitably clay altered. Quartz chips occur through out, suggesting narrow veins are common. Weak limonite stains are common			5		2					0.5	1.52 (5)	N30550	0.031		0.16	
	130				5		1					0.5	1.52 (5)	N30551	0.005		0.11	
	135				5		1					1	1.52 (5)	N30552	0.011		0.20	
	140																	

NANSEN PROJECT

HOLE PDH 85-5

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Porphyry: as described on previous page.			30		2					2	1.52 (5)	N30553	0.011		0.13	
	145				30		5					2	1.52 (5)	N30554	0.008		0.15	
	150				50		5					2	1.52 (5)	N30555	0.011		0.15	
	155	Porphyry fragments containing abundant fine crystals of pyrite.			90		1					4	1.52 (5)	N30556	0.017		0.24	
	160				85		5					4	1.52 (5)	N30557	0.015		0.44	
	165				85		5					4	1.52 (5)	N30558	0.360		0.54	
	170	cloudy white to medium grey fine grain quartz chips. some pitting.		TRANSITION ZONE	70		10					3	1.52 (5)	N30559	0.044		0.26	
	175				2		2					2	1.52 (5)	N30560	0.006		0.17	
	180				30		10					3	1.52 (5)	N30561	0.160		1.54	
	185	chips of medium grey chalcedonic quartz containing abundant medium grained pyrite crystals.			50		5					3	1.52 (5)	N30562	0.031		0.07	
	190				20		3					2	1.52 (5)	N30563	0.005		0.05	
	195				5		3					2	1.52 (5)	N30564	0.005		0.03	
	200				10		10					1	1.52 (5)	N30565	0.004		0.01	
	205				10		5					2	1.52 (5)	N30566	0.001		0.05	
	210																	

NANSEN PROJECT

HOLE PDH 85-5

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Porphyry: as previously described.		TRANSITION ZONE	7		2					1	1.52 (5)	N 30567	0.002		0.03	
	215				1		1					0.5	1.52 (5)	N 30568	0.003		0.01	
	220				5		10					0.5	1.52 (5)	N 30569	0.002		0.01	
	225	Manganese oxides more abundant.			1		3					0.5	1.52 (5)	N30570	0.030		0.52	
	230				70		2					4	1.52 (5)	N 30571	0.037		1.01	
	235				70		2					10	1.52 (5)	N30572	0.050		3.80	
	240	Manganese disappears again.			70		2					1.5	1.52 (5)	N30573	0.007		0.48	
	245				70		1					2	1.52 (5)	N30574	0.004		0.19	
	250				50		10					1.5	1.52 (5)	N 30575	0.004		0.18	
	255				40		2					2	1.52 (5)	N30576	0.004		0.15	
	260				40		3					2	1.52 (5)	N30577	0.006		0.15	
	265				15		7					1	1.52 (5)	N30578	0.005		0.13	
	270	Footwall Fault Granodiorite: medium grey-green, medium grained with weak propylitic alteration	+ + +		15		3					2	0.91 (3)	N30579	0.004		0.20	
	273																	

NANSEN PROJECT

HOLE No. PDH 85-6 ZONE BROWN-McDADE

STARTED JULY 6, 1985 FINISHED JULY 6, 1985

ZONE COORDINATES 199.37 S / 60.20 W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1272.58 m

COLLAR DIP 60 E ACID TEST DIP

TOTAL DEPTH 42.7m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-6

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: mixture of porphyry and granodiorite float.			T		T					0.5	1.52 (5)	N30589	0.001		0.08	
	5	Porphyry: pervasively clay and sericite altered, strong manganese staining. Pits and quartz vein chips are common.		LEACHED CAP	T		1					0.5	1.52 (5)	N30590	0.001		0.07	
	10				1		3					0.5	1.52 (5)	N30591	0.010		0.11	
	15						4					0.5	1.52 (5)	N30592	0.011		0.17	
	20				T		4					0.5	1.52 (5)	N30593	0.013		0.13	
	25				3		1					0.5	1.52 (5)	N30594	0.003		0.08	
	30	Presence of glassy vein chip and elevated gold values suggests narrow vein present			T		2					0.5	1.52 (5)	N30595	0.079		0.20	
	35				1		1					0.5	1.52 (5)	N30596	0.010		0.17	
	40						1					0.5	1.52 (5)	N30597	0.003		0.08	
	45				T		1				manganese oxide 5	0.5	1.52 (5)	N30598	0.002		0.04	
	50	Manganese staining increases sharply toward main vein zone.					1				manganese oxide 10	0.5	1.52 (5)	N30599	0.030		0.08	
	55	Mixture of porphyry & quartz vein chips: as described above and below.			T		4					0.5	1.52 (5)	N30600	0.034		0.36	
	60	Quartz Vein: tan coloured fine grained quartz vein. Minor pitting.					5					0.5	1.52 (5)	N30601	0.128		0.51	
	65	Mixture of porphyry and quartz vein chips: tan quartz vein with white to grey argillic altered and weakly silicified porphyry.					1					0.5	1.52 (5)	N30602	0.050		0.28	
	70																	

NANSEN PROJECT

HOLE PDH 85-6

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Altered Porphyry: intensely argillic altered. Rock is limonitic, pitted and in part manganese stained.		LEACHED CAP	T		3					0.5	1.52 (5)	N30603	0.010		0.21	
	75	Quartz Vein & intensely silicified porphyry: fine grained to chalcedonic quartz ranges from grey to tan to nearly white. Occasional banded appearance. Porphyry matrix is pervasively silicified but a few argillic altered phenocrysts remain. Pitting and leached out hairline fractures are common.					3					0.5	1.52 (5)	N30604	0.140		1.12	
	80				T		2					0.5	1.52 (5)	N30605	0.232		3.00	
	85						1					0.5	1.52 (5)	N30606	0.027		0.44	
	90						2					0.5	1.52 (5)	N30607	0.122		1.65	
	95						2					1	1.52 (5)	N30608	0.016		0.33	
	100	Altered Granodiorite: pervasively argillic altered and manganese stained granodiorite.			15		3					1	1.52 (5)	N30609	0.020		0.38	
	105				15		2					1	1.52 (5)	N30610	0.008		0.31	
	110				5		2					1	1.52 (5)	N30611	0.003		0.06	
	115	Granodiorite: weakly limonite stained and propylitically altered. Hornblende usually altered to chlorite. Unit is locally leucocratic.			5		2					1	1.52 (5)	N30612	0.002		0.04	
	120				3		1					1	1.52 (5)	N30613	0.004		0.06	
	125				2		1					1	1.52 (5)	N30614	0.001		0.04	
	130				1		1					1	1.52 (5)	N30615	0.003		0.07	
	135				1		1					1	1.52 (5)	N30616	0.004		0.17	
	140																	

NANSEN PROJECT

HOLE No. PDH 85-7 ZONE BROWN - McDADE

STARTED JULY 6, 1985 FINISHED JULY 6, 1985

ZONE COORDINATES 200.15S / 104.72W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1268.33m

COLLAR DIP 60E ACID TEST DIP

TOTAL DEPTH 76.2m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: mixture granodiorite & mongoiex stained porphyry			1		1					1	1.52 (5)	N30621	0.003		0.03	
	5	Granodiorite: medium to coarse grained, medium grey-green to leucocratic. Hornblende often altered to chlorite and plagioclase occasionally weakly saussuritized but otherwise fresh.		LEACHED CAP	T		T					1	1.52 (5)	N30622	0.001		<0.01	
	10				T		T					1	1.52 (5)	N30623	0.001		<0.01	
	15				2		T					1	1.52 (5)	N30624	0.002		0.01	
	20											0.5	1.52 (5)	N30625	0.006		0.01	
	25						T					0.5	1.52 (5)	N30626	<0.001		<0.01	
	30				T		T					2	1.52 (5)	N30627	<0.001		<0.01	
	35						T					1	1.52 (5)	N30628	0.011		0.01	
	40						T					1.5	1.52 (5)	N30629	<0.001		<0.01	
	45						T					0.5	1.52 (5)	N30630	<0.001		<0.01	
	50				T		T					0.5	1.52 (5)	N30631	<0.001		<0.01	
	55				T		T					0.5	1.52 (5)	N30632	<0.001		<0.01	
	60				T		T					1	1.52 (5)	N30633	<0.001		<0.01	
	65	Mixture Granodiorite & Pegmatite: units described above and below			T		1					0.5	1.52 (5)	N30634	<0.001		<0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Pegmatite: coarse grained leucocratic dyke rock principally comprised of quartz and feldspar.		CAP			T					0.5	1.52 (5)	N30635	<0.001		<0.01	
	75				T		T					0.5	1.52 (5)	N30636	<0.001		<0.01	
	80				T		T					0.5	1.52 (5)	N30637	<0.001		<0.01	
	85				1		2					0.5	1.52 (5)	N30638	<0.001		<0.01	
	90				T		1					0.5	1.52 (5)	N30639	<0.001		<0.01	
	95												1.52 (5)	N30640	0.002		<0.01	
	100	Mixture Granodiorite & Pegmatite: units as described above and below		LEACHED	T		1					0.5	1.52 (5)	N30641	0.001		<0.01	
	105	Granodiorite: exhibits only weak propylitic alteration except for last metre where chips of argillically altered granodiorite show up.			T		1					4	1.52 (5)	N30642	0.002		<0.01	
	110				T		T					0.5	1.52 (5)	N30643	0.002		<0.01	
	115	Porphyry: fine grained, pervasively altered to sericite &/or clay. Feldspar phenocrysts rare and intensely clay altered. Pits locally abundant. Some clear quartz veins. Light coating on manganese present on most fractures.			T		T					0.5	1.52 (5)	N30644	0.002		0.01	
	120												1.52 (5)	N30645	0.002	—	0.01	
	125				3		T					0.5	1.52 (5)	N30646	0.001		0.03	
	130			TRANSITION	70		1					0.5	1.52 (5)	N30647	0.001		<0.01	
	135	Argillically altered granodiorite: mafics totally altered to chlorite while feldspars are clay altered. Medium grained.			1		T					0.5	1.52 (5)	N30648	0.004		<0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Argillically altered granodiorite: as previous page		TRANSITION ZONE	50		I					0.5	1.52 (5)	N30649	<0.001		<0.01	
	145	Porphyry: as described on previous page except that manganese decreases toward quartz vein and silicification increases.			70		T	T	T			0.5	1.52 (5)	N30650	0.006		0.03	
	150				50		T					0.5	1.52 (5)	N30651	0.005		0.29	
	155				2		I					0.5	1.52 (5)	N30652	0.001		0.04	
	160				5		I					1	1.52 (5)	N30653	0.001		0.01	
	165				3		T					2	1.52 (5)	N30654	0.001		0.01	
	170				15							2	1.52 (5)	N30655	0.003		0.11	
	175				20							4	1.52 (5)	N30656	0.024		0.29	
	180				35							5	1.52 (5)	N30657	0.086		1.21	
	185				15							5	1.52 (5)	N30658	0.043		0.56	
	190				25							5	1.52 (5)	N30659	0.018		0.23	
	195	Quartz Vein & Intensely silicified Porphyry: white to grey quartz veining is mixed with porphyry. Porphyry matrix is usually silicified while phenocrysts are intensely clay altered. The rock is tan coloured and well oxidized except for the first (richest) interval which is light grey and relatively unoxidized.			50							4	1.52 (5)	N30660	0.320		1.72	
	200				5		5					2	1.52 (5)	N30661	0.028		0.18	
	205				2		5					1	1.52 (5)	N30662	0.124		0.98	
	210																	

NANSEN PROJECT

HOLE PDH 85-7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Altered porphyry: little or no silicification. Black manganese oxide on some fragments.		TRANSITION ZONE	10		5					2	1.52 (5)	N30663	0.035		0.54	
	215	Altered Granodiorite & porphyry: pervasive argillic and sericitic alteration in main fault zone. Footwall Fault			5		3					0.5	1.52 (5)	N30664	0.005		0.07	
	220	Granodiorite: medium to coarse grained, weakly to moderately propylitically altered. Locally leucocratic but generally grey-grey.			1		1					2	1.52 (5)	N30665	0.003		0.06	
	225				T		T					2	1.52 (5)	N30666	0.001		<0.01	
	230				T		T					1	1.52 (5)	N30667	0.002		<0.01	
	235				T		T					0.5	1.52 (5)	N30668	0.001		<0.01	
	240				T		T					0.5	1.52 (5)	N30669	0.002		<0.01	
	245				1		T					1	1.52 (5)	N30670	0.001		<0.01	
	250																	

NANSEN PROJECT

HOLE No. PDH 85-8 ZONE BROWN - McDADE

STARTED JULY 6, 1985 FINISHED JULY 6, 1985

ZONE COORDINATES 299.69S / 49.67W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1265.93m

COLLAR DIP -60E ACID TEST DIP -

TOTAL DEPTH 32.0m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-8

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: material pushed onto drill sites by cat. Most fill came out of trench g.		LEACHED CAP			4					0.5	1.52 (5)	N30685	0.122		0.47	
	5	Porphyry: a fine grained felsic rock with occasional quartz and feldspar phenocrysts up to 3 mm long. Rare quartz veinlets. Manganese stains common. Colour ranges from tan to medium brown. Weak to pervasive argillic and sericite alteration.			T		2					0.5	1.52 (5)	N30686	0.003		0.04	
	10				T		2					1	1.52 (5)	N30687	0.003		0.03	
	15				T		2					0.5	1.52 (5)	N30688	0.002		0.02	
	20				T		2					0.5	1.52 (5)	N30689	0.002		0.02	
	25				T		2					0.5	1.52 (5)	N30690	0.001		0.01	
	30				5		2					0.5	1.52 (5)	N30691	0.001		0.01	
	35				T		2					0.5	1.52 (5)	N30692	<0.001		0.01	
	40						2					0.5	1.52 (5)	N30693	<0.001		0.01	
	45						2					0.5	1.52 (5)	N30694	<0.001		0.03	
	50				T		2					0.5	1.52 (5)	N30695	0.020		0.34	
	55	Quartz Veining with intensely silicified porphyry: rocks are dominently silica and exhibit a variety of features including; numerous clay altered feldspar phenocrysts, banding, and pitting after sulphides. Quartz is normally clear or white but occasionally grey					2					0.5	1.52 (5)	N30696	0.039		0.58	
	60				T		2					0.5	1.52 (5)	N30697	0.019		0.27	
	65				T		3					0.5	1.52 (5)	N30698	0.130		1.60	
	70																	

NANSEN PROJECT

HOLE PDH 85-8 PAGE 2/2

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	as above		LEACHED CAP			2					0.5	1.52 (5)	N30699	0.097		1.30	
	75						2					0.5	1.52 (5)	N30700	0.088		0.69	
	80						2					0.5	1.52 (5)	N30701	0.040		0.26	
	85	Porphyry: clay altered with brownish aphanitic matrix and white phenocrysts. At surface breccia - gouge zone.					2					0.5	1.52 (5)	N30702	0.002		0.03	
	90	Granodiorite: weak to moderate propylitic alteration. Rock is medium to coarse grained and medium green in colour, but exhibits some coarse grained leucocratic bands.			T		1					0.5	1.52 (5)	N30703	0.004		0.03	
	95						1					0.5	1.52 (5)	N30704	0.002		<0.01	
	100												1.52 (5)	N30705	0.003		0.03	
	105																	

NANSEN PROJECT

HOLE No. PDH85-9 ZONE BROWN-McDADE

STARTED JULY 7, 1985 FINISHED JULY 7, 1985

ZONE COORDINATES 300.15 S / 102.61 W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1259.93 m

COLLAR DIP -60E ACID TEST DIP -

TOTAL DEPTH 83.8 m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-9

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: mixture of porphyry granodiorite & presumably vein float			-		1					0.5	1.52 (5)	N30717	0.010		0.07	
	5	Porphyry: fine grained phenocrysts rare. Weak to moderate argillic and sericitic alteration. Manganese oxides are common on fractures. Approximately 40% of chips are glassy to cloudy quartz, presumably derived from narrow quartz veins. Quartz phenocrysts are rare.		LEACHED CAP	T		1					0.5	1.52 (5)	N30718	0.001		<0.01	
	10				2		1					0.5	1.52 (5)	N30719	<0.001		<0.01	
	15				4		1					0.5	1.52 (5)	N30720	0.002		<0.01	
	20				T		1					0.5	1.52 (5)	N30721	<0.001		<0.01	
	25				1		1					0.5	1.52 (5)	N30722	<0.001		<0.01	
	30				T		1					0.5	1.52 (5)	N30723	<0.001		<0.01	
	35				T		1					0.5	1.52 (5)	N30724	0.001		<0.01	
	40				T		1					0.5	1.52 (5)	N30725	<0.001		<0.01	
	45				T		1					0.5	1.52 (5)	N30726	<0.001		<0.01	
	50						1					0.5	1.52 (5)	N30727	<0.001		<0.01	
	55				T		1					0.5	1.52 (5)	N30728	<0.001		<0.01	
	60				4		1					0.5	1.52 (5)	N30729	<0.001		<0.01	
	65				2		1					0.5	1.52 (5)	N30730	<0.001		0.04	
	70																	

NANSEN PROJECT

HOLE PDH 85-9

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Porphyry: as before except alteration is slightly more pervasive.		LEACHED CAP	3		1					0.5	1.52 (5)	N30731	<0.001		0.01	
	75				3		1					0.5	1.52 (5)	N30732	<0.001		<0.01	
	80				1		1					0.5	1.52 (5)	N30733	<0.001		<0.01	
	85				1		1					0.5	1.52 (5)	N30734	<0.001		<0.01	
	90				T		1					0.5	1.52 (5)	N30735	0.001		<0.01	
	95				T		2					0.5	1.52 (5)	N30736	0.001		<0.01	
	100				T		2					0.5	1.52 (5)	N30737	<0.001		<0.01	
	105				T		2					0.5	1.52 (5)	N30738	0.001		<0.01	
	110						1					0.5	1.52 (5)	N30739	0.001		<0.01	
	115				T		1					0.5	1.52 (5)	N30740	<0.001		<0.01	
	120				T		2					0.5	1.52 (5)	N30741	0.004		<0.01	
	125				T		1					0.5	1.52 (5)	N30742	0.002		<0.01	
	130				T		1					0.5	1.52 (5)	N30743	0.001		<0.01	
	135				T		2					0.5	1.52 (5)	N30744	<0.001		<0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-9 PAGE 3/4

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Porphyry : as before		LEACHED CAP	T		2					0.5	1.52 (5)	N30745	<0.001		0.07	
	145				5		1					0.5	1.52 (5)	N30746	0.010		0.15	
	150				T		1					0.5	1.52 (5)	N30747	0.001		<0.01	
	155				T		1					0.5	1.52 (5)	N30748	<0.001		<0.01	
	160				T		1					0.5	1.52 (5)	N30749	0.003		<0.01	
	165				1		1					0.5	1.52 (5)	N30750	<0.001		<0.01	
	170	Porphyry : as before but manganese oxides much more intense, increasing toward vein.			T		1					0.5	1.52 (5)	N30751	<0.001		<0.01	
	175				1		1					0.5	1.52 (5)	N30752	0.001		<0.01	
	180				T		1					0.5	1.52 (5)	N30753	<0.001		<0.01	
	185				1		1					0.5	1.52 (5)	N30754	<0.001		0.04	
	190				T		1					0.5	1.52 (5)	N30755	<0.001		<0.01	
	195				2		1					0.5	1.52 (5)	N30756	0.001		0.04	
	200				1		1					0.5	1.52 (5)	N30757	0.001		0.04	
	205				20		5					0.5	1.52 (5)	N30758	0.002		0.09	
	210																	

