ARIS SUMMARY SHEET

Dirict Geologist, Nelson
ASSESSMENT REPORT 18633 MINING DIVISION: Nelson Off Confidential: 90.01.25
PROPERTY: Goatfell LOCATION: LAT 49 07 00 LONG 116 12 00 UTM 11 5440514 558378 NTS 082F01E CLAIM(S): Goat 1,Goat 2 OPERATOR(S): Chevron Min. AUTHOR(S): Hitzman, M.W. REPORT YEAR: 1989, 150 Pages COMMODITIES SEARCHED FOR: Zinc,Lead,Silver
KEYWORDS: Proterozoic, Aldridge Formation, Reverse faults, Tourmalinite pipe Alteration, Sulphides
DONE: Geological,Drilling,Physical DIAD 844.1 m 2 hole(s);NQ GEOL 500.0 ha PETR 5 sample(s) ROAD 0.5 km RELATED
REPORTS: 16970

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ASSESSMENT REPORT

GEOLOGICAL,	GEOPHYSICAL	AND	DIAMOND	DRILLING	WORK
MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES					
Rec'd •AR 3 1 1989				FIL	MED
SUBJECT	GOATFE	LL G	ROUP		
VANCOLIVER B.C.					

Yahk Area, B.C.

Nelson and Fort Steele Mining Divisions

N.T.S. 82/F1 WE

Latitude: 49°07'N

Longitude: 116°12'W

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ZO Owners: G. Leask; Chevron Minerals Ltd.

Author: M. W. Hitzman

February 1989

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1. Claim Status

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1.0 SUMMARY

During 1988 Chevron Minerals Ltd. undertook a surface exploration program on the Goatfell Property near Yahk, B.C.

The Goatfell Property contains a major tourmalinite pipe cutting metasediments of the middle Proterozoic, middle Aldridge Formation. This occurrence was deemed a favorable indicator for zinc-lead-silver mineralization of the Sullivan type. The primary target zone is the Sullivan mine horizon near the lower - middle Aldridge boundary.

Chevron Minerals Ltd. completed geologic mapping, a two-hole diamond drilling program, limited petrographic studies and three short lines of MAG/VLF during the 1988 field season.

The work confirmed the stratigraphic position of the prospect area suggested during 1987. Further geologic mapping, combined with diamond drilling, revealed a significant zone zone of quartz-chlorite-carbonate-pyrite alteration with associated weak zinc and lead mineralization.

2.0 INTRODUCTION

Diamond drilling was conducted on the Goatfell Project between July 15 and October 27. Geological mapping in the project area was carried out intermittently during the same period. Personnel for the project were based in a motel near Yahk, B.C.

The objectives of the 1988 exploration program on the Goatfell Project were to evaluate the property for a Sullivan-type stratiform zinc-lead- silver deposit (Hamilton, et al., 1982). The exploration model for a Sullivan-type massive sulfide deposit assumes that such a deposit formed at a horizon displaying evidence of tectonic instability such as abundant slumped beds, conglomerates or debris slides, and rapid lateral facies variations. In addition, it is possible that deposits of this type will have associated alteration zones. The most likely alteration pattern in a major ore system is thought to be a tourmalinized zone below the orebody, possibly with weak pipe-like extensions into overlying sediments, and a broad silica - chlorite - high sulfur (pyrite) - base metals-rich halo below and above the orebody with an albiteiron sulfide - rich core. Weaker hydrothermal systems, in which alteration did not persist after sulfide deposition, may contain only footwall alteration such as a zone of silica chlorite - (albite) alteration enclosing small tourmalinite pipes. Any major syngenetic/syndiagenetic deposit in the Aldridge Formation is expected to display a weak geochemical fringe extending up to several kilometers from the deposit along the ore horizon as at the Sullivan Mine. Although the prime horizon of interest on the Goatfell Property is the Sullivan mine horizon in the uppermost lower Aldridge, other horizons within the middle Aldridge are also considered () possible sites for syndiagenetic - syngenetic mineralization.

Exploration on the Goatfell Property during 1988 was achieved by mapping of the various alteration types in the Aldridge Formation and diamond drilling to test the Sullivan mine horizon. The 1988 program consisted of:

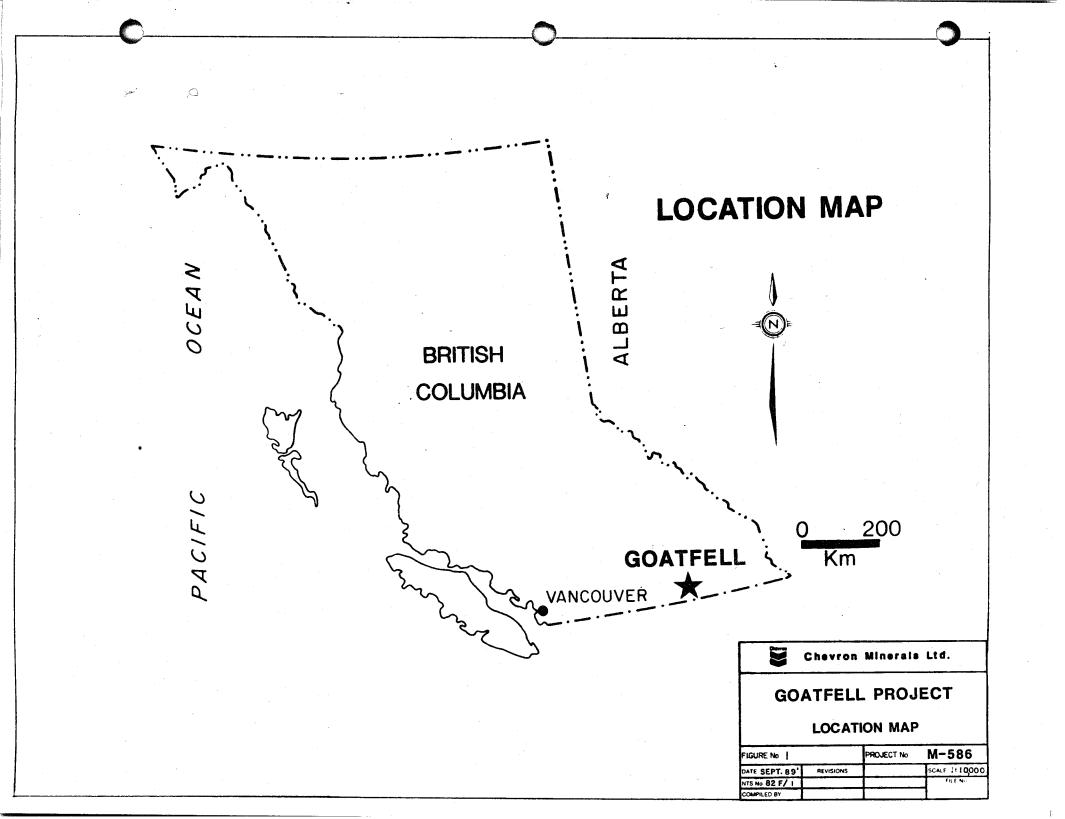
- Geological mapping and prospecting on the Goat 1, 2, and
 3 claims and the immediately surrounding area at 1:5,000 scale.
- 2. A geophysical survey consisting of three lines (1.9 kilometers) of MAG/VLF R22K on the Goat 1 and 2 claims to determine the location of a major fault.
- 3. Road repair for drill access.
- 4. Diamond drilling for a total of 844.14 m in two NQ holes.

3.0 LOCATION AND ACCESS

The Goatfell Property is located approximately 10 km northwest of the town of Yahk in southwestern British Columbia (Figure 1) and 10 km north of the Canada - USA border (NTS 82F/1; latitude 4907' north, longitude 11612' west).

Elevations on the property range from approximately 700 m along Kitchener Creek to 1,645 m on the highest mountains. Moderate to cliff forming slopes with broad U-shaped valleys, occasionally with more recent steep down cutting gorges, typify the topography of the region. The property is generally forested with pine and fir except in areas of recent clear cutting and along Kitchener Creek where farming has been developed.

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Access to the property is by Highway 3 which crosses the northern portion of the property through the valley connecting the Kitchener Creek (west) and Rainy Creek drainages. The highway corridor also contains two natural gas pipelines and a CPR branch rail line. Permission must be sought for crossing the gas pipeline corridor with oversized vehicles. A number of forestry and private roads cross the property. Access to the southern portion of the property is provided by a major forestry road which joins Highway 3 just to the southeast of the Goatfell railway siding and intersects the Carroll Creek valley to the west. Permission to use the private roads must be obtained from local property owners. The BC Hydro high tension line lies approximately 7 km west of the property.

4.0 CLAIM STATUS AND OWNERSHIP

The Goatfell Property straddles the Nelson and Fort Steele Mining Divisions (Figure 2). Table 1 lists the claim names, number of units, record number and expiry dates for all claims comprising the Goatfell Property.

The Goat 1 and 2 claims are owned by Gordon Leask and are under option to Chevron Minerals Ltd. Chevron has an agreement with Leask whereby Chevron can earn a 65 percent interest in the claims by making specified expenditures. Formosa Resources Corporation has an agreement with Chevron Minerals Ltd. whereby it can earn 50 percent of Chevron's interest in the claims by making certain specified

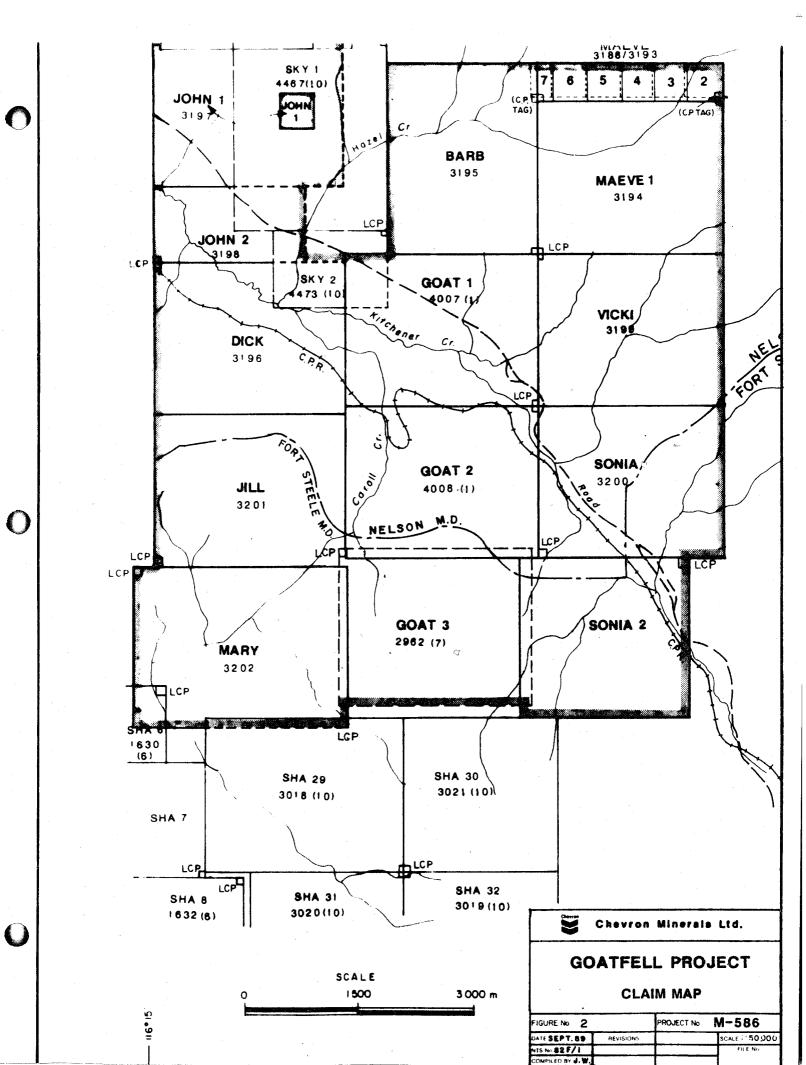


Table 1

CLAIM STATUS

<u>Claim Name</u>	<u>Record No.</u>	<u>Mining</u> Division	<u>Units</u>	<u>Expiry Date</u> (after submission of this report)
Goat 1 Goat 2	4007 4008	Nelson Nelson	20 20	January 27, 1999 January 27, 1993
Goat 3	3286	Ft. Steele	20	February 8, 1990
John 1	5364	Nelson	20*	September 9, 1989
John 2	5365	Nelson	8 *	September 9, 1989
Díck	5363	Nelson	20*	September 10, 1989
Jill	3201	Ft. Steele	20	September 12, 1989
Mary	3202	Ft. Steele	20	September 12, 1989
Barb	5368	Neson	20	September 9, 1989 🚽
Maeve 1	5356	Nelson	20	September 10, 1989
Maeve 2*	5357	Nelson	1	September 10, 1989
Maeve 3	5358	Nelson	1	September 10, 1989
Maeve 4	5359	Nelson	1	September 10, 1989
Meave 5	5360	Nelson	1	September 10, 1989
Maeve 6	5361	Nelson	1	September 10, 1989
Maeve 7	5362	Nelson	1	September 10, 1989
Vicki	5366	Nelson	20	September 10, 1989
Sonia	g 5367	Nelson	20	September 11, 1989
Sonia 2	3228	Ft. Steele	20	October 30, 1989
Sky	4467	Nelson	20*	October 17, 1990
Sky 2	4473	Ne1son	6	October 29, 1990
Sky 3	5314	Nelson	1	September 2, 1989

*John 1 - 6 complete units, 6 fractional units overlapping Star 4 claim (4477 - Cominco) and Sky claim (4467 - Wiklund).

*John 2 - 4 complete units, 3 fractional units overlapping Sky 1 claim (4467 - Wyklund) and Sky 2 claim (4473 - Wiklund).

*Dick - 16 complete units, 3 fractional units overlapping Sky 2 claim (4473 - Wiklund).

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*Maeve 2-6 overlap Maeve 1 claim, while Maeve 7 is a fractional claim overlapping Barb and Maeve 1 claims.

*Sky claim oncompasses Sky 3-1 unit claim.

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expenditures. The Sky claims are owned by Mr. David Wiklund and Mr. Harry Davies and are under option to Chevron Minerals Ltd. Chevron has an agreement with Mr. Davies and Mr. Wiklund whereby Chevron can earn the entire right, title and interest to the property by making specified expenditures. All other claims in the property are held by Chevron Minerals Ltd.

5.0 PREVIOUS EXPLORATION

Although detailed, modern geological work has been carried out in portions of the Aldridge Formation outcrop area by members of the British Columbia Geologic Survey (Rice, 1940; Reesor, 1981; Hoy and Diakow, 1982; Hoy, 1984), a modern geological map of the 82 F/1 sheet is not available. The occurrence of massive tourmalinite along the railway at Goatfell has been recognized for a number of years, however (Ethier and Campbell, 1977). Despite the relationship recognized at the Sullivan Mine between tourmalinite and mineralization, the Goatfell occurrence remained unclaimed until early 1985 when it was staked by Mr. Gordon Leask.

During the summer of 1985 Leask carried out prospecting and limited geologic mapping. The prospecting revealed a high angle zone of carbonate - manganese breccia with trace sphalerite and galena on the west bank of Hazel Creek near its juncture with the Kitchener valley on the Sky claim. Prospecting also located what was thought to be a siliceous pyritic exhalative horizon within thick sandstones near the railway loop on the Goat 1 claims (G. Leask, 1985).

The goal of geological mapping from 1986-87 was to determine the depth to the lower - middle Aldridge Formation boundary, which roughly coincides with the Sullivan Mine time horizon. Through use of well-laminated or "varved" marker beds within the middle Aldridge Formation and the discovery of probable lower Aldridge sediments at the mouth of Hazel Creek it was determined that the Sullivan mine horizon occurred at reasonable depth (less than 1000 m) in the central portion of the property. A major, high-angle fault trending north-south across the property was recognized which significantly downdropped the target horizon to the west.

Besides the obvious tourmaline alteration in the pipe-like body cropping out along the railway line, tourmaline alteration was also inferred from abundant float in the area of the Carroll Creek forestry road, immediately east of the An indistinct alteration was noted by Leask to Goat 3 LCP. the west of the tourmalinite pipe along the railway loop. The siltstones and sandstones in this area were noted to be Leask interpreted this alteration type bleached. as Based on the distribution of alteration and a "albitic." supposed thickening of bedding in the railway exposures, Leask proposed a 1 kilometer wide graben trending ENE and straddling the Goat 1 and 2 claim boundary.

A transient electromagnetic and magnetic survey was conducted over much of the Goat 1 and 2 claims during July, 1987 by Orequest Ltd. and Quantech Consulting Inc. to test for

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conductors in the proposed graben (LeBel and Morrison, 1987). The EM-37 data was contaminated by culture sources, primarily the railway line and pipeline. Within the existing coverage However, a finite, no strong anomalies were located. formational-appearing conductor was located in the southern portion of the grid. The magnetic coverage revealed a pronounced magnetic anomaly over the Moyie sill exposed to the west of the high angle, north-south trending fault. The poorly outcropping sill to the east does not show an anomaly, however. Recommendations from this program were stratigraphic drill holes to test the Sullivan horizon in the area of best alteration along the northern portion of the railway loop and immediately south of the railway loop in the area of the weak EM anomaly.

In August, 1987 a limited lithochemical survey was undertaken on the property (Edmunds, 1987). Samples were taken along a traverse through the lower Aldridge in the area of the railway loop. The method utilized involved collecting clusters of samples along traverses across strike and analyzing the samples for Pb, Zn and Hg. A sample score was calculated that is a combination of these three elements and that score was evaluated against a cut-off value established from work on known mineralized systems. Values from the forty eight samples taken were all close to background. The conclusion from the survey was that significant stratiform mineralization is not present for at least 5 kilometers in the stratigraphic sequence sampled.

6.0 REGIONAL GEOLOGY

The Goatfell Property lies on the western flank of the Purcell Anticlinorium and is entirely underlain by middle Proterozoic rocks of the Belt - Purcell Supergroup.

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Although the Belt - Purcell Supergroup rocks preserve delicate depositional textures they are metasediments having undergone extreme sedimentary loading during the Proterozoic. This loading produced advanced burial diagenesis or load metamorphism up to the biotite isograd of greenschist facies (McMechan and Price, 1982; Maxwell and Hower, 1967). The metamorphism produced only a weak foliation in clay/mica-rich rocks and minor recrystallization, rarely polygonization, of quartz grains. Due to this metamorphism the rocks in the sequence are given metamorphic designations: quartzite (metasandstone), siltite (metasiltstone) and argillite (metamudstone).

The Goatfell area is predominantly underlain by the Aldridge (Pritchard) Formation which in the Purcell Mountains forms the lowest exposed member of the Belt-Purcell Supergroup. The Aldridge Formation in the southern Purcell Mountains is in excess of 4200 m thick (Hoy, 1982; McMechan, 1981; Edmunds, 1973, 1977) and has been subdivided into three members. The lower Aldridge, consists of rusty-weathering, laminated to thin-bedded, fine-grained quartzite, argillaceous quartzite and siltite. Minor black argillite partings, commonly containing abundant diagenetic iron sulfide (now pyrrhotite)

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are present. The lower Aldridge has a maximum exposed thickness of approximately 1000 m in the southern Purcell Mountains (Reesor, 1958; Edmunds, 1977).

The overlying middle Aldridge is distinguished from underlying rocks by the predominance of grey, argillaceous quartzite. The unit as a whole is characterized by thin- to thick-bedded, fine-grained quartzite and argillaceous quartzite interbedded with massive to laminated or ripple cross-laminated siltite and minor laminated argillite. The quartzite and siltite beds are commonly massive but contain sedimentary structures that suggest they are turbidite deposits. A number of laminated marker horizons, first noted by Cominco geologists, occur within siltites and argillites of the middle Aldridge and can be traced throughout the Purcell Mountains and southward into the USA (Huebschman, 1973). Recognition and correlation of these markers makes it possible to stratigraphically locate sections within the monotonous middle Aldridge.

The upper Aldridge consists of thin-bedded, rusty-weathering dark to medium grey argillite and siltite. It grades upwards into the Creston formation (Ravalli Group-Burke (lowest), Revett, and St. Regis Formations in northern Idaho and Montana) which contains varicolored argillaceous quartzite, siltstone, argillite and rare quartzite lenses containing abundant shallow water depositional textures.

The Goatfell Property straddles the Moyie-Dibble Creek fault, a steeply west- dipping, Laramide thrust fault with an estimated 10 -15 km of southeasterly directed movement (Benvenuto and Price, 1979). The Yahk block to the east of the Moyie fault appears to be structurally simple, forming a broad anticline with its culmination in the vicinity of the Chevron Mt. Mahon property. A complicated block-faulted terrane is present to the west of the Moyie fault. On the Goatfell Property the next major fault to the west of the Moyie is a high-angle, reverse fault, termed the Spider Creek fault, which appears to be a backthrust. The Spider Creek fault is cut out by the Moyie thrust to the south near Kingsgate and dies out or is cut out by the Old Baldy fault to the north on the Chevron Kydd property. The Old Baldy fault is a high-angle, reverse fault with an offset similar, but of less magnitude, to the Moyie and St. Mary faults. The Old Baldy fault can be traced into the Kidd Creek area but is cut by a series of high-angle normal faults to the west.

These north-trending normal faults define a major north-trending syncline situated between the Creston valley anticline and the Purcell anticline. The age of these faults is not known with certainty but is believed to be late Laramide to Tertiary. The effect of the faults is significant for exploration in bringing the lowermost middle Aldridge Formation near the surface in a number of locations between Creston and Yahk.

7.0 PROPERTY GEOLOGY

7.1 <u>Introduction</u>

Geologic mapping of the central portion of the property was carried out from July 5 to 9, July 19 to 20, October 5-6, and October 13 to 16, 1988 by Murray W. Hitzman, of Chevron Minerals Ltd., the operator of the project. An area of approximately 7 square kilometers was covered, mainly on the boundary between Goat 1 and 2 claims but extending northwards across Kitchener Creek to the Hazel Creek area. The area had been previously mapped by G. Leask in 1987. However, the current mapping emphasized examination of the rocks for alteration.

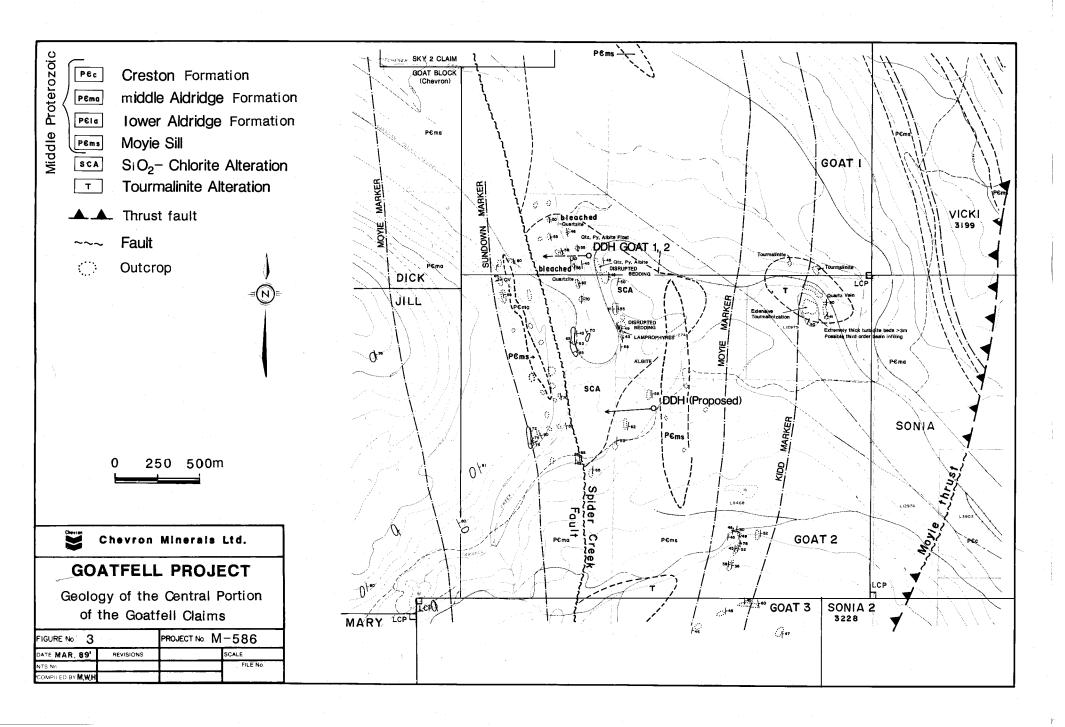
7.2 <u>Lithologies</u>

The majority of the Goatfell Property is underlain by middle Aldridge metasediments (Figure 3). A small zone of lower Aldridge occurs in the Hazel Creek area on the Goat 1 and Sky claims. Creston Formation and upper Aldridge rocks are found on the eastern edge of the claim block but were not examined in detail during the 1988 season. The middle Aldridge is intruded by two igneous rock types, the Proterozoic Moyie Sills and Cretaceous -Tertiary (?) lamprophyre dikes.

Bedrock is covered by a thin mantle of glacial drift throughout most of the area, except in the Kitchener Creek valley where an unknown thickness of glacial drift and alluvial sediments are present. Exposures are restricted to

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steep slopes or man-made cuts such as the CPR line. Total exposure is about 5%.

Individual stratigraphic units are described below based on observations made during field mapping, core logging and from petrographic studies. A discussion of the structural geology and alteration and mineralization on the property follows. Complete petrographic descriptions are included as Appendix III.

lower Aldridge (PCla)

Well-established lower Aldridge crops out on the Sky claims near the mouth of Hazel Creek. Discontinuous, poor outcrop limits definition of a well-defined stratigraphy. Outcrops are dominantly rusty-weathering argillaceous quartzites with thin, dark grey siltite tops. Abundant stream float indicates the presence of dark grey to black argillite, much of which contains abundant disseminated to laminated iron sulfide, both pyrite and pyrrhotite.

middle Aldridge (PCma)

The middle Aldridge member forms the majority of the rock exposed on the Goatfell Property. Fine- to medium-grained, weakly argillaceous quartzite is the most common lithology in outcrop. This rock weathers to a brownish color and is greyish on fresh surfaces.

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Individual quartzite beds are generally 0.5 to 4 m in thickness and display a poorly developed grading. The massive quartzites are separated by siltite beds which are commonly only 10-20 cm thick but may be up to 4 m thick. In drill turbidite core, individual beds are more easily distinguished. They are generally composed of a massive, structureless quartzite base which shows a rapid, upwards transition to siltstone. Between 5 and 10% of the turbidite beds have a laminated siltite to argillite top which commonly displays cross-ripple laminations.

Based on the correlation of the sequences in the Goat 1 and 2 drill holes, which were collared at the same point and drilled at 50 and 70 respectively, there appears to be extreme variation in bed thickness in the lower middle Aldridge. The most extreme variation is a single massive quartzite bed which varies from 4 m to 20 m in thickness over a lateral distance of 40 m. Extremely thick quartzite beds are found up into the central portion of the middle Aldridge. In the tourmalinized zone along the railway, one quartzite bed is approximately 30 m thick but appears to thin rapidly along strike up the hill. Soft sediment deformation textures, such as slump features and rip-up clasts are present, but rare, in the section examined to date.

These relationships suggest that the middle Aldridge in this portion of the Goatfell Property contains a series of channel-fill deposits in an upper- to mid-fan position. These

channels may have been present on a broad regional turbidite fan or may reflect more local processes such as a subsidiary fan in a localized basin or graben. More stratigraphic sections need to be measured in this interval from throughout the Goatfell area before firm conclusions regarding the depositional environment can be substantiated.

Petrographic studies (Getsinger, 1988 - Appendix III) on samples from the drill holes confirmed that the most common rock types are fine-grained quartzite and siltite. In the least altered samples the mineralogy is 50-70% quartz, 0-20% 10-45% muscovite (plagioclase + K-feldspar), feldspar (including sericite), up to 15% biotite, 3 % sphene and 3-4% opaques (commonly iron sulfide). In thin section the rocks display good sorting of clastic grains though there has been metamorphic mineral overgrowth as well as some some Small-scale sedimentary textures in the recrystallization. more argillaceous rocks, such as bedding, graded bedding, slump folding and rip-up clasts are well-preserved. Static metamorphic textures, especially porphyroblastic mineral overgrowths of muscovite, biotite and garnet are superimposed on the sedimentary texture. The red-brown color of the biotite is unusual in rocks of greenschist grade, it probably indicates a high titanium content in the sedimentary protolith. High initial titanium is also indicated by the presence of up to 3% sphene in many of the samples. Retrograde minerals in the rocks are chlorite, sericite and minor epidote. Chlorite, together with opaques, appears to

be dominantly an alteration product of the red-brown biotite. Epidote occurs around opaques but may be common in the drill hole samples because of their altered nature, ie. increased carbonate content.

upper Aldridge (PCua)

Upper Aldridge rocks probably crop out on the southeast corner of the Sonia 2 claim but were not examined during the 1988 field season.

Creston Formation (PCc)

Creston Formation is present along the eastern edge of the property on the Vicki, Sonia and Sonia 2 claims. Due to its position, high above the lower middle Aldridge section of economic interest, the Creston Formation was not examined in detail during the 1988 field season.

Proterozoic Moyie intrusive rocks (PCms)

A number of Moyie metadiorite to metagabbroic sills are present on the Goatfell Property to the west of the Moyie fault. These rocks are dark green-grey to dark green, fineto medium-grained. The majority of sills contain 40 - 60% hornblende, 15 - 40 % plagioclase, and 10 - 20 % quartz. Common accessory minerals include biotite, garnet, magnetite, apatite, sphene, rutile, leucoxcene, carbonate minerals, and epidote - clinozoisite. The sills commonly show a variable mineralogy indicative of varying degrees of alteration.

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On the Goatfell Property, Moyie sills have been recognized at the lower - middle Aldridge contact in the Hazel Creek area and at irregular intervals throughout the middle Aldridge. The sills appear to form discontinuous lenses in the Goatfell area with a maximum thickness of 80 meters. The sill mapped in the area between the Goat 1 drill hole site and the tourmalinite pipe is unusual in its lack of magnetic response, presumably caused by destruction of magnetite.

Cretaceous - Tertiary (?) lamprophyre dikes

At least two meter thick, dark greenish dikes crosscut an area of disrupted bedding along the railway line (Figure 3). The dikes are heavily weathered. They appear to contain amphibole and pyroxene phenocrysts in a fine-grained dark matrix. The rock was termed a lamprophyre by Leask (Leask, 1985) although no petrologic work has been conducted to confirm this.

7.3 Structure

The Goatfell Property may be divided into three structural blocks. To the east of the Moyie thrust rocks of the Belt-Purcell Supergroup strike nearly north-south and dip moderately (40-45) to the west. Between the Moyie thrust and the Spider Creek backthrust the middle Aldridge metasediments strike approximately north south and dip 45 - 60 (average 55) to the east. To the west of the Spider Creek fault uppermost middle Aldridge rocks strike NNW and dip 60 - 80 to the east. Offset on the Moyie fault has not been determined on the Goatfell Property but regional work suggests the fault has 12 - 15 kilometers of southeasterly directed displacement. Offset on the Spider Creek backthrust fault has been calculated at approximately 3,000 m based on offset of marker beds within the middle Aldridge. The Spider Creek fault forms a topographic low. Drilling and surface mapping indicates the fault zone is at least 50 m in width and is composed of sheared argillaceous material containing floating blocks of quartzite.

7.4 Alteration and Mineralization

Two distinctive styles of alteration, tourmalinization and quartz - chlorite - pyrite, have been delineated on the Goatfell Property.

Tourmalinization appears to be present in at least two areas on the claim block. The best known is an oval area (500 x 300m) centered on the railway line immediately west of the Goat 1,2 LCP. The degree of tourmalinization within this zone appears variable (Edmonds and Rodgers, 1987). In weakly altered zones the rocks are darker grey than normal and somewhat more difficult to break with a hammer than is typical. In thin section these rocks show fine-grained, olive to brown tourmaline needles interstitial to quartz grains (Ethier and Campbell, 1977). More thoroughly altered rocks are jet black, extremely hard and break with a semi-conchoidal fracture. Bedding features are commonly obscured in the most

altered rocks. Quartz veins are typical of the most altered zones presumably due to brittle fracture during metamorphism and later deformation. Detailed mapping of this tourmaline pipe together with geochemical studies (Beaty et al., 1988) will be undertaken during the 1989 field season. Tourmalinite has also been found as abundant float along the forestry road connecting Highway 3 with Carroll Creek, near the Goat 2 and 3 claim boundary. This tourmalinite is similar to that exposed along the railway. The occurrence has not been mapped in detail.

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A second type of alteration has been distinguished on the Goatfell Property. Earlier workers (Leask, 1988 per. comm; Edmunds and Rodgers, 1987) noted "bleached," pale and quartzites and siltites in the vicinity of the railroad loop and assumed they were albite-rich, based on analogies with the albite-rich assemblage present immediately above the massive portion of the Sullivan mineralized lense. Mapping during the 1988 season indicated that this alteration type, termed quartz-chlorite-pyrite alteration, covers a roughly triangular The alteration extends approximately 1.2 kilometres area. along the Spider Creek fault and appears to narrow in width upwards toward the tourmalinite pipe on the railway. This alteration type is present throughout almost the entire length of drill holes Goat 1 and 2. Data from drilling and surface exposures indicate it effects at least 500 m of stratigraphic section.

Weakly altered, grey to dark grey quartzites within the alteration zone contain hairline to centimeter wide greenish veins which generally cut bedding at a high angle. Pale greenish bleaching extends out irregularly from these veins into bedding, producing a jagged irregular edge to the bleached zone. In thin section it is apparent that many of the veins have calcite cores. The bleached, green coloration is caused by muscovite/sericite, minor chlorite and carbonate. This type of alteration appears to grade into a pervasive bleaching typical of much of the altered zone.

Thin section examination of pervasively bleached rocks (Appendix III) shows that the bleaching involves removal of biotite and some opaques as well as recrystallization of quartz and fine-grained mica into larger, less turbid crystals and addition of carbonate. Bleaching is better developed in quartzites than siltites or argillites. Although albite was sought in the thin sections there is little evidence of greater than 1-3% in any of the rocks examined to date.

Carbonate is a typical mineral within quartzites of the altered area. It occurs as a late, pervasive cement between quartz grains and occasionally is abundant enough to be distinguished megascopically as concretions up to 7 cm in diameter. Calcium-rich minerals such as garnet and epidote group minerals are more common in the altered zone than elsewhere in middle Aldridge rocks. Pink garnet, commonly poikilitic to skeletal in texture, is a common accessory

mineral in carbonate-rich zones as are epidote and clinozoisite.

Bleaching of siltite and argillite is also seen in the Goatfell drill holes. These zones commonly display a buff-white to tan color on fresh surfaces. A single sample (DDH 1 - 1117') from one of these zones contains 40 - 50 % muscovite/sericite and abundant carbonate (2-4%). Minor albite is present but further petrographic study is required to determine whether or not albite is a common constituent of this alteration subtype.

All the altered rocks appear to contain more chlorite, sphene (1-3%), carbonate (1-5%) and tourmaline (1-2%) than typical middle Aldridge rocks. Additionally, pyrite is a common iron sulfide in the altered sequence. Whole-rock analysis of altered and unaltered rocks from this portion of the middle Aldridge will be conducted as part of the 1989 program to more closely evaluate the chemical variations between these altered rocks and typical unaltered middle Aldridge lithologies.

Several styles of mineralization have been noted on the Goatfell Property. Fine-grained siltites and argillites in both the lower and middle Aldridge contain minor amounts of laminated, diagenetic iron sulfide, now pyrrhotite. Quartz veins cutting the tourmalinite along the railway contain irregular clots of pyrrhotite. On the NW bank of Hazel Creek a meter wide quartz vein was excavated in the past. It

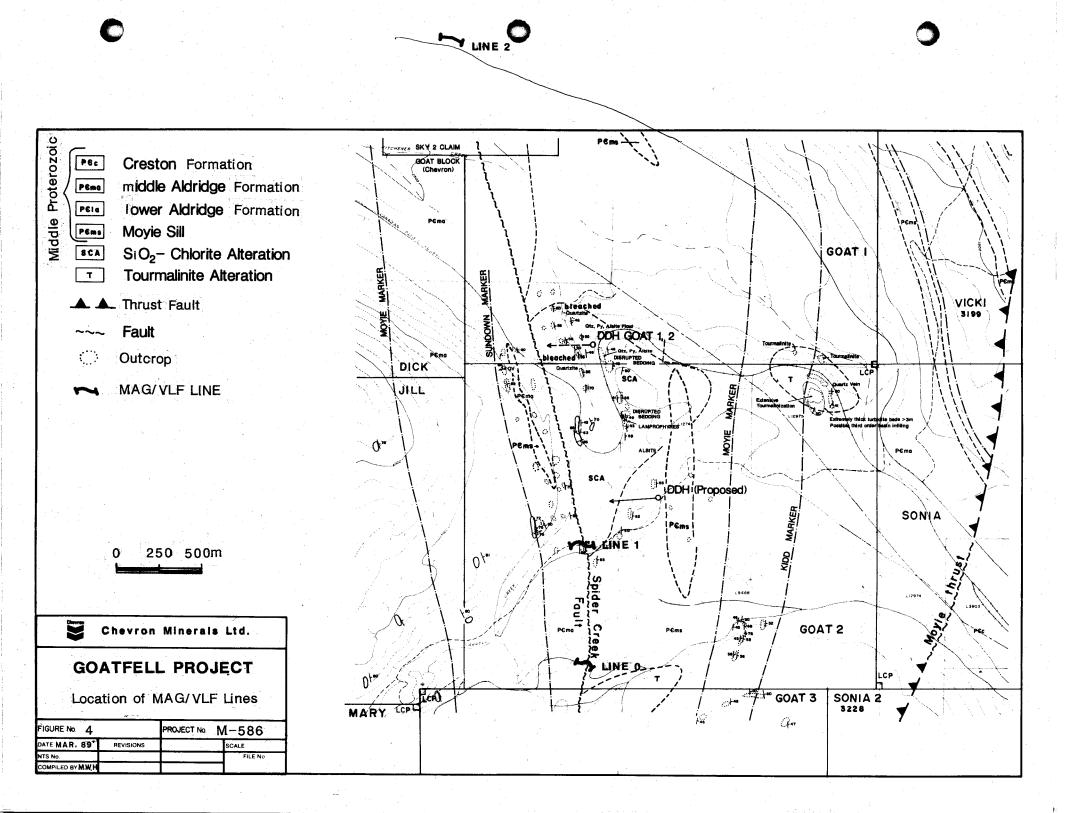
contains minor sphalerite, galena and pyrite. Thin quartz veins with base metal sulfides were also intersected by drilling within the Spider Creek fault.

Disseminated and veinlet-controlled sulfide mineralization is common within the quartz - chlorite - pyrite alteration zone intersected in the drilling. Pyrite and pyrrhotite are the most common sulfide minerals. Pyrite predominates in quartzites and in highly altered zones, whereas pyrrhotite is most common in siltites and argillites. Sphalerite occurs most commonly intergrown with quartz and carbonate minerals in hairline vein fillings within altered beds. The sphalerite has a characteristic red-brown color. Disseminated red-brown sphalerite occurs as a cement in some altered quartzites and rarely may account for 2-4% of the rock over short intervals. In hole Goat - 2 minor laminated sphalerite occurs with pyrrhotite in siltites and argillites. Galena is relatively rare. Where present, it occurs with disseminated sphalerite. More coarsely crystalline sphalerite, galena, pyrite and chalcopyrite occur in centimeter-wide, bedding parallel quartz veins intersected in both drill holes. No assays were made of the mineralization present in either drill hole.

8.0 <u>GEOPHYSICS</u>

In October, 1988 three lines of MAG/VLF were run in order to better determine the position of the Spider Creek fault. Line 0 (650 m) was located along the main forestry access to Carroll Creek along the southern boundary of the Goat 2 claim (Figure 4). Line 1 (625 m) was located to the north of Line 0, along the overgrown road following Carroll Creek. Line 2 (625 m) was located along Highway 3 at the mouth of Hazel Creek. The half-day survey was completed using a Omni-Plus tie-line MAG/VLF R22K instrument. Uncorrected total field magnetic data as well as both in-phase and quadrature readings was collected at 25 m stations. The VLF data was recorded from three transmitting stations (Annapolis, Hawaii, and Seattle) at each location. Data was plotted in the field for each of the lines (Appendix IV). Magnetic data was plotted as uncorrected total field values. VLF data was plotted as linear array of in-phase and quadrature values.

On Line 0 the supposed trace of the fault (between stations 350 and 450), based on sparse outcrop geology, was confirmed by a rapid shift of total field magnetic readings as well as a broad decrease in quadrature values shown in data from all three stations (Appendix IV). The fault location on Line 1 was not obvious from the magnetic data. VLF quadrature values, however, show a pronounced decrease between stations 325 and 425, which is taken to represent the fault zone. This location corresponds well with the location derived from bedding dip changes in outcrops in the area. The fault location is more problematic on Line 2 which was run along Highway 3 with its associated cultural features such as buried cables, overhead wires and metal culverts. The total field magnetic data shows a change in trend between stations 325



and 400. A pronounced increase in VLF quadrature values are found at these same stations in readings utilizing the Hawaii and Seattle stations. Although this location is approximately the one that would have been picked utilizing surface geologic data, the absence of nearby outcrop control makes this determination less precise than those from Lines 0 and 1. The geophysical data confirms the information gained from drilling that the Spider Creek fault zone is up to 100 m wide.

9.0 DIAMOND DRILLING

During July to October, 1988 a diamond drilling program was conducted on the Goatfell Property to test the Sullivan mine horizon in the area of the quartz-chlorite-pyrite alteration zone. Two diamond drill holes were completed for a total length of 844.14 meters. Boundary Drilling Inc. of Vancouver, B.C. was contracted to drill the property during the 1988 season. The drilling began on July 15 and was completed October 17 using a trailer-mounted DMW-1 drill and NX rods. The core is currently stored in a warehouse in Cranbrook, B.C. leased to Mr. G. Leask.

The drill core was logged on site. The first 255 m of Goat-1 was logged by Dr. Jennifer Pell, consulting geologist. Both drill holes were then logged in their entirety by Mr. Gordon Leask. Hole to hole correlation was accomplished by Dr. Murray Hitzman utilizing Leask's drill logs and by inspection of the drill core in Cranbrook. The drill logs are found in Appendix V.

9.1 Drill Hole Goat - 1

Drill hole DDH Goat-1 was collared on the Goat -1 claim approximately 50 m west of the CPR line above Carroll Creek (Figure 5). The hole was designed to test the Sullivan mine horizon in the lower Aldridge. This hole was drilled to a total depth of 391.7 metres. The bearing of the hole was 265 and it had a collar angle of 50 at surface. Seven orientation tests were taken downhole utilizing a Sperry-Sun instrument.