NANSEN PROJECT

HOLE · PDH 85-9

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Porphyry : as before except for increased manganese oxide on fractures.		LEACHED CAP	4		10				Manganese oxide 10	0.5	1.52 (5)	N30759	0.008		0.19	
	215				T		10					0.5	1.52 (5)	N30760	0.010		0.26	
	220	Quartz vein : Blue-grey and pitted white quartz mixed with intensely argillic altered porphyry					10				Scorodite T White oxide 2	0.5	1.52 (5)	N30761	0.128		3.83	
	225				T		5				Scorodite 3 White oxide 1	0.5	1.52 (5)	N30762	0.040		0.54	
	230	Porphyry : Limonite and manganese stained porphyry cut by glassy quartz veins					4					0.5	1.52 (5)	N30763	0.006		0.09	
	235				T		2					0.5	1.52 (5)	N30764	0.007		0.26	
	240	Quartz Vein : cloudy, strongly pitted quartz mixed with sericitized and argillic altered porphyry			T		4					0.5	1.52 (5)	N30765	0.067		0.51	
	245						10					0.5	1.52 (5)	N30766	0.038		1.27	
	250	Blue grey quartz veins cutting intensely silicified and argillic altered porphyry. Phenocrysts argillic altered & matrix silicified. Porphyry strongly pitted.			T		5					0.5	1.52 (5)	N30767	0.248		1.40	
	255											0.5	1.52 (5)	N30768	0.024		0.36	
	260											0.5	1.52 (5)	N30769	0.024		0.23	
	265				5		2					0.5	1.52 (5)	N30770	0.006		0.07	
	270	Leucocratic Granodiorite with argillic altered feldspar porphyry. Grounded armed hand indicating fault crossed.	+ + +		1		2					0.5	1.52 (5)	N30771	0.005		0.04	
	275																	

NANSEN PROJECT

HOLE No. PDH 85-10 ZONE BROWN-McDADE

STARTED JULY 8, 1985 FINISHED JULY 85, 1985

ZONE COORDINATES BM 97.81N / 47.40W
BMX 108.45N / 32.41N

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1263.08

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 36.6m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-10

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Granodiorite: pervasively argillic altered with abundant manganese oxides on fractures. Medium to coarse grained, light grey.		LEACHED CAP			2					1	1.52 (5)	N30780	0.002		0.04	
	5						1					0.5	1.52 (5)	N30781	0.001		<0.01	
	10				T		1					0.5	1.52 (5)	N30782	0.001		<0.01	
	15	Porphyry: fine grained, tan coloured. Phenocrysts rare, 1 to 3 mm in diameter. Rock exhibits pervasive argillic &/or sericitic alteration. Local variations described below.			T		2					0.5	1.52 (5)	N30783	0.002		<0.01	
	20				T		1					0.5	1.52 (5)	N30784	0.002		<0.01	
	25				T		2					0.5	1.52 (5)	N30785	0.001		0.01	
	30	Manganese stains common on fractures.			1		3					0.5	1.52 (5)	N30786	0.001		0.06	
	35	Similar to above except rock is often strongly pitted, exhibits frequent boxworks, and is cut by hairline grey quartz veinlets.		TRANSITION ZONE	5		2					1	1.52 (5)	N30787	0.086		1.11	
	40				7		2					2	1.52 (5)	N30788	0.256		2.16	
	45	Generally porphyry but some fragments appear to be intensely argillic altered granodiorite.			2		1					1	1.52 (5)	N30789	0.028		0.23	
	50				5		1					2	1.52 (5)	N30790	0.028	—	0.20	
	55				2		1					1	1.52 (5)	N30791	0.028		0.18	
	60				35		3					1	1.52 (5)	N30792	0.009		0.09	
	65				T		2					1	1.52 (5)	N30793	0.004		0.04	
	70																	

NANSEN PROJECT

HOLE PDH 85-10

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Porphyry: changes from tan to grey. Phenocrysts either more numerous or easier to recognize. Average phenocryst 1 to 2 mm in diameter and intensely clay altered. Matrix slightly darker and appears to be mixture of quartz and sericite.		TRANSITION ZONE	5		1					2	1.52 (5)	N30794	0.007		0.09	
	75				20		3					3	1.52 (5)	N30795	0.004		0.13	
	80				1		2					3	1.52 (5)	N30796	0.003		0.09	
	85				7		1					3	1.52 (5)	N30797	0.006		0.13	
	90				5		1					3	1.52 (5)	N30798	0.002		0.04	
	95				40	5	2					3	1.52 (5)	N30799	0.034		0.37	
	100				20	5	T					4	1.52 (5)	N30800	0.012		0.07	
	105	Granodiorite: medium to light grey, medium to coarse grained, typically weak to moderately propylitically altered. Pyrite is very fresh.	+ + + + + + + +	HYPOGENE ZONE	40							5	1.52 (5)	N30801	0.003		0.04	
	110				30							5	1.52 (5)	N30802	0.003		0.06	
	115				8							5	1.52 (5)	N30803	0.001		0.03	
	120																	

NANSEN PROJECT

HOLE No. PDH 85-11 ZONE BROWN-McDADE

STARTED JULY 8, 1985 FINISHED JULY 8, 1985

ZONE COORDINATES BM 98.30N / 103.76W
BMX 123.51N / 87.74W

PROPERTY COORDINATES

AZIMUTH 070 ELEVATION 1269.90

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 85.3m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-11

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: predominently argillic to propylitically altered granodiorite as described below but minor porphyry float also.		LEACHED CAP	5		T					0.5	1.52 (5)	N30823	0.005		0.06	
	5				3		1					0.5	1.52 (5)	N30824	0.004		0.06	
	10	Altered Granodiorite: intensely propylitic to moderately argill - altered granodiorite. Tan with manganese oxides on fractures. Medium to coarse grained. Most feldspars totally altered to chlorite or muscovite.			5		1					0.5	1.52 (5)	N30825	0.006		0.04	
	15				2		1					0.5	1.52 (5)	N30826	0.003		0.01	
	20				10		1					0.5	1.52 (5)	N30827	0.002		0.04	
	25				5		1					0.5	1.52 (5)	N30828	0.012		0.04	
	30				2		1					0.5	1.52 (5)	N30829	0.001		0.01	
	35				T		2					0.5	1.52 (5)	N30830	0.002		0.04	
	40				T		1					0.5	1.52 (5)	N30831	0.003		0.01	
	45	Porphyry: tan, fine grained. Phenocrysts rare. Minor pitting in a few chips. Sericite & clay altered.					T					0.5	1.52 (5)	N30832	0.003		<0.01	
	50				T		T					0.5	1.52 (5)	N30833	0.002		0.05	
	55				T		T					0.5	1.52 (5)	N30834	0.001		0.04	
	60						T					0.5	1.52 (5)	N30835	0.001		<0.01	
	65				T		T					0.5	1.52 (5)	N30836	0.001		<0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-11

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Granodiorite: tan, medium grained moderate to intensely argillic altered feldspar with tan to yellow micas replacing mafics. Quartz stwkr.		LEACHED CAP	T		T				manganese oxides	0.5	1.52 (5)	N30837	0.002		<0.01	
	75				T		T				1	0.5	1.52 (5)	N30838	0.001		<0.01	
	80				1		T				1	0.5	1.52 (5)	N30839	0.002		<0.01	
	85				2		T				1	0.5	1.52 (5)	N30840	0.001		<0.01	
	90				1		1				1	0.5	1.52 (5)	N30841	0.001		0.04	
	95	Porphyry: intensely clay altered phenocrysts in a matrix of clay and sericite. Rare silicification rocks are tan coloured and fine grained.			T		1					0.5	1.52 (5)	N30842	0.001		0.01	
	100				T		T					0.5	1.52 (5)	N30843	0.003		0.04	
	105			TRANSITION ZONE	1		1					1	1.52 (5)	N30844	<0.001		0.06	
	110				1		2					1	1.52 (5)	N30845	0.003		0.01	
	115				1		2					2	1.52 (5)	N30846	<0.001		<0.01	
	120	Chips of grey & yellow stained quartz - probably from a narrow vein zone			10		10					2	1.52 (5)	N30847	0.082		0.20	
	125				60		T					4	1.52 (5)	N30848	0.001		0.01	
	130				70		T					4	1.52 (5)	N30849	0.003		0.23	
	135	Altered Granodiorite: tan coloured intensely clay altered feldspar with yellow mica after mafics. Medium grained			70		T					3	1.52 (5)	N30850	0.001		0.07	
	140																	

NANSEN PROJECT

HOLE PDH 85-11

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Altered Granodiorite: as previously described.			50							3	1.52 (5)	N30851	0.003		0.04	
	145				10		1					1	1.52 (5)	N30852	0.003		0.06	
	150	Mixture Altered Granodiorite & Porphyry: as described above & below.			5		1					0.5	1.52 (5)	N30853	0.018		0.23	
	155	Porphyry: tan, fine grained matrix of clay and sericite with minor, up to 2mm in diameter, clay altered phenocrysts. Rocks are locally silicified and fragments of grey quartz occur in most intervals containing elevated precious metal values.			80		T					6	1.52 (5)	N30854	0.014		0.42	
	160				80		T					7	1.52 (5)	N30855	0.054		0.77	
	165				60		5					3	1.52 (5)	N30856	0.010		0.16	
	170			TRANSITION ZONE	80		T					3	1.52 (5)	N30857	0.020		0.25	
	175				50		2					2	1.52 (5)	N30858	0.003		0.10	
	180				50		1					1	1.52 (5)	N30859	0.001		0.07	
	185				50		T					0.5	1.52 (5)	N30860	0.008		0.19	
	190				10		1					1	1.52 (5)	N30861	0.001		0.07	
	195				20		3					1.5	1.52 (5)	N30862	0.010		0.06	
	200				10		5					4	1.52 (5)	N30863	0.059		0.51	
	205	Grey quartz chips plus one chip 4mm x 5mm x 6mm of nearly massive pyrite.			80		1					5	1.52 (5)	N30864	0.093		0.51	
	210																	

NANSEN PROJECT

HOLE PDH 85-11

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Porphyry: light grey, sericitized and argillic altered. Fine grained with up to 2 mm intensely clay altered phenocrysts.		TRANSITION ZONE	65		T					3	1.52 (5)	N30865	0.017		0.44	
	215				50		2					2.5	1.52 (5)	N30866	0.005		0.10	
	220				30		1					1	1.52 (5)	N30867	0.003		0.16	
	225				30		2					0.5	1.52 (5)	N30868	0.002		0.01	
	230				40		2					0.5	1.52 (5)	N30869	0.001		<0.01	
	235				40		1					0.5	152 (5)	N30870	0.001		0.04	
	240				50		2					0.5	1.52 (5)	N30871	0.001		0.01	
	245				40		1					1.5	1.52 (5)	N30872	0.001		0.01	
	250				25		2					1.5	1.52 (5)	N30873	0.001		<0.01	
	255				60		2					1.5	1.52 (5)	N30874	0.001		0.01	
	260				40		3					1	1.52 (5)	N30875	0.002		0.06	
	265				50		T					2	1.52 (5)	N30876	0.005		0.04	
	270	one chip of siliceous & pyritic (50%) vein material			60		T					9	1.52 (5)	N30877	0.010		0.43	
	275				60		8					2.5	1.52 (5)	N30878	0.002		0.07	
	280																	

NANSEN PROJECT

HOLE No. PDH 85-11A ZONE BROWN-McDADE

STARTED JULY 29, 1985 FINISHED JULY 30, 1985

ZONE COORDINATES BM 98.30N / 99.83W
BMX 122.49N / 83.93W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1269.89 m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 94.5 m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-11A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden										T	1.52 (5)	P601	0.003		<0.01	
	5											T	1.52 (5)	P602	0.002		<0.01	
	10	Granodiorite: weak montmorillonite alteration of feldspar and chloritization of matrix with strong supergene overprint of kaolinite and sericite.		LEACHED CAP								T	1.52 (5)	P603	0.001		<0.01	
	15											T	1.52 (5)	P604	0.001		<0.01	
	20											T	1.52 (5)	P605	0.002		<0.01	
	25											T	1.52 (5)	P606	0.001		0.01	
	30											T	1.52 (5)	P607	0.001		0.03	
	35											T	1.52 (5)	P608	0.002		0.09	
	40											T	1.52 (5)	P609	0.001		0.01	
	45											1/2	1.52 (5)	P610	0.001		<0.01	
	50											1/2	1.52 (5)	P611	0.002		0.01	
	55											1/2	1.52 (5)	P612	0.001		0.06	
	60											1/2	1.52 (5)	P613	0.001		0.01	
	65	Feldspar Porphyry: Strong, pervasive kaolinite alteration										1/2	1.52 (5)	P614	0.003		0.03	
	70																	

NANSEN PROJECT

HOLE PDH 85-11A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Feldspar Porphyry: as above		LEACHED CAP								3/4	1.52 (5)	P615	0.001		0.02	
	75	Granodiorite: weak to moderate montmorillonite with strong kaolinite, supergene overprint										1/2	1.52 (5)	P616	0.003		0.07	
	80																	
		Feldspar Porphyry: moderate to strongly kaolinite altered										1/2	1.52 (5)	P617	0.013		0.13	
	85			TRANSITION								1 1/2	1.52 (5)	P618	0.003		0.06	
	90											1	1.52 (5)	P619	0.002		0.01	
	95											1	1.52 (5)	P620	0.004		0.04	
	100											1	1.52 (5)	P621	0.002		0.05	
	105											6	1.52 (5)	P622	0.003		0.17	
	110											1/2	1.52 (5)	P623	0.002		0.03	
	115											1	1.52 (5)	P624	0.001		0.02	
	120											1/2	1.52 (5)	P625	0.008		0.05	
	125	Granodiorite: weak to moderate clay alteration										2	1.52 (5)	P626	0.003		0.07	
	130											6	1.52 (5)	P627	0.040		0.36	
	135											3	1.52 (5)	P628	0.001		0.03	
	140																	

NANSEN PROJECT

HOLE PDH 85-11A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	145	Granodiorite: moderate to strongly clay altered granodiorite with rare quartz vein fragments		TRANSITION								3	1.52 (5)	P629	0.077		0.26	
	150											2	1.52 (5)	P630	0.009		0.07	
	155											6	1.52 (5)	P631	0.007		0.08	
	160											1/2	1.52 (5)	P632	0.004		0.05	
	165											1/4	1.52 (5)	P633	0.004		0.04	
	170											1	1.52 (5)	P634	0.002		0.16	
	175											1	1.52 (5)	P635	<0.001		0.19	
	180											1 1/2	1.52 (5)	P636	0.006		0.08	
	185											1 1/2	1.52 (5)	P637	0.020		0.17	
	190											4	1.52 (5)	P638	0.024		0.36	
	195											1 1/2	1.52 (5)	P639	0.005		0.20	
	200											2	1.52 (5)	P640	0.002		0.20	
	205											4	1.52 (5)	P641	0.016		0.26	
	210											2	1.52 (5)	P642	0.003		0.16	

NANSEN PROJECT

HOLE PDH 85-11A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Moderately Altered Feldspar Porphyry										2	1.52 (5)	P643	0.001		0.02	
	215											2	1.52 (5)	P644	0.001		<0.01	
	220											3	1.52 (5)	P645	0.002		0.02	
	225											4	1.52 (5)	P646	0.001		<0.01	
	230	Moderate to Weakly Altered Granodiorite										4	1.52 (5)	P647	0.001		<0.01	
	235											3	1.52 (5)	P648	0.001		0.03	
	240											2	1.52 (5)	P649	0.001		0.02	
	245											1	1.52 (5)	P650	0.003		0.07	
	250											5	1.52 (5)	P651	0.007		0.16	
	255	Strongly Altered Granodiorite : moderate to intense kaolinite but no quartz veining		TRANSITION								10	1.52 (5)	P652	0.012		0.39	
	260											6	1.52 (5)	P653	0.003		0.10	
	265											8	1.52 (5)	P654	0.001		0.01	
	270											14	1.52 (5)	P655	0.001		0.01	
	275	Unaltered Granodiorite										9	1.52 (5)	P656	0.001		0.02	
	280																	

NANSEN PROJECT

HOLE PDH 85-11A

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Unaltered Granodiorite	+	TRANSITION								6	1.52 (5)	P657	0.001		0.01	
	285		+															
			+									6	1.52 (5)	P658	0.001		0.01	
	290		+															
			+									4	1.52 (5)	P659	0.001		0.03	
	295		+															
			+									3	1.52 (5)	P660	0.002		0.05	
	300		+															
			+									3	1.52 (5)	P661	0.013		0.01	
	305		+															
			+									4	1.52 (5)	P662	0.003		0.04	
	310																	

NANSEN PROJECT

HOLE No. PDH 85-12 ZONE BROWN - McDADE

STARTED JULY 9, 1985 FINISHED JULY 10, 1985

ZONE COORDINATES 99.64S / 167.52 W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1264.77m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 148.7m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-12

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden: mixture of granodiorite & porphyry		LEACHED CAP									1.52 (5)	N30893	0.001		0.01	
	5	Leucocratic Granodiorite or Pegmatite dyke: coarse grained felsic rock composed of feldspar, quartz and rare chlorite. Fresh or weak propylitic alteration.			1		T					0.5	1.52 (5)	N30894	<0.001		<0.01	
	10				2		1					0.5	1.52 (5)	N30895	<0.001		<0.01	
	15				T		T					0.5	1.52 (5)	N30896	<0.001		<0.01	
	20												1.52 (5)	N30897	<0.002		<0.01	
	25	Granodiorite: relatively fresh medium grained, grey-green granodiorite. Hornblende not chloritized.			T		T					0.5	1.52 (5)	N30898	<0.001		0.04	
	30						T					0.5	1.52 (5)	N30899	<0.001		0.01	
	35						T					0.5	1.52 (5)	N30900	<0.001		<0.01	
	40	Weak propylitic to argillic alteration locally.					T					0.5	1.52 (5)	N30901	<0.001		<0.01	
	45						T					0.5	1.52 (5)	N30902	0.002		0.01	
	50	Rock becomes pervasively sericitized and argillic altered			T		1					0.5	1.52 (5)	N30903	0.001		<0.01	
	55						2					0.5	1.52 (5)	N30904	0.001		0.01	
	60	Fragment of massive pyrite vein 4 mm thk			T		3					0.5	1.52 (5)	N30905	0.004		0.10	
	65				1		2					0.5	1.52 (5)	N30906	0.002		0.09	
	70																	

NANSEN PROJECT

HOLE PDH 85-12 **PAGE** 2/7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	70	Altered Granodiorite & porphyry: rocks are tan coloured and often exhibit spots of manganese oxide. Both units exhibit alteration ranging from pervasive argillic alteration to weak silicification. Rare quartz veins		LEACHED CAP	1		2					0.5	1.52 (5)	N30907	0.010		0.12	
	75				4		2					0.5	1.52 (5)	N30908	0.009		0.16	
	80				1		3					0.5	1.52 (5)	N30909	0.011		0.16	
	85				1		2					0.5	1.52 (5)	N30910	0.002		0.09	
	90				2		2					0.5	1.52 (5)	N30911	0.001		0.06	
	95				T		2					0.5	1.52 (5)	N30912	0.002		0.01	
	100				2		2					0.5	1.52 (5)	N30913	0.001		0.01	
	105				T		1					0.5	1.52 (5)	N30914	0.002		<0.01	
	110				T		2					0.5	1.52 (5)	N30915	0.001		<0.01	
	115	Granodiorite: pervasively argillic altered. All feldspars to clay and mafics to chlorite &/or sericite. Medium grained and tan coloured.			T		2					0.5	1.52 (5)	N30916	<0.001		<0.01	
	120				T		1					0.5	1.52 (5)	N30917	0.001		<0.01	
	125			TRANSITION ZONE	2		2					0.5	1.52 (5)	N30918	<0.001		<0.01	
	130				T		T					0.5	1.52 (5)	N30919	0.001		<0.01	
	135				T		T					0.5	1.52 (5)	N30920	<0.001		0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-12

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	140	Argillic Altered Granodiorite as previously described.		TRANSITION ZONE	1		T					0.5	1.52 (5)	N30921	<0.001		0.01	
	145				T		T					0.5	1.52 (5)	N30922	<0.001		0.01	
	150				T		T					0.5	1.52 (5)	N30923	<0.001		0.01	
	155				1		T					0.5	1.52 (5)	N30924	<0.001		0.01	
	160				1		T					0.5	1.52 (5)	N30925	<0.001		<0.01	
	165	Granodiorite: medium grey-green, medium to coarse grained. Fresh to weak propylitic alteration.			1		3					0.5	1.52 (5)	N30926	<0.001		<0.01	
	170				1		2					0.5	1.52 (5)	N30927	<0.001		<0.01	
	175				T		T					0.5	1.52 (5)	N30928	<0.001		<0.01	
	180				T		T					0.5	1.52 (5)	N30929	<0.001		<0.01	
	185				T		T					0.5	1.52 (5)	N30930	<0.001		<0.01	
	190				3		1					0.5	1.52 (5)	N30931	<0.001	—	<0.01	
	195				T		T					0.5	1.52 (5)	N30932	<0.001		<0.01	
	200				1		T					0.5	1.52 (5)	N30933	<0.001		<0.01	
	205				T		T					0.5	1.52 (5)	N30934	<0.001		<0.01	
	210																	

NANSEN PROJECT

HOLE PDH 85-12 **PAGE** 4/7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	210	Granodiorite: as previously described.	+		T		1					0.5	1.52 (5)	N30935	<0.001		<0.01	
	215		+		1		1					0.5	1.52 (5)	N30936	0.002		<0.01	
	220		+		1		1					0.5	1.52 (5)	N30937	<0.001		<0.01	
	225	Pervasive propylitic alteration all hornblende to chlorite, clear quartz veinlets	+		T		1					0.5	1.52 (5)	N30938	<0.001		<0.01	
	230	Altered Granodiorite: exhibits pervasive alteration ranging from intense propylitic to moderate argillic. Occasional glassy quartz chip suggests narrow veins are present.	+	TRANSITION ZONE	T		T					0.5	1.52 (5)	N30939	<0.001		<0.01	
	235		+		3		1					1	1.52 (5)	N30940	<0.001		<0.01	
	240		+		T		1					0.5	1.52 (5)	N30941	<0.001		<0.01	
	245		+		5		1					0.5	1.52 (5)	N30942	0.001		<0.01	
	250		+		1		1					0.5	1.52 (5)	N30943	<0.001		<0.01	
	255		+		1		T					0.5	1.52 (5)	N30944	<0.001		<0.01	
	260		+		T		T					0.5	1.52 (5)	N30945	<0.001	—	<0.01	
	265		+		1		T					0.5	1.52 (5)	N30946	0.005		0.01	
	270	Mixture Altered Granodiorite and Porphyry: as described above and below	+		T		1					0.5	1.52 (5)	N30947	0.001		0.01	
	275	Porphyry: matrix clay to silica altered with clay altered phenocrysts. Phenocrysts up to 1mm long.			T		1					0.5	1.52 (5)	N30948	<0.001		0.01	
	280																	

NANSEN PROJECT

HOLE PDH 85-12

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	280	Porphyry: as previously described.		HYPOGENE	40		1					15	1.52 (5)	N30949	0.017		0.15	
	285	Quartz & Massive sulphide vein: blue-grey quartz plus a fragment of massive pyrite 8cm in diameter.			95		1					25	1.52 (5)	N30950	0.340		2.42	
	290	Porphyry: tan to light grey, fine grained porphyry. Occasional clear quartz vein chips and chips of intensely clay altered granodiorite. Alteration in porphyry ranges from moderate sericitic to strong argillic and occasionally moderate silicification.			85		T					10	1.52 (5)	N30951	0.022		0.16	
	295				5		1					0.5	1.52 (5)	N30952	0.004		0.05	
	300				1		1					0.5	1.52 (5)	N30953	0.001		<0.01	
	305				8		T					0.5	1.52 (5)	N30954	0.008		0.08	
	310	Altered Granodiorite: light to medium grey medium grained granodiorite exhibiting alteration ranging from intense propylitic to intense argillic.			15		3					0.5	1.52 (5)	N30955	0.005		0.01	
	315				10		2					0.5	1.52 (5)	N30956	0.002		0.01	
	320				10		1					0.5	1.52 (5)	N30957	0.001		0.07	
	325				20		1					0.5	1.52 (5)	N30958	0.002		0.05	
	330	Porphyry: light grey, fine grained. Normally sericitized or clay altered but occasionally silicified. A few chips contain abundant pyrite (up to 20%). Rare white to grey quartz vein chips. Occasional fragments of argillic altered granodiorite.			50		T					0.5	1.52 (5)	N30959	0.003		0.13	
	335				50		T					0.5	1.52 (5)	N30960	0.006		0.19	
	340				40		T					5	1.52 (5)	N30961	0.030		0.28	
	345				30		T					4	1.52 (5)	N30962	0.017		0.18	
	350																	

NANSEN PROJECT

HOLE PDH 85-12 **PAGE** 6/7

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENOPYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	350	Porphyry: as previously described.			50	2	T					5	1.52 (5)	N30963	0.033		0.21	
	355				75	2	T					4	1.52 (5)	N30964	0.014		0.33	
	360				65	2	T					1.5	1.52 (5)	N30965	0.007		0.24	
	365				75		T					0.5	1.52 (5)	N30966	0.006		0.13	
	370				50		T					1.5	1.52 (5)	N30967	0.158		0.35	
	375	Granodiorite: argillic altered for a few metres from porphyry contacts then propylitically altered. Medium to coarse grained often leucocratic.			65		T					0.5	1.52 (5)	N30968	0.002		0.04	
	380				40		T					0.5	1.52 (5)	N30969	0.002		0.07	
	385				40		T					0.5	1.52 (5)	N30970	0.002		0.10	
	390				60		T					0.5	1.52 (5)	N30971	<0.001		0.04	
	395				50		T					0.5	1.52 (5)	N30972	<0.001		0.04	
	400				1							0.5	1.52 (5)	N30973	<0.001		0.01	
	405				2							0.5	1.52 (5)	N30974	<0.001		0.01	
	410				1							0.5	1.52 (5)	N30975	<0.001		<0.01	
	415				10		1					0.5	1.52 (5)	N30976	0.006		0.12	
	420																	

HYPOGENE

NANSEN PROJECT

HOLE PDH 85-12

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	420	Granodiorite: as previously described except strongly argillic altered and tan coloured.		HYPOGENE	1		1					0.5	1.52 (5)	N30977	<0.001		0.05	
	425				1		1					0.5	1.52 (5)	N30978	0.002		0.07	
	430	Porphyry: tan to light grey fine grained, pervasively sericitized, argillic altered or silicified. Occasional milky to grey quartz veins, argillic altered granodiorite fragments.			10		2					0.5	1.52 (5)	N30979	0.002		0.04	
	435				70		2					0.5	1.52 (5)	N30980	0.001		0.06	
	440				50		1					0.5	1.52 (5)	N30981	0.003		0.12	
	445				40		1					0.5	1.52 (5)	N30982	0.003		0.12	
	450				25		T					0.5	1.52 (5)	N30983	<0.001		0.01	
	455				60		1					0.5	1.52 (5)	N30984	0.001		0.01	
	460				60		T					0.5	1.52 (5)	N30985	0.002		0.04	
	465				10		2					0.5	1.52 (5)	N30986	0.001		0.07	
	470				10		1						1.52 (5)	N30987	0.001	—	0.11	
	475				15		1						1.52 (5)	N30988	<0.002		0.03	
	480				20		1						1.52 (5)	N30989	0.010		0.15	
	485				10		1						0.91 (3)	N30990	0.002		<0.01	
	488																	

NANSEN PROJECT

HOLE No. PDH 85-13 ZONE BROWN - McDADE

STARTED JULY 30, 1985 FINISHED JULY 31, 85

ZONE COORDINATES BM 192.89N / 93.32W
BMX 207.13N / 55.03 N

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1267.67 m

COLLAR DIP -60E ACID TEST DIP -

TOTAL DEPTH 86.9m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-13

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden		LEACHED CAP								½	1.52 (5)	P675	<0.001		<0.01	
	5											½	1.52 (5)	P676	0.001		<0.01	
	10	Granodiorite: weak to moderate montmorillinite alteration with a strong kaolinite, supergene over print.										½	1.52 (5)	P677	<0.001		<0.01	
	15											1	1.52 (5)	P678	0.001		<0.01	
	20											1	1.52 (5)	P679	0.001		0.01	
	25											½	1.52 (5)	P680	<0.001		0.01	
	30											½	1.52 (5)	P681	0.001		0.01	
	35											½	1.52 (5)	P682	0.001		0.02	
	40											½	1.52 (5)	P683	0.001		0.01	
	45			TRANSITION								1	1.52 (5)	P684	<0.001		<0.01	
	50											½	1.52 (5)	P685	<0.001		<0.01	
	55											½	1.52 (5)	P686	<0.001		0.01	
	60											½	1.52 (5)	P687	<0.001		<0.01	
	65	Feldspar Porphyry: rock is strongly kaolinite altered and relic textures are largely obliterated. May be strongly altered granodiorite										½	1.52 (5)	P688	<0.001		0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-13

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Feldspar Porphyry										½	1.52 (5)	P689	0.001		0.01	
	75	Granodiorite : as before but supergene overprint weaker.										½	1.52 (5)	P690	0.002		0.01	
	80											½	1.52 (5)	P691	<0.001		<0.01	
	85											½	1.52 (5)	P692	<0.001		<0.01	
	90	Feldspar Porphyry : strongly clay altered										2	1.52 (5)	P693	<0.001		<0.01	
	95											4	1.52 (5)	P694	<0.001		<0.01	
	100											4	1.52 (5)	P695	<0.001		0.01	
	105											3	1.52 (5)	P696	0.001		0.01	
	110			TRANSITION								5	1.52 (5)	P697	<0.001		<0.01	
	115											3	1.52 (5)	P698	<0.001		0.01	
	120											½	1.52 (5)	P699	0.002		0.01	
	125	Granodiorite : weak to moderate clay alteration in feldspar with chlorite and occasionally sericite alteration of hornblende.										½	1.52 (5)	P700	0.002		<0.01	
	130											½	1.52 (5)	P701	<0.001		0.01	
	135											½	1.52 (5)	P702	0.001		<0.01	
	140																	

NANSEN PROJECT

HOLE PDH 85-13

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Granodiorite as before		TRANSITION								½	1.52 (5)	P703	0.001		0.01	
	145											½	1.52 (5)	P704	<0.001		0.02	
	150											½	1.52 (5)	P753	<0.001		<0.01	
	155											½	1.52 (5)	P754	<0.001		<0.01	
	160											½	1.52 (5)	P755	<0.001		<0.01	
	165											½	1.52 (5)	P756	<0.001		<0.01	
	170											½	1.52 (5)	P757	<0.001		<0.01	
	175											½	1.52 (5)	P758	0.004		<0.01	
	180											½	1.52 (5)	P759	<0.001		<0.01	
	185											½	1.52 (5)	P760	<0.001		<0.01	
	190											½	1.52 (5)	P761	<0.001		0.01	
	195											T	1.52 (5)	P762	<0.001		<0.01	
	200											½	1.52 (5)	P763	<0.001		<0.01	
	205											½	1.52 (5)	P764	0.026		0.03	
	210																	

NANSEN PROJECT

HOLE PDH 85-13

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP/PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	215	Feldspar Porphyry: strongly clay altered with rare quartz chips.		HYPOGENE								½	1.52 (5)	P765	0.002		<0.01	
	220											½	1.52 (5)	P766	0.015		0.01	
	225											½	1.52 (5)	P767	0.002		0.14	
	230											½	1.52 (5)	P768	0.021		0.48	
	235	Granodiorite: moderate to strong clay alteration plus local sericite alteration										5	1.52 (5)	P769	0.010		0.38	
	240											3	1.52 (5)	P770	0.024		0.41	
	245											2	1.52 (5)	P771	0.004		0.16	
	250											3	1.52 (5)	P772	0.002		0.09	
	255											6	1.52 (5)	P773	0.001		0.08	
	260											6	1.52 (5)	P774	<0.001		0.09	
	265	Intensely altered and quartz veined granodiorite: strong pervasive sericite and argillic alteration with fragments of quartz										10	1.52 (5)	P775	0.172	–	0.36	
	270											6	1.52 (5)	P776	0.104		0.20	
	275											6	1.52 (5)	P777	0.066		0.14	
	280	Unaltered Granodiorite										2	1.52 (5)	P778	0.018		0.05	

NANSEN PROJECT

HOLE PDH 85-13

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Unaltered Granodiorite:	+ +	HYPOGENE								1	1.52 (5)	P779	0.009		0.03	
	285																	

NANSEN PROJECT

HOLE No. PDH 85-14 ZONE BROWN-McDADE

STARTED JULY 31, 1985 FINISHED JULY 31, 1985

ZONE COORDINATES 400.00S / 35.79W

PROPERTY COORDINATES

AZIMUTH 070 ELEVATION 1250.11m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 30.5m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-14

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden		OXIDE ZONE	T							T	1.52 (5)	P705	<0.001		0.02	
	5				T							T	1.52 (5)	P706	0.001		0.02	
	10	Bleached schists: bleaching and alteration varies from weak to moderate. Alteration consists of weak clay alteration of feldspar and sericitization of chlorite original lithology quartz-feldspar-chlorite schist.			T							T	1.52 (5)	P707	<0.001		<0.01	
	15				T							T	1.52 (5)	P708	<0.001		0.01	
	20				T							T	1.52 (5)	P709	0.017		0.71	
	25				T							T	1.52 (5)	P710	<0.001		0.04	
	30				T							T	1.52 (5)	P711	0.001		0.02	
	35				T							T	1.52 (5)	P712	0.003		0.07	
	40				T							T	1.52 (5)	P713	0.002		0.03	
	45				T							T	1.52 (5)	P714	<0.001		0.01	
	50				T							T	1.52 (5)	P715	<0.001		<0.01	
	55				T							1/4	1.52 (5)	P716	<0.001		<0.01	
	60				T							1/4	1.52 (5)	P717	0.001		0.01	
	65				T							1/4	1.52 (5)	P718	<0.001		<0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-14

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
	75			TRANSITION ZONE	5							1/4	1.52 (5)	P719	<0.001		<0.01	
		Fault?																
		Shattered schists: dark green, quartz-feldspar-chlorite schists			10							1/4	1.52 (5)	P720	<0.001		0.02	
	80				10							1/4	1.52 (5)	P721	<0.001		0.01	
	85				10							1/4	1.52 (5)	P722	<0.001		0.01	
	90				10							1/4	1.52 (5)	P723	<0.001		0.01	
	95				10							1/4	1.52 (5)	P724	<0.001		0.01	
	100																	

NANSEN PROJECT

HOLE No. PDH 85-15 ZONE BROWN-McDADE

STARTED JULY 31, 1985 FINISHED JULY 31, 1985

ZONE COORDINATES 400.00S / 81.39W

PROPERTY COORDINATES

AZIMUTH 070° ELEVATION 1245.71m

COLLAR DIP -60E ACID TEST DIP —

TOTAL DEPTH 67.1m LOGGED BY WDE

NANSEN PROJECT

HOLE PDH 85-15 **PAGE** 1/4

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Overburden		OXIDIZED ZONE								T	1.52 (5)	P797	0.006		0.04	
	5											T	1.52 (5)	P798	0.001		<0.01	
	10											T	1.52 (5)	P799	0.004		0.07	
	15	Bleached Schist: ranges from weakly to intensely bleached. Rock originally quartz-feldspar chlorite schist. Variable clay alteration of feldspar and sericite alteration of chlorite. No evidence of veining.										T	1.52 (5)	P800	0.001		0.01	
	20											T	1.52 (5)	P801	0.001		0.01	
	25											T	1.52 (5)	P802	0.001		<0.01	
	30											T	1.52 (5)	P803	<0.001		0.02	
	35											T	1.52 (5)	P804	0.001		0.03	
	40			TRANSITION ZONE								2	1.52 (5)	P805	0.001		0.03	
	45											1½	1.52 (5)	P806	0.001		0.05	
	50											2½	1.52 (5)	P807	0.001		0.03	
	55											1	1.52 (5)	P808	0.001		0.03	
	60											2½	1.52 (5)	P809	0.001		0.03	
	65											1	1.52 (5)	P810	<0.001		<0.01	
	70																	

NANSEN PROJECT

HOLE PDH 85-15

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Bleached Schists		TRANSITION ZONE								1	1.52 (5)	P811	<0.001		<0.01	
	75											2½	1.52 (5)	P812	0.001		0.01	
	80											2	1.52 (5)	P813	0.001		<0.01	
	85											4	1.52 (5)	P814	0.001		0.01	
	90											2	1.52 (5)	P815	0.001		0.01	
	95											1	1.52 (5)	P816	<0.001		<0.01	
	100											1	1.52 (5)	P817	<0.001		0.01	
	105											1	1.52 (5)	P818	0.001		0.01	
	110											2	1.52 (5)	P819	<0.001		<0.01	
	115											1	1.52 (5)	P820	<0.001		<0.01	
	120											1	1.52 (5)	P821	<0.001		<0.01	
	125											1	1.52 (5)	P822	<0.001		0.08	
	130											½	1.52 (5)	P823	<0.001		0.07	
	135											1½	1.52 (5)	P824	0.001		0.05	
	140																	

NANSEN PROJECT

HOLE PDH 85-15

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Bleached schists		TRANSITION ZONE								1½	1.52 (5)	P825	<0.001		0.01	
	145											1	1.52 (5)	P826	<0.001		0.01	
	150											1½	1.52 (5)	P827	0.001		0.02	
	155											2	1.52 (5)	P828	<0.001		0.01	
	160											3	1.52 (5)	P829	<0.001		0.05	
	165											4	1.52 (5)	P830	<0.001		0.01	
	170											3	1.52 (5)	P831	<0.001		0.02	
	175	Fault ?										4	1.52 (5)	P832	<0.001		0.04	
	180	Unaltered schists : dark green quartz - feldspar chlorite schist.										5	1.52 (5)	P833	<0.001		0.01	
	185											5	1.52 (5)	P834	<0.001		0.01	
	190											3	1.52 (5)	P835	<0.001		0.03	
	195											5	1.52 (5)	P836	0.001		0.05	
	200											7	1.52 (5)	P837	<0.001		0.02	
	205											10	1.52 (5)	P838	<0.001		0.03	
	210																	