The drill hole collared in typical quartzite-dominated middle Aldridge metasediments (Figure 6). The contact between the middle to lower Aldridge members was picked at 280.6 metres immediately below a 4 m thick quartzite bed. The lower Aldridge member is distinguished from the middle Aldridge in DDH Goat-1 by the increased amount of siltite relative to quartzite. Laminated marker beds were found at 160-161 m and 309-310 m. A major sheared zone was intersected from 288 -293 m which is believed to be a high angle normal fault. The main Spider Creek fault zone was encountered at 354 m and drilling was terminated due to poor core recovery in highly sheared siltites within the fault zone.

The hole displayed quartz-chlorite-pyrite alteration, with associated carbonate, of quartzite beds throughout its entire length. Intense alteration affecting quartzites and siltites was noted at 300 - 302 m and 310 - 316 m. There was no conspicuous change in the style or relative intensity of

Middle Proterozoic PEm NENER SKY 2 CLAIM Pec Creston Formation GOAT BLOCK (Chevron) PEma middle Aldridge Formation PEId lower Aldridge Formation P€ma P6ms Moyie Sill SiO2- Chlorite Alteration SCA GOAT I **Tourmalinite Alteration** т MARKER MARKE Thrust Fault **_** VICKI bleache NMOONIS 3199 Fault GOAT ivx. Outcrop PEma DICK FIO SCA i ċi JILL 0* P€mo SCA DDH (Proposed) SONIA PEm 0 250 500m .0/. 19468 100 free (+ 22 45 / 100 (+ 22 45 / 102 Chevron Minerals Ltd. GOAT 2 P€m Ĩee) 2017 34 **GOATFELL PROJECT** C1 - F. f. GOAT 3 Drill Hole Location SONIA 2 3228 ...**⊦**•• MARY 1CP 1. (j.47 FIGURE No. 5 PROJECT No. M-586 DATE MAR. 89 REVISIONS SCALE FILE No MPILED BY M.W.

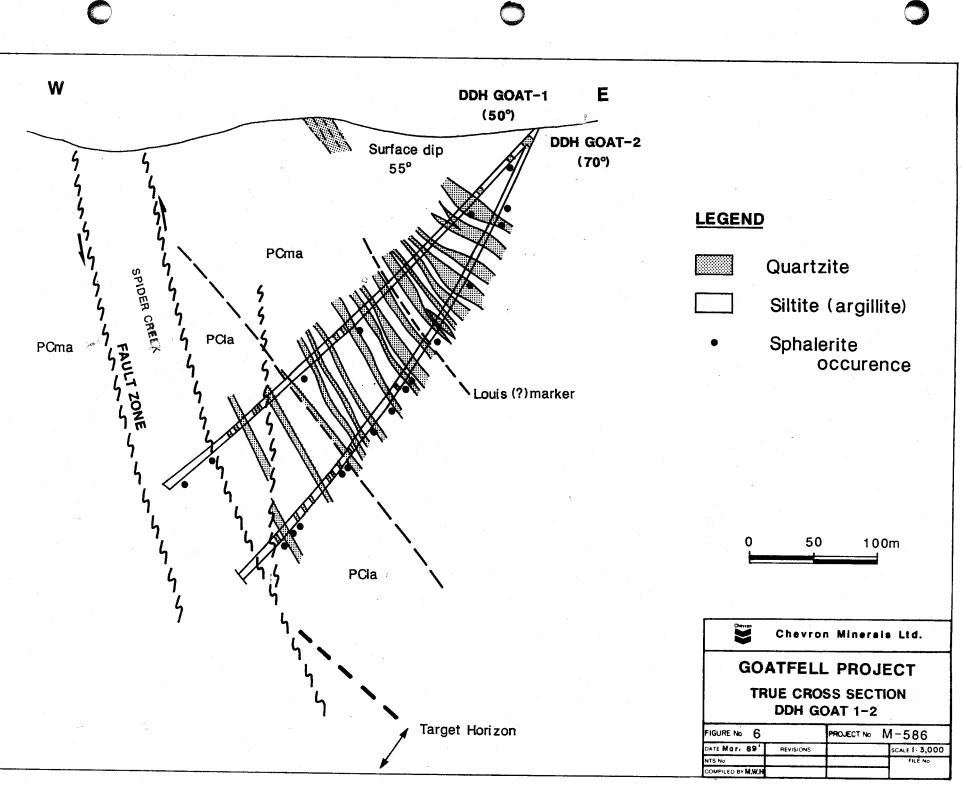
alteration downhole. Minor base metal mineralization, dominantly red-brown sphalerite, but occasionally with fine-grained galena, was noted at 33 - 35 m, 82 - 83 m, 203 - 204 m, 258 - 259 m, 342 - 344 m, 372 - 373 m, and at 374.6 m. In most instances the sulfides form disseminations or fillings of discontinuous fractures in quartzites. Between 258 and 259 m the mineralization infills small, discontinuous fractures in slumped siltite beds. The mineralization at 374.6 m occurs in a 3 cm wide quartz vein which is probably related to the Spider Creek fault.

The drill hole failed to reach the projected Sullivan mine horizon due to cut-out along the Spider Creek fault. The presence of significant alteration and minor base metal mineralization were considered encouraging, however.

9.2 Drill Hole Goat - 2

Drill hole Goat - 2 was collared from the same site as Goat-1. The hole had the same bearing as Goat-1 (267), but was drilled at a steeper inclination (70°). Goat-2 was designed to determine the dip of the Spider Creek fault, test the lateral continuity of individual beds as well as alteration types and penetrate the Sullivan mine horizon. The hole was drilled to a total depth of 452.44 before being terminated due to poor core recovery within the Spider Creek fault. Five orientation tests were taken downhole utilizing a Sperry-Sun instrument.

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The hole collared in middle Aldridge metasediments. Despite the proximity of the two drill holes, significant thickness variations in quartzite beds was observed (Figure 6) indicating channelling in this portion of the turbidite fan. The lower - middle Aldridge contact was picked at 295 m, below a thick quartzite unit. Laminated marker beds were located at 173 - 179 m, 194.5 - 195.7 m and 343 - 344 m. The marker beds at 161 m in DDH Goat -1 and the marker beds at 194.5 m in DDH Goat - 2 were correlated, though the match is poorer than had been hoped due to the intensity of alteration in both holes. It is believed that this is the Louis Marker which is approximately 295 m above the ore horizon in the Sullivan mine area. Goat - 2 contained a number of thin zones displaying disturbed bedding in siltites (47 - 48m, 258 m, 317 m, and 365 m). The absence of comparable zones in Goat - 1 emphasizes the lateral inhomogeneity of the sedimentary sequence in this area.

A discrete clay gouge zone between two quartzite beds was intersected at 416 - 418 m. This may be the down dip extension of the fault zone intersected at 288 m in DDH Goat - 1. The main Spider Creek fault zone was intersected at 431 m in Goat - 2 and the hole remained in clay gouge with quartzite blocks until its termination at 452.44 m.

Alteration in DDH Goat - 2 resembles that in the first hole. The dominant alteration type is quartz-chlorite-pyrite with carbonate which extends through the entire hole. Intense

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alteration, which was believed to include albite, is more pronounced in Goat - 2. Intensely altered zones were intersected from 16 - 17 m, 21-23 m, at 50 m, 53-54 m, 60 - 64 m, 67 - 68 m, 115 - 116 m, 210 - 121 m, 217 - 218 m, 225 - 226 m, at 267 m and 272 - 273 m. Thus zones of most intense alteration appear to be more common near the top of the hole. With the exception of the alteration at 267 m, the majority of intense alteration is confined to quartzite beds.

Minor mineralization is ubiquitous in Goat - 2. Sphalerite was noted at 62 - 63 m, 73 m, 122 - 123 m, 164 - 164 m, 188 m, 209 - 211 m, 218.7 m, 229 m, 241 - 242 m, 253.5 m, 292 m, 316 m, 319 m, 324 m, 333 m, 362 m, 384 m, 391 - 396 m, and 406 m. High in the hole the base metal sulfides occur as weak dissemination and fillings of discontinuous, hairline fractures. The occurrence at 122 - 123 m contains galena in addition to red-brown sphalerite. From 218 to 333 m hairline fracture sphalerite occurs as fillings and laminations with pyrite and pyrrhotite in siltites and argillites. Exceptions are the occurrences at 253 m, 362 m, 384 m, and 391 - 396 m which are disseminations and fracture fillings in quartzite beds. At 292 m sphalerite occurs with pyrite, pyrrhotite, galena and chalcopyrite in two bedding parallel, several centimeter-wide quartz veins.

Drill hole Goat - 2 was successful in allowing for determination of the dip of the Spider Creek fault (approximately 70 to the east), and in providing information

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concerning the continuity of individual beds and alteration zones. Unfortunately the hole intersected the Spider Creek fault prior to encountering the Sullivan mine horizon in the lower Aldridge, based on correlations utilizing the laminated marker beds.

10.0 CONCLUSIONS

- The majority of the Goatfell Property is underlain by middle Aldridge metasedimentary rocks. The lower Aldridge is exposed on the east side of the Spider Creek fault near Hazel Creek.
- 2. The Goatfell Property consists of three structural blocks: a block to the east of the Moyie thrust containing Creston Formation and upper and middle Aldridge Formations; a block between the Moyie thrust and the Spider Creek backthrust consisting of middle Aldridge and minor lower Aldridge Formations; a western block consisting entirely of middle to uppermost middle Aldridge Formation.
- 3. Surface mapping and drilling indicate that quartzite beds within the lowermost middle Aldridge display rapid variations in thickness suggestive of highly channelized sediments within an active turbidite fan.

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- 4. The trace of the Spider Creek fault has been constrained throughout much of the central portion of the property by geologic mapping and three lines of MAG/VLF.
- 5. Two distinctive styles of alteration have been delineated on the property: tourmalinite alteration and quartzchlorite-pyrite alteration. Tourmalinite alteration has been found in place along the railway line on the Goat 1 -2 claim boundary. This occurrence contains nearly massive tourmalinite in places and appears to have a pipe-like shape which cross-cuts bedding. A second zone of tourmalinite is inferred to the south along the Carroll Creek access forestry road from abundant float. Quartz - chlorite - pyrite alteration forms a broad zone adjacent to the Spider Creek fault in the area of the railway line. Petrographic studies suggest this zone is characterized by a lack of biotite and increased chlorite, white mica and carbonate minerals.
- 6. Two diamond drill holes (Goat 1 and 2) were completed on the property. The holes were drilled from the same site on identical bearings but at differing angles (50 and 70). Both holes penetrated the lower - middle Aldridge contact but encountered the Spider Creek fault zone before testing the Sullivan mine horizon. Alteration and weak mineralization were encountered along the length of both holes.

Weak mineralization consisting of pyrite and sphalerite, 7. with trace galena, was intersected in the drilling. Mineralization consists primarily of fracture filling of hairline calcite-quartz veins in altered quartzite beds. Minor disseminated iron sulfide sphalerite mineralization in quartzite beds was observed as well as weak, laminated iron sulfide sphalerite mineralization in argillites.

8. The Sullivan mine horizon, the prime horizon of interest during the current phase of exploration, remains untested. Results to date are encouraging and exploration during the 1989 season should be geared toward a definitive test of this horizon.

11.0 RECOMMENDATIONS

Further exploration on the Goatfell Property is warranted by the 1988 exploration results. The program for 1989 should include:

- Geologic mapping (1:5000) of the entire Goatfell Property.
- 2. Detailed (1:2500) geologic mapping of the ridge between Hazel and Kitchener Creeks on the Goat 1, Barb and Sky claims. This mapping should include a measured section from the lower Aldridge through the middle Aldridge. Lithochemistry through the section would aid in

evaluation of possible productive horizons above the Sullivan mine horizon.

- 3. Extension of the shallow soil geochemical survey on the Sky claims to other portions of the Goatfell block. Areas for testing should be based on the results of the lithochemical survey recommended above.
- 4. Detailed (1:2500) mapping of the railway tourmalinite pipe to determine its geometry and zoning. Comparisons (chemical, isotopic) of the tourmalinite from both Goatfell Property occurrences with tourmaline from other Belt Supergroup occurrences.
- 5. Continued petrographic study of the quartz-chloritepyrite alteration zone and comparison with unaltered Aldridge lithologies. The study should include whole rock chemistry of altered and unaltered rocks. Petrographic studies should be conducted to determine the differences between the magnetic and non-magnetic Moyie sills on the property.
- 6. Further diamond drilling to test the Sullivan mine horizon. A vertical hole at the site of DDH Goat 1,2 would test the horizon as well as providing further information on bed thickness variations and variability of alteration assemblages. A second, angle hole to the south at the northern boundary of the Goat 2 claim is

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required to test the weak EM anomaly identified in 1987 as well as the Sullivan mine horizon. Further drilling would be contingent on positive results such as intersections of significant mineralization/alteration or lithochemical response in rock from the Sullivan mine horizon. A further hole to the south on Goat 2 or 3, in the vicinity of the suspected southern tourmalinite pipe would help delineate the extent of alteration zones. A fourth hole in the Kitchener Creek valley to cut the middle - lower Aldridge contact in the near-surface would provide useful information on Quaternary cover thickness in the valley and on lateral changes in stratigraphy as well as possible northern extensions of the recognized alteration zone.

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STATEMENT OF QUALIFICATIONS

APPENDIX I

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STATEMENT OF QUALIFICATIONS

I, Murray W. Hitzman, hereby certify that:

- I am presently employed as a geologist by Chevron 1. Minerals Ltd. at 1900 - 1055 West Hastings Street, Vancouver, B. C.
- 2. I have studied geology at Dartmouth College (A.B. 1976), and have graduate degrees in geology from the University of Washington, Seattle (M.S. 1978), and from Stanford University, Stanford, California (Ph.D. 1983).
- I have practiced within the geologic profession 3. since 1975.
- 4. That I am a member in good standing of the Geological Society of America, the Society of Economic Geologists and The Geological Society.
- That the work outlined in this report was conducted 5. under my supervision.

Dated the 15 day of February, 1989 Muyur. 144 Murray W. H

APPENDIX II

COST STATEMENT

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GOATFELL

1988 COST STATEMENT

<u>Salaries</u>

	<u></u>	<u>ielđ 0</u> :	ffice	Field	Dates	
М. Н.	itzman	18	A C		Sept.22-23, Oct. 13-16,	9,620.40
G. Le	eask	19	S	ug. 7-14, Sept.17-19, Oct. 5-6	Sept.5-6, Sept.21-23,	7,200.00
J. Pe	ell	10		April 29-30 July 30 - A		1,480.00
T. E] J. Le	orris Ldrige eask Amunds	8 1 5 -	– J	Tuly 30 - A Tuly 6 Sept. 10-13	5	1,000.00 250.00 2,000.00 400.00
			I	otal	\$2	21,950.40

Disbursements

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		and the second
Airline flights Truck rental 22 days @ \$50 Suburban rental 8 days @ \$40	\$	2,224.70 1,100.00 320.00
Car rental		842.18
Lodging		1,276.93
Fuel		357.49
Telephone		161.75
Food, meals		289.73
Maps, copying		45.62
Thin sections and petrographic reports		1,400.75
Core racks 2 @ \$1000		2,000.00
Drafting, reproduction		1,861.35
D6C 16 hrs. @ \$65		1,040.00
544 JD Loader 7 hrs. @ \$55		385.00
Faller 8 hrs. @ \$10		80.00
Equipment move 2 hrs. @ \$100		200.00
6 6' 10x10 \$30/each		180.00
Diamond Drilling	1:	<u>27,883.29</u>

Total Cost

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<u>\$163,599.19</u>

GOATFELL

1988 DIAMOND DRILLING COSTS

Mobilization/Demobilization

\$ 5,796.50

Drilling

DDH Goat - 1	20' @ \$24.00 1000' @ \$21.00 360' @ \$35.00	480.00 21,021.00 12,600.00
DDH Goat - 2	20' @ \$24.00 1000' @ \$21.00 500' @ \$35.00	480.00 21,000.00 17,500.00

Drill Moves/Set Up/Standby

DDH Goat - 1	55.5 man hrs. @ \$38.50 5 labor hrs. @ \$20.00	2,136.75 100.00
DDH Goat - 2	41 non-operating hours @ \$93.00 38 man hrs. @ \$38.50 18 labor hrs. @ \$20.00	3,813.00 1,463.00 360.00

<u>Other</u>

Drilling materials	15,920.28
Core Boxes	2,305.50
Sperry Sun rental	1,500.00
Board/lodging	18,607.68
Steel gates for landowner	385.07
Field check of site prior to drilling	2,414.51

Total Drilling Cost

<u>\$127,883.29</u>

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APPENDIX III

PETROGRAPHIC REPORT ON SAMPLES FROM THE GOATFELL PROPERTY J.S. GETSINGER, DECEMBER 2, 1988

PETROGRAPHIC REPORT ON SAMPLES FROM GOATFELL PROPERTY

FOR

CHEVRON MINERALS LTD.

BY

J.S. GETSINGER, Ph.D.

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DECEMBER 2, 1988

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SUMMARY OF PETROGRAPHY ON FIVE SAMPLES FROM THE GOATFELL PROPERTY

Description of Samples

Five samples were selected from drill hole DDH-1 on the Goatfell property for thin section interpretation (DDH1-Bx55 (298 m), DDH11-1004' (306 m), DDH1-1073' (327 m), DDH1-1117' (340 m), and DDH1-1139.5' (347 m)).

All 5 rocks are meta-siltstone to fine sandstone, with some variation in mineralogy and texture. Mineralogy consists of 40 to 60% quartz, up to 15% feldspar (plagioclase \pm K-feldspar), 10 to 45% muscovite (including sericite), up to 15% biotite, up to 4% garnet, up to 3-4% opaques, up to 10% carbonate, up to 3% sphene, and up to 1% tourmaline or epidote.

Texture is well-sorted to poorly sorted (within the siltstone to fine sandstone range), clastic to somewhat recrystallized. Sedimentary structures such as bedding, graded bedding, slump folding, and rip-up clasts are well-preserved. Static metamorphic textures are superimposed on the sedimentary textures, as seen in sample DDH1-Bx55 (298 m), with its porphyroblastic and atoll garnets, and in other samples with porphyroblastic muscovite and metamorphic biotite.

In this sample suite, tourmaline does not coexist in equilibrium with biotite, but tends to occur in rocks with greater than 15% muscovite. It occurs as small, individual prisms zoned from bluish-green to brown (up to 1% of rock). Tourmaline was noted in rocks with more structural complexity, such as slump folding, convolute bedding, or microfaulting.

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The presence of sphene up to 3% seems excessive for a typical siltstone. It occurs, in part, surrounding opaques (Fe-Ti-oxides (?) such as ilmenite), but also as an alteration associated with tourmaline, related to a crosscutting trend in sample DDH1-1117' (340 m). This suggests that the calcium and/or titanium may have been introduced in fluids along with boron.

Opaques are in general finely disseminated and in small amounts, up to 3-4%. They were observed in hand specimen to consist of pyrrhotite and arsenopyrite, but may also consist of ilmenite, as suggested by alteration to sphene. Some appear to be retrograde reaction products of biotite altering to chlorite, also suggesting Fe-Ti oxides.

Metamorphic minerals are mainly biotite, muscovite, and garnet, with retrograde chlorite, epidote, and muscovite/sericite. Red-brown colour of biotite usually indicates amphibolite facies metamorphism; however, other features in these rocks suggest a lower grade, such as greenschist facies metamorphism. The red-brown colour is believed to reflect Ti-content. It is possible that the metamorphism was more of a metasomatism caused by movement of hydrothermal fluids through the rock rather than typical regional or burial metamorphism.

Garnet porphyroblasts in sample DDH1-Bx55 (298 m) are interesting because some are poikiloblastic whereas others are in ring shapes (atolls) with recrystallized quartz in the core.

Muscovite occurs as porphyroblasts and also as finer grained sericite. The larger flakes are interpreted as porphyroblastic rather than detrital grains because of their randomly distributed orientation and their metamorphic association. For instance, in sample DDH1-Bx55 (298 m), large muscovite grains in one layer are likely to be

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porphyroblastic because the rock also contains porphyroblastic garnet and metamorphic biotite. In some rocks the sericite is clearly an alteration of feldspar (DDH1-1139.5' (347 m)) whereas in others it probably represents metamorphically recrystallized argillaceous minerals or layers (DDH1-1117' (340 m)).

Retrograde metamorphic minerals are mainly chlorite, sericite, and minor epidote. Sphene is also seen as an alteration around opaques. Pale green chlorite, with associated opaques, is a common alteration from red-brown biotite. It also occurs along fractures, especially in sample DDH1-1073' (327 m). Epidote was noted around opaques and also as clinozoisite veinlets crosscutting other structures and muscovite porphyroblasts, as in sample DDH1-Bx55 (298 m).

Postmetamorphic alteration consists of late carbonate veinlets (1 mm). They are composed mainly of calcite, but some ankeritic component may also be present (as in sample DDH1-1117' (340 m).

Summary of Geological History

The geological history of the area around drill hole DDH-1 can be summarized briefly using evidence from the 5 samples studied in thin section. Sedimentary deposition of fine sand to silt with some argillite probably occurred in a turbiditic environment, as indicated by slump-folds and possible microfaulting, but there is not enough data from these sample to distinguish lower from middle Aldridge Fm.

Static metamorphism without deformation occurred in conditions approximating upper greenschist facies or perhaps hornblende hornfels facies. The most diagnostic mineral assemblage observed was garnet - biotite - muscovite (+ quartz) \pm sphene \pm tourmaline. Some metamorphic components may have been introduced by

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metasomatism or hydrothermal fluids, such as boron, calcium, titanium. Age relations of tourmaline and other metamorphic minerals are not clear, although tourmaline and sphene appear to be somewhat related to crosscutting trends.