NANSEN PROJECT

HOLE PDH 85-15

DEPTH m	DEPTH ft	REMARKS	VISUAL LOG	OXIDATION ZONE	MINERALIZATION % PYRITE	ARSENO-PYRITE	LIMONITE	GALENA	SPHALER.	BARITE	OTHERS	HEAVY MINERALS TSP / PAN	SAMPLE LENGTH m (ft)	SAMPLE NUMBER	Au oz/ton	Au g/t	Ag oz/ton	Ag g/t
		Unaltered schist		TRANSITION								6	1.52 (5)	P339	<0.001		0.02	
	215											10	1.52 (5)	P340	<0.001		0.02	
	220																	

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : AUGUST 1
DDH 85-2A	NANSEN	BROWN - McDADE	FINISHED : AUGUST 8
COORDINATES	AZ: 070°	DIP-COLLAR: 60° E	T.D. 146.91 m
N: 19882.0N	EL: 1266.82m	ACID DIP TEST: 61.2°E (BOTTOM)	LOGGED BY: M. PHILLIPS
E: 19871.1E			

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
>– PERVASIVE> VEINLET
<– VEINLET< PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- BRECCIA
- CRACKLE BRECCIA
- CONTACT, ANGLE TO CORE AXIS
- SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLONITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE (TRACE SULPHIDES AND SULFATES)	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		OVERBURDEN (GLACIO-FLUVIAL?) BROWN SANDY CLAY WITH <30cm ANGULAR ROCK FRAGMENTS.												N3505	.16	5.75			50
7.3		2cm ROUNDED FRAGMENT													53.8				
														504	80	1.52			20
														507	7.31 10	1.52			55
														508	8.84 96	0.51			150
														509	10.36 40	1.52			70
														510	11.28 34	1.52			15
														511	12.80 98	1.52			10
18.84		UP TO 3cm SUBANGULAR, GRANODIORITE AND MT NANSEN VOLCANICS - TUFF												512	14.33 36	1.52			15
														513	15.85 12	1.52			5
														514	17.37 14	1.52			20
18.9		REDDISH BROWN SAND, INCREASED ROCK FRAGMENTS (MOSTLY GRANODIORITE, APLITE & PEGMATITE) SOME ROUNDED QUARTZITE PEBBLE												515	18.30 84	1.52			15
														516	20.42 76	1.52			20
														517	21.95 38	1.52			10
23.17		GRANODIORITE - HIGHLY BROKEN	23.17 PROPYLITIC FACIES	PF	N	VF	VF	VF	N	N	PL	N	VL	N	518	23.47 90	0.31			5
25.31		1cm ROUNDED PEBBLE												519	24.38 25.00	0.61			75
27.74		D/S - ALTERED FINE FRAGMENTS MORE COMMON	27.74 MONTMORILLONITE FACIES (SUPERGENE)	N	N	PH	PA	PM	N	VL	N	N	VL	N	520	25.52 24	1.52			<5
														521	27.04 24	1.52			<5
														522	28.04 12	1.52			25
														523	28.57 20	1.22			15
30.78		0.3m CLAY BAND WITH 4cm PEBBLES OF QUARTZITE												524	30.78 34	2.49			20
														525	33.27 37	0.91			<5
														526	34.15 62	1.22			5
34.27		BEDROCK CONTACT? GRANODIORITE	34.27 SHARP CONTACT PROPYLITIC FACIES	PH	N	VL	N	VL	N	N	PL	N	VL	N	527	35.34 84	2.29			5
				F										528	37.63 75	0.61			230
														529	38.25 82	1.68			<5
														530	39.93 100	0.31			<5
														531	40.04 50	1.22			<5
															41.74				
														532	88	1.52			5
														533	43.28 36	1.52			<5
														534	44.81 34	1.52			5
														535	46.33 40	0.36			<5
															46.63				
47.85		D/S FRACTURING 0-45° & WITH CLAY AND CALCITE (MOSTLY 1/2-10cm) INCREASED SHEARS				VF	VF							536	39	1.52			10
			49.38 UP TO 0.1cm BLEACHED BANDS			4M	VM							537	48.16 37	1.22			20
50.90		FAULT - 0.15m GREEN CLAY	50.90			VF	VL							538	49.38 82	1.52			<5
														539	50.90 30	1.52			<5
														540	52.43 34	0.91			<5
														541	53.34 34	1.52			<5
														542	54.86 20	0.61			<5
														543	55.47 30	1.52			<5
59.22		BANDS OF ALTERED CRUMBLY ROCK COMMON	58.22 TRANSITIONAL			PH	PF							544	57.0 82	1.52			<5
														545	58.52 86	1.52			<5
60.81			60.81 MONTMORILLONITE FACIES	FL	N	PL	FA	PF	N	N	PL	N	<L	N	546	60.05 81	1.98			5
						P									62.13				
			64.91 KAOLINITE FACIES (WEAK)	N	N	N	PF	PA	N	N	PL	N	VL	N	547	64.77 73	1.98			5
						L								548	66.29 87	1.22			20
66.45		VEIN - 1cm	66.45 - 1cm VEIN + QSQC	N	N	PH	PA	PF	N	N	PL	N	VL	N	549	67.51 78	1.68			<5
			67.36 PROPYLITIC FACIES	PH	PL	VF	VF	N	N	N	PL	N	N	N	N31350	67.67 97	1.37			<5
70.1															69.04				
		IN PLACES SHEARED	70.1 MONTMORILLONITE FACIES	N	N	<A	PA	PF	VL	VL	PL	N	N	N	N31701	70.10 34	1.07			10
														702	71.63 88	1.52			40
72.84			72.84 PROPYLITIC FACIES	H	N	PH	PL	N	N	>L	N	N	N		703	73.15 35	1.52			25
			74.37 MONTMORILLONITE FACIES	PL	N	>A	PA	PF	N	N	<L	N	N	N	704	74.68 83	1.68			<5
			1cm CA-PY VEINLET-TRACE SL											705	76.35 100	1.52			<5
			77.1 PROPYLITIC FACIES	PH	PL	PF	PL	N	N	>L	N	N	N		706	77.88 87	1.68			5
			78.33 MONTMORILLONITE FACIES	H	N	PH	PM	PF	N	N	PL	N	<L	N	707	79.55 53	0.51			40
														708	80.07 82	1.52			15
			81.83 PROPYLITIC FACIES	PH	PL	VF	VL	N	N	N	>L	N	<L	N	709	81.59 85	0.91			<5
														710	82.51 84	1.52			<5
														711	84.03 97	0.51			<5
														712	84.54 97	0.51			100
														713	85.05 46	0.61			10
														714	85.66 74	1.52			<5
														715	87.18 84	1.52			320
														716	83.0 60	1.52			370
														717	90.53 80	1.52			<5
			92.5 MONTMORILLONITE FACIES	PF	N	>A	PH	PF	N	N	PL	N	VL	N	718	92.05 40	1.52			<5
94.18		D/S ROCK BECOMES CRUMBLY												719	93.57 57	1.22			<5
														720	94.79 87	1.22			<5
														721	96.01 78	1.37			<5
														722	97.38 88	0.76			30
														723	98.14 76	0.76			<5
														724	98.90 84	0.76			15
														N31725	99.66	0.51			<5
			101.13 TRANSITIONAL PHYLLIC FACIES Q.S-PY VEINLETS					VM		<A				N31551	83	1.83	0.005		
															102.11				
102.87		BRECCIA: 0.4cm ROUNDED-ANGULAR CLASTS	102.87 - TRANSITIONAL KAOLINITE FACIES (WEAK)	N	N	N	PF	PA	N	N	>L	N	N	N	552	82	1.52	0.004		
														553	103.63 94	1.07	0.004		
104.7		D/S SHEARS COMMON													104.7				
105.46		FAULT - 0.01m + 1cm QUARTZ CLASTS IN WHITE GOUGE, HIGHLY BROKEN IN PLACES GOUGE TO 105.77m	105.46 KAOLINITE FACIES (STRONG	N	N	N	N	PH	N	N	VP	N	N	N	554	105.77 71	1.68	0.004		
		BRECCIA - P - PHENOCRYS ORTHOCLASE LOOK ROUNDED												555	104.28 70	0.91	0.001		
			108.5 D/S INCREASING QZ VEINLETS											556	107.23 50	1.52	0.002		
															108.61				
110.03		0.3m FELDSPAR PORPHYRY?	109.97 SILICIFICATION?											557	88	1.52	0.005		
111.25		VEIN - WEAK FAULT - 0.02m, HIGHLY BROKEN & GOUGY GRANODIORITE	111.25	N	N	H	FL	PF	PH	VM	VM	>M	FF	N	N		110.29				
			KAOLINITE FACIES	N	N	N	PL	FA	VF	N	<F	N	N	N	558	32 111.84	1.52	0.007		
			112.47						N		PL			559	78 113.38	1.52	0.005		
														560	82 114.91	1.52	0.001		
115.52		FAULT - 0.15m - 3cm GOUGE												561	116.43	0.76	<0.001		
116.28		FAULT - 5cm WEAK												562	117.19	0.76	0.003		
116.82		FAULT - WEAK VEIN	116.82 PHYLLIC FACIES	N	N	N	N	N	PH	PM	PA	PA	N	N	563	117.95 30	1.52	0.308		
														564	119.46 84	1.52	0.021		
118.87			118.87 - TRANSITIONAL MONTMORILLONITE FACIES	N	N	PF	PA	PH	N	N	PM	>F	N	N	565	120.98 82	1.52	0.015		
														566	122.50 84	1.52	0.002		
123.00		D/S HIGHLY BROKEN, FRACTURES ACUTE TO CA OFTEN FRACTURES SLICKENSIDED												567	124.05 76	1.52	0.002		
125.12														568	125.58 30	1.52	0.003		
														569	127.10 92	1.52	0.001		
														570	128.63 84	1.52	0.001		
														571	130.15 50	1.52	<0.001		
														572	131.67 56	1.52	<0.001		
132.89		BOTTOM CONTACT STRONG FRACTURING												573	133.19 57	1.22	0.004		
			133.2 - TRANSITIONAL MONTMORILLONITE FACIES (WEAK)	N	N	FL	PF	N	N	N	>M	PL	N	N	574	134.41 30	1.52	<0.001		
			135.64				PF	PH						575	135.94 47	1.22	<0.001		
137.77		FAULT - WEAK	137.46 0.3m SHEARED - STRONG SX	N	N	PF	PH	N	N	VF	<F	N	N	N	576	137.46 84	1.52	0.008		
			MONTMORILLONITE FACIES											577	139.14 70	1.52	0.002		
			140.21 MONTMORILLONITE FACIES	N	N	<L	PM	N	N	N	<F	N	N	N	578	140.82 84	1.52	<0.001		
														579	142.34 84	1.52	0.001		
			143.82 PROPYLITIC FACIES	PF	PF	FL	N	N	N	N	<F	N	N	N	580	143.87 90	1.52	0.006		
														581	145.39 92	1.52	<0.001		
														582	146.30 82	1.52	<0.001		
146.91		END OF HOLE												N31583	146.91				

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ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : AUGUST 12
DDH85-12B	NANSEN	BROWN-McDADE	FINISHED : AUGUST 16
COORDINATES	AZ: 070°	DIP-COLLAR: -55°E	T.D. 145.39 m
N: 19802.2N	EL: 1266.57m	ACID DIP TEST: -55.4°E (BOTTOM)	LOGGED BY: M. PHILLIPS
E: 19917.5E			

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

- P - PERVASIVE
- >- PERVASIVE > VEINLET
- <- VEINLET < PERVASIVE
- V - VEINLET
- E - ENVELOPES

AMOUNT

- N - NIL
- L - LOW TRACE
- F - FAIR
- M - MODERATE
- A - ABOVE AVERAGE
- H - HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- BRECCIA
- CRACKLE BRECCIA
- CONTACT, ANGLE TO CORE AXIS
- SHEAR
- QV - QUARTZ VEINLET
- QC - CHALCEDONY
- SL - SPHALERITE
- GL - GALENA
- AS - ARSENOPYRITE
- ANGLE TO CORE AXIS
- D/S - DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLONITE	KAOLINITE	SERICITE	QTZ-VEINS	PYRITE	VERY FINE DISSEMINATED SULPHIDES	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
0.0		GRANODIORITE - DARK COLORED MEDIUM GRAINED, TO 25% HORNBLENDE OCTAHEDRAL PHENOCRYSTS 5-8mm GNEISSIC TO 60° C.A. ; NARROW APLITE-PEGMATITE DYKES UP TO 0.1m.	FRESH	PL	N	N	N	N	N	N	N	VL	N							
															N31449	98	3.96			≤.05
																	3.96			
															450	100	1.52			<.5
																	5.49			
															451	140	1.52			5
7.01		ALTERATION ON 30° FRACTURES	T.01 KAOLINITE FACIES-SUPERGENE	N	N	N	N	>A	N	N	N	N	VA	N				7.01			
															452	40	7.92			<.5
																	7.92			
															453	100	1.65			20
		FRACTURES 5-20/m COMMON															9.60			
															454	100	1.52			180
																	11.13			
															455	100	1.07			45
																	12.19			
															456	100	1.07			5
18.1			13.11 TRANSITIONAL			VL	VL	VF							457	100	13.11 1.52	0.61		5
			14.63 FRESH - PROPYLITIC FACIES ALONG FRACTURES - 1cm BANDS/DOC MAFIC ALTERED TO MONTMORILLONITE/CHLORITE	PF	N	EL	EL	N	N	N	PL	N	VF	N	458	45	14.65	1.22			<.5
															459	100	15.87	0.61		<.5
															460	50	1.52			<.5
																	17.07			
															461	94	1.52			<.5
																	18.59			
															462	50	1.52			<.5
20.11																	20.12			
															463	10	1.22			<.5
		APLITE - OCC. NARROW BANDS OF PEGMATITE															21.34			
															464	100	21.96	0.61		<.5
			22.25 MONTMORILLONITE FACIES	N	N	>A	M	VF	N	N	N	N	VL	N	465	100	1.52			<.5
23.47		D/S FRACTURING INCREASING	23.47 PROPYLITIC FACIES	PL	N	VF	N	VF	N	N	N	N	VL	N	466	100	23.47 1.22			5
																	24.69			
															467	100	25.90	0.31		<.5
25.70		HIGHLY DECOMPOSED 30° FRACTURES COMMON													468	100	27.42	0.61		55
27.12		FAULT-30° WEAK	27.76 KAOLINITE FACIES - SUPERGENE	PL	N	N	PF	PA	N	N	N	N	VL	N			28.27			
		D/S FRACTURES 1-2/5cm WITH CLAY/FOW ENVELOPES	27.12 FRESH-PROPYLITIC FACIES	PL	N	VL	N	VL	N	N	PL	N	VL	N	469	100	1.52			<.5
																	27.74			
															470	100	28.80	1.07		<.5
															471	60	29.87	1.07		<.5
30.48		D/S FRACTURING DECREASES	30.48 D/S INCREASE IN CHLORITE AND CALCITE IN MAFICS	PF		AF									472	100	31.03	1.22		5
															473	100	32.31	1.22		<.5
32.61		5mm MYLONITE-50°													474	100	33.83	1.52		50
																	35.34			
36.57		D/S OCC. <3mm MYLONITES													475	100	1.52			90
																	36.86			
															476	100	1.52			30
																	38.38			
															477	100	1.52			5
																	39.90			
															478	100	1.52			10
																	41.43			
41.97															479	100	1.52			<.5
42.62		LEUCOCRATIC GRANODIORITE															42.98			
		APLITE-PEGMATITE DYKES COMMON													480	100	43.65	0.31		5
44.81															481	150	1.52			5
															482	50	45.52	1.07		<.5
															483	100	46.43	0.31		<.5
48.15		D/S FRACTURES 0-30° A COMMON													484	100	47.85	1.52		<.5
																	49.38			
															485	55	1.52			60
																	50.90			
															486	100	1.52			<.5
51.30		D/S CRUMBLY	51.34														52.42			
51.50		FAULT-60° A	51.80 KAOLINITE - SUPERGENE	N	N	PL	N	PH	N	N	N	N	VL	N	487	40	1.52			<.5
53.34		SHEARED	MONTMORILLONITE FACIES	H	N	>A	PA	PH	N	N	N	N	VL	N			53.94			
															488	100	1.52			10
		FAULT-45° GOUGE & CRUSHED ROCK	54.25 MONTMORILLONITE - PROPYLITIC TRANSITION	PF	N	MH	PF	PL	N	N	N	N	VL	N			55.46			
54.35															489	80	55.17	1.52		<.5
		NO RECOVERY - DRILLERS REPORT SAND													490	0	1.83			5
57.0		D/S HIGHLY BROKEN OFTEN CRUMBLY	57.0 MONTMORILLONITE FACIES SUPERGENE?	H	N	M	SH	PH	N	N	N	N	VL	N			57.0			
															491	20	1.52			5
		STRONG PEGMATITE DYKING TO 60-65m													492	100	58.32	0.61		<.5
59.13		FAULT?	59.62 KAOLINITE FACIES	N	N	PL	FL	>A	N	N	N	N	EL	L	493	100	59.93	0.61		<.5
60.64		HIGHLY BROKEN													494	100	61.45	0.61		<.5
															N31685	38	1.22			<.5
62.17		FAULT-15cm WHITE CLAY															63.17			
															N31584	83	0.31			<0.001
64.86															585	42.94	0.31			0.001
65.55		FELDSPAR PORPHYRY	64.86 MONTMORILLONITE FACIES < 10% CHALCEDONY VEINLETS IN PORPHYRY	N	N	>A	FH	PF	N	N	N	N	VL	N	586	43.20	0.31			<0.001
66.19																	64.31			
		CRUMBLY ROCK													587	84	1.52			0.001
67.66																	65.84			
															588	100	1.52			<0.001
69.2																	67.74			
		OFTEN CRUMBLY	69.12 KAOLINITE FACIES	N	N	N	PF	PA	N	N	N	N	VL	N	589	96	1.52			<0.001
															590	68.88 100 69.19	1.52	0.30		<0.001
71.32		CHILLED BRECCIATED CONTACT	71.32														70.71			
		FELDSPAR PORPHYRY - TAN COLORED BRECCIATED, CONTAINS ANGULAR TO SUBROUNDED FRAGMENTS OF FLOW TEXTURED, 10-15% FINE FELDSPAR PHENOCRYSTS IN VERY FINE GRAINED MATRIX	KAOLINITE FACIES (WEAK SILICIFICATION)	N	N	N	PF	PH	N	N	PA	N	>F	N	591	100	71.62	0.31			0.001
															592	100	1.52			0.002
															593	100	73.18	0.30		0.001
															594	100	73.64	0.30		0.001
															N31585	100	1.52			0.001
																	74.98			
															N31648	100	1.52			0.001
																	76.50			
															N31594	80	1.52			0.042
			78.63 D/S CORE BECOMES SOFTER-BROKEN, ALTERATION					PH			>F		FC				78.03			
			79.85 D/S PATCHY PERVASIVE/ENABLED QUARTZ-MINOR EX												595	100	75.55	1.52		0.032
80.42		CONTACT LOST	80.42												596	100	1.07			0.048
		VEIN	SILIC FACIES - DARK WHITE QUARTZ	N	N	N	N	N	N	N	N	PA	>F	N			80.62			
81.53		CONTACT - 60° A	81.63 KAOLINITE FACIES	N	N	N	N	PH	N	N	N	PA	>F	N	597	100	1.52			0.083
																	82.14			
83.82		IRREGULAR CONTACT GRANODIORITE													598	20	83.59	0.76		0.007
															601	100	1.52			0.002
																	84.95			
															602	100	1.52			0.001
																	86.47			
															603	100	1.52			0.002
																	87.98			
															604	80	1.52			0.001
																	89.50			
90.22		CHILLED CONTACT	90.37 D/S MINOR CRUST GYPSUM												605	30	1.52			<0.001
		FELDSPAR PORPHYRY - TAN COLORED BRECCIATED, CONTAINS ANGULAR TO SUBROUNDED FRAGMENTS OF GRANODIORITE & PORPHYRY, GRADATIONAL AT TOP CHANGING D/S TO VERY FINE GRAINED															90.53			
															606	100	1.52			0.001
																	92.05			
															607	30	1.52			0.001
																	93.57			
															608	100	1.52			0.001
95.16		MYLONITE - 5cm - 50° A															95.10			
96.19		QUARTZ-VEINS 2.0°	96.16 - 96.19 QUARTZ - NO SULPHIDES												609	100	1.52			0.001
96.34		GRANODIORITE - BRECCIATED															96.62			
98.15			98.15												610	100	1.52			0.001
		SAND - BLACK PYRITIC	MONTMORILLONITE FACIES	N	N	PH	PH	PL	N	N	PH	N	N	N			99.15			
99.67		CONTACT													611	20	1.52			0.224
		FELDSPAR PORPHYRY															99.67			
101.5		BLACK SAND AT CONTACT	101.5												612	37	1.52			0.003
		GRANODIORITE		PL	N	>F	>A	FE	N	N	PL	N	VL	N			101.5			
															613	84	1.52			<0.001
																	103.02			
															614	100	1.22			<0.001
																	104.24			
105.14		D/S FRACTURES - 30° COMMON SLICKENSIDED	105.14	PF	PL	>F	PH	PF	N	N	D>F	N	VL	N	615	100	1.52			<0.001
			STRINGER ALTERATION ALONG SHEARS														105.74			
															616	88	1.22			0.001
															617	90	106.98 1.52			0.001
																	108.51			
															618	90	1.52			0.001
			110.64 QUARTZ-PYRITE VEINLETS UP TO 5cm QUARTZ VEINLETS <2mm, MINOR FRACTURE EPIDOTE	N	N	N	N	PA	EL	VE	>E	N	N	N			110.03			
111.25															619	100	1.22			0.001
																	111.25			
		APLITE WITH <5cm PEGMATITE DYKES													620	100	112.47 1.22			0.001
															621	100	1.52			<0.001
																	114.00			
															622	100	1.52			0.008
115.56			115.34														115.52			
		NUMEROUS 5mm SHEARS	MONTMORILLONITE FACIES	N	N	>F	PH	PF	N	VL	>F	N	VL	N	623	100	1.52	0.91		0.009
117.65															624	100	117.05 1.52	0.001		0.001
			117.05 KAOLINITE FACIES	N	N	N	PL	PA	N	VF	>F	N	VL				117.34				
			118.11 5-6cm TRACE CHALCEDONY/ PYRITE VEINLETS (QC TO 5mm) FAIR PERVASIVE QUARTZ												625	90	1.52			0.002
																	118.86			
															626	100	1.52			<0.001
																	120.01			
			122.07 D/S INCREASING QUARTZ-CHALCEDONY VEINLETS WITH SY								EH	AM			627	100	1.52			<0.001
																	122.55			
															628	100	124.05 1.52			0.025
124.36		D/S HIGHLY FRACTURED & SHEARED													629	100	1.52			0.003
125.82																	125.58			
		VEIN	125.52 SILIC FACIES - QUARTZ STRINGERS AT 75° TO CORE BOTTOM CONTACT	N	N	N	FL	PF	PF	PA	PF	PF	N	N	630	100	127.61 0.91	0.001		
127.41		FAULT - GOUGE & CRUSHED ROCK	127.41 KAOLINITE FACIES	N	N	N	FE	PH	N	N	>M	N	N	N	631	100	1.52			0.006
127.86		CRUSHED	128.65 2% 1/16" VEINLETS IN BRECCIATED PORPHYRY												632	100	1.52			0.008
		BRECCIATED CONTACT															129.95			
		FELDSPAR PORPHYRY - TAN COLORED FINE TO COARSE FELDSPAR CRYSTS IN FINE GRAINED MATRIX, CLASTS ARE BRECCIATED AT TOP CONTACT													633	73	129.89 0.91	0.012		
															634	100	130.76 1.52	0.001		
															635	100	1.22	0.001		
131.83		IRREGULAR CONTACT	131.83 - D/S TRANSITIONAL	N	N	PL	FE	N	N	VL	FL	N	L	N			131.67				
		GRANODIORITE - SHEARED 1cm, AVERAGE 5mm - 2% LIMONITES COMMON	133.20 PROPYLITIC FACIES	PA	FF	VF	N	N	N	>F	N	L	N		636	100	1.52	0.001		
																	133.2			
133.63		CONTACT LOST	134.72 - - TRANSITIONAL												637	100	1.82	0.001		
		MT. NANSEN PORPHYRY - FELDSPAR AND MINOR BIOTITE PHENOCRYSTS IN FINE GRAINED GROUNDMASS, BRECCIATED AT BOTTOM CONTACT	136.52 KAOLINITE FACIES												638	100	134.72 1.22	0.044	0.001	
															639	100	135.94 1.52	0.061	<0.001	
															640	100	137.46 1.52	0.061	0.017	
															641	100	138.98 1.52	0.061	0.002	
137.50		BRECCIATED CONTACT	137.82												642	100	140.50 1.52	0.07	0.002	
		GRANODIORITE - SHEARED, HEAVY LIMONITES/MYLONITES	PROPYLITIC FACIES	VF	PF	VF	N	N	N	>F	N	N	N			138.23				
															643	100	140.82 1.52	0.001		
																	138.98			
															644	80	140.82 1.07	0.001		
			141.73 KAOLINITE FACIES	N	N	PL	PE	PH	N	N	PL	L	>L	N	645	100	142.34 1.52	0.001		
			142.80 MONTMORILLONITE FACIES	N	N	>M	PA	PF	N	N	PL	N	>L	N			143.87			
143.87		BASE OF MYLONITES													646	100	1.52	0.001		
145.39		END OF HOLE													N31647	100	145.39 1.52	<0.001		

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ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : AUGUST 28
DDH85-16	NANSEN	BROWN-McDADE EXT.	FINISHED : AUGUST 30
COORDINATES N: 20,154.9 N E: 19,874.7 E	AZ: 070° EL: 1266.01 m	DIP-COLLAR: -50°E ACID DIP TEST: -52°E (BOTTOM)	T.D. 63.40 m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
>– PERVASIVE> VEINLET
<– VEINLET< PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ – BRECCIA
- CRACKLE BRECCIA
- 75° ---- CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ∠ – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		GRANODIORITE - 10-15% HORNBLENDE PORPHYRITIC ORTHOCLASE PHENOCRYSTS UP TO 1.5 CM., CUT BY NARROW PEGMATITE DYKES	KA FACIES (SUPERGENE) MINOR QV±QC TO 3CM	N	N	N	N	PH	VF	VF	N	N	VL	N	N31727	23	2.13	0.001	<0.01	
															728	50	2.13 0.91	0.001	<0.01	
															729	60	3.05 0.61	0.002	<0.01	
			3.35 TRN CNT PR FACIES	PM	N	PL	PF	N	N	N	N	N	VL	N			3.66			
4.72		CNT LOST-CHILLED FELDSPAR PORPHYRY-MINOR FLOW BANDING	4.72 TRN CNT MM FACIES	N	N	PA	PM	VF	N	N	N	N	PL	VF	730	60	5.18 1.52	0.001	<0.01	
															731	76	6.10 0.91	0.001	<0.01	
6.86		APPROX CNT-CHILLED GRANODIORITE - BRECCIATED	6.86 TRN KA FACIES	N	N	N	N	PH	N	N	N	N	<L	N	732	8	7.62 1.52	0.001	<0.01	
															733	44	1.52	0.001	<0.01	
~8.99		CHILLED CNT	8.99 TRN MONTMORILLONITE FACIES D/S INCREASING SUPERGENE	N	N	PH→N	PA→F	N→PA	N	N	N	N	PL	NF	734	100	9.14 0.61	0.001	<0.01	
		FELDSPAR PORPHYRY - TAN TO DARK BROWN; UP TO 5 mm FELDSPAR MINOR QUARTZ PHENOCRYSTS IN A VERY FINE GRAINED QUARTZ-FELDSPAR MATRIX;													735	100	9.75 0.91	<0.001	<0.01	
															736	90	10.67 0.61	0.001	<0.01	
			12.19								PL				737	94	11.28 1.52	<0.001	<0.01	
															738	67	12.80 0.91	0.002	<0.01	
															739	67	13.72 0.91	<0.001	<0.01	
															740	100	14.63 1.22	0.002	<0.01	
			15.84			PF	PM	N									15.85			
16.46		D/S FELDSPAR PHENOCRYST NOT COMMON	16.45			PL	PF	PA							741	100	1.52	<0.001	<0.01	
															742	100	17.37 1.22	0.001	<0.01	
															743	100	18.59 0.61	0.002	<0.01	
															744	100	19.20 0.76	0.001	<0.01	
20.11		VEIN-0.1m	SILIC-<1cm QZ												745	100	19.96 0.46	0.001	<0.01	
20.42		CNT LOST-CHILLED GRANODIORITE - HIGHLY BROKEN OFTEN CRUMBLY	20.42 KAOLINITE FACIES-SUPERGENE	N	N	PL	PL	VH	N	N	N	N	VF	N	746	68	20.42 0.76	<0.001	<0.01	
															747	84	21.80 0.76	0.001	<0.01	
															748	100	21.95 1.52	<0.001	<0.01	
23.32		D/S CORE BECOMES COMPETENT	23.32 PROPYLITIC FACIES	PF	N	PL	PF	VL	N	N	PF	N	VL	N	749	100	23.47 0.61	<0.001	<0.01	
24.38		D/S-STRONG CRACK FRACTURING	24.38 MONTMORILLONITE FACIES STRONG SUPERGENE	N	N	>H	PA	VA	N	VL	PL	N	<F	N			24.10			
															750	100	25.60 1.52	0.002	<0.01	
															751	100	26.52 0.91	0.001	0.01	
															752	100	28.04 1.52	0.001	<0.01	
															753	89	29.41 1.37	<0.001	<0.01	
29.41		VEIN-0.15m, 60°∡	29.41-SILIC FACIES 0.15m												754	86	30.48 1.67	0.001	0.01	
		SHEAR ZONE - to 34.14m													755	90	31.09 0.61	<0.001	<0.01	
30.78			30.78								N	PL		VL						
31.09		FELDSPAR PORPHYRY-0.31m SHEAR ZONE - WIDELY SPACED SHEARED PYRITE VEINLETS													756	98	32.61 1.52	0.001	<0.01	
															757	100	1.52	<0.001	0.05	
			34.14 MINOR <1cm QZ VEINLETS & PYRITE VEINLETS								VF	<F					34.14			
34.14															758	100	1.52	<0.001	0.01	
35.51		D/S-FRC 0-45°∡ COMMON, SLICKENSIDED IN PLACES SHEARED	35.15								N				759	100	35.66 1.22	0.005	0.07	
															760	100	36.88 0.91	0.001	0.03	
			38.1 PROPYLITIC FACIES	PL	N	<F	PL	N	N	N	PF	N	N	N	761	93	37.80 0.91	0.001	<0.01	
						↓M	↓M								762	100	38.71 1.22	0.001	<0.01	
															763	93	39.93 1.22	0.001	<0.01	
40.81		VEIN-0.3m FELDSPAR PORPHYRY BLEACHED <10% TO 2mm FELDSPAR PHENOCRYSTS	40.81-SILIC FACIES-2% PY±SX MONTMORILLONITE FACIES	N	N	PA	PA	PF	N	N	PF	N	PL	N	764	95	41.15 0.61	0.001	<0.01	
															765	100	41.76 0.91	0.001	<0.01	
															766	100	42.67 0.61	<0.001	<0.05	
43.28		D/S BR-UP TO 4CM CLASTS, STRONG FRACTURING	43.28 D/S INCREASING ALTERATION			PH		PM		VL	<F				767	40	43.28 1.52	0.001	0.08	
															768	100	44.81 1.52	<0.001	0.17	
45.72		CNT LOST GRANODIORITE - STRONG FRC-0-10°∡													769	100	46.33 0.91	0.001	0.05	
															770	100	47.24 1.52	0.001	0.03	
															771	86	48.77 1.52	0.001	0.03	
															772	84	50.29 1.52	0.001	0.04	
		SHEAR ZONE-0.27m - BANDS TO 3CM, BR GRANODIORITE WITH GRAPHITE-PYRITE AV. 70°∡													773	100	51.82 0.91	0.008	0.07	
52.27															774	93	52.73 0.91	0.005	0.09	
53.03		FAULT ZONE - BR, GRAPHITE-CHLORITE SHEARS 50°-70°∡													775	98	53.64 1.22	0.003	0.10	
54.10			54.10 PROPYLITIC-MONTMORILLONITE FACIES PY-QZ VEINLETS COMMON DECREASING D/S	PM	N	PF	<F	N	N	VF	<F	N	N	N	776	100	54.86 1.52	0.006	0.11	
															777	100	56.39 1.52	<0.001	0.03	
															778	100	57.91 1.52	0.001	0.03	
															779	100	59.44 0.61	<0.001	0.03	
60.27		VEIN-2cm-80°∡ 2cm QZ±PY													780	100	60.04 1.52	0.006	0.05	
															781	98	61.57 1.22	0.009	0.06	
			62.48		PF										N31782	100	62.79 0.61	0.001	0.01	
63.40		END OF HOLE															63.40			

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ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : AUGUST 31
DDH 85-17	NANSEN	BROWN-M'DADE EXTN	FINISHED : SEPT 3
COORDINATES N: 20226.6 N E: 19,793.2 E	AZ: 070° EL: 1273.89 m	DIP-COLLAR: -50°E ACID DIP TEST: -50.7°E (BOTTOM)	T.D. 92.66 m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