Retrograde metamorphism involved fracturing and hydration of minerals at a lower temperature (such as consistent with lower greenschist facies), with biotite altering to chlorite \pm opaques, feldspar and muscovite/sericite altering to a later phase sericite, and epidote/clinozoisite veinlets.

Mineralization consisting of up to 3-4% finely disseminated opaques, possibly including pyrrhotite, arsenopyrite, Fe-Ti oxides and Fe-oxides, may have been primary or metamorphic.

Postmetamorphic alteration consisted of minor carbonate veining (calcite \pm ankerite). No penetrative deformation appears to have taken place.

Comparison with Samples from Sullivan and Mt. Mahon

Three samples from other areas were also described in thin section for comparison with the samples from drill hole DDH-1. Samples S-1 and S-2 are from the Sullivan orebody, and sample Mt. Mahon 2 is from Mt. Mahon.

Sample S-1 is supposed to be an example of a chloritized siltstone from the Sullivan Hanging Wall. It is a mineralized siltstone, but there is hardly any chlorite in it. The dominant alteration products are fine-grained garnet and quartz, with lesser biotite, plagioclase, and minor chlorite. The disseminated opaques, mainly pyrrhotite, are also locally altered to red hematite.

Sample S-2 is an example of the Sullivan Tourmalinite Footwall. It is an altered granule conglomerate with clasts of siltstone and shale as well as quartz grains. Both the clasts and matrix have been altered to a dirty brown mat of fine-grained crystals which are likely to be tourmaline, in comparison with previous descriptions. The tiny needles are colourless to pale green, but with no visible pleochroism, unlike most tourmaline; and length fast, consistent with a uniaxial negative mineral. Carbonate and muscovite alteration are intimately associated with opaques, which are disseminated throughout in a small amount (3-4%) as lumpy, skeletal grains.

Sample Mt. Mahon 2 is a tourmalinized turbiditic siltstone with fine-grained, altered shaly layers. As well as fine, very pale green tourmaline(?) needles forming a brown mat-like alteration (up to 30%), there are also larger, individual grains of tourmaline-(<1%) which can be positively identified as such because of distinctive green to tan pleochroism (O>E).

The samples from DDH-1 are also altered siltstone, but none show the pervasive finegrained tourmaline alteration typical of Sullivan or Mt. Mahon.

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IL PETROGRAPHIC DESCRIPTIONS

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by J.S. Getsinger, PhD____

For: Chevron Minerals Ltd. Project: Goatfell - M586 Sample: M586-DDH1-Bx55 (298 m) Date: 88-11 Collector: M.W. Hitzman Date Collected: 1988

LOCATION: Goatfell project, B.C., drill hole DDH-1, 298 m depth

ROCK TYPE: Meta-siltstone to fine sandstone

HAND SPECIMEN: Thin section offcut chip (0.8 x 2.1 x 3.6 cm) cut perpendicular to compositional layering (bedding), which is defined by light to dark green layers (2-6 mm) with apparent grading. Grain size is very fine (0.1 mm?) with slightly coarser black and dark green spots to 0.25 mm. Mineralization consists of a few grains (up to 0.5 mm) of angular to subhedral, silvery arsenopyrite (<< 1%) and minor disseminated pyrrhotite (not apparently magnetic). Pink areas (up to 7 mm) superimposed across bedding may be garnet; the smaller areas are solid pink, whereas the larger ones show a rim 0.5 mm wide of pink garnet(?) surrounding a grey to greenish-grey core (atoll structure). Very fine calcite veins (react in HCL) crosscut the garnet atolls.

THIN SECTION:

- % (Approx.) MINERALS
 - 60 Quartz Angular to subrounded, poorly to medium well-sorted silt- to fine sand-sized clastic grains; some undulose extinction; uniaxial(+). Occurs also in larger grains within atoll garnets, where undulose extinction is most common.
- 10-15 Muscovite/Sericite Colourless mica, med. biref., may be from altered feldspar and/or detrital mica. One layer has porphyroblastic muscovite as well as abundant sericite, sphene, etc. Clinozoisite vein crosscuts muscovite porphyroblast.
 - 5-10 Biotite Brown mica, occurs disseminated as small, squarish flakes, concentrated in some layers more than others. Locally altered to chlorite. Associated with sphene.
 - 5 Chlorite Pale green, an alteration of biotite
 - 3-4 Garnet Poikilitic to skeletal to atoll-shaped, filled mainly by quartz. Inclusions may be quartz, clinozoisite, minor opaques.
 - 2-3 Sphene High relief, brownish pleochroism, sphene shape; isolated grains and as common high relief grains, possibly from altered biotite; may include leucoxene(?). Some sphene surrounds opaque grains in a reaction rim.

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Sample M586-DDH1-Bx55 (298 m), continued (p. 2)

- Epidote/Clinozoisite High relief; common anomalous blue biref., occurs around opaques and in crosscutting veinlets.
- 2-3 Opaques Small grains, skeletal grains. Associated with clinozoisite, post-garnet, some altered to sphene (may be ilmenite).
- Trace Rutile or Hematite High relief grain with strong red absorption
 - 1 Carbonate Isolated large grains and vein alteration near the atoll garnets.
- ROCK TEXTURES/STRUCTURES: Bedding is well preserved as variations in composition and texture. Biotite is altered to chlorite. Garnet occurs as porphyroblasts and ring-shapes (atolls). Muscovite occurs as porphyroblasts and as sericitic alteration of feldspar(?). Sphene is concentrated in layer with porphyroblastic muscovite, epidote, sericite, and opaque dust. No deformation textures were noted except for slightly flattened garnets and undulose extinction in quartz.

PROTOLITH: Siltstone, quartz arenite, or greywacke

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- ALTERATION/MINERALIZATION: Alteration is metamorphic: muscovite garnet biotite (lower amphibolite facies?); and retrograde metamorphic: sericite - chlorite - epidote (greenschist facies). Opaques are apparently premetamorphic.
- CONDITIONS OF FORMATION: Deposition of quartz feldspar(?) siltstone or greywacke in turbidite environment. Static metamorphism to lower amphibolite facies or hornblende hornfels facies produced red-brown biotite and garnet (and sphene); retrograde metamorphism resulted in chlorite, sericite, epidote alteration.

by J.S. Getsinger, PhD___

For: Ch	evron Minerals Ltd.	Date: 88-11	
• • • • • • • •	Goatfell - M586 M586-DDH1-1004'(306 m)	Collector: M.W. Hitzr Date Collected: 1988	nan

LOCATION: Goatfell project, B.C., drill hole DDH-1, 306 m depth

ROCK TYPE: Meta-siltstone to fine sandstone

HAND SPECIMEN: Thin section offcut chip (0.8 x 2.2 x 3.6 cm), cut across layering. About one third of the section is light yellowish-green with thin rip-up clasts (up to 0.1 x 3 mm) of finer-grained yellowish-green shale and patchy yellowish- green alteration that may be sericite. The other part of the section is slightly finer-grained (<0.1 mm), dark grey, with light greenish-grey alteration patches. Only very minor local reaction to HCl. Mineralization is not apparent, although there may be some very finely disseminated sulphides. Non-magnetic.

THIN SECTION:

% (Approx.) MINERALS

- 60 Quartz Moderately well-sorted grains are closely packed with minimal sericitic matrix; uniaxial(+)
 - 5 Feldspar K-feldspar Microcline twinning(?), minor - Plagioclase - Albite twinning, relief contrast with quartz
- 10-15 Muscovite Colourless mica. Detrital and alteration. Locally occurs with fine-grained, semi-opaque material.
- 10-15 Biotite Brown mica, equant small flakes; locally altered to chrorite
 - 3-5 Chlorite Pale green, from altered biotite; causes local light green colour of rock.
 - <1 Sphene High relief, biref. Isolated grains and fine-grained alteration products
 - <1 Carbonate Mainly in veinlet
 - <1 Opaques Fine-grained, ragged, disseminated; also associated with chlorite

Sample M586-DDH1-1004'(306 m), continued (p. 2)

ROCK TEXTURES/STRUCTURES: Rip-up clasts are finer-grained, slightly more argillaceous than rest of siltstone. Sedimentary textures are well preserved; no deformation textures were noted. Chlorite replaces biotite. Mica is somewhat aligned on bedding.

PROTOLITH: Siltstone to fine sandstone

ALTERATION/MINERALIZATION: Alteration is mainly metamorphic - biotite, muscovite; and retrograde metamorphic - sericite, chlorite; with late carbonate veining. Opaques may be primary or products of retrograde metamorphism.

CONDITIONS OF FORMATION: Deposition in turbidite environment. Static metamorphism to upper greenschist facies(?). Retrograde metamorphism caused biotite to alter to chlorite.

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by J.S. Getsinger, PhD_

For: Chevron Minerals Ltd.	Date: 88-11
Project: Goatfell - M586	Collector: M.W. Hitzman
Sample: M586-DDH1-1073'(327 m)	Date Collected: 1988

LOCATION: Goatfell project, B.C., drill hole DDH-1, 327 m depth

ROCK TYPE: Meta-siltstone to fine sandstone

HAND SPECIMEN: Thin section offcut chip $(0.9 \times 2.1 \times 3.6 \text{ cm})$. Rock is very fine-grained (less than 0.1 mm), hard, siliceous, a dull greenish, tannish grey. Layering is defined by subtle textural changes. Darker grey blebs and patches to 1 cm (chlorite) and very fine, light-coloured veinlets (calcite, react in HCl) crosscut the siltstone. Non-magnetic.

THIN SECTION:

% (Approx.) MINERALS

- 60 Quartz Poorly sorted, angular to subrounded silt-sized grains
- 15-20 Muscovite Colourless mica, med. biref., irregularly aligned
 - 5-10 Carbonate In crosscutting veinlets, probably calcite
 - 1 Tourmaline Isolated small, euhedral to subhedral grains. Slightly zoned, with O = blue-green to olive to brown, E = tan, O > E.
 - 3-5 Chlorite Pale green, low biref., with pleochroic haloes; occurs as alteration along fractures

Trace Zircon - Pleochroic haloes in chlofite

2-3 Opaques - Finely disseminated

ROCK TEXTURES/STRUCTURES: Bedding is not planar but somewhat convoluted or perhaps microfaulted. Crosscutting fractures are filled with carbonate; some are filled with chlorite. Fracturing may indicate minor brittle deformation.

PROTOLITH: Siltstone or quartz arenite

ALTERATION/MINERALIZATION: Tourmaline occurs as individual grains disseminated throughout. Muscovite may indicate low grade metamorphism. Chlorite is a product of alteration or retrograde metamorphism. Calcite is a late vein-type alteration. Mineralizatio consists of finely disseminated opaques.

CONDITIONS OF FORMATION: Siltstone was deposited in turbidite enviornment. Low-grade metamorphism may be indicated by muscovite, but assemblage is generally undiagnostic. Chlorite is a result of later retrogression or hydrothermal alteration. Calcite came in on veins o microfaults, indicating possible brittle fracturing.

by J.S. Getsinger, PhD_____

For: Ch	evron Minerals Ltd.	Dat	:e:	88-13	1	
Project:	Goatfell - M586	Col	lect	tor:	M.W.	Hitzman
Sample:	M586-DDH1-1117'(340	m) Dat	e Co	pllect	ted:	1988

LOCATION: Goatfell project, B.C., drill hole DDH-1, 340 m depth

ROCK TYPE: Meta-siltstone to fine sandstone

HAND SPECIMEN: Thin section offcut chip (0.8 x 2.3 x 3.7 cm). Light greenish-grey, hard siltstone shows sedimentary structures such as graded bedding, local soft-sediment folding, and possible slumping. The coarser grains may be muscovite. Rusty veinlets are both parallel to and crosscutt: bedding; some are filled with milky white material; little reaction to HCL.

THIN SECTION:

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% (Approx.) MINERALS

- 40-45 Quartz Fine-grained, clastic
- 5(?) Plagioclase Albite-twinned grains in with quartz
- 40-45 Muscovite Mainly sericitic, fine-grained, white mica, aligned subparallel to bedding. Some layers are nearly pure mica.
 - 2-3 Sphene High relief, sphene-shaped, brownish, as alteration of opaques (ilmenite?) and as individual grains and alteration associated with tourmaline-bearing areas.
 - <1 Tourmaline Tiny zoned grains, olive to brownish, associated with sphene along a crosscutting trend and within the layering.
 - 1-2 Opaques Finely disseminated and in clumps
 - 2-3 Carbonate In veins. Poor reaction to HCl and rusty weathering suggest dolomitic or ankeritic component. Untwinned; extrem relief changes; one index lower than or equal to balsam (indicating some calcite); extreme biref.; uniaxial(-) with colour rings.

ROCK TEXTURES/STRUCTURES: Bedding is somewhat curved, but not visibly cross-laminated. Mica defines bedding-parallel foliation. Tourmali and sphene are related to a crosscutting trend. Carbonate comes in veins, some parallel to bedding.

PROTOLITH: Siltstone or quartzofeldspathic arenite with argillaceous layers

ALTERATION/MINERALIZATION: Tourmaline and sphene may have been introduced hydrothermally. Muscovite/sericite indicates some metamorphic recrystallization. Mineralization consists of finely disseminated opaques. Late carbonate veins are probably ankeritic.

CONDITIONS OF FORMATION: Deposition of siltstone in turbiditic environment. Low-grade metamorphic recrystallization. Possible hydrothermal alteration bringing in sphene and tourmaline, possibly opaques. Lat carbonate veining.

by J.S. Getsinger, PhD_

For: Chevron Minerals Ltd.	Date: 88-11
Project: Goatfell - M586	Collector: M.W. Hitzman
Sample: M586-DDH1-1139.5'(347 m)	Date Collected: 1988

LOCATION: Goatfell project, B.C., drill hole DDH-1, 347 m depth

ROCK TYPE: Hornfelsed siltstone to fine sandstone

HAND SPECIMEN: Thin section offcut chip (0.8 x 2.1 x 3.6 cm). Very fine-grained (<< 0.1 mm), hard, massive siltstone is light greenish-grey with tiny green spots(0.1 mm), and darker grey. The transition is irregular, not following bedding, and appears to crosscut primary textures. One late, crosscutting veinlet reacts in HCl (calcite). Non-magnetic.

THIN SECTION:

% (Approx.) MINERALS

- 50-55 Quartz Well-sorted, interlocking grains.
- 10-15 Feldspar Turbid, with relief contrast to quartz, somewhat altered to sericite
 - 15 Muscovite As porphyroblasts scattered throughout, and pervasive sericite alteration on altered feldspar
 - 10 Chlorite Pale green flakes, distributed throughout
- 1-2 Biotite Pale brown mica, mainly altered to chlorite; bent grains
- Trace Tourmaline Slightly zoned, olive to brown
 - 2-4 Opaques Finely disseminated, and altered to semi-opaque masses, possibly sphene
 - <1 Carbonate In crosscutting veinlets
- ROCK TEXTURES/STRUCTURES: Biotite is altered to pale green chlorite. Texture is clearly clastic but somewhat recrystallized, with no clear foliation or bedding. The colour difference in the rocks is due to more opaques in the dark portion, and chlorite in the light greenish-grey portion.

PROTOLITH: siltstone or guartzofeldspathic arenite

ALTERATION/MINERALIZATION: Feldspar is altered somewhat to serQcite; biotite nearly completely to chlorite. Pale green visible alteration in rock is related to chloritization of biotite. Mineralization consists of finely disseminated opaques. Late carbonate veins crosscut rock.

CONDITIONS OF FORMATION: Deposition of siltstone in turbidite environment. Some metamorphic recrystallization caused growth of biotite, and muscovite porphyroblasts. Retrogression is mainly indicated by chlorite alteration. Opaques may be primary or metamorphic. Carbonate veinlets are late hydrothermal.

by J.S. Getsinger, PhD_

For: Chevron Minerals Ltd.	Date: 88-12
Project: Goatfell - M586	Collector: -
Sample: Sullivan S-1	Date Collected: Pre-1988

LOCATION: Sullivan Chloritized Siltstone, Hanging Wall

ROCK TYPE: Mineralized garnetiferous guartz-biotite siltstone

HAND SPECIMEN: No hand specimen. Section shows squarish patch 1 x 1.5 cm of darker area with scattered, fine-grained opaques and red-brown grains (hematite, 2-3%) forming darker core, in a background of fine-grained, light-coloured rock. Opaques and darker minerals, 5-10%.

THIN SECTION:

% (Approx.) MINERALS

Opaques - Finely disseminated, with some concentration toward centre 5-10 of slide, anhedral, skeletal forms, surrounded by garnet and quartz alteration; some alteration to hematite. Hematite - High relief, anhedral grains with red absorption, 2-3 surrounding and intergrown with skeletal opaques. 20-25 Garnet - High relief, light-coloured alteration associated with opaques, blobby to subhedral, isotropic to very low biref. 30-35 Quartz - Occurs as polygonal grains interstitial to mineralization, uniaxial(+) with some albite. Also occurs in siltstone matrix (+_ feldspar) with sericite. 5-10 Biotite - Brown mica associated with opaques chlorite - Low to anomalous blue biref., very pale green, associated 3 - 4with hematite 10 Sericite (Muscovite) - Fine-grained, colourless mica in fine-grained sediment that is not as altered as central part Feldspar (Albite?) - With albite twinning, associated with opaques and 2-5 quartz; may also occur in siltstone part Tourmaline - Very tiny, individual greenish grains in siltstone Trace ROCK TEXTURES/STRUCTURES: Rock is very fine grained overall, with coarser, recrystallized area in the centre, with opaques, garnet, quartz, biotite, and chlorite, with minor feldspar. Rest of rock is less altered, finer-grained, sericitic guartz (+_ feldspar?) siltstone. Garnet is clearly associated with opaques.

sample Sullivan s-1, continued (p.2)

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PROTOLITH: Siltstone

ALTERATION/MINERALIZATION: Alteration associated with mineralization is dominantly garnet and guartz, with lesser biotite, chlorite, and feldspar (there is not enough chlorite to justify calling it "chloritized", however). Mineralization may be pyrrhotite, and must include some iron.

-CONDITIONS OF FORMATION: Deposition in fine-grained sedimentary environment. Possible metamorphism to upper greenschist facies, postdating or accompanying mineralization. Later retrograde alteration to minor chlorite and hematite.

by J.S. Getsinger, PhD_

For:Chevron Minerals Ltd.Date:88-12Project:Goatfell - M586Collector:-Sample:Sullivan S-2Date Collected:pre-1988

LOCATION: Sullivan Tourmalinite Footwall

ROCK TYPE: Tourmalinized siltstone conglomerate

HAND SPECIMEN: No hand specimen.

THIN SECTION:

% (Approx.) MINERALS

40% Clasts: Angular to subangular, dirty white to olive brown, tabular, up to 2 x 3 mm, with fine laminations, apparently siltstone or shale, altered to brownish, fine-grained material which contains tourmaline(?) needles.

Matrix:

- 25-30 Quartz Colourless. Angular silty to sandy grains, some subdivided, recrystallized; some overgrown with tiny needles; uniaxial(+).
 - 3-4 Opaques Pyrrhotite(?); occurs in lumpy skeletal grains, in matrix.
 - <1 Iron oxide(?) High relief, brownish alteration around opaques.
 - 25 Tourmaline(?) Fine-grained needles forming brownish mat throughout matrix and in clasts; colourless to pale green, length fast.
 - 2 Carbonate Associated with opaques and muscovite
 - 1-2 Muscovite Colourless mica, medium biref., associated with opaques. Also occurs in some altered clasts.

ROCK TEXTURES/STRUCTURES: Poorly sorted sediment has grain size from silt(?) to small pebbles of siltstone or shale. Clasts as well as matrix are pervasively altered with tourmaline needles. Quartz is unaltered, shows some recrystallization. Opaques are disseminated skeletal grains in matrix.

PROTOLITH: sedimentary conglomerate with clasts of siltstone/shale

ALTERATION/MINERALIZATION: Alteration is mainly in form of fine-grained tourmaline(?) needles (up to 25%). Mineralization is associated with muscovite and carbonate.

CONDITIONS OF FORMATION: Deposition in guartz-rich clastic sedimentary environment (turbidite), with conglomerate forming locally from shale and siltstone layers, indicating faulting or slumping. Tourmalinealteration is post-depositional.

by J.S. Getsinger, PhD__

For: Chevron Minerals Ltd.	Date: 88-12
Project: Goatfell - M586	Collector: -
Sample: Mt. Mahon 2	Date Collected: pre-1988

LOCATION: Goatfell project, B.C.

ROCK TYPE: Tourmalinized(?) siltstone

HAND SPECIMEN: No hand specimen. Slide shows very fine-grained, laminated shale to siltstone, with finer-grained portions a dull olive brown colour. Siltstone shows wavy bedding, possibly intraformational slump-folding.

THIN SECTION:

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% (Approx.) MINERALS

- 30 Quartz (+_ Feldspar?) Fine-grained, colourless, low biref., low relief background material
 - 5 Feldspar Larger grains in coarser (silty) layers, biaxial, poikiloblastic
- 20-30 Muscovite Colourless mica flakes; in coarser-grained layers aligned at an angle (40 degrees) to bedding, apparently subparallel wit axial planes of minor slump folds.
 - 1 Garnet Euhedral, individual grains (porphyroblasts) sparsely distributed across the section, occurring particularly in the finer-grained layers (14 grains total, 0.1 to 0.5 mm).
 - 2 Opaques Very finely disseminated throughout
 - <1 Tourmaline Individual prisms in silty layers; O = green, E = colourless to tan, O > E.

20-30 Tourmaline(?) - Fine-grained, med.-high relief, dark-appearing but actually colourless to very pale green needles, in shaly layers length fast; no pleochroism; forming a dirty-brown looking mat. Clearly a different phase from the larger individual grains of green tourmaline seen scattered throughout the section.