- P – PERVASIVE
- >– PERVASIVE> VEINLET
- <– VEINLET< PERVASIVE
- V – VEINLET
- E – ENVELOPES

AMOUNT

- N – NIL
- L – LOW TRACE
- F – FAIR
- M – MODERATE
- A – ABOVE AVERAGE
- H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- BRECCIA
- CRACKLE BRECCIA
- 75° CONTACT, ANGLE TO CORE AXIS
- SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ∠ – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES (PY, SPH, GL) BANDS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au	ppm Ag
		GRANODIORITE - CUT BY NARROW APLITE AND PEGMATITE DYKES; CORE DECOMPOSED	KAOLINITE FACIES (SUPERGENE)	N	N	N	N	PH	N	N	N	N	<L	N	N31783	10	3.05	< 0.001	<0.01		
																3.05					
															789	80	1.52	<0.001	<0.01		
5.18		GRANODIORITE - FINE-MED GRAINED <10% HORNBLENDE, UP TO 2cm POIKOLITIC ORTHOCLASE/PHENOCRYSTS	5.18 PROPYLITIC FACIES	PA	N	N	N	VF	N	N	N	N	VL	VL	785	4.57 5.18	0.61	<0.001	<0.01		
													786	5.18 5.79	0.61	<0.001	<0.01		
													787	33 5.79	0.91	<0.001	<0.01		
													788	58 6.71	0.46	<0.001	<0.01		
7.32		– – – –	7.32										789	78 7.32	1.37	<0.001	<0.01		
		HIGHLY BROKEN, STRONG FRACTURING	KAOLINITE FACIES (SUPERGENE)	N	N	N	N	PH	N	N	N	N	VL	VF	790	100 8.53	1.22	<0.001	<0.01		
9.91		FAULT? – – –	9.81										791	100 9.75	0.76	<0.001	<0.01		
													792	50 10.97	1.22	<0.001	<0.01		
11.49		D/S INCREASED FRACTURING	PROPYLITIC FACIES (SUPERGENE OVERPRINT)	N	N	N	N	VF	N	N	N	N	VL	VF	793	70	1.22	0.002	<0.01		
			12.04 - D/S INCREASING ALTERATION			PL	PL			VF	PL			VM VL	794	95 12.19	1.22	0.002	<0.01		
													795	33 13.11	0.31	0.011	0.15		
14.02		VEIN - 0.3m? - LARGE CORE LOSS	14.02 - 0.3m SILIC. FACIES	N	N	N	N	N	N	PH	PA	PF	N	N	796	67 14.02	0.31	0.048	1.93		
15.54		D/S HIGHLY BROKEN	MONTMORILLONITE FACIES	N	N	PL	PM	VL	N	N	PL	N	VL	VL	797	38 15.24	1.22	0.027	1.15		
			16.15 KAOLINITE FACIES (SUPERGENE)	N	N	N	N	PA	N	N	N	N	<F	N	798	80 16.31	1.07	<0.001	0.03		
17.68		FAULT ZONE - WEAK													799	57 17.37	1.07	<0.001	<0.01		
18.53															800	50 18.53	1.22	<0.001	<0.01		
18.85		FAULT ZONE - CRUSHED ROCK IN GOUGE													801	70 19.51	0.31	<0.001	<0.01		
19.50															802	63 20.42	0.91	<0.001	<0.01		
20.42		FAULT - 70° A 5cm GOUGE	20.11 - BASE SUPERGENE? INCREASING ALTERATION D/S TRANSITIONAL FACIES			PL	PF	VA						VM	803	85 21.64	1.22	<0.001	<0.01		
22.56		CONTACT LOST	22.56												804	98 23.16	1.52	<0.001	<0.01		
		MT NANSEN PORPHYRY - TAN COLORED FELDSPAR & MAFIC PHENOCRYSTS FLOW BANDED	MONTMORILLONITE FACIES	N	N	<F	PF	PF	N	VL	PL		PL	N	805	97 24.08	0.91	<0.001	<0.01		
24.69		CONTACT LOST	24.69												806	100 24.99	0.91	<0.001	0.07		
		GRANODIORITE	MONTMORILLONITE FACIES	N	N	<F	PF	PF	N	N	PL		>L	N	807	100	1.52	<0.001	0.01		
26.27		CONTACT LOST														24.82					
		MT NANSEN PORPHYRY - AS ABOVE													808	27.13	0.61	<0.001	<0.01		
27.74		CONTACT LOST													809	27.74	0.91	<0.001	<0.01		
		GRANODIORITE	27.74 - D/S NARROW BANDS PROPYLITIC ALTERATION	PF		<L		VL			<L		>F	N	810	28.64	0.61	<0.001	<0.01		
28.96		FAULT - WEAK													811	100 29.48	0.61	<0.001	<0.01		
			29.41 KAOLINITE FACIES (SUPERGENE)	N	N	N	N	<H	N	N	N	N	PL	N	812	100 29.72	0.30	<0.001	<0.01		
30.9		VEIN - 1cm 30° A QUARTZ WITH 6X	30.32													100	0.76	<0.001	<0.01		
31.03			MONTMORILLONITE FACIES INCREASING KAOLINITE D/S	N	N	PH	PH	PF	N	N	CL	N	PL	N	813	30.78	0.76	<0.001	<0.01		
31.7		MT NANSEN PORPHYRY - STRONG MG				↓ N	PL	PH							814	87 31.39	0.91	<0.001	0.01		
32.3		WEAK GOUGE													815	31.45	0.30	<0.001	0.01		
		VEIN ZONE													816	100 32.16		<0.001	<0.01		
33.83		CONTACT - 50° A	32.3 SILIC. FACIES - 5cm BAND PYRITE WITH SPHALERITE, MINOR GL	N	N	N	N	N	PF	PH	PL	PF	N	N	817	92 32.32	0.76	0.05	1.34		
			33.93 PHYLLIC FACIES	N	N	N	N	VL	PH	PF	<F	N	VL	N	818	78	1.22	0.03	0.54		
34.59		CONTACT LOST	34.29													34.44					
		MT NANSEN PORPHYRY - LIGHT GRAY, BLEACHED/ALTERED, STRONGLY FRACTURED, IN PLACES BRECCIATED	MONTMORILLONITE FACIES	N	N	PH	PF	VL	N	N	PF	N	VF		819	78	1.68	0.03	0.11		
						↓ L									820	36.12 76	0.91	0.004	0.05		
						PA	PA	FF							821	34.88 85	1.22	0.001	0.01		
38.56																38.1					
39.17		CHILLED, STRONG MAGNETITE													822	100	1.22	<0.001	0.03		
39.62		VEIN - 0.15m	39.62 SILICA FACIES - 0.15m QUARTZ, 5% GL			PM	PM	PA							823	39.32 85	1.22	0.001	0.05		
41.45		CONTACT SHEARED	41.45													40.55					
		GRANODIORITE - MEDIUM COLORED 5-10% HORNBLENDE PHENOCRYSTS <2cm ORTHOCLASE, APLITE DYKES	PROPYLITIC FACIES	F	N	<F	VF	N	N	N	PF	N	VL	N	824	97 41.45	0.91	0.001	0.03		
													825	100 42.37	0.91	<0.001	<0.01		
													826	80 43.13	0.76	0.001	0.01		
													827	98 44.65	1.52	<0.001	<0.01		
													828	77 45.72	1.07	<0.001	<0.01		
													829	100 46.33	0.61	<0.001	<0.01		
													830	46.94	0.61	<0.001	<0.01		
													831	100 47.55	0.61	<0.001	<0.01		
			47.7 MONTMORILLONITE FACIES	N	N	>M	PH	PM	N	N	<F	N	PL	N	832	83	1.83	0.001	0.01		
49.22		FAULT - 0.15m VEIN ZONE	49.22 PHYLLIC FACIES - PATCHY	N	N	VF	N	N	PA	VF	CL	N	N	N	833	49.38 80	1.52	<0.001	0.01		
50.24			50.24 MONTMORILLONITE FACIES	N	N	>M	PH	PM	N	N	<F	N	PL	N		50.91					
			51.51 MONTMORILLONITE FACIES - WEAK	N	N	PH	PM	PA	N	VL	CL	N	N		834	88 52.43	1.52	<0.001	0.01		
						↓ M									835	100 53.34	0.91	<0.001	0.01		
54.71		SHARP, IRREGULAR CONTACT	54.71												836	89	1.37	<0.001	0.03		
		MT NANSEN PORPHYRY - DARK GREEN ABUNDANT FELDSPAR & HORNBLENDE PHENOCRYSTS	PROPYLITIC FACIES	PN ↓ M	N	VF	PF	N	N	N	PF	N	<L		837	54.71 55.97	0.76			<1	0.3
													838	70 57.0	1.52			<1	0.3
													839	100 58.52	1.52			<1	0.2
59.83		D/S STRONG MAGNETITE											840	93 59.44	0.91			<1	0.3
													841	100 60.96	1.52			3	0.3
													842	100 62.48	1.52			1	0.2
													843	100 64.01	1.52			<1	0.3
64.17		HIGHLY ALTERED AT CONTACT	64.17													100					
		CONTACT - 70° A GRANODIORITE - BRECCIATED TO 65.68m	MONTMORILLONITE FACIES	N	N	>M	PH	PA	N	N	PL	N	<L	N	844	31 65.68	1.68	0.004	0.03		
65.68		D/S STRONG CRACK FRACTURING	65.68 PROPYLITIC FACIES	PL	N	VF	VF	N	N	N	PF	N	N	N	845	64.14	0.46	<0.001	0.01		
													846	100 67.67	1.52	<0.001	0.01		
67.67		SHEARED AND BRECCIATED; SHEARS 70° A	67.67 KAOLINITE FACIES	N	N	PL	PF	PH	N	N	PA	N	N	N	847	100 68.19	1.52	0.015	0.04		
69.28		WEAK FRACTURING, INCREASING D/S	69.28 MONTMORILLONITE FACIES	N	N	<F	PF	N	N	VL	>F	N	N	N	848	86 70.71	1.52	<0.001	0.05		
70.86		– –	70.86													100					
		BRECCIATED - <5cm CLASTS PYRITIC SHEARS - 70-80° A	KAOLINITE FACIES - (POSSIBLE STRONG MONTMORILLONITE)	N	N	PH	PH	PA	N	N	<F	N	VL		849	78 72.24	1.52	0.001	0.17		
													850	100 73.76	1.52	0.008	0.03		
74.37		– FAULT - MAIN BREAK	74.37 MONTMORILLONITE FACIES - WEAK	PL	N	PH	PM	PL	N	N	>L	N	N	N	851	100 75.29	1.52	0.002	0.03		
		HIGHLY CRUSHED				↓ L									852	100 76.2	0.91	<0.001	<0.01		
76.81		– – –	76.81												853	100 77.72	1.52	<0.001	<0.01		
		MODERATE FRACTURING	PROPYLITIC FACIES	PF	N	N	PL	N	N	N	PL	N	N	N	854	100 78.33	0.61	<0.001	0.01		
78.94			78.94												855	100 78.55	1.22	0.001	0.07		
79.61		FAULT ZONE - CRUSHED BROKEN SHEARED	MONTMORILLONITE FACIES	PL	N	PM	PF	VM	N	N	N	N	N	N	856	87 80.01	0.46	0.001	0.05		
79.84		FAULT - 0.27m CRUSHED													857	54 81.08	1.07	0.001	0.07		
81.13		FAULT - 0.15 GOUGE & CRUSHED ROCK													858	100 82.65	1.52	0.041	0.09		
81.68																82.65					
82.30		FAULT - CRUSHED ROCK, GOUGE AT BOTTOM	82.05 SILIC. FACIES	N	N	N	N	VF	PA	VF	<F	<F	<L	N	859	15 83.21	0.61	0.013	0.15		
82.84		VEIN	82.94 PHYLLIC FACIES	N	N	N	N	PF	VF	N	<F	<F	N	N	860	100 84.43	1.22			86	0.8
			84.12 PROPYLITIC FACIES	PM	N	VF	VF	N	N	N	<F	N	N	N	861	100 85.45	1.22			14	0.5
			87.17 - D/S <1cm BLEACHED MM+CA +PY VEINLETS												862	100 87.17	1.52			15	0.06
													863	100 88.39	1.22			16	0.04
													864	100 89.92	1.52			25	0.5
													865	100 91.44	1.52			26	1.1
92.66		END OF HOLE											N31866	100 92.66	1.22			31	0.05

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ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 3
DDH 85-18	NANSEN	BROWN-McDADE EXTEN.	FINISHED : SEPT 7
COORDINATES N: 20,288.5N E: 19,692.8E	AZ: 070° EL: 1287.77m	DIP-COLLAR: -50°E ACID DIP TEST: -50°E (BOTTOM)	T.D. 117.35m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P - PERVASIVE
>- PERVASIVE> VEINLET
<- VEINLET< PERVASIVE
V - VEINLET
E - ENVELOPES

AMOUNT

N - NIL
L - LOW TRACE
F - FAIR
M - MODERATE
A - ABOVE AVERAGE
H - HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ - BRECCIA
- ∠ - CRACKLE BRECCIA
- 35°∠ - CONTACT, ANGLE TO CORE AXIS
- ≈ - SHEAR
- QV - QUARTZ VEINLET
- QC - CHALCEDONY
- SL - SPHALERITE
- GL - GALENA
- AS - ARSENOPYRITE
- ∡ - ANGLE TO CORE AXIS
- D/S - DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES IN SILICIFIED ROCK	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		GRANODIORITE - CRUMBLY TO FINE FRAGMENTS - WEATHERING	KAOLINITE FACIES SUPERGENE	N	N	N	N	PM	N	N	N	PL	N	>F	N31847	11	2.13	0.01	0.70	
															2.13					
															8.68	67	6.31	0.002	0.01	
															3.05					
															8.43	20	1.22	0.001	<0.01	
															4.27					
															8.70	5.18	0.91	0.002	0.01	
															8.11	5.18	0.91	<0.001	0.01	
6.9																6.10				
6.86		MT NANSEN PORPHYRY - BRECCIATED GRANODIORITE	6.9-9.5m EARLY QUARTZ VEINING							SL	PL			FH	8.12	52	1.52	0.008	0.03	
7.17		CONTACT 45° CHILLED MT NANSEN PORPHYRY - 3-5% PEROXENE PHENOCRYSTS IN A DARK GREEN MATRIX, STRONG MAGNETIC, FLOW BANDED BOTTOM CONTACT	8.44 PROPYLITIC FACIES	PL	N	PA	PL	<L	N	N	N	N	VL	>L		7.10				
															8.13	100	0.61	0.001	0.02	
															8.14	100	1.22	<0.001	0.01	
10.21		GRANODIORITE - APLITE & PEGMATITE DYKES COMMON	10.06 MONTMORILLONITE FACIES	N	N	>M	PA	VM	N	VL	N	N	VL	VL		10.04				
															8.15	50	0.61	<0.001	0.01	
															8.16	50	1.22	<0.001	<0.01	
																11.28				
															8.17	36	1.52	<0.001	<0.01	
			13.87			>F	FL	VF					VF			12.8				
															8.18	80	1.52	<0.001	<0.01	
																14.33				
															8.19	100	0.61	<0.001	<0.01	
																14.94				
															8.80	36	0.91	<0.001	<0.01	
																15.85				
															8.81	24	0.91	<0.001	<0.01	
																16.76				
			17.98			>A	PM	CH		VF			VL		8.82	97	1.22	<0.001	0.01	
																17.98				
						<0.001	0.01	<0.01							8.83	61	0.61	<0.001	<0.01	
																18.59				
															8.84	85	1.22	<0.001	<0.01	
																19.81				
															8.85	84	1.52	0.001	<0.01	
																21.34				
															8.86	78	1.52	<0.001	<0.01	
																22.86				
			23.47 KAOLINITE FACIES	N	N	N	N	PH	N	N	PA	N	PL	N	8.87	100	0.61	0.001	<0.01	
															8.88	85	0.91	0.004	0.27	
24.05		CONTACT 60°∠ FELDSPAR PORPHYRY - <2mm FELDSPAR PHENOCRYSTS IN A TAN COLORED MATRIX	24.69 MONTMORILLONITE FACIES	N	N	<H	PM	<F	N	N	PA	N	PL	N		24.65				
															8.89	84	1.52	<0.001	0.01	
																26.81				
															8.90	75	1.22	<0.001	0.01	
																27.43				
28.04		CONTACT - 16°∠	28.09												8.91	34	1.52	<0.001	<0.01	
		CRACKLE BRECCIA	KAOLINITE FACIES	N	N	N	N	PM	N	N	PA	N	PL	N		28.04				
28.24		GRANODIORITE - POLYOLITIC ORTHOCLASE PHENOCRYSTS TO SCM COMMON	29.56 MONTMORILLONITE FACIES	N	N	>F	PM	PL	N	VL	N	N	PL	N		29.56				
															8.92	100	0.91	0.001	<0.01	
																30.87				
															8.93	67	1.22	<0.001	<0.01	
																31.03				
															8.94	30	1.52	<0.001	<0.01	
																32.61				
															8.95	34	1.07	<0.001	<0.01	
																33.68				
34.44		D/S HIGHLY FRACTURED	34.44 - D/S INCREASING. KAOLINITE?												8.96	80	1.07	<0.001	<0.01	
																34.15				
35.51		CONTACT LOST MT NANSEN PORPHYRY - HIGHLY ALTERED, MAFIC PHENOCRYSTS, DARK GRAY COLOR, DISSEMINATED MAGNETITE, HEAVY PINK FRACTURING	35.51 MONTMORILLONITE FACIES	N	N	PL	VF	VL	N	N	PM	N	>L	N	8.97	30	1.22	0.007	0.07	
															8.98	32	0.61	<0.001	<0.01	
															8.99	20	0.61	<0.001	<0.01	
37.49			37.49												9.00	100	0.76	<0.001	<0.01	
		GRANODIORITE - STRONG FRACTURED & SHEARED				VL					N		N		9.01	37.35	0.76	<0.001	<0.01	
															9.02	38.71	0.61	<0.001	<0.01	
															9.03	39.32	0.61	<0.001	<0.01	
39.92																39.93				
		MT NANSEN (M) PORPHYRY - INTENSE CRACKLED, BECOMES TO SAND													9.04	97	1.22	<0.001	0.01	
40.84			40.84													41.15				
41.45		GRANODIORITE - STRONG SHEARED & CRACKLE FRACTURING	41.45 - VEIN - MODERATE QTZ-SCK			VF					PL		>L		9.05	100	0.46	<0.001	0.01	
		VEIN - 0.6m														41.60				
															9.06	82	1.52	0.001	0.03	
																43.13				
															9.07	52	1.52	<0.001	<0.01	
																44.65				
															9.08	77	1.07	<0.001	<0.01	
																45.72				
46.32		PORPHYRY DYKE - 5cm EOA													9.09	84	1.52	<0.001	<0.01	
47.24			47.24													47.24				
47.83		CRUMBLY - FAULT ZONE ?				PA	PM	PF					>F		9.10	52	1.22	<0.001	0.02	
			48.46 D/S STRONG SUPERGENE			PL	VF	VA					>L			48.46				
															9.11	86	0.91	<0.001	<0.01	
																49.38				
		HIGHLY BROKEN OFTEN CRUMBLY CORE													9.12	82	1.22	0.001	<0.01	
																50.96				
															9.13	100	0.61	<0.001	0.01	
																51.81				
															9.14	83	0.91	0.002	<0.01	
																52.12				
															9.15	76	0.91	0.002	0.01	
																53.04				
															9.16	84	1.52	<0.001	0.01	
																54.56				
54.84		- - -	54.86 PROPYLITIC FACIES	PL	N	VL	PL	PA	N	N	PL	N	>L	N	9.17	94	0.91	<0.001	<0.01	
																55.77				
			56.4												9.18	86	1.52	<0.001	<0.01	
			MONTMORILLONITE FACIES	N	N	>L	PA	N	N	N	PL	N	>L	N		57.0				
57.04		FAULT ZONE - SHEARED & BRECCIATED													9.19	100	1.37	<0.001	0.07	
58.32																58.36				
58.38		D/S INCREASING FRACTURING													9.20	36	1.52	<0.001	0.04	
																59.89				
60.66			60.66												9.21	100	0.76	<0.001	<0.001	
		MT. NANSEN PORPHYRY - TAN COLORED FINE BRECCIA AT CONTACTS, OFTEN SHEARED, STRONG ALTERED	QV & QC <2cm VEINLETS ASSOCIATED WITH CALCITE VEINLETS			<H	PM	>F		VF						60.66				
															9.22	52	1.52	0.001	0.001	
																62.18				
62.85		GRANODIORITE - NUMEROUS SHEARS & MYLONITES	62.85 KAOLINITE FACIES	N	N	VL	PF	PA	N	N	PL	N	N	N	9.23	97	1.22	<0.001	<0.001	
						↓										63.4				
						N									9.24	52	1.52	<0.001	<0.001	
																64.82				
															9.25	85	1.22	0.001	<0.01	
																66.04				
67.06		- - D/S SHEARS & MYLONITES DECREASE													9.26	88	1.52	<0.001	<0.01	
67.67			67.67													67.67				
		MT. NANSEN PORPHYRY - TAN COLORED, VERY FINE BRECCIA UP TO 0.15m CLASTS GRANODIORITE	MONTMORILLONITE FACIES	N	N	>M	PA	PF	N	VL	>L	N	VL	N	9.27	100	0.61	0.001	<0.01	
															9.28	68.28	0.61	0.001	<0.01	
															9.29	68.84	1.22	<0.001	<0.01	
70.10			70.1													70.10				
		GRANODIORITE - CRUSHED AND BROKEN ADJACENT TO PORPHYRY				>H	PA	PH							9.30	80	1.52	0.001	0.03	
			71.32 - -													71.32				
72.08			71.78 - -								>F				9.31	96	0.91	0.001	0.03	
						>M										72.53				
		MT. NANSEN PORPHYRY - LIGHT - MEDIUM BROWN, BRECCIATED AND CRUSHED, CLASTS <1mm - 3cm ANGULAR TO ROUNDED													9.32	50	1.52	0.10	0.07	
																74.07				
73.23			73.61 KAOLINITE FACIES	N	N	N	PL	PH	N	N	PF	N	<F	N	9.33	93	0.91	0.022	0.11	
																74.98				
		GRANODIORITE	75.25 MONTMORILLONITE FACIES	N	N	>L	PL	N	N	VL	<L	N	<L	N	9.34	97	0.76	0.004	0.01	
																75.74				
															9.35	88	1.37	0.003	<0.01	
																77.11				
			78.13												9.36	95	1.22	0.003	0.08	
						VF	PH			VL	<F					78.33				
															9.37	100	1.52	0.001	0.01	
																78.84				
80.31		D/S STRONG FRACTURING													9.38	88	1.37	0.005	0.07	
80.85		CONTACT 35°∠ - VEIN	80.99 - PHYLLIC - COARSE AS IPY													81.23				
81.61		5cm GOUGE 55°∠	81.81 - HINGE GL	N	N	N	N	PL	PF	PA	PA	>H	N	N	9.39	96	1.52	0.043	0.48	
		GRANODIORITE - STRONGLY FRACTURED	MONTMORILLONITE FACIES	N	N	VF	PH	N	N	VL	<F	N	<L	N		82.75				
83.31		FAULT - <2cm GOUGE													9.40	76	0.76	0.002	0.09	
		D/S - IN PLACES LOOKS SHEARED														83.32				
															9.41	70	1.52	0.001	0.09	
																85.04				
															9.42	100	0.30	0.001	0.04	
																85.34				
86.41		TRANSITIONAL - VEIN	86.41 SILIC FACIES - 3-5% AS IPY	N	N	N	N	PF	PF	PA	PA	PA	<L	N	9.43	75	1.22	0.001	0.01	
87.33		CONTACT LOST	87.33													86.86				
		MT NANSEN PORPHYRY - DARK GREEN APHANITIC GLASSY WITH VERY FINE ALTERED PHENOCRYSTS	MONTMORILLONITE FACIES	N	N	VF	PL	N	N	N	PF	N	N	N	9.44	100	0.91	0.002	0.05	
															9.45	87.48	1.22	0.001	0.08	
															9.46	88.7	0.61	0.001	0.08	
89.3		CONTACT LOST	89.3													89.31				
		GRANODIORITE - APLITE & PEGMATITE DYKES COMMON	PROPYLITIC FACIES	PF	N	N	N	N	N	N	PF	N	N	N	9.47	92	1.52	0.001	0.01	
91.20		CONTACT 60°∠	91.2													90.83				
91.68		MT NANSEN PORPHYRY - CONTACTS - FAULTED?	91.68 MONTMORILLONITE FACIES	N	N	<L	PF	N	N	VL	>L	N	N	N	9.48	94	0.81	0.016	0.07	
92.42		MT NANSEN PORPHYRY - 20m - 35°∠														91.74				
			PROPYLITIC FACIES	PM	PL	VL	PL	N	N	N	DL	N	N	N	9.49	55	1.22	0.001	0.01	
		GRANODIORITE														92.96				
															N31350	84	1.52	0.001	<0.01	
																94.48				
															N3478	55	1.37	0.004	0.01	
															9.50	75	0.30	0.002	0.01	
96.26		CONTACT 50°∠	96.26													95.86				
		MT NANSEN PORPHYRY - DARK GREEN APHANITIC, 40% PORPHYRITIC PHENOCRYSTS, MAGNETIC		PL	N	VM		W				VF	<L	N	9.51	96.16	1.37	0.001	0.03	
															9.52	97.54	0.91	0.007	0.07	
															9.53	98.05	0.61	0.002	0.01	
															9.54	98.96	0.91	0.002	0.01	
															9.55	99.57	0.91	0.002	0.01	
100.01		CONTACT 60°∠	100.13													100.13				
		GRANODIORITE - DARK COLORED, EQUIGRANULAR PHENOCRYSTS ABSENT, NARROW LEUCOCRATIC BANDS, OCCASIONAL SHEARS		PF		VF	PF				<L		N		9.56	88	1.52	0.001	0.01	
						↓	↓									101.5				
						L	L								9.57	95	1.22	0.002	0.01	
																102.72				
			104.24												9.58	84	0.91	<0.001	<0.01	
							VL									103.63				
															9.59	58	1.52	<0.001	0.01	
																105.46				
															9.60	94	1.52	<0.001	0.01	
																106.68				
															9.61	94	1.07	<0.001	<0.01	
																107.75				
															9.62	97	1.07	0.003	<0.01	
																108.81				
															9.63	75	0.91	0.002	<0.01	
			108.73					VF								109.73				
															9.64	81	1.07	0.002	<0.01	
																110.75				
															9.65	94	1.07	0.001	<0.01	
																111.84				
															9.66	91	1.07	<0.001	<0.01	
																112.93				
113.09		FAULT ZONE - HIGHLY BROKEN, 5cm GOUGE AT BOTTOM CONTACT													9.67	55	0.61	<0.001	<0.01	
113.84			113.84 KAOLINITE FACIES	N	N	N	PF	PA	N	N	PL	N	PL	N	9.68	94	0.76	<0.001	0.05	
			114.47													114.3				
			MONTMORILLONITE FACIES	N	N	>M	PL	F	N	N	N	PL	N	N	9.69	85	1.07	<0.001	<0.01	
								↓								115.37				
								L							9.70	92	0.61	<0.001	<0.01	
116.74		VEIN - 5cm	116.74 - QUARTZ - MINOR PYRITE													115.36				
116.80		FAULT - 50cm GOUGE & CRUSHED ROCK													N 3483	37	1.37	<0.001	0.02	
117.35		END OF HOLE														117.35				