ROCK TEXTURES/STRUCTURES: Grain size varies from very fine (clay?) to fine (silt) in laminations and graded bedding (beds < 1 cm, laminations < 1 mm). Coarser-grained laminations have muscovite aligned at about 40 degrees to bedding, subparallel to axial planes of minor folds.

PROTOLITH: Siltstone/shale (turbidite)

Sample Mt. Mahon 2, continued (p. 2)

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- ALTERATION/MINERALIZATION: Metamorphic minerals are garnet and muscovite, possibly feldspar. Alteration includes two possible forms of tourmaline, larger individual green grains, and a brown mat of fine-grained needles. Mineralization consists of very finely disseminated opaques.
- CONDITIONS OF FORMATION: Deposition of fine sediment in turbiditic environment. Static metamorphism, possibly accompanied by very weak deformation, to upper greenschist facies (garnet, muscovite). Tourmaline needles are probably hydrothermal, whereas larger grains could be detrital and/or metamorphic.

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STATEMENT OF QUALIFICATIONS

I, Jennifer S. Getsinger, do hereby certify:

- 1. That I am a geologist employed by Chevron Minerals Ltd. with offices at 1900 1055 West 1055 West Hastings Street, Vancouver, B.C. V6E 2E9.
- 2. That I have studied geology at Harvard University (A.B. 1974), and have graduate degrees in geology from the University of Washington, Seattle (M.S. 1978), and from the University of British Columbia, Vancouver (Ph.D. 1985).
- 3. That I have practiced within the geological profession since 1974.
- 4. That I am a Fellow of the Geological Association of Canada and a member of the Geological Society of America.
- 5. That the opinions, conclusions and recommendations contained herein are based in part on petrographic analysis and research carried out by me.
- 6. That I hold no direct or indirect interest nor do I expect to receive any interest in the property or in any securities of the owner or operator of the property, or in any associated companies.
- 7. That this report may be utilized for inclusion in a Prospectus or Statement of Material Facts.

Signed

Jennifer S. Getsinger, Ph.D.

December 2, 1988 Vancouver, B.C.

APPENDIX IV

MAG/VLF SURVEY GOATFELL PROPERTY OCTOBER 1988

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LINE () Mag data

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 TOTAL FIELD DATA (uncorrected)

Reference field: 56800.0 Datum subtracted: 0.0Date 14 OCT 88 Operator: 3333 89 Records: Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:14:27

Line 0+00 N Date 14 OCT 88 #1 TIME DS FIELD=X GRAD=+ POSITION FIELD ERR DRIFT 56369.7 .00 Χ. 0.0 10:50:38 88 +. 57409.9 .02 0.0 10:52:05 88X #2

Line 0+00 N Date 14 OCT 88 #3 TIME DS FIELD=X GRAD=+ POSITION FIELD ERR DRIFT 0.0 10:52:55 BBX 0+00 E 57409.7 .02 +. . 0+25 E 57521.7 .03 0.0 10:53:55 88 Х +. 0+50 E 57528.1 .02 0.0 10:55:17 88 . X + -

 0+50 E 5/528.1 .02
 0.0 10:00.17 E0

 0+75 E 57525.6 .02
 0.0 10:56:27 88

 1+00 E 57516.4 .02
 0.0 10:57:21 88

 1+25 E 57519.0 .02
 0.0 10:58:16 88

 1+50 E 57534.0 .02
 0.0 10:59:05 88

 1+75 E 57538.3 .02
 0.0 11:00:36 88

 . X +. . × . × +. +. . X. +-. x. +. . X. 2+00 E 57540.1 .02 0.0 11:01:35 88 +. 0.0 11:02:44 88 Χ. +. 2+25 E 57550.6 .02 0.0 11:03:34 88 • X • 2+50 E 57524.7 .02 +. **.** X 2+75 E 57523.2 .02 0.0 11:04:33 88 +. . X . 3+00 E 57522.0 .02 0.0 11:05:31 88 +. 3+25 E 57518.4 .02 0.0 11:06:29 88 • X +. • X . 3+50 E 57510.6 .02 ÷. 0.0 11:07:17 88 • X 0.0 11:08:25 88 +. 3+75 E 57495.5 .02 E FAULT +. 0.0 11:09:14 88 Χ. 4+00 E 57470.6 .02 . х 4+25 E 57526.7 .02 0.0 11:10:08 88 +. +. 0.0 11:10:58 88 х. 4+50 E 57553.1 .02 +. Х 0.0 11:11:50 88 4+75 E 57693.2 .02 . Y +. 5+00 E 57700.7 .03 0.0 11:12:50 88 X +. 5+25 E 57602.6 .02 0.0 11:13:40 88 . X 5+50 E 57502.9 .02 0.0 11:14:43 88 +. 5+75 E 57599.9 .02 6+00 E 57559.8 .02 0.0 11:15:44 88 • Х +. Χ. +. 0.0 11:16:41 88 Х. 0.0 11:17:33 88 +. 6+25 E \$7545.4 .03 Χ. 6+50 E 57540.8 .02 0.0 11:19:55 88 ÷., .х 0.0 11:21:42 88 57500.6 .02 ÷. #30 \$57397.0 .02 0.0 11:33:53 88 -+ **.** #31

LINED MAG DATA

LINE O VLF DATA ANNAPOLIS

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:17:55

LINED VLF DATA ANNAPOLIS STATION

Line 0+00 N Date 14 OCT 88 21.4 #1 POSITION I/P QUAD T.FLD TILT TIME CULT S DIR 4-FRA 5-FRA RESIS PHASE #1 69.9 0.2 3910. 11.0 10:50:38 99 0.0 ! #2 -13.4 -15.1 9.64 -7.6 10:52:05 53 89.4 !

Line 0+0	ON D	ate 14	OCT 88	3 21.4	4 #3						
POSITION	I/P	QUAD	T.FLD	TILT	TIME	CULT S	DIR	4-FRA	5-FRA	RESIS	PHASE
 0+00 E	-15.4	-13.9	9.64	-8.7	10:52:55	53	-87.7				
0+25 E	-17.1	-10.7	9.85	-9.7	10:53:55	54	-83.6				
0+50 E					10:55:17		-83.0				
0+75 E	-21.1	-6.5	10.66	-11.9.	10:56:27	43	-66.8	5.1			
1+00 E	-20.5	-4.1	10.92	-11.5	10:57:21	- 45	-83.8	2.1	3.6		
1+25 E	-20.4	-2.9	11.04	-11.5	10:58:16	43	-68.3	-0.5	0.8		
1+50 E	-16.2				10:59:05	44	-70.3	-2.7	-1.6		
 1+75 E	-14.3	-0.8	10.95	-8.1	11:00:36	45	-78.3				
2+00 E		-1.0			11:01:35		-86.5				
2+25 E	-5.1		10.56		11:02:44		-69.9	,			
2+50 E	-1.3		10.37		11:03:34		-79.1		-9.5		
2+75 E	0.2		10.31		11:04:33		-62.2	-8.4	-9.5		
3+00 E	0.9		9.90		11:05:31		-63.4				
3+25 E	1.4		9.86		11:06:29		-56.0	440			
3+50 E		-3.3	9.73		11:07:17		-81.1				
3+75 E	-5.6	-4.7			.11:08:25		-71.1	6.0	3.6		
4+00 E	-4.7		10.14		11:07:14		-68.9	5.1	5.5		
4+25 E	-1.5		10.14		11:10:08		-70.5	-1.3	1.9		
4+50 E	-0.1	-1.0			11:10:58		-86.3				
4+75 E	-2.9	-1.6	9.23		11:11:50		-80.9		-3.4		
5+00 E	-5.7	-2.7	9.27		11:12:50		-73.9	4.0	1.1		
5+25 E	-7.3	-1.8	9.52	+	11:13:40		-63.9	5.7	4.8		
5+50 E	-9.3	0.0	9.73		11:14:43F			4.6	5.1		,
5+75 E	-10.6		10.00		11:15:44		-54.8		4.3		
6+00 E	-11.6		10.09		11:16:41		-65.8	3.2	3.6		
6+25 E	-10.8		10.17		11:17:33		-66.9	1.5	2.3		
6+50 E	-10.6		10.47		11:19:55		-74.1	-0.4	0.5		
#30	-9.8		9.73		11:21:427		-65.7				
#31	-15.5	-13.1	8.90	-8.8	11:33:531	1E 43	-85.5	:			

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LINE O VLF Data ANNAPOLIS

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) LINE D Date 14 OCT 88 Operator: 3333 VLF DATA 89 Records: ANNAPOLIS STATION Lithium: 3.48 Volt Bat: 17.2 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:22:39 Line 0+00 N Date 14 OCT 88 21.4 #1 POSITION VLF - TOTAL FLD = X IN-PHASE = + QUAD = # -30 -10 10 .+ # . 50 30 #1 • . X #2 .X #+. Line 0+00 N Date 14 OCT 88 21.4 #3 POSITIONVLF - TOTALFLD = XIN-PHASE = +QUAD = #-30-1010 30 50 0+00 E .X +#. 0+25 E .X 0+50 E .X 0+75 E . X 1+00 E . X 1+25 E . X # 1+50 E . X 1+75 E . X 2+00 E . X 2+25 E .X 2+50 E .X 2+75 E .X 3+00 E .X 3+25 E .X 3+50 E .X #+ 3+75 E .X +# 4+00 E .X 4+25 E .X 4+50 E .X 4+75 E .X 5+00 E .X 5+25 E .X 5+50 E .X 5+75 E .X 6+00 E .X 6+25 € .X 6+50 E .X #30 .X #31 -+#L__ . Х

Line O VLF DATA Hawaii

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VLF PATA

Hawaii Station

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:19:06

Line 0+00 N Date 14 OCT 88 23.4 #1 POSITION I/P QUAD T.FLD TILT TIME CULT S DIR 4-FRA 5-FRA RESIS PHASE #1 70.5 0.2 3661. 12.0 10:50:38 99 0.0 ! #2 -10.6 -5.3 4.49 -6.0 10:52:05 52 67.5 !

Line 0+00	O N Da	te 14	-OCT 88	3 23.4	+ #3							
POSITION	I/P	QUAD	T.FLD	TILT	TIME	CULT S			5-FRA	RESIS	PHASE	
0+00 E	-18.9	-6.5			10:52:55	52	72.1	-				
0+25 E	-20.2	-3.1	4.54	-11.4	10:53:55	53	75.9					
 0+50 E	-23.3	-0.8	4.60	-13.1	10:55:17	52	78.3					
0+75 E	-24.4	-0.8	4.74	-13.7	10:56:27		-85.2	4.7				
1+00 E	-24.2	3.7			10:57:21		79.1					
1+25 E	-23.5	4.4			10:58:16		-86.6					
1+50 E	-20.0	6.1			10:59:05		-86.9					
1+75 E	-18.9	7.1	5.01	-10.7	11:00:36	42	85.5	-4.8				
2+00 E	-15.6	7.3	5.00		11:01:35		76.6					
2+25 E	-9.8	7.1		-5.6	11:02:44		-86.7					
2+50 E	-5.0	7.9	5.07	-2.9	11:03:34			-11.0				
2+75 E	-2.8	5.0	5.17	-1.6	11:04:33			-9.9				
3+00 E	-0.1	5.0	5.03		11:05:31		-78.5					
3+25 E	2.0	4.0	5.02	1.1	11:06:29		-72.3		-6.3			
3+50 E	-1.6	0.7	5.12	-0.9	11:07:17		78.8		-3.7			
3+75 E	-4.7	-0.8	5.08	-2.7	11:08:25			4.7				
4+00 E	-5.2	-0.2	5.10	-2,9	11:09:14		-86.7					
4+25 E	-3.5	2.2	5.22	-2.0	11:10:08		~88.7					
4+50 E	-2.6	3.2	5.03		11:10:58		75.1			ŧ		
4+75 E	-5.2	1.2	4.74		11:11:50		82.7					
5+00 E	-4.3	-0.9	4.83		11:12:50		-89.6					
5+25 E	-4.6	-0.1	4.85		11:13:40		-79.3		1.2			
5+50 E	-7.3	0.5	5.04		11:14:43F		-76.5					
5+75 E	-8.4	2.4	5.15		11:15:44		-70.7					
6+00 E		4.0	5.22		11:16:41		-79.5					
6+25 E	-8.7	5.3	5.30		11:17:33		-81.2					
6+50 E	-9.9		5.43		11:19:55		-89.3		0.9			
#30	-7.2	1.0	5.15		11:21:427	· ·	-82.3					
#31	-17.7	-5.8	5.49	-10.0	11:33:537	1E 53	72.6	!		Q		

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LINE O VLF Data Hawaii .

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:24:46

LINE O VLF Data Heweii Station

į	Line	0+0	ΟN	Date	14 OCT	88	23.4	#1							
1	POSITI	I ON	VLF	- тот	AL FLD	= X	IN-È	HASE	=	+ QUA	AD =	#			
					-30			10			10	, .	2	50	50
	井口	L			.+X				#	•		•			
	#2		. x				. +	#		•		•	*		

Line 0+00 N POSITION VLF	Date 14 OC - TOTAL FL	D = X IN-FI		UAD = #		50
	-30			10	30	
0+00 E .X	•	+ • •	# .	•		
 0+25 E .X	•	+ .	. # .	•	. •	
0+50 E .X	•	+ .	# .			
0+75 E .X	÷ •	+ .	# _	•		
1+00 E .X	•	+ .	#.	•		1 4 A
1+25 E .X	•	+ •	₩ .	•		• •
1+50 E .X	•	+ .	#.	•		
1+75 E .X		+ .	#	•		
2+00 E .X	• •	+.	#	•		
2+25 E .X	•	.+	#	•		
2+50 E .X	•	•	+ #	•		
2+75 E .X	•	•	+ #.	•	•	······
3+00 E .X	•	•	+ #.	<u>.</u>		
3+25 E .X	•	. •	+# .	•		
3+50 E .X		•	+ # .	•		
3+75 E .X		•	+ # .	•	K- FA	ULT
4+00 E .X	•	•	• + + •	•		
4+25 E .X	۰ .	•	+ # .	•		
4+50 E .X		•	+ #.	•		
4+75 E .X		•	+ + .			
5+00 E .X		•	+ # .	•	1	
5+25 E .X	•	•	+ # · .	•		
5+50 E .X	•		+ # .	•		
5+75 E .X		. +	• # .	•		
6+00 E .X		. +	• #•	•		
6+25 E .X		. +				
6+50 E .X	-	.+	#	•		
#30 .X	. مەر	•	+ # .	•		
11 mm a 32	U.		#	· · · ·		

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LINE O VLF DATA SEATTLE

LINE D

VLF DATA

Seattle Station

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last-time update: 10/12 10:08:00 Start of print: 10/14 15:16:45 Line 0+00 N Date 14 OCT 88 24.8 #1 I/P QUAD T.FLD TILT TIME CULT S DIR 4-FRA 5-FRA RESIS PHASE POSITION #1 70.6 0.2 3678. 6.0 10:50:38 99 0.0 ! #2 -17.1 -7.4 76.65 -9.7 10:52:05

Line 0+00 N Date 14 OCT 88 24.8

Q

58 89.2 !

POSITION I/P QUAD T.FLD TILT TIME CULT S DIR 4-FRA 5-FRA RESIS PHASE

0+00 E	-16.7	-7.9 7	77.05	-9.4	10:52:55	59	-88.4		•	
0+25 E	-18.8	-4.6 8	30.46	-10.6	10:53:55	57	-84.7			
0+50 E	-21.2	-1.6 8	33.78	-11.9	10:55:17	46	-83.0			
0+75 E	-22.0	-0.9 8	37.75	-12.4	10:56:27	45	-66.4	4.3		
1+00 E	-21.1	2.6 8	39.98	-11.9	10:57:21	. 46	-83.3	1.8	3.0	
1+25 E	-20.1	2.4 9	72.08	-11.4	10:58:16	45	-69.1	-1.0	0.4	
1+50 E	-16.6	4.3 9	74.09	-9.4	10:59:05	56	-71.1	-3.5	-2.3	
1+75 E	-13.4	4.6 9	71.08	-7.6	11:00:36	58	-78.2	-6.3	-4.9	
2+00 E	-10.2	4.1 9	70.05	-5.8	11:01:35	49	-87.1	-7.4	-6.9	
2+25 E	-4.9	4.2 8	37.94	-2.8	11:02:44	49	-71.0	-8.4	-7.9	
2+50 E	-0.3	4.7 8	36.35	-0.2	11:03:34	49	-80.3	-10.4	-9.4	
2+75 E	0.3	3.18	36.13	0.1	11:04:33	49	-63.7	-8.5	-9.5	
3+00 E	1.1	2.5 8	32.92	0.6	11:05:31	49	-64.4	-3.7	-6.1	
3+25 E	1.3	1.5 8	32.13	0.7	11:06:29	49	-56.6	-1.4	-2.6	
3+50 E	-2.2	-1.1 8	83.23	-1.3	11:07:17	49	-83.6	1.3		
3+75 E	-5.7	-2.5 8	34.97	-3.3	11:08:25	59	-73.0	5.9	3.6	
4+00 E	-4.8	-1.3 8	36.64	-2.7	11:09:14	49	-70.9	5.4	5.6	
4+25 E	-1.7	0.9 8	36.12	-1.O	11:10:08	59	-71.9	-0.9	2.2	
4+50 E	-0.8	1.4 8	33.01	-0.5	11:10:58	58	-87.9	-4.5	-2.7	
4+75 E	-3.3	0.97	78.75	-1.9	11:11:50	49	-82.8	-1.3	-2.9	
5+00 E	-5.7	-1.0.7	78.13	-3.2	11:12:50	49	-75.8	3.6	1.1	
5+25 E	-7.6	-o.3 8	31.63	-4.3	11:13:40	49	-65.8	5.1	4.3	
5+50 E	-9,4	1.3 8	34.48	-5.4	11:14:43FEN	i⊂ 49	-62,5	4.6	4.8	
5475 je	-10.3	3.6 9	36.99	-5,8	11:15:44	4.9	-56.4		4.1	
etOC E	-1 1 7	5.0 8	38.44	-6.2	11:16:41	49	-68.0		3.O	
	-9.5	6.4 3	39.97	🖑 🔒 斗	11:17:33	49	-68.2	0.4	1	
5+50 E		7.3 9	92.65	-5.5	11:19:55	49	-76.4	-1.1	0.4	
#問心	4	1.7 S	36.04	-5.3	11:21:42TIE	49	-67.2	4		
# <u>7</u> .1	-19	-7.7.7	77.27		11:33:53TIE	56	-86.1	1		

#3

1

OMNI-PLUS Tie-lin VLF TOTAL FIELD DA Date 14 GCT 88	e MAG/VLF R22K Ser #2610 TA (uncorrected)	LINE O VLF DATA SEATTLE
Operator: 3333 Records: 89 Bat: 17.2 Volt Last time update:		LINE O VLF DATA SEATTLE Station
Line 0+00 N Date	10/14 15:21:25 14 OCT 88 24.8 #1	•••••••••••••••••••••••••••••••••••••
POSITION VLF - TO #1 . #2 .	TAL FLD = X IN-PHASE = + -30 -10 .+ X . # X. + . #	QUAD = # 10 30
	14 OCT 88 24.8 #3 TAL FLD = X IN-PHASE = + -30 -10 X. + . #	QUAD = # 10 30
0+25 E . 0+50 E . 0+75 E . 1+00 E .	X. + . # X + . # X + . # X + . #	
1+25 E . 1+50 E . 1+75 E . 2+00 E .	• X + • # • X + • # • X +• # • X +• #	· · · · · · · · · · · · · · · · · · ·
2+25 E . 2+50 E . 2+75 E . 3+00 E .	X + # X + # X + # X + #	• • •
3+25 E . 3+50 E . 3+75 E . 4+00 E .	X • * X • +# X • + # X • + #	E Failt
4+25 E . 4+50 E . 4+75 E . 5+00 E .	X • + # X • +# X• + # X• • + #	· · ·
5+25 E . 5+50 E . 5+75 E . 6+00 E .		• • • • • • • •
6+25 E . 6+50 E . #30 . #31 .	·X ·+ ·X ·+ X ·+ #	# • • • •

C

LINE | MAG DATA

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 TOTAL FIELD DATA (uncorrected) LINE) MAG DATA

Reference field: 56800.0 Datum subtracted: 0.0Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:14:27

 Line 1+00 N Date 14	OCT 88	#	32				· · · · · · · · · · · · · · · · · · ·	and the second
POSITION FIELD ERR	DRIFT	TIME `	DS	FIELD=X	GRAD:	=+		
0+00 E 57564.4 .02	0.0	12:09:49	88	•	Х	+.	•	÷
0+25 E 57595.7 .02	0.0	12:11:18	88	•		X +.	•	
0+50 E 57616.1 .02	0.0	12:12:08	88	•		X+.	•	
0+75 E 57620.1 .02	0.0	12:13:11	88	•	•	X+.	•	i i i i i i i i i i i i i i i i i i i
1+00 E 57603.8 .02	0.0	12:14:03	88	•	-	X +.	•	
1+25 E 57588.7 .02	0.0	12:14:50	88	•	•	X +.	•	
1+50 E 57571.5 .02	0.0	12:15:34	88	•	Х	+.		en e
1+75 E 57802.2 .03	0.0	12:16:18:	88	. •	•	.+ .	•	X
2+00 E 57549.0 .02	0.0	12:17:05	88		Χ.	+.		
2+25 E 57546.8 .02	0.0	12:17:51	88	•	Χ.	÷.	• .	
2+50 E 57545.3 .02	~ 0.0	12:18:43	88	•	х.	+.	. •	
2+75 E 57535.3 .02	0.0	12:19:29	88		Х.	+.	•	
3+00 E 57532.6 .03	0.0	12:20:16	88	-	х.	+.	•	
3+25 E 57527.0 .02		12:21:10		•	Хг	+.	•	
3+50 E 57756.7 .02	0.0	12:22:05	88	•	•	+.	. X	
3+75 E 57516.2 .02	0.0	12:22:57	88	- 1		+.	•	s Fault
4+00 E 57519.3 .02	0.0	12:23:47	88	-	Х	+.	•	•
4+25 E 57518.9 .03	0.0	12:24:41	88		х.	+.	•	
4+50 E 57513.4 .02	0.0	12:25:28	88		х.	+.	· -	
4+75 E 57523.8 .02	0.0	12:26:31	88	•	X .	+.	• .	
5+00 E 57178.1 .02	0.0	12:27:32	88	-	. •	X+.	•	
5+25 E 57511.3 .02			88		х.	+.	•	
5+50 E 57526.0 .02			88	•	х.	+.	•	
5+75 E 57526.1 .02		12:30:10	88	•	х.	+.	•	
6+00 E 57523.9 .03			88	•	х.	+.		
6+25 E 57521.6 .02		12:31:51		•	х.	+.	•	
#58 57144.1 .03			88	•		X +.	•	
#59 57546.0 .02		12:38:23	88	-	х.	+.	•	
#60 57566.0 .02	0.0	12:42:24	88	•	X		•	

LINEI VLF DATA ANNAPOLIS

LINE 1 VLF DATA ANNAPOLIS STATION

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:17:55

Line 1+00 N Date 14 OCT 88 21.4 #32 POSITION ~ I/P QUAD T.FLD TILT TIME

P .	OSITION.	~ I/P	QUAD	T.FLD		TIME			4-FRA	5-FRA	RESIS	PHASE
·	0+00 E	-6.3		10.31		12:09:49		-76.2	$(1,1) \in \mathbb{R}^{n}$			
	0+25 E			10.28	-3.4	12:11:18	54	-56.8				
	0+50 E	-7.0	5.9	10.38	-4.0	12:12:08	55	-71.1				
	0+75 E	-9.1	6.3	10.38	-5.2	12:13:11	55	-78.7	2.0			
	1+00 E	-12.4	7.0	10.37	-7.1	12:14:03	53	-74.3				
	1+25 E	-13.7	6.7	10.44		12:14:50		-87.5				
	1+50 E	-14.4	7.0	10.67	-8.1	12:15:34	45	-81.7	3.6	4.6		
	1+75 E	-14.5	9.3	10.69	-8.2	12:16:18		-83.2				
						12:17:05		89.9		1.3		
	2+25 E					12:17:51		89.1	1.7	1.4		
	2+50 E	-16.7	9.6	10.74	-9.5	12:18:43		-81.3		1.6		
	2+75 E	-14.0	9.2	10.79	-8.0	12:19:29	54	-81.6	-0.5	0.5		
	3+00 E	-11.4	7.6	10.51	-6.5	12:20:16	54	-86.2				
	3+25 E			10.27		12:21:10		-75.0	-5.4	-4.8		
	3+50 E	-9.9	1.0	10.02	-5.6	12:22:05	54	-75.3	-3.3			
	3+75 E	-12.4	-0.4	9.92	-7.0	12:22:57	55	-89.3	0.5	-1.4		
	4+00 E	-13.9				12:23:47		-83.6	3.7	2.1		
	4+25 E	-14.7	2.8	10.79	-8.3	12:24:41	54	-66.8	3.6	3.6		
		-16.3		11.32		12:25:28		-60.8				
	4+75 E	-17.4	7.8	11.85	-9.9	12:26:31		-82.9				
	5+00 E	-16.8	8.8	11.91	-9.5	12:27:32FB	ENC 55	-88.2				
	5+25 E	-15.8	9.5	11.90		12:28:34		-81.6		0.6		
	5+50 E	-14.8	9.9	12.01	-8.4	12:29:26	56	-80.3	-2.0	-1.3		
	5+75 E	-17.1	10.2	12.01	-9.7	12:30:10	54	-66.2	-0.4	-1.2		
	6+00 E	-21.7	10.2	11.91	-12.2	12:30:57		-81.5				
	6+25 E	-31.2	8.8	11.72	-17.3	12:31:51		-85.7				
	#58					12:33:53T		-89.7				
	#59	-16.0	9.5	11.25	-9.1	12:38:23T		-71.8				
	#60	-6.4	4.7	10.66	-3.7	12;42:24T		-84.3				
						.V.						

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VLF DATA ANNAPOLIS OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 LINE VLF TOTAL FIELD DATA (uncorrected) VLF DATA Date 14 OCT 88 ANNAPOLIS STATAON Operator: 3333 89 Records: Lithium: 3.48 Volt Bat: 17.2 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:22:39 Line 1+00 N Date 14 OCT 88 21.4 #32 POSITION VLF - TOTAL FLD = X IN-PHASE = + QUAD = # 30 5 -10 10 -30 # . 0+00 E .X + 井. 0+25 E .X #. 0+50 E .X ±± . 0+75 E .X 1+00 E .X # 1+25 E .X # 1+50 E . X # . # 1+75 E . X 2+00 E . X 2+25 E . X # 2+50 E . X 2+75 E . X 3+00 E .X # 3+25 E .X #. 3+50 E .X E FAULT 3+75 E .X 4+00 E .X 4+25 E . X 4+50 E . X 4+75 E .. X 5+00 E . X # 5+25 E . X # 5+50 E . X ŧ 5+75 E . X 6+00 E . X # 井 6+25 E . X ·-|--#58 .X . # . X . # #59 -1-# #6O -1-. X Q

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LINE I VLF DATA HAWAII

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:19:06 LINE | NLF DATA HAWAII STATION

	Line 1+0	ON Da	te 14	OCT SE	3 23.4	4 #32					-74		
-	POSITION	I/P	QUAD	T.FLD	TILT	TIME	CULT	S DIR	4-FRA	5-FRA	RESIS	PHASE	
	0+00 E	-8.0	7.8	7.36	-4.6	12:09:49	5	3 78.7					
	0+25 E	-7.6	7.6	7.61	-4.3	12:11:18	5	3 -79.7					
	0+50 E	-8.6	8.4	7.95	-4.9	12:12:08	6	4 84.9					
	0+75 E	-11.0	9.7	8.14	-6.2	12:13:11	5	4 77.7	2.2				
	1+00 E	-15.8	9.6	8.39	-8.9	12:14:03	6	7 83.0	5.9	4.0			
	1+25 E	-17.2	9.6	8.49	-9.7	12:14:50	5	6 70.6	7.5	6.7			
	1+50 E	-17.5	10.3	8.61	-9.9	12:15:34	5	5 77.1	4.5	6.0			
	1+75 E	-17.6	11.5	8.75	-10.0	12:16:18	5	6 73.9	1.3	2.9			
	2+00 E	-18.9	11.5	8.73	-10.7	12:17:05	5	8 68.2	1.1	1.2			
	2+25 E	-19.4	12.0	8.78	-11.0	12:17:51	5	8 68.4	1.8	1.4			
	2+50 E	-19.5	10.7	8.95	-11.0	12:18:43	5	4 77.1	1.3	1.5			
	2+75 E	-17.3	9.5	9.00	-9.8	12:17:27	_ 5	4 77.5	-0.9	0.2		. 7	
	3+00 E	-13.8	7.4	8.77	-7.9	12:20:16	4	4 72.4	-4.3	-2.6			
	3+25 E	-12.3	5.2	8.43	-7.0	12:21:10	5	3 83.6	-5.9	-5.1			
	3+50 E	-11.8	2.2	8.10	-6.7	12:22:05	5	4 83.1	-4.0	-5.0			
	3+75 E	-14.6	-0.1	8.10	-8.3	12:22:57	5	4 68.0	0.1	-2.0			
	4+00 E	-15.8	1.4	8.37	-9.0	12:23:47	5	5 74.5	3.6	1.8			
	4+25 E	-16.3	4.9	8.87	-9.2	12:24:41	5	5 -87.7	3.2	3.4			
	4+50 E	-17.4	7.3	9.39	-9.8	12:25:28	5	5 -81.0	1.7	2.4			
	- 4+75 E	-18.4	9.7	9.74	-10.4	12:26:31	5	5 77.8	2.0	1.8		÷	
	5+00 E	-16.7	11.3	9.78	-9.5	12:27:32F	ENC 5	6 72.9	0.9	1.4			
	5+25 E	-16.4	11.0	9.92	-9.3	12:28:34	.5	7 78.4	-1.4	-0.3			
	5+50 E	-15.2	11.4	9.89	-8.6	12:29:26	5	5 79.2	-2.0	-1.7			
	\5+75 E	-17.4		10.07		12:30:10		5 -86.0	-0.3	-1.2			
	6+00 E	-22.8	12.1	10.05	-12.8	12:30:57	5	9 77.7	4.8	2.2			
	6+25 E	-32.5	10.8			12:31:51	4	9 73.0	12.3	8.5			
	#58	-17.0	10.9	9.98	-9.6	12:33:537	'IE 5	9 70.1	!				
	#59	-19.6	10.3	9.41	-11.1	12:38:237	IE 4	4 86.7	1				
	#60	-7.7	6.8	8.05	-4.4	12:42:24T	IE 5	8 72.6	1				

LINE | VLF DATA HAWA II

	Date 14 OCT Date 14 OCT Operator: : Records: : Bat: 17.2 Last time up	3333	orrected) n: 3.48 Vol 0:08:00		LINE I VLF DA HAWAII		
1	Line 1+00 N			32		analanda analan analan katu s	lina Marine II.
	POSITION VL	F - TOTAL FLD -30	= X IN-PHA -1C	SE = + QUAD = 10		~	కం
1	0+00 E .X	-30	-10	, TO #	' J	5	الية فيت
1	0+25 E .X	•	• -	#	•	·	
	0+20 E .X		• •	· #	•		
	0+75 E .X	•	• •	• "	•	87° -	
la se	1+00 E .X	•	+	. #	•	• • • • •	
	1+25 E .X	•	+ .	. #			
	1+50 E .X	· · · ·	+ .	. #			
	1+75 E .X		+	• .#			
i i	2+00 E .X		+ .	. #	•		
	2+25 E .X		+ .	. #	•		
	2+50 E .X	•	+ .	. #	•		
	2+75 E .X		· + .	. #	f 💼 🕓		
	3+00 E .X		+.	#	•		
	3+25 E .X	•	+	#.	•		
	3+50 E .X	•	+	#.	•		
	3+75 E .X		+.	# .	. /	FAINT	
	4+00 E .X	<i>i</i>	+.	# .		- FAULT	
	4+25 E .X	•	+	#. 3	•		
	4+50 E .X	•	+ .	#	•		~~~
	4+75 E .X	•	+ .	· . #	•		
	5+00 E .X	•	+.	• #	•		
	5+25 E .X	•	+.	. #	•		
	5+50 E .X	•	+ .	. #	•		
	5+75 E .X	• · · · ·	+ •	. #	•		
	6+00 E .X	•	+ .	. #			
	6+25 E .X	·+-	-	• #	•		
	#58 .X			. #	•		
	#59 .X		-+- •	. #	•		
Į	#60 .X	•		#			
1		•	1997 - 19		· · · · · · · · · · · · · · · · · · ·		

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LINE | VLF DATA SEATTLE

> LINE I VLF DATA

Beattle Station

CANTENDE Trefline MAGAULT R224 Factor VLF TOTAL FIELD DATA (unconnected) Date 14 COT 28 Oberator: 3333 Records: 99 Pat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:16:45

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			OCT 88					<u> </u>	5.500	RESIS	PUACE
POSITION	I/F		T.FLD	TILT	TIME	CULT S		4-614	0-FKH	REDID	FHMOL
0+00 E	-6.0		93.85		12:09:49		-79.9				
0+25 E	-6.0		94.01		12:11:18		-59.7				
0+50 E	-6.4		94.57		12:12:08		-73.8	. –			
0+75 E	-8.2		94.85		12:13:11		~82.8	1.5			
1+00 E	-11.8		97.13		12:14:03		-77.9		2.9		
1+25 E	-13.6		97.55		12:14:50				5.2		
1+50 E	-14.1		98.75		12:15:34		-85.0	4.3	5.2		
1+75 E	-13.9	9.8	99.68		12:16:18		-88.1	1.5			
_2+00 E	-15.2		100.3		12:17:05	55		0.8	1.1		
2+25 E	-16.1	10.9	99.53	-9.1	12:17:51	59		1.8			
2+50 E	-15.4	10.2	101.3	-8.7	12:18:43		-85.9	i.3	1.5		
2+75 E	-13.8	9.2	101.3	-7.9	12:19:29	58	-85.7	-1.1	0.1		
3+00 E	-10.8	7.9	98.31	-6.2	12:20:16	58		-3.7			
3+25 E	-9.5	5.5	95.29	-5.4	12:21:10	58	-79.9	-5.0	-4.4		
3+50 E	-10.6	1.5	92.84	-6.0	12:22:05	58	-79.4	-2.7	-3.9		
3+75 E	-12.8	0.1	93.04	-7.3	12:22:57			1.7	-0.5	•	
4+00 E	-14.3	0.7	96.65	-8.1	12:23:47	59	-88.2	4. Ç	2.8		
4+25 E	-14.7	3.1	101.4	-8.3	12:24:41	56	-70.1	3.1	3.5		
4+50 E	-16.0	5.3	108.2	-9.1	12:25:28	55	-64.1	2.0	2.5		
4+75 E	-16.5	8.5	112.5	-9.4	12:26:31	59	-87.1	2.1	2.0		
5+00 E	-15.4	9.7	115.7	-8.7	12:27:326	FENC 59	87.7	0.7	1.4		
5+25 E	-14.3	9.9	116.6	-8.1	12:28:34	59	-86.4	-1.7	-0.5		
35+50 E	-13.3	10.8	117.3	-7.6	12:29:26	59	-84.6	-2.4	-2.1		
5+75 E	-15.4	11.3	119.4	-8.7	12:30:10	56	-70.1	-0.5	-1.5		
6+00 E	-20.3			-11.4	12:30:57	59	-86.9	4.4	1.9		
6+25 E	-30.0				12:31:51	47	88.9	11.8	8.1		
#58	-15.4		121.8		12:33:53	TIE 59	86.1	!			
#59	-15.9		112.4		12:38:23		-75.6	!			
#60	-6.3		101.5		12:42:24		-86.2	!			
11 42 12		344 B 166									

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LINE I VLF DATA SEATTLE

LINE 1 NIE DATA

Last time update:)	Lithium: 3.46 Vol 0/12 10:08:00 0/14 15:21:25	ter de la constante de la const	Scattle Station	
Line 1400 N Date	14 OCT 88 24.8 TAL FLD = X IN-PH	#32 HASE = + QUAD = 10 + #. + #. + #. # # # # # # # # # # # # #	\mathbf{F}_{AULT}	5

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LINE 2 MAG DATA

LINE 2

MAG DATA

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 TOTAL FIELD DATA (uncorrected)

Reference field: 56800.0 Datum subtracted: 0.0Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:14:27

Line 2+00 N Date 14	OCT 88	#61				
POSITION FIELD ERR	DRIFT	TIME DS	S FIELD=X	GRAD=+		
0+00-E 57562.4 .02	0.0.3	13:21:54 88	3.	X	+	
0+25 E 57618.0 .02	0.0	13:23:12 88	3 .	• •	+	
0+50 E 57569.3 .05	0.0	13:24:22 88	з.	~	+. · ·	
0+75 E 57579.9 .02	0.0 3	13:25:17 88	3.	. X	+	
1+00 E 57579.2 .03		13:25:54 88		. X .	+	
1+25 E 57586.4 .03		13:26:37 88		• • •	-+	
1+50 E 57599.0 .02		13:27:40 88		. X	+	
1+75 E 57607.0 .02		13:28:29 88		- ×	+	
2+00 E 57615.3 .03		13:29:16 8		-	·	
2+25 E 57622.0 .02		13:30:52 8			+	
2+50 E 57603.2 .03		13:31:59 8			+	
2+75 E 57620.6 .02		13:33:03 8	_	-		
3+00 E 57614.9 .02		13:33:57 8			+	а
3+25 E 57590.9 .02		13:34:49 8		• X	+	T = 117
3+50 E 57572.5 .02		13:35:54 8		, X	+	Feult!
3+75 E 57549.3 .02		13:36:56 8		Χ.	+	v
4+00 E 57397.6 1.9		13:37:44 8		•	* • •	7 FAUE 7
4+25 E 58301.0 .03		13:40:13 8		. X	+	* Conser).
4+50 E 57613.9 .02		13:41:54 8		-	······································	
4+75 E 57546.7 .03		13:42:41 8		X. X.	+	
5+00 E 57551.8 .02		13:43:27 8		X.	+	
5+25 E 57548.8 .03		13:44:14 8		x.	+	
5+50 E 57559.3 .03				x.	+.	
5+75 E 57557.0 .02		13:46:10 8: 13:47:03 8		x.	+	•
6+00 E 57560.0 .02				x	-+	
6+25 E 57565.6 .03		13:47:49 8		x.	+	
#87 57552.1 .02		13:50:56 8			(+.	
#88 57621.3 .02	• • •			X	···	
#89 57565.6 .03	0.0	13:58:53 8	⊂ •	~		

EOF

LINE Z VLF DATA ANNAPOLIS

OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:17:55

LINE Z VLF DATA Annepolis Station

	مودد دری ورور مدیر						harron y he Alliand A allog		adara managana in Angle antangginatin	ang dia ari 19 19-19 ang pananali -	المأعلم الله ما المراجع الدين ال	
- Line	e 2+0	ON Da	te 14	OCT 88	3 21.4	4 #61						
POS	ITION	I/P	QUAD	T.FLD	TILT	TIME CUL	гѕ	DIR	4-FRA	5-FRA	RESIS	PHASE
0-	+00 E	-47.1	11.6	10.52	-25.2	13:21:54	59	43.0				
0-	+25 E	-55.1	5.9	10.12	-28.8	13:23:12	49	42.0				
0-	+50 E	-50.6	17.6	11.07	-26.8	13:24:22POST	59	40.4				
Q-	+75 E	-49.4	8.4	10.28	-26.3	13:25:17	49	48.5	-0.9			
1.	+00 E	-42.9	17.3	10.64	-23.2	13:25:54	49	41.7	-6.1	-3.5		
1.	+25 E	-38.9	12.0	9.84	-21.3	13:26:37	59	44.3	-8.6	-7.4		
1.	+50 E	-35.2	11.3	9.65	-19.4	13:27:40	49	43.6	-8.8	-8.7		
1	+75 E	-30.8	18.1	10.24	-17.1	13:28:29	59	41.5	-8.0	-8.4		
2.	+00 E	-26.6	15.9	10.08	-14.9	13:29:16	59	41.7	-8.7	-8.4		
- 2	+25 E	-20.6	15.3	9.92	-11.6	13:30:52	49	42.2	-10.0	-9.4		
. 2.	+50 E	-6.7	11.6	9.79	-3.8	13:31:59	49	38.6	-16.6	-13.3		
2.	+75 E	-94.7	29.5	12.94	-43.4	13:33:03RDAD	49	38.8	20.7	2.0		
3	+00 E	-60.8	25.0	10.66	-31.3	13:33:57	48	43.2	59.3	40.0		
3.	+25 E	-43.4	34.3	11.17	-23.4	13:34:49	59	40.3	7.5	33.4		
3.	+50 E	-45.1	33.0	11.42	-24.3	13:35:54CABL	59		-27.0			
3	+75 E	-44.0	22.1	10.62	-23.7	13:36:56	59	44.3	-26.7	-16.9	ч.	
4.	+00 E	-69.8	20.3	10.28	-34.9	13:37:44HYDR	49	52.7	10.9	2.1		
4	+25 E	-57.0	26.4	10.38	-29.7	13:40:13CREC	49	47.4	16.6	13.7		
4.	+50 E	-53.9				13:41:54	49			8.0		
4	+75 E	-48.7	24.4	10.24	-26.0	13:42:41	59	47.6	-10.3	-5.5		
- 5-	+00 E	-43.4	23.1	9.97	-23.4	13:43:27	49	46.3	-8.6	-9.5		
. 5	+25 E	-40.0	23.1	9.59	-21.8	13:44:14R0AD	49	47.8	-9.1	-8.9		
5.	+50 E	-34.9	21.8	9.85	-19.2	13:45:25	49	44.2		-8.8		
5	+75 E	-34.8	21.3	9.61	-19.1	13:46:10	49	43.3	-6.9	-7.7		
6.	+00 E	-32.7	21.7	9.53	-18.1	13:47:03	49	43.3	-3.8	-5.4		
6-	+25 E	-29.9				13:47:49ROAD		42.2	-3.6	-3.7		
, f	# 87	-41.8	23.6	9.47	-22.7	13:50:56TIE	49	47.1	!			
4	#88	-92.7	29.7	11.59	-42.8	13:54:34TIE	49	38.5				
1	#89	-52.0	1.9	8.37	-27.4	13:58:53TIE	49	42.3	!			