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ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 7
DDH85-19	NANSEN	WEBBER	FINISHED : SEPT 10
COORDINATES N: 20331.0N E: 17371.5E	AZ: 062° EL: 1351.6m	DIP-COLLAR: -55°E ACID DIP TEST: -54.8°E	T.D. 48.77m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
> – PERVASIVE > VEINLET
< – VEINLET < PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ – BRECCIA
- CRACKLE BRECCIA
- 75° CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- 4 – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		DRILL PAD FILL - SOME VEIN QUARTZ WITH STIBNITE													P10456	29	2.13			3070
1.98		BEDROCK CONTACT														2.13				
		QUARTZ-FELDSPAR-HORNBLENDE GNEISS DARK COLORED, FINE GRAINED, BRECCIATED, CLAST SUPPORED, SUB-ANGULAR-SUBROUNDED <4CM CLASTS	PROPYLITIC FACIES	PH	N	N	N	VL	N	N	<L	N	<L	N	457	100	1.52			50
															458	3.66 100 3.96	0.30			102
															459	100 5.18	1.22			8
															460	100 5.64	1.52			6
6.25		D/S SUBTLE BRECCIA	6.25 KAOLINITE FACIES	N	N	N	PL	PH	N	N	N	N	<L	VL	461	93 7.01	1.07			12
															462	100	1.22			14
															463	8.23 100 9.30	1.07			6
															464	100 10.34	1.07			13
10.52		CONTACT 60°	10.52																	
10.97		0.15m GOUGE & CRUSHED ROCK VEIN QUARTZ-FELDSPAR-HORNBLENDE GNEISS	10.97 SILIC FACIES	N	N	N	N	PF	PF	PH	N	PL	PF	N	465	88 11.13	0.76	0.06	0.17	
		D/S BRECCIA? - STRONG FINE FRACTURING	KAOLINITE FACIES - D/S INTENSITY DECREASES	N	N	N	N	PH ↓ M	N	N	N	N	>F	<F	466	100 11.89	0.76			22
															467	100 13.11	1.22			324
			13.56 KAOLINITE - PROPYLITIC TRANSITION	N	N	N	<M	<M	N	N	PL	N	<F		468	100 14.33	1.22			6
15.03		D/S BRECCIA - UP TO 7cm ANGULAR CLASTS	15.03 PROPYLITIC FACIES	PM	PL	PL	PF	N	N	N	PL	N	<L		469	100 15.85	1.52			8
															470	100 16.76	0.91			16
															471	100 17.37	0.61			28
															472	80 17.68	0.30			3
															473	85 18.29	0.61			4
18.29		D/S LIGHT BROWN WEATHERING MODERATE FRACTURING, STRONG HAIRLIKE CRACKS	18.14 SHARP CONTACT KAOLINITE FACIES ALL SUPERGENE?	N	N	N	N	>A	N	N	N	N	<F	<F	474	100 19.51	1.22			4
															475	97 20.42	0.91			22
															476	100 21.34	0.91			13
21.95		D/S UP TO 1CM CLASTS WHITE QUARTZITE													477	100 22.86	1.52			3
															478	100 24.08	1.22			246
25.15		FAULT? - CLAY WITH BROKEN ROCK													479	80 25.30	1.22			351
				CL	EP	CA	MM	KA	QS	QZ	PY	SX	LI	MN	480	100 26.52	1.22			8
27.43		FAULT													481	100 27.43	0.91			11
			D/S INCREASING FRACTURE LI												482	100 28.65	1.22			21
			D/S INCREASING BLEACHING												483	74 29.47	0.83			10
29.47		CONTACT 70° VEIN	29.47												484	83 29.93	0.46	0.002	0.05	
29.93		QUARTZ-FELDSPAR GNEISS BRECCIATED, ANGULAR <2cm, AV 0.5cm CLASTS; MODERATE FRACTURING DECREASING D/S	29.93 KAOLINITE, VEINLET SILIC KAOLINITE FACIES	N	N	N	N	<A	N	N	N	N	<F	<F	485	100 30.18	0.24			7
															486	100 31.70	1.52			12
															487	100 33.22	1.52			35
			34.23 - D/S INCREASING BLEACHING												488	94 34.69	1.46			27
34.59		FAULT GOUGE	34.53					PH	PF											
35.20			35.20 WEAK BANDS QS												489	100 35.51	0.82	0.009	0.22	
35.75		CONTACT 65° VEIN	35.75																	
36.36		CONTACT 60° QUARTZ-FELDSPAR GNEISS BRECCIATED	36.36 PHYLLIC - SILIC AT BOTTOM PHYLLIC FACIES	N	N	N	N	N	PH F	PF PH	PF	PH	PL	N	490	100 36.58	1.07	0.292	24.20	
				N	N	N	N	PF	PH	VF	PL	N	>L	>L	491	100 38.1	1.52			486
								H	F	L					492	100 39.32	1.22			287
			39.82 KAOLINITE FACIES SUPERGENE	N	N	N	N	PH	N	N	PL	N	>M		493	100 40.23	0.91			49
40.84		FAULT - GOUGY & BROKEN													494	100 41.15	0.91			9
41.91		FAULT CONTACT FELDSPAR PORPHYRY - CHILLED & BRECCIATED													495	83 42.06	0.91			92
42.82															496	100 42.98	0.91			378
		FAULT ZONE - GOUGE & CRUSHED ROCK													497	100 44.5	1.52			282
44.65		FELDSPAR QUARTZ PORPHYRY TAN COLORED, 5% FELDSPAR > QUARTZ PHENOCRYSTS IN A HARD APHANITIC MATRIX, HIGHLY BROKEN													498	25 46.33	1.52			100
															499	20 47.59	1.22			54
															P10500	13 48.46	0.91			21
48.77		END OF HOLE													PBTL	60 48.77	0.36			108

1340

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 10
DDH85-20	NANSEN	WEBBER	FINISHED : SEPT 12
COORDINATES N: 20213.2N E: 17,405.2E	AZ: 062° EL: 1358.0m	DIP-COLLAR: -55°E ACID DIP TEST: -53°E (BOTTOM)	T.D. 38.1 m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
> – PERVASIVE > VEINLET
< – VEINLET < PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ – BRECCIA
- CRACKLE BRECCIA
- 75° ,--- CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ∠ – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	FACIES	ALTERATION: CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
0.0		DRILL PAD FILL/OVERBURDEN													P872	8	3.35			<1
3.35		QUARTZ-FELDSPAR GNEISS - LIGHT COLORED - QUARTZ RICH WISPS & PARTINGS AMPHIBOLITE, FOLIATION - 60°∠	KAOLINITE FACIES - SUPERGENE	N	N	N	N	PF	N	N	N	N	PL	<L			3.35			
4.88		STRONG FRACTURING													873	16	1.52			<1
6.10		FAULT - GOUGE, WEAK														4.88				
7.32		STRONG FRACTURING													874	55	1.22			6
7.92																6.10				
															875	72	1.52			5
																7.62				
															876	93	0.46			3
															877	8.08	0.46			2
															878	8.53 80	0.61			<1
															879	50 9.14	0.46			3
																87 9.60				
															880	89	1.37			<1
10.67			10.67					PH								10.97				
11.13															881	80	1.52			12
																12.49				
12.34		FAULT ZONE? - <0.3m BANDS OF DECOMPOSED ROCK													882	70	0.91			3
13.11																13.41				
14.02															883	84	0.76			2
																14.17				
															884	34	1.07			6
																15.24				
15.54															885	90	0.61			10
															886	15.85 80	0.15			2
16.15		CONTACT LOST	16.15													16.00				
		AMPHIBOLITE - DARK COLORED	PROPYLITIC FACIES	PM	N	N	N	VL	N	N	KF	N	VL	N	887	37	1.07			3
																17.07				
															888	98	1.52			2
																18.59				
18.59		CONTACT LOST	18.59 - D/S SUPERGENE KA ALONG FRACTURE AND <0.15m ENVELOPES					VF							889	95 19.22	0.61			2
		QUARTZ FELDSPAR GNEISS - LIGHT COLORED, QUARTZ HIGH, WISPS & PARTINGS OF CHLORITE, OFTEN IMPARTS STRIPED LOOK													890	45	1.22			<1
																20.42				
															891	90	1.22			5
																21.64				
															892	93	0.46			<1
															893	22.10 80	1.07			7
																23.16 100				
															894	23.77	0.61			1
22.71		TRANSITIONAL AMPHIBOLITE													895	30 24.38	0.61			<1
23.93		SHARP CONTACT - 50°∠	24.38 D/S INCREASING FRACTURE MANGANESE											<M	896	93	1.22			<1
		QUARTZ FELDSPAR CHLORITE GNEISS QUARTZ RICH, CHLORITE IMPARTS STRIPED APPEARANCE														25.60				
															897	77	1.07			<1
			27.01													26.67				
27.10		FAULT ZONE? - HIGHLY BROKEN CORE	KAOLINITE FACIES	N	N	N	N	PF	N	N	N	N	VL	VM	898	62	1.37			<1
28.04																28.04				
28.8		FAULT? 0.15m - CRUMBLY CORE													899	93	0.91			37
																28.96				
			30.18 D/S MN DECREASING												906	94	1.52			<1
																30.48				
															901	45	0.61			1
																31.10				
32.0		CONTACT 45°∠ VEIN?	KAOLINITE FACIES	N	N	N	N	PH	N	N	N	N	<H	N	902	75	2.44			5
32.61		TRANSITIONAL QUARTZ FELDSPAR CHLORITE GNEISS	KAOLINITE FACIES MINOR <5mm QUARTZ GASHES	N	N	N	N	PH	N	VL	PL	N	VL	VF		33.53				
															903	84	1.52			4
																35.05				
															904	92	1.52			<1
			36.27 D/S QZ V <3mm BECOME MORE COMMON, INCREASING MN, DECREASING LI							VF			VF	VM		36.58				
															P905	92	1.52			<1
38.1		END OF HOLE														38.1				

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 12
DDH 85-21	NANSEN	WEBBER	FINISHED : SEPT 14
COORDINATES N: 20269.0N E: 17,406.0E	AZ: 062° EL: 1359.0m	DIP-COLLAR: -55°E ACID DIP TEST: -53°E (BOTTOM)	T.D. 1359.0m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
\> – PERVASIVE > VEINLET
< – VEINLET < PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ – BRECCIA
- CRACKLE BRECCIA
- 75° CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- 4 – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION: FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		DRILLPAD FILL & OVERBURDEN													P906	10	3.35			3
3.35		FAULT ZONE - SAND & MUD	PROPYLITIC FACIES PYRITE IN CHLORITE RICH BANDS	PF	PL	PL	PL	VL	N	N	PL	N	<L	N	907	3.35 80 3.96	0.61			14
4.45															908	67 4.42	0.46			20
4.87		FAULT - 0.6m GOUGE QUARTZ FELDSPAR GNEISS - LIGHT COLORED, CHLORITE WISPS, PARTINGS & BANDS < 5cm; OCCASIONAL < 5mm FELDSPAR PORPHOBLASTS; FOLIATION - 50°A													909	100 4.57	0.15			5
															910	93	0.91			4
															911	5.49	0.30			<1
															912	100 5.79	0.91			<1
															913	6.71	1.22			<1
															914	87 7.92 96	1.52			<1
																9.45				
															915	100 10.97	1.52			<1
															916	93 11.43	0.46			<1
															917	100 12.04	0.61			<1
															918	100	0.76			2
															919	12.80 TL 13.72	0.91			8
14.93		D/S INCREASED FINE FRACTURING	14.93 - INCREASING CALCITE & KAOLINITE ON FRACTURES			<F									920	93 14.94	1.22			<1
															921	100 15.85	0.91			<1
															922	80 16.92	1.07			<1
															923	87 17.37	0.46			<1
															924	80 17.98	0.61			<1
															925	73 19.20	1.22			<1
															926	93 20.42	1.22			8
			20.42 D/S MINOR < 2mm QZ-CA -LI VEINLETS							VL					927	84 21.79	1.37			<1
															928	88 22.56	0.76			<1
															929	84 23.93	1.37			<1
															930	64 24.69	1.07			<1
															931	77 25.60	0.91			<1
															932	76 27.13	1.52			<1
			27.43 MONTMORILLONITE - PART SUPERGENE KAOLINITE	N	N	>F	PF	VM	N	VF	>F	N	>F	<N F	933	63 28.04	0.91			<1
															934	90 29.57	1.52			193
															935	100 31.09	1.52			57
															936	94 32.61	1.52			6
			32.92 KAOLINITE FACIES	N	N	N	N	PA	VL	VF	<F	N	>F	<F	937	100 33.53	0.91	0.001	0.01	
													>L	<L	938	68 34.75	1.22	0.018	1.74	
34.9		CONTACT - COLOR CHANGE VEIN	34.9 PHYLLIC - SILIC FACIES	N	N	N	N	PF	PM	PM	N	N	>F	N	939	43 35.97	1.22	0.016	1.42	
35.87		CONTACT 70°A	35.87 KAOLINITE FACIES	N	N	N	N	PH	PF	N	N	N	>M	N	940	80 36.42	0.46	0.001	0.36	
36.58		VEIN - 45°A	SILIC FACIES	N	N	N	N	PL	PL	PH	>L	>F	>F	N	941	67 37.34	0.91	0.288	38.40	
37.3		QUARTZ FELDSPAR CHLORITE GNEISS FOLIATION - 70°A	PHYLLIC FACIES	N	N	N	N	PF	PH	>F	N	VL	VF	N	942	57 38.40	1.07	0.028	6.00	
															943	70 39.32	0.91	0.009	0.95	
39.47		CONTACT 30°A	39.47 SILIC FACIES	N	N	N	N	N	N	PH	N	N	VF	N	944	95 39.93	0.61	0.001	0.11	
39.78		VEIN CONTACT IRREGULAR	39.78 KAOLINITE FACIES	N	N	N	N	PM	PF	VL	N	N	VF	N	945	100 40.23	0.30	0.001	0.20	
		QUARTZ FELDSPAR CHLORITE GNEISS	40.23	N	N	N	N	PH	N	N	N	N	VL	N	946	80 40.84	0.61	<0.001	0.20	
			40.84 PROPYLITIC FACIES	F	N	N	N	VL	N	N	PL	N	VF	VL	947	100 41.76	0.91	0.001	0.03	
42.67		FAULT ZONE - 35°A BRECCIATED, CLASTS IN CLAY		N				PH			N		VH		948	77 42.67	0.91	0.001	0.09	
43.28		END OF HOLE													P949	80 43.28	0.61	0.006	0.50	