LINE 2 VLF DATA ANNAPOLIS

LINE Z VLF DATA Annapolis Station

OMNI-PLUE Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 Start of print: 10/14 15:22:39

Line 2+00 N Date 14 OCT 88 21.4 .#61 POSITION VLF - TOTAL FLD = X IN-PHASE = + QUAD = #

	-30				
0+00 E .X+	00	-10	10	30	50
- 0+25 E .X	•	•	. # .		
0+50 E + X	•	•	#.	+	
0+75 E +X	•	•	• # •		
1+00 E . X +	•	•,	. #		
1+25 E .X +	•	•	• # •	•	
1+50 E .X	•	•	• # •		
1+75 E .X	т. ,	•	• # •		
	.		• # .		
	• +	•	. # .		
	• +	•	• # •		
2+50 E .X 2+75 E . X	•	. +	- # .		
	•	-	+	#	
3+00 E . X	•	• `	· #.	+	
3+25 E . X +	•	8	•	#	
3+50 E . X+	•	•		# T	Fault?
3+75 E . X +	•		. #.		tzult
4+00 E .X	•	•		+ + 1	
4+25 E .X	•	•	• #	mfer	
4+50 E .X	•	•	- #	+	
4+75 E .*		•	• #.		
5+00 E .X +	•	•	. #		
5+25 E.X +	•		. #.		
5+5° E .X	-+- _	-	· #		
5+75 E .X			. #		
6+00 E .X	+.	•			
6+25 E .X	. +				
#87 .X +			• • • •	Q	
#88 . X		• •	+	#	
#89 .X	-	. +	*	•	
• • • • •	•	- '	· _ ·		

LINE 2 VLF DATA HAWA II

	OMNI-PLUS VLF TOTAL Date 14 () Gperator: Records: Bat: 17.1 Last time Start of	FIELD CT 89 3333 89 2 Volt update	DATA Lit : 10/:	(undorr thium: 12 10:0	ected) 3.48 98:00		2			```	INE 2 ILF DATA Jeweii Stati	oh
	POSITION	N Da I/P	QUAD	1.FLD	TILI	4 #61 TIME L 13:21:54	JULIS		4-FRA	5-FRA	RESIS PHA	4SE
	0+25 E	-32.8	8.7	9.52	-18.1	13:23:12	57 70	30.0 27.7				
• •	-0+50 E	-29.3				13:24:22PC		26.5				
	0+75 E	-25.8					59		-5.1			
·	-1+00 E	-22,6	12.8	9.55	-12.7	13:25:54	49	28.7	-7.3	-6.2		
	1+25 E	-17.2	15.2	9.42	-9.7	13:26:37 13:27:40 13:28:29 13:29:16	59	29.1	-8.3	-7.8		
	1+50 E	-12.7	16.1	9.51	-7.2	13:27:40	55	25.2	-10.2	-9.3		
	1+75 E	-11.4	16.7	9.69	-6.5	13:28:29	59	26.4	-8.7	-9.5		
		-8.4	17.8	9.70	-4.8	13:29:16	59	26.1	-5.6	-7.2		
	2+25 E	-4.2	18.6	9.69	-2.4	13:30:52	59	26.2		-6.1		
	2+50 E 2+75 E			9.93		13:31:59	46		-13.2			
	2+75 E 3+00 E					13:33:03R0		23.8				
	3+00 E 3+25 E	-37.0	24.0	10.27	-15 0	13:33:57 13:34:49	49	28.5	54.5		e e e e e e e e e e	
	3+50 E					13:34:49 13:35:54CA		25.6	8.1 -18.2			
	3+75 E	-33.1	20.1	10.95	-18 3	13:36:56	50		0.8			
		-33.3	33.7	10.79	-18.4	13:37:44HY						
						13:40:13CR	EC 49	32.3	2.3	2.1		
	4+50 E					13:41:54	59	31.8	4.1	3.0		
	4+75 E					13:42:41			0.3			
-	5+00 E	-31.1	26.0	10.15	-17.3	13:43:27	49	31.1		-2.3		
	5+25 E	-28.9	24.5	9.84	-16.1	13:44:14R0	AD 49	31.9	-5.7			
	5+50 E	-26.3	23.6	9.99	-14.7	13:45:25	49		-5.2			
	5+75 E	-26.5	22.4	9.94	-14.8	13:46:10	59		-3.9			
	6+00 E	-25.3				13:47:03			-1.8			
	6+25 E	-24.7				13:47:49R0		26.2	-1.5	-1.7		
	#87	-30.9				13:50:56TI		32.6				
	#88 #89					13:54:34TI		25.3				
	#37	-33.6	8.6	7.28	-18.5	13:58:53TI	E 49	28.9	i			

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LINE 2 VLF DATA HAWAII

> LINE Z VLF DATA Hawaii Statin

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OMNI-PLUS Tie-line MAG/VLF R22K Ser #26102 VLF TOTAL FIELD DATA (uncorrected) Date 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Lithium: 3.48 Volt Last time update: 10/12 10:08:00 -Start of print: 10/14 15:24:46

23.4 2+00 N Date 14 OCT 88 #61 Line IN-PHASE = +QUAD = #POSITION VLF - TOTAL FLD = X 30 10 -30 -10 0+00 E .X 0+25 E .X 0+50 E .X 0+75 E .X 1+00 E .X 1+25 E .X 1+50 E .X 1+75 E .X 2+00 E .X # 2+25 E .X 2+50 E .X 샢 2+75 E . X -3+00 E .X . ¥ 3+25 E . X 3+50 E . X Fault? 3+75 E . X 4+00 E . X # 4+25 E .X # 4+50 E .X ±± 4+75 E .X 5+00 E .X 5+25 E .X 5+50 E .X 5+75 E .X 6+00 E .X 6+25 E .X #87 **.** X #88 • X . 44 #8[†] "Х

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LINE 2 VLF DATA SEATTLE

	Date 14 Operator Records:	-L FIELD OCT 88 *: 3333	DATA	1AG/VLI (uncoi	F R22K rrected	Ser #2610 J)	2			LINE VLF Seat	2 deta 11e Stat	lion	
	Bat: 17 Last tin Start c	ne updat	e: 10/	thium: 12 10: 14 15:	3.48 08:00 16:45	3 Volt							
i	_ine 2+(DO N Da	te 14	OCT B	3 24.8	3 #61	••••• • • • • • • •		,	and Laboratory and in parts of a second second		1.00	
1	POSITION					TIME CU				5-FRA	RESIS	PHASE	:
	0+00 E					13:21:54				,			
	0+25 E					13:23:12							
	0+50 E					13:24:22POS		26.2					
	0+75 E	-24.9	7.8	101.6	-14.0	13:25:17	59		-6.2				
	1+00 E	-20.1	8.9	100.2	-11.3	13:25:54	49	28.2	-7.7				
	1+25 E	-15.5	11.4	99.51	-8.8	13:25:54 13:26:37 13:27:40	59	30.8	-9.3				
	1+50 E	-12.1	12.1	102.4	-6.9	13:27:40	49	28.4	-9.6				
	1+75 E					13:28:29			-7,6				
	2+00 E	-6.0	14.1	103.2	-3.4	13:29:16	59	24.9	-6.7				
	2+25 E	-3:0	13.9	101.6	-1.7	13:30:52	49		-7.4				
	2+50 E					13:31:59			-11.5				
	2+75 E					13:33:03ROA				4.5			
	3+00 E					13:33:57			50.1				
	3+25 E					13:34:49			7.0				
	3+50 E					13:35:54CAB			-16.3			45	
	3+75 E					13:36:56	49		-0.3				
	4+00 E					13:37:44HYD			0.2				
	4+25 E					13:40:13CRE			0.9				
	4+50 E					13:41:54			4.0				
	4+75 E					13:42:41			0.7				
	5+00 E					13:43:27	49		-4.0				
	5+25 E					13:44:14ROA			-4.9				
	5+50 E					13:45:25	49		-4.2				
	5+75 E					13:46:10				-3.5			
	6+00 E					13:47:03							
	6+25 E					13:47:49ROA			-i.O	-1.1			
	#87					13:50:56TIE		32.5					•
	#88					13:54:34TIE		24.2					
	#89	-33.8	5.8	90.96	-18.7	13:58:53TIE	49	29.2	1				

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LINE 2 VLF DATA SEATTLE

	OMNI-PLÓS Tia-li VLF TOTAL FIELD DA Daté 14 OCT 88 Operator: 3333 Records: 89 Bat: 17.2 Volt Last time update: Start of print:	ATA (Uncorrected Lithium: 3.48		02	Line 2 VLF dzta Scattle St	otin
	5+50 E . 5+75 E . 6+00 E . 6+25 E . #58 . #59 . #60 .	× + × + + × + × + × + × +	+ .	. # . # . # . # . # . # . #	•	
	POSITION VLF - T(0+00 E . 0+25 E . 0+50 E . 0+75 E .	-30 +. X + X . * . X +	.8 #61 IN-PHASE = -10	# . # # #	30 • •	· · · · · · · · · · · · · · · · · · ·
	1+00 E . 1+25 E . 1+50 E . 1+75 E . 2+00 E . 2+25 E . 2+50 E .	• X + • X + • X • X • X • X	• + •+ • + • +	.# - # - # - # - # - # + #	•	:
-	2+75 E . 3+00 E . 3+25 E . 3+50 E . 3+75 E . 4+00 E . 4+25 E .	+ X + X + X + X + X + X + X + X	• • • • • • • • • • • • • • • • • • •	• # • # • *	#	ł
	4+50 E . 4+75 E . 5+00 E . 5+25 E . 5+50 E . 5+75 E . 6+00 E .	+. X .+ X . +X . X+ . X+ . X + . X + . X +	•	• • # • #		, O
	6+25 E . #87 . #88 . #88	• X + • +X • X -	•	. #	, 祥 · ·	

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APPENDIX V

DIAMOND DRILL LOGS

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LOG OF DDH GOATTEL 88-1

M.D. NELSON	ProjectGOA	ATFELL	Property GOAT	Claim GOAT 1
NTS	UTM,	North	ing Easting	Elevation
Collar Azimuth 267°	Collar Angle <u>-50°</u>	Depth <u>391 m</u>	Date Started July 20, 1988	Date Completed <u>Aug. 2, 1988</u>
Contractor			Drill	
		ана стана стана По стана с		

Objective To intersect the Lower - Middle Aldridge time horizon in search of a "Sullwan type" massive sulphide deposit

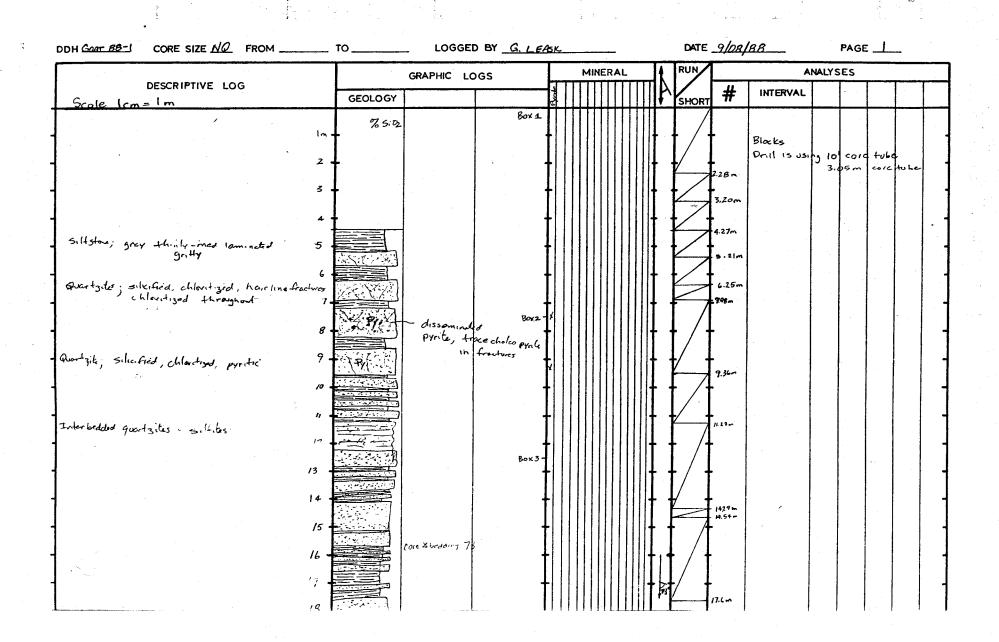
ORIEN	TATION TEST	<u>s</u>	CORE
Depth	Inclination	Azimuth	Depth
57'	-52°	<u>267°</u> A₹	
247	-50°	265° Az	
397	-49°	267° AZ	
547	-47.5°	267°Az	
697	-46-5°	266°Az	
847	-45.5°	266°AZ	Orien
997	-43.8"	265 "Az	instru
. <u>.</u>		<u></u>	<u> </u>
1347			

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CORE SIZE Depth Core Size

CONVENTIONS & SYMBOLS

Logged by G.LEASK. FINALINUS SSOCIATES. t Vancouver, B.C.



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881C pmA LOGGED BY G. LEASK DATE 9/08/88 CORE SIZE NO. FROM PAGE . DDH GOAT 88-1 TO RUN ANALYSES MINERAL GRAPHIC LOGS DESCRIPTIVE LOG # INTERVAL GEOLOGY SHORT Scale Icm= 1m Box 1. 752 In Blacks Drill is using 10 cord fuld 3.05 m core Z core to Le 2.28 m 3 3.20m Bedrock 6.2.7m - massive bedded med grained grey quartisity typical middle aldridge quartisity .210 6.25m -pole sicon silicities quartzite, still above weathering some, pyrite is oxidized in fractures 9.98 m 7. Box 2 8 2 pole green Gracture Style silicification texture. 9.36rusty weathering grey-green subicified guartzite 11.22 rusty weathering surfaces on fracture planes¹² sulicified grey quartsite Box 3 13 14 1429 m 14.54-15 Core & bedding 78° 16 mor silty horizons finely laminated 17 grey intersity suicified quarty the abundant servicity if pyrite disseminations 17.6 m

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13th Manure hadded schedud, chlaritysed Iscally pyritic 27 29 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	hinly laminated bunded silfite			BoxS -					
27 30 31 31 32 4 4 4 4 4 4 4 4 4 4 4 4 4	tsile increasive badded schecking, chloritized locally pyritic 24			+					
Histore Finely Chiminded chloridie 5: Histore 33	3	7		Bext =					
strike; prothe; chlorothe = 31	Hotore Finely Camerolod chlorider 5, 125-1000 3:		sphaler to ir 11	a the second second					

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	DDH Goar-88-1_ CORE SIZE NO_ FROM _18m	TO <u>_36m</u>	LOGGED BY	G.Lea	sK		-		Ď	ATE	8/88	3		PAGE	- 2		
		-	GRAPHIC LOGS			MINER	AL		RU	M/L		A	NALYS	SES	- -		
	DESCRIPTIVE LOG	GEOLOGY							SH		ŧ	INTERVAL		ŀ			
	massive bodded medium gramind grey quartzite wacke w/ abundant sericite 19.			80x4 -		ΠΠ	Π		Τ	7							
1	finely lamineted sillite if Po, Ry laminetims								1/	í t							
		- ()		ł					Ł		334						•
-	Intensely silicitied clean pale green quarty wake abundant scricite, trace calcule within 21.	1/1		ł					ł	A							.
-	- stop 7 2			· +					$\frac{1}{4}$	´ ¦							-
-	finely laminated gree colored siltatome with minor guartzite interbods 23.								Ł		15m						
	massive thick bedded silicified 24			Box 5 -					1							ан. Т	
·	quartite, chloritized, sericitized	月日								/ [
1	grey-grea color 25 - hairline silierfied freetures	T/		1					<u>†</u> /	t				-			-
1	peh Green in color 26			t i					1	- 26-							-
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	29			1					1/	1						1	
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1	finaly laminuted gray sulfite.								† /	1							4
1	massive quartily, with abundant desseminated 32			ł				+	ŧ∕	ł							-
+	Pyrite, Po, trace galena and sphalerite 33			ļ				+	F		^t ~						-
4	(Nery clean quarty, te) => white 34	Pe, Ry, Go, Sph							Į,	/							
	35			Box 7 -						· · ·							
	Grey-green silicitied massive quertisite	17731		Ť				†			+						1

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DATE 9/08/88 DDH GOAT BB-1 CORE SIZE NO. FROM _36.0m TO 54.0m LOGGED BY _ G.LEASK PAGE 3 MINERAL RUN ANALYSES GRAPHIC LOGS a state of the second DESCRIPTIVE LOG # INTERVAL GEOLOGY SHORT -massive silicitied quartzite, abundant 37 calcula filled harline fractures. groy - green colour 38 - bleached green silicied areas suroinding 38.68 39 fractures. in places intensely subcified hardness 40 greater then 7. 40.24 Bex B 40.70~ - nedium grain sized 41 42 pyrile/p. blotches are commen within the new intensely subcified regions. 43 43.59 m 44 45 tour melinised as fo 46 Bo* 7 46.03 netwoon grained much harder than hacks 46.30 . massive signations blade 47 48 clast within silicified 49 grey quartiste 49.23 ~ 50 miner silt horan 51 BOX 10tournelized sst, rings when hit with hanner 52. 52.28r clean schoched quartite with minor Caco, venility, and green coloured scheifitte within sile fred quartite

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DESCRIPTIVE LOG		GRAPHIC LO	GS	╧	ΤŃ						#	INTERVAL				
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Tourmehrised silvetone	72															

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gray siltsbre clad within alth gartyck Winner cale winds occassional-p. ventets 57 58 58 58 58 58 58 58 58 58 58	GRAPHIC GEOLOGY			TTP	SHORT	#	INTERVAL						
gray siltstre clad		Box 4 -				: 55.03m							
ele mudstone 2:6m Mich, traces of Po 59 within it. Schefied quarts.te				•		5896m							
gray a litstane cleat 62	A la	Box 12 -		-		• 64.05 m							
po laninations within chlorikind sillite 65 Afencely silicified quertzite, with 66 bundlant sericite. 67	The party	Bar 13		•		:67.07 m							
Carbonate rich quartzite, slighter 68 silicified 69 soricite rich silicified quartzite 70. with Po dissemination to bottom of 71. Box 13.	Pa lafardhan					70.12m		-					

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	G	TO <u>90m</u> LOGGED BY <u>G.LEASK</u> GRAPHIC LOGS MINERAL					L	4	RUN	PAGE ANALYSES						
DESCRIPTIVE LOG	GEOLOGY							AIT	\mathcal{V}	#	INTERVAL		T	1		
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DDH GAAT 88-1 CORE SIZE NQ.	FROM _72_m_ TO _92_m		BY <u>G.LEASK</u>		ATE _10/08/88		NGE <u>5</u>
DESCRIPTIVE LO		GRAPHIC LOG	s	MINERAL A RU		ANALYSE:	S The second
med gramid gray-green sil granzite massive hedded locally carbonate rich abundant serieste 75m frühly trachired grandsite oh tracture planes. two egg shaped carbonate rich concretions within a med-ce gramed grey substite Carbonate rich honzon within med g mossive gray quartiste Carbonate rich honzon within me Silverhid gray-green quar For disemended within a highly quartzite .5 2? 3. sphide Finely laminated siltike with min Silverfile core thedding =	74 75 75 75 75 75 75 75 75 75 75	acos CaCos	Box 15 -		73.04m 74.04m 75		

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			GRAPHIC LOGS MINERAL						RUN	ANALYSES							
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		94 .			Box 18	*			† †	\mathbf{b}	•						
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DESCRIPTIVE LOG	GEOLOGY	·		ΠT	TI			٩I	SHORT	#	INTERVAL.				19 A
Massive thick bedded grey-grace guartstate, schicified & bleached along hair line fractures	91 - Fy specs			•				•		fa aðm					
	93									-93.10m	194 5			-	
massuri group green silicité quartzites chiloritie en fractione planes	85		Box 18 -					 .		•					
	96 - 97 -							† 	. /	96 <i>1</i> 5m					
	98			-				+ -	./.	•			~		
for with carborate horizon	99 100 2 X X		Вок 19 - 95 - 9_							9923-					
coorse graniel locally silicified gray white quartzite	/oj														
	103			•					. /	102.13 ₀₄					
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Silly quartacte of P. Kommation, deloritie fracture planes	106	-	Box 20 -	-					. /	105.24m					