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 14
DDH 85-22	NANSEN	WEBBER	FINISHED : SEPT 15
COORDINATES N: 20238.2 N E: 17434.0 E	AZ: 062° EL: 1363.3 M	DIP-COLLAR: -55°E ACID DIP TEST: -56°E (BOTTOM)	T.D. 39.62 m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
>– PERVASIVE > VEINLET
<– VEINLET < PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- BRECCIA
- CRACKLE BRECCIA
- CONTACT, ANGLE TO CORE AXIS
- SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- 4 – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	ALTERATION FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
0.0		DRILLPAD FILL ; OVERBURDEN													P15434	4	2.13			198
2.29		BEDROCK CONTACT – QUARTZ FELDSPAR CHLORITE GNEISS FOLIATION-55°x, DARK GRAY COLOR	KAOLINITE FACIES -SUPERGENE	N	N	N	N	PM	N	N	N	N	>F	N	435	2.13 16 3.66	1.52			4
3.66		FAULT - 0.15m GOUGE & BROKEN ROCK													436	15 4.88	1.22			7
4.88		FAULT?													437	40 5.18	0.30			3
5.18		FAULT - HIGHLY BROKEN; GOUGE													438	17 6.10	0.91			3
6.10		–													439	40 6.7	0.30			<1
6.7			PROPYLITIC FACIES	PF	N	N	N	VF	N	N	N	N	>L	N	440	70 7.01	0.30			5
7.62		FAULT? 0.31m - HIGHLY BROKEN													441	43 7.62	0.91			2
9.14		–													442	70 7.92	0.30			<1
9.14		HIGHLY BROKEN	KAOLINITE FACIES-SUPERGENE -IN PLACES PROPYLITIC	N	N	N	N	<H	N	N	N	N	>L	N	443	45 8.53	0.61			<1
10.36		FAULT - GOUGE & CRUSHED ROCK													444	65 9.14	0.61			<1
10.97		AMPHIBOLITE		PM				VF					>F		445	17 10.06	0.91			<1
12.50		VEIN	12.50 SILIC FACIES	N	N	N	N	PH	PF	PF	N	N	>L	N	446	60 10.96	0.91			2
12.8		FAULT - 0.15 GOUGE													447	66 12.50	1.52			1
		QUARTZ FELDSPAR CHLORITE GNEISS OCCASIONAL NARROW BANDS OF AMPHIBOLITE	KAOLINITE FACIES -	PL	N	N	N	PH	N	N	N	N	VF	>L	448	36 12.80	0.30			4
															449	47 13.72	0.91			2
															450	93 14.63	0.91			6
															451	53 15.85	1.22			3
															452	85 16.46	0.61			<1
															453	60 17.68	1.22			1
															454	95 18.90	1.22			<1
															455	80 20.42	1.52			2
19.81		D/S INCREASING CRACK FRACTURING	19.81 D/S INCREASING PY & LI & MINOR < 2mm QUARTZ VEINS							VL	PF	N	>F	N	456	72 21.95	1.52			4
21.15		VEIN - VERY WEAK	21.15 SILIC FACIES	N	N	N	N	PH	N	VF	PF	N	>F	N						
21.49		QUARTZ FELDSPAR CHLORITE GNEISS OCCASIONAL NARROW BANDS OF AMPHIBOLITE	21.49 KAOLINITE FACIES	N	N	N	N	PH	N	N	N	N	VF	>L	457	73 22.86	0.91			7
															458	80 23.47	0.61			2
															459	77 24.54	1.07			2
															460	51 25.60	1.07			354
25.91		CONTACT 20°x	25.91												461	100 26.52	0.91	0.104	0.62	
26.06		FAULT GOUGE - 5cm	PHYLLIC - TO SILIC FACIES AT BOTTOM CONTACT	N	N	N	N	N	PH→F	PM→H	N	PL	VL	N	462	83 27.58	1.07	0.012	0.03	
		VEIN ZONE													463	35 28.65	1.07			12
27.58		TRANSITIONAL	27.58 KAOLINITE FACIES	N	N	N	N	PH	PL	N	PL	N	VF	N	464	70 29.87	1.22			19
28.04		FAULT - BROKEN ROCK & GOUGE													465	43 30.78	0.91			70
28.65		FAULT? - 3cm GOUGE													466	50 31.7	0.91			609
29.26		–													467	95 32.31	0.61			16
30.63		FAULT - 0.15 GOUGE													468	90 33.53	1.22			3
31.55		FAULT ZONE - GOUGE AT CNTS													469	95 34.14	0.61			12
32.0		QUARTZ-FELDSPAR CHLORITE GNEISS	32.25 PROPYLITIC FACIES - BANDS OF SUPERGENE KAOLINITE	PF	N	N	PF	VH→A	N	N	N	N	>F	>H→L	470	65 34.75	0.61			71
															471	67 35.66	0.91			<1
			36.37 PROPYLITIC FACIES	PM	PL	VL	PF	VF	N	N	>L	N	VL	>L	472	60 36.58	0.91			3
															473	70 36.88	0.30			<1
															474	86 38.40	1.52			55
															475	100 39.62	1.22			2
39.62		END OF HOLE																		

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 15
DDH 85-23	NANSEN	WEBBER	FINISHED : SEPT 17
COORDINATES N: 20,247.5 N E: 17,379.5 E	AZ: 062° EL: 1353.6m	DIP-COLLAR: -55°E ACID DIP TEST: -54.8°E	T.D. 41.15 m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

P – PERVASIVE
> – PERVASIVE > VEINLET
< – VEINLET < PERVASIVE
V – VEINLET
E – ENVELOPES

AMOUNT

N – NIL
L – LOW TRACE
F – FAIR
M – MODERATE
A – ABOVE AVERAGE
H – HEAVY

SYMBOLS

- VEIN
- FAULT
- FAULT GOUGE
- △ – BRECCIA
- CRACKLE BRECCIA
- 75° – CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- 4 – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	FACIES	CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		DRILL PAD FILL & OVERBURDEN													P15476	6	3.66			222
3.35		BEDROCK CONTACT														3.66				
		QUARTZ FELDSPAR CHLORITE GNEISS - CHLORITE GRADING INTO NARROW AMPHIBOLITE BEDS; FOLIATION 55°A	KAOLINITE FACIES-SUPERGENE	N	N	N	N	<A	N	N	N	N	>L	N	477	40	1.52			348
			5.18 - STRONG MN													5.18				
		HIGHLY BROKEN													478	65	0.61			360
5.94			5.94													5.79				
		FAULT ZONE - 2cm ANGULAR CLASTS IN A DARK BROWN MATRIX	VEIN ZONE ?? - STRONG MN AT TOP CONTACT												479	40	0.91			731
7.62																6.71				
8.08		FAULT GOUGE													480	74	1.52			185
			8.08													8.23				
															481	97	0.91			25
			9.14 PROPYLITIC FACIES	PM	N	N	N	VF	N	N	N	N	>L	N		9.14				
															482	65	0.61			17
																9.75				
			10.36												483	76	1.52			30
			KAOLINITE FACIES	N	N	N	N	PA	N	N	N	N	<M	N		11.28				
															484	100	0.61			4
																11.89				
12.34		D/S FAIR CORE CUTTING FRACTURES; STRONG FINE STOCKWORK CRACKS	12.34											>F	485	94	1.52			8
																13.41				
															486	96	1.52			4
																14.94				
															487	70	1.22			2
			16.15 - D/S INCREASING BLEACHED DECREASING LI										<F L	N	488	99	0.30			5
																16.46				
16.92		CONTACT - 3cm GOUGE	16.92																	
		VEIN	SILIC FACIES	N	N	N	N	N	VF	PH	N	N	PM	N	489	88	1.22	0.024	0.70	
17.47		GOUGE - 0.15m 40°x	17.47													17.69				
			KAOLINITE FACIES	N	N	N	N	PH	N	N	N	N	<F	<L	490	70	1.22			<1
								PM								18.90				
															491	77	0.91			<1
			18.66													19.81				
			MONTMORILLONITE FACIES	PF	N	>F	PM	VF	N	N	PF	N	>L	N	492	96	1.52			<1
																21.34				
															493	83	1.22			<1
																22.56				
			22.86 0.3m BANDS 1/2m WITH INCREASED FRACTURE LI										<F		494	78	1.22			1
																23.77				
															495	95	1.22			3
																24.99				
															496	94	1.52			1
																26.52				
			26.52 D/S INCREASED CHLORITE	PM		>F									497	63	0.91			<1
																27.43				
															498	88	1.52			2
																28.96				
29.26		D/S AMPHIBOLITE BANDS <0.15 m COMMON													499	90	1.52			2
																30.48				
			30.48 TRANSITIONAL FACIES			<L		<M												
31.55		SHARP BREAK 50°x - FAULT	31.55												P15500	70	1.52			6
			KAOLINITE FACIES	N	N	N	N	PA	N	VL	N	N	<M	VM		32.00				
															P1884	25	0.61			39
			32.61										<L	VL		32.61				
															885	88	1.22	0.004	0.06	
																33.83				
															886	70	1.52	<0.003	0.04	
			35.20 PHYLLIC FACIES					PF	PA	VF						35.35				
36.03		VEIN - 0.12m 45°x	36.03 PHYLLIC-SILIC FACIES	N	N	N	N	PM	PM	PF	PF	PF	<F	N	887	83	1.22	0.024	0.06	
			36.45 PHYLLIC FACIES	N	N	N	N	PF	PF	VL	N	PF	VA	N		36.58				
			KAOLINITE FACIES	N	N	N	N	PH	N	VF	N	N	VA	N	888	84	1.52			71
																38.1				
			38.71 D/S QV & LI DECREASES, MN INCREASES					PM		VL			<F	<F	889	82	1.52			50
																39.62				
															P1890	92	1.52			15
41.15		END OF HOLE														41.15				

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 17
DDH 85-24	NANSEN	WEBBER	FINISHED : SEPT 18
COORDINATES N: 20155.1N E: 17478.3E	AZ: 062° EL: 1365.4m	DIP-COLLAR: -55°E ACID DIP TEST: -55°E (BOTTOM)	T.D. 39.62m
			LOGGED BY: M. PHILLIPS

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

- P – PERVASIVE
- > – PERVASIVE > VEINLET
- < – VEINLET < PERVASIVE
- V – VEINLET
- E – ENVELOPES

AMOUNT

- N – NIL
- L – LOW TRACE
- F – FAIR
- M – MODERATE
- A – ABOVE AVERAGE
- H – HEAVY

SYMBOLS

- – VEIN
- – FAULT
- – FAULT GOUGE
- △ – BRECCIA
- – CRACKLE BRECCIA
- 75° – CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ∠ – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	FACIES	ALTERATION: CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
		DRILL PAD FILL & OVERBURDEN													P17651	8	4.57			3
4.57		BEDROCK CONTACT – QUARTZ FELDSPAR, CHLORITE GNEISS – GRAY TO WHITE WITH NARROW BEDS CHLORITE; FOLIATION-45°, FAIR – MODERATE FRACTURING 0-35°∠	PROPYLITIC FACIES	PF	N	N	N	N	N	N	PL	N	PL	N	652	4.57 / 4.98	0.3			5
															653	5.18	0.3			80
															654	20	1.52			16
			6.71													6.70				
			KAOLINITE FACIES - SUPERCEDE	N	N	N	N	PH	N	N	N	N	>L	>L	655	20	0.91			45
																7.62				
															656	30 / 8.23	0.61			3
															657	63	0.91			11
																9.14				
10.21		FAULT? - 0.15m DECOMPOSED													658	92	1.22			6
																10.36				
															659	94	1.52			6
																11.89				
12.5		FAULT - 0.3m													660	82	1.22			4
			14.01 D/S INCREASING LI & QZ													13.11				
14.17		TRANSITIONAL	14.17												661	96	0.91			4
		VEIN? - 35-40°∠ WEAK	PHYLLIC - SILIC FACIES	N	N	N	N	PF	PF	VF	N	N	>L	N		14.02				
16.09		FAULT? - 0.15m DECOMPOSED	16.09												662	92	2.44			5
		QUARTZ-FELDSPAR CHLORITE GNEISS	PROPYLITIC FACIES	PF	N	N	N	VL	N	VL ↓ N	>F	N	VL	N		16.46				
17.53		FAULT - WEAK													663	86	0.91			2
																17.37				
															664	85 / 17.98	0.61			2
															665	92	1.22			2
		FOLIATION - 35°∠														19.2				
															666	90	0.91			4
																20.12				
															667	94	1.52			1
																21.64				
22.25		D/S FRACTURING INCREASES TO MODERATE													668	95 / 22.25	0.61			1
				CL	EP	CA	MM	KA	QS	QZ-VN	PY	SX	LI	MN	669	80	1.52			1
																23.77				
															670	96	0.91			2
																24.69				
															671	96	1.52			3
25.91		D/S CORE LIGHT BROWN COLOR	25.91													26.21				
			KAOLINITE FACIES	N	N	PL ↓ N	PF ↓ N	PH	N	N	N	N	<L	<L	672	86	0.91			<1
			27.58 - D/S BANDS PHYLLIC ALTERATION WITH QZ												673	27.13 / 27.43 / 90	0.30			3
								PM	VM	VF					674	82	1.37			6
																28.8				
30.18		FAULT? 0.15m HIGHLY BROKEN													675	96	0.91			2
																29.7				
30.48		TRANSITIONAL	30.48												676	93	0.91			5
		VEIN? - 60°∠	SILIC FACIES - WEAK	N	N	N	N	PA	PL	VF	N	N	<F	N		30.63				
															677	100	1.02			13
																31.7				
32.28		TRANSITIONAL	32.28												678	72	0.76			7
		QUARTZ FELDSPAR CHLORITE GNEISS	KAOLINITE FACIES	N	N	N	N	PH	N	VF ↓ N	N	N	<M	N		32.46				
															679	94	1.07			2
																33.53				
															680	82	1.37			11
35.05		CONTACT - 65°∠	35.05												681	34.9 / 100 / 35.05	0.15			4
		VEIN	SILIC FACIES	N	N	N	N	N	PH ↓ L	PL ↓ H	N	PL	<M	N	682	84	1.37			11.70
36.27		CONTACT - 40°∠	36.27												683	36.42 / 36.73	0.30			1180
		QUARTZ FELDSPAR CHLORITE GNEISS	KAOLINITE FACIES	N	N	N	N	PH	N	VF	N	N	<F	<F	684	100	1.37			130
			37.27													38.1				
			MONTMORILLONITE FACIES	N	N	PF	PF	VF	N	N	N	N	>L	N	P17685	94	1.52			22
39.62		END OF HOLE														39.62				

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

Sample No.

CHEVRON CANADA RESOURCES

HOLE No.	PROJECT	TARGET	STARTED : SEPT 18
DDH 85-25	NANSEN	WEBBER	FINISHED : SEPT 19
COORDINATES	AZ: 062°	DIP-COLLAR: -55°E	T.D. 59.74m
N: 20,194.2N	EL: 1361.8m	ACID DIP TEST: N.A.	LOGGED BY: M. PHILLIPS
E: 17,441.7E			

ROCK TYPES

- OVERBURDEN
- FELDSPAR PORPHYRY
- QUARTZ-FELDSPAR PORPHYRY
- MT. NANSEN GROUP VOLCANIC FLOWS PYROCLASTICS & FEEDER DYKES
- GRANODIORITE INCLUDES NARROW APLITE & PEGMATITE DYKES
- QUARTZ FELDSPAR CHLORITE GNEISS WITH NARROW BANDS OF AMPHIBOLITE
- AMPHIBOLITE

MODE

- P – PERVASIVE
- > – PERVASIVE > VEINLET
- < – VEINLET < PERVASIVE
- V – VEINLET
- E – ENVELOPES

AMOUNT

- N – NIL
- L – LOW TRACE
- F – FAIR
- M – MODERATE
- A – ABOVE AVERAGE
- H – HEAVY

SYMBOLS

- – VEIN
- – FAULT
- – FAULT GOUGE
- △ – BRECCIA
- – CRACKLE BRECCIA
- 75° ---- – CONTACT, ANGLE TO CORE AXIS
- ≈ – SHEAR
- QV – QUARTZ VEINLET
- QC – CHALCEDONY
- SL – SPHALERITE
- GL – GALENA
- AS – ARSENOPYRITE
- ∠ – ANGLE TO CORE AXIS
- D/S – DOWN SECTION

DEPTH (m)	VISUAL LOG	LITHOLOGY	FACIES	ALTERATION: CHLORITE	EPIDOTE	CALCITE	MONTMORILLITE	KAOLINITE	QTZ-SERICITE	QTZ-VEINS	PYRITE	VERY FINE SULPHIDES AND SULFO-SALTS	LIMONITE	MANGANESE OXIDES	SAMPLE No.	% RECOVERY BETWEEN BLOCKS	SAMPLE INTERVAL (m)	oz/t Au	oz/t Ag	ppb Au
															P17686	7	2.74			3
2.74		BEDROCK CONTACT?														2.79				
		QUARTZ FELDSPAR CHLORITE GNEISS	PROPYLITIC FACIES	PM	N	>L	N	VF	N	N	PL	N	VL	N	687	90 3.35	0.61			6
3.96		FAULT?-0.13m DECOMPOSED													688	80	1.22			3
4.88		FAULT 5cm DECOMPOSED														4.57				
5.18		VEIN?													689	100 4.88	0.30			11
5.79			5.18 KAOLINITE FACIES	N	N	N	N	PA	PF	VL	N	N	>L	N	690	5.18 80	0.30			4
6.7			5.79 PROPYLITIC FACIES	PM	N	>L	N	VL	N	N	PL	N	>L	N	691	60	0.91			2
															692	6.1 6.71 85	0.61			<1
															693	43	0.91			<1
															694	7.62 8.53 73	0.91			<1
															695	60 8.84	0.30			<1
															696	83	0.91			<1
10.36		FAULT?-45°x-5cm CLAY													697	9.75 50 10.36	0.61			2
		STRONG FRACTURING	10.36 KAOLINITE FACIES - MOSTLY SUPERGENE	N	N	N	PF	VM ↓ A	N	N	PL	N	VL	N	698	73	0.91			<1
11.80															699	84 1.28	0.76			<1
															700	12.04 88 12.8	0.76			<1
			12.5							VL										
			13.05							N					701	85	1.22			1
															702	14.02 86	0.91			5
															703	14.94 75	1.22			3
			15.85	PL				PM						>L	704	16.15 65	0.61			8
															705	16.76 100	0.61			<1
			17.68												706	17.37 80 17.68	0.30			2
		TRACE PORPHOBLASTS TO 5mm FELDSPAR - ORTHOCLASE?	GYPSUM ALONG FRACTURES QS & QV.	N			N	PH	VF	VF			VF		707	76	1.68			<1
															708	19.35 100	1.37			1
															709	20.73 92	1.22			<1
			22.10	PL			PF	PM	N	VL	N			N	710	21.95 90	1.52			2
															711	23.47 66	1.52			<1
															712	24.99 86	1.52			<1
			26.52 D/S ALTERATION INCREASING	N			PL	PA	VL	N			<F		713	26.52 87	1.22			<1
27.65															714	27.74 80	1.52			1
			28.96 PHYLLIC ALTERATION	N	N	N	N	PH ↓ L	PM	N	N	N	VL	>M	715	29.26 88	1.52			12
															716	30.78 90	1.52			5
			32.0											<H		32.31				
			32.61 BAND STRONG MN											N	717	100	1.52			46
																33.83				
34.2		GOUGE-3cm VEIN													718	90	1.52			309
34.34		FAULT-50°x GOUGE	SILIC FACIES	N	N	N	N	PL	PF	PH	N	N	PL	N		35.36				
35.42		TRANSITIONAL VEIN	35.42 PHYLLIC FACIES	N	N	N	N	PF	PF	PM	N	N	PL	N	719	100	1.22			164
36.33		CONTACT-60°x	36.33 SILIC FACIES													36.58				
		QUARTZ FELDSPAR CHLORITE GNEISS	KAOLINITE FACIES	N	N	N	N	PH	PF ↓ M	VF	N	PL	PF	H	720	100 36.88	0.30			34
															721	37.49 100	0.61			13
															722	100	0.91			33
															723	38.4 75 39.01	0.61			25
															724	100	0.91			42
															725	39.93 100 40.54	0.61			3
														N	726	100	0.91			<1
																41.45				
															727	100	1.22			<1
			42.61													42.67				
			PHYLLIC ALTERATION	N	N	N	N	PF	PM	PL	PL	N	<M	VF	728	75	1.22			15
															729	43.89 83	0.91			3
															730	44.81 100	1.52			27
			46.02											>L		46.33				
46.33		D/S < 4cm GOUGY BREAKS COMMON													731	70	1.52			38
			47.86													47.85				
48.16		D/S HIGHLY FRACTURED, 0.46m GOUGE AT BOTTOM CONTACT						PH	PF				<F	N	732	70	1.52			34
49.38																49.38				
															733	50	0.91			41
50.29		FAULT-0.3m CLAY													734	50.25 50 50.9	0.61			24
50.9															735	100	0.91			103
			51.97-D/S INCREASING QUARTZ							PF ↓ M	PL	PF			736	51.82 100	0.91			1350
															737	52.73 100 53.34	0.61			85
			53.10												738	53.95 75	0.61			3
54.07		FAULT-45°x	54.07																	
54.45		FAULT-50°x 5cm GOUGE VEIN	PHYLLIC-SILIC FACIES	N	N	N	N	PF	PH	PA	N	N	<L	N	739	100	1.22			253
55.02		CONTACT-55°x	55.02													55.17				
			PROPYLITIC FACIES	PF	N	N	N	VF	VF	N	VF	N	<F	N	740	100	1.52			94
																56.69				
			57.76												741	100	1.52			646
			KAOLINITE FACIES-SUPERGENE	N	N	N	N	PH	N	N	N	N	<F	N		58.22				
															P17742	100	1.52			10
59.74		END OF HOLE														59.74				