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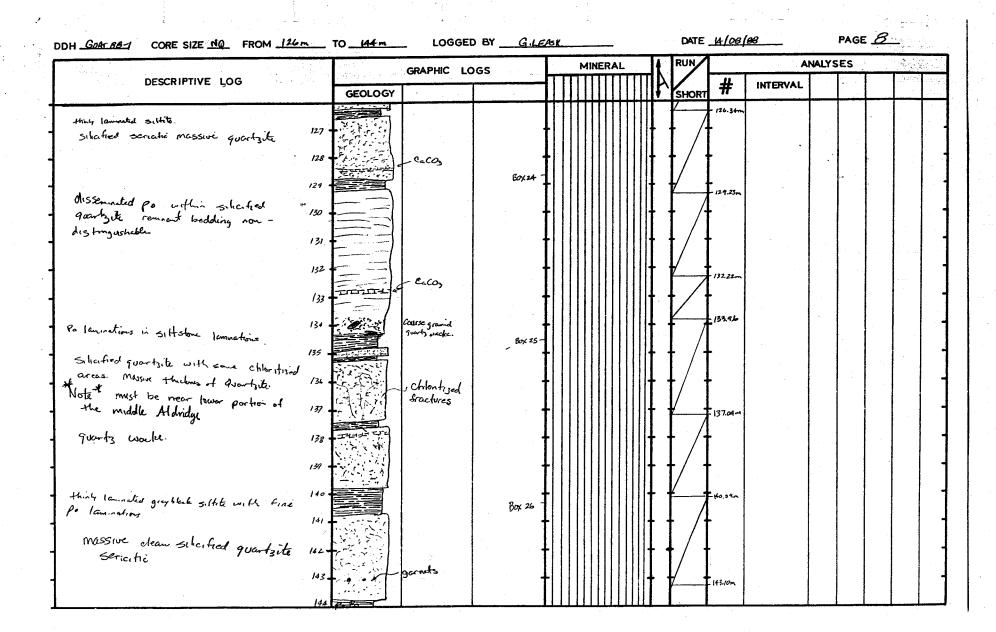
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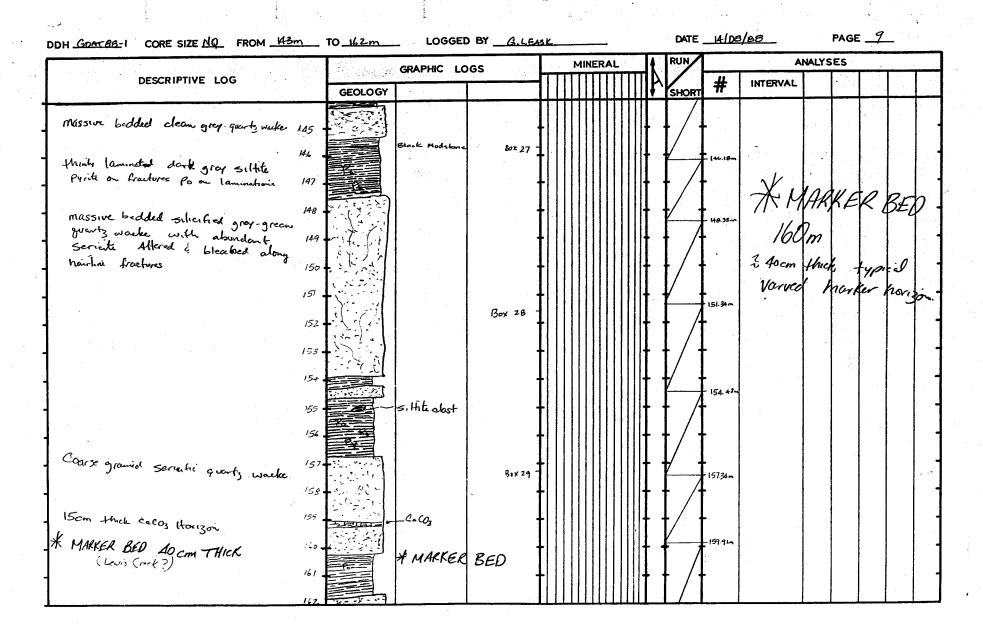
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Gover gent CORE SIZE NQ FROM LOBO	то <u>126 м</u>		BY <u>GLEASK</u>	-	 I A	RUNZ		<u>/88</u>	NALYS	 	
DESCRIPTIVE LOG	GEOLOGY	GRAPHIC LO	GS .		╤┯┫┇	SHORT	#	INTERVAL			
Med-fine granid doork grey silly Norzite - silhte """"""""""""""""""""""""""""""""""""		CeCoz - CeCoz honzan	Box 22 - Box 22 - Box 23 -				-108.32 -114.23 -114.2				





		GRAPHIC LO	GS	Mli	IERAL		RUN		ANA	LYSES	
DESCRIPTIVE LOG	GEOLOGY	•	an a			4	SHORT	#	INTERVAL		
intensely silicified quartaite with abundant chlorilic fracture selverges minor mudstone (grey) clasts in quarta watke matrix	163 - C - C - C - C - C - C - C - C - C -		Bor 30-					-163.02m - 164.72m			
	167		Box 31				. / .	- 167.77m			
Sillafied quartz workes Turbidik succession	169 770 170	- Carbonste steer - Mgarno	n baud				. / .	170.79		2	
chlor.the Sheared, pyrthi	172	wy g <i>o</i> rno	* I								
Massive bedded med grained gray Schecked quarts warke. Sometimes chloritic Gracture filled	173		B6x 32				/	173.29			
	176							176.46			
	177							177.77m			

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		GRAPHIC LO	GS		MIN	ERAL	-		RUN		A	NALYS	ES		
DESCRIPTIVE LOG	GEOLOGY					ΠΠ		A	SHORT	#	INTERVAL				
	81	e-Cacos Harizon			Π				Ķ.,	180.70m					
	82	- Caloz concretion								•					
the top has traces of py is throughout.	183								/	-					
	104		-	•						18375-					
Silicified sericity rich quartz warks with fine sillite tops.	185		Box 34 -												
with the sittle tope.	186			•					/	/85.91m			1.4		
	197			•					$\frac{1}{2}$		an a				
	188 - 5 - 0			•				╟	 / -						
clean quartaites, le white/lightgray	137 - 1 - 1	Caco concretto	÷.	-				 	F _7	188.94 m					
Silicitied sericitie	190		Box35					 	+/						
	191		4	•					↓ / ·	- 191.79m					
۰. بر ۱	192	Coz concretion	•	•						- 196/14					
	193		-	-				+ ·	† ∕ ·	•					
	194		-	•					†∕ `	19/00					
	195			•				† ·	1	- ^{194.90}					
	196		Box 367	•				† '	t / [.]						
	197	1964 - N	4	-				†	t/ · ·	•					

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DESCRIPTIVE LOG GRAPHIC LOGS GEOLOGY	Goar 88-1 CORE SIZE NO FROM 198m			C.C.		MINE	ERA	L	1	RUN	e generalis.	A	NALYS	ES		
Clean silicified Quartzites/ wacks 200 201 202 202 202 202 202 202	DESCRIPTIVE LOG	GEOLOGY		.	TT		Π	Î	ΠP	SHORT	#	INTERVAL				
Clean silicative Quartsites/ wards and gray sites / dat gran with some guarts grit interface about Po laminetes 200 Huin Markler Bed ~ 30cm thick 200 Huin Markler Bed ~ 30cm thick 200 Huin Marker Bed ~ 3		No. 7 State			\prod		T	Π		17						
Clean Silic field Quartzites/ wacks 3 202 203 205 205 205 205 205 205 205 205	199									1/	•					
Clean silicited Quartsites/ wacks 200 thus lamines gray eithster / dat gran with some guarts grit interbals abordat Po laminetes 200 this Marker Bed ~ 30cm thuk 24	200									† / i						
Clean Silicified Quartzites/ Wacks 202 203 203 204 205 204 205 204 205 204 205 204 205 204 205 205 205 205 205 205 205 205	201			- Box 37 -						F	201.0Lm					
Wacks S 202 Magainer of John of Line	202		raty		•					t /·	•					
thick the intervals 201 205 205 205 205 205 205 205 205	Clean Suitcitied Quartzites/ 203		Trace of solars in	<i>u</i> .						• / ·	-					
Hundy lamineted gray sittstee / dort gran with some quarts grit interbreds abundant po laminetions 200 Hund Marker Bed ~ 30cm thick 200 Hund Marker Bed ~ 30cm thick 200		17, Fo, Gi.	top portion of a	silic fint	•					-7	-203.8tm					
thick laminated gray citistics / dork gran 200 with some georg citistics / dork gran 200 abundant po laminations 200 210 this Markler Bed & 30cm thick 200 this Markler Bed & 30cm thick 200	205				-						205.030					
think laminetid gray sittstan / dark gran 200 with some guarts grit interlads abundant Po laminetions 200 210 thin Marker Bed 23 30 cm thick 200 thin Marker Bed 23 30 cm thick 200	2 cú									ļ /	-					
thick lamineted gray sittston / dort gran 2008 with some quarts grit interbads abundant Po laminetions 210 thin Marker Bed ~ 30cm thick 212				Вох 38 -						1/-	-	* -				
Him Marker Bed 230cm thick In										↓ .						
thin Marker Bed 230cm thick 21	with some quarts grit interbuds									17	- 208.32					
thin Marker Bed 23 30 cm thick 21									IIT	[/]						
thin Marker Bed 23 30 cm thick 21	210									t/	-					
thin Marker Bed 2 30cm thick 2	2 · : .			Parkao.	•				†	*	21621m					
	512			60×34 -	•					† /·	-					
	thin Marker Bed 3 30cm thick 200			•	•					ŧ∕ ·	-					
	Sec.		- · · · · ·	•	•					F7	213.84m	1				
	- ² 3			-	-					$\frac{1}{4}$		-				

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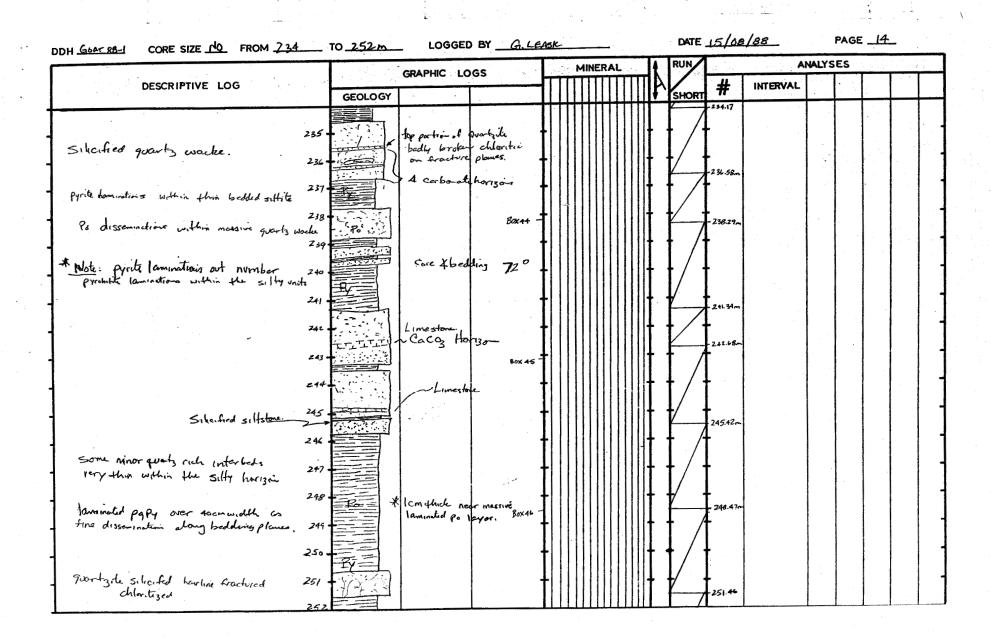
<u></u>		GRAPHIC LO	GS		MIN	ERAL		RUN	1	A	NALYS	ES		
DESCRIPTIVE LOG	GEOLOGY				TI			SHOP	#	INTERVAL				
the the design of the state of the	×7.000			ľ				/ · ·						
works wacked are dominately silvation	217 - 1		B6× 40-					¥						1
envelopes		C-CO3 Concretion							1				.	
	2.8		•					t /	T				ŀ	
								1 /*	1					
	211													
laminated sulfites are quite chloritic	720							- 	7 ^{219.93}					
lending a greenish colour.	7.									1. I.				
	221	- Cacoz Ho	್ಯಾಸ					∶T /	T					
	722							4/	4			1		
								V						
	223		Box +1 =				 		才 222.98					
				ŀ							1 1 1			
	224		. 4				! 1	· ¥	7 224.11	A. 94				1.
hissoninated p. throughout their bodded would.	225							. ↓ /	Ŧ					
redded warla.								<u> </u>	22551				1	
	226							• 🛉	A					
guarts wackes continue to be		4.7											ł	
guarts wackes continue to be silicitied and chlorifized.	227	n cacage	onzai					` T /	T					}
	228		Box42 -					. 4/	+					
	20							¥	228.47.	4			1	
	229		-					· † .	/†					
			a series and a series of the s					. 1 /	1 .					
	230		•	[T/	T			[1	
	231							· +/	+					
								ř.	231.52					
	232		•					· † ⁄	1				1	
	233								233.10					

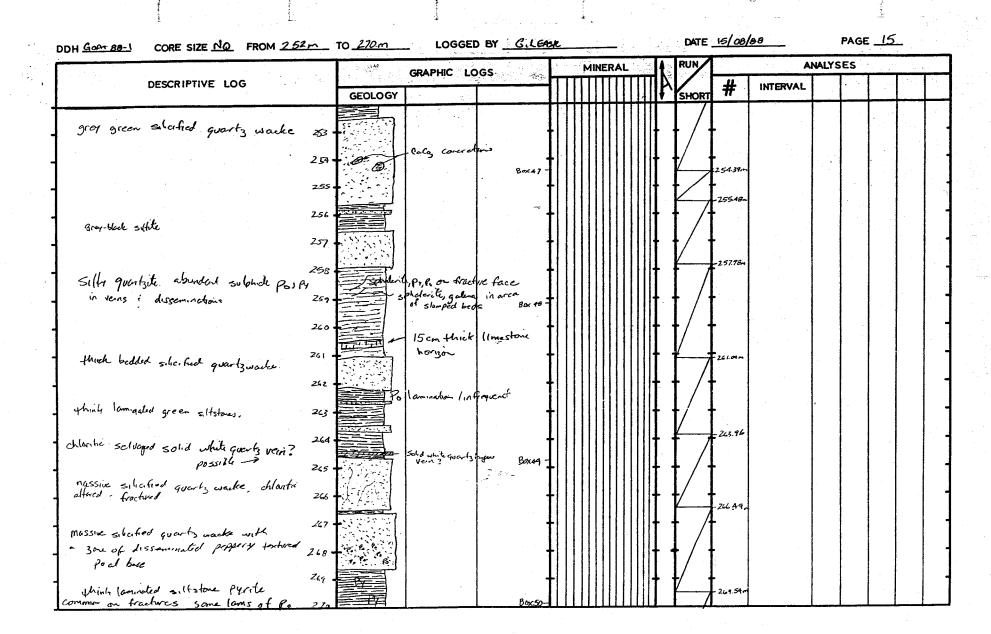
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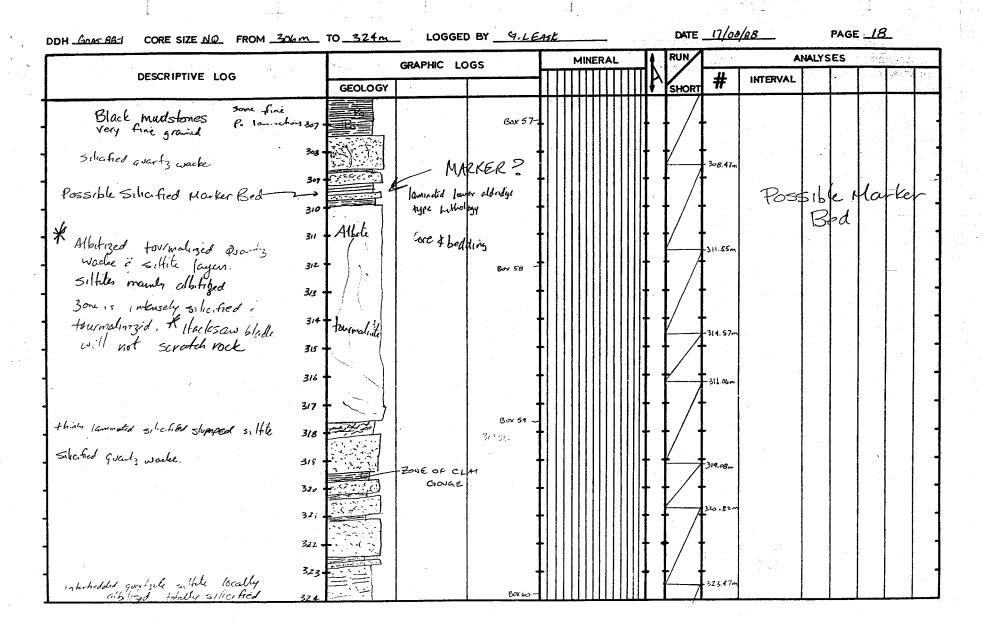




					2 2 2 2 2			
DDH GOAT BAL CORE SIZE NO. FROM 2	<u>20 m</u> TO <u>289 m</u>	LOGGED BY	LEASK	DA	TE 17/08	188	PAGE	16
1772) 1772 177721		GRAPHIC LOGS	MINERAL	RUI			VALYSES	- 7.
DESCRIPTIVE LOG	GEOLOG	r		SHK	жт #	INTERVAL		
	271 - 27/ 24		•					
Sitty quartite with a zone of garnet chlorite attenction	272	-GARNET Porphablasts			273.59m		•	
Pyrite & Pyrobitile laminition for quent in then bedded settile	214	- Bone of Interne Po disseminations	+		274. 4.~			
Chloritized a silicitied quarts wacke. think laminated silfstom gritty in places frequent po laminations	274	Slumped beds	51 - 1		277.26*			
medium course grained subscribed gray green quartz wacke	278		+ +					
think lammated grap green Sittite	280	4 Lineston horizon Boy	52- 4		279.73			-
Greguent po laminations 4/pyrete on son fracture surfaces Silicified medium course gramied massive	282				281.20			-
worke 2cm thick -	283		†					
shink laminded broken of green witht.	285	Limestone horizon Box:	53		285.94			
	287	in upper griffy silf			/			

		GRAPHIC L	065		MINE	RAL	1	RUN		A.	NALYS	ES	
DESCRIPTIVE LOG	GEOLOG		1	ТП	TIT	ΠΠ	ΠI	SHORT	#	INTERVAL			
<u></u>	GEOLOG						┼┼┼		- 288.38				
	39 Joure	- Fault zon		•									
the thing laminated situles	290	Sheared foliate Chloriti	d 11t. e.s.					$\overline{\mathbf{Z}}$	290.03 m 290.94.			-	
silfites cleave in a pocker chip manor.	24 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	E Chiordic	silfile Box 54 -						210 440		2.		
	252	El l						17	292.16m				
	293								†				
1 1 1 10 10 10 10	Z94] [1	294~				
this po lams commun sillie guartz wacke strongly silicitied	275		Box 55 -					t /	† .			-	
	296		Dorse					t/ '	t.				
	297	garnet, limest	-					1	297.01m				
Silty quarts wacker.	298	Aurray has	this sample					1/					
check this for Albit	299		-					t/ '	†				
ninly caminated albitized settite	300		-					1	- 30aobr	1 1			
	301	- Carbonato re	Box 56-					1/	†				
inely (aminated abtised sulfite	302		-	•					-302.83~				
	303 -		•				†	1 /	†				
	304 -							1/	†				
	305		•					1/	- 305.40	n			

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	4m TO 342m		D BY <u>G.L.</u>							3/88			: 19	-	
		GRAPHIC L	OGS		MIN	ERAL	 . {	RUN			NALYS	ES			: T
DESCRIPTIVE LOG	GEOLOGY						 	SHORT	#	INTERVAL				1999-94 1999-94 1999-94	Ļ
	三三							/			a a c				
assive bedded growty warke, Silicit	325						1	t/	•						
lically abondant pyrohofite and chlorite in the free sense	326 - 70-						+	ز ا	- 325.91 m						ŀ
· ·	327 chlork	· ·						L /.		1					
Chlorini green siltite	*		Box 61 -						-7	Laver	-1	do	le		
te: LOWER-Middle Aldudge	378		004.61				 †	t/ ·		Tro		1/		me	
Transition Zone	329		· .	-			l i	¥	-305.08m						
mset of third, laminated chlarter								/			P				ľ
onset of thirdy laminated chilartic. sittles - Lower Aldridge type	330														
1 (Histogy	331 -			•				t / †	•						
silicified quarts waeke	332			-			 	Ι.	332.010						
Nonti sillite	The stand														
disseminated Pr schecked quartz works	333 - Ro						T '	t / 1	- -						
shoud high of dark sittle layers to other of box hower Aldridge hithology	334		Box 62 -				+ ·	/ -	- 33432m						
them of box course retraining	335							1 /	2279 Jun						
	336						† '	t/ '							
rinky laminated, locally abitized	317			-			÷.	<u></u>	336.82	· · · ·					
ycy - brown how aldridge							Ι.	1 /.							
Allulogy sitte. Very fine grained	338	ж. Т													
locally light i dark bands. Albhrad brann s. like	357		BOX63 -				† ·	* ;	- 339.02 m						
	340	day		-			ł.	↓ /·	-						
ilicitied Allatised querts warke.		gouge.													
Brown/tan sittstone	34/-						Ť	<u> </u>	-31149						

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	GRAPHIC LC	ogs	MINERAL	RUN	ANAL	YSES	
DESCRIPTIVE LOG	GEOLOGY			SHORT #	INTERVAL		
ne gramed brown & grey quartiste with 343 some sittly interbids thirdy laminated brown selfstore: 344 Silicited med gravid grav goards wackege Finkly laminated alternativity bunds of grey/ green sillstone, 34	forth gouge	hatron TIII	₽₽ ~Delk. • •	343.91m 344.67n			
	fault gouge	3cm w.że Boy 65 -		3117.72 -			
own med gramid quertzile with 35. Minor silty bends. 35. Fault Zone 35. dowinality siltile clay gauge filled 35.				35339			
badly brokens remnal quartzite 35 Locally mainly remnant sulfile 35 350		Box 66 -		359.97			

		GRAPHIC LO	GS	тт	MINE	RAL		RUN]		NAĻYS	ES I		
DESCRIPTIVE LOG	GEOLOGY							SHOR	#	INTERVAL				0.1
	$\left \right \left \right $								360.76m			1.1	~	ц ц
361	ť ////								Ī				X	
362 -	 ///	Fault zor	l ·					F /	36177-					
343-														
~~ · · · · · · · · · · · · · · · · · ·		· · · ·	Bx 67 -					¥	-361450					
ughly sheared greens. Hite 344.	TITUMIT		•					1 /	†					
3(5)	TITIL			.					\downarrow		1 - J			
fault goige zone	Contraction and	local C	4 and					<u> </u>	-365.61m					
gray-brown fine grained quarte 344.		local faul horizo	Jouge					1 /	T					
grey brown silfstone locally fault gouged. B67.	E			-			 	$\frac{1}{1}$	+					•
		Ry on Fracture	place Box 6 8 -					<u> </u>	367.96 m					۰,
with mixor Catale verilets.	·					$\left\{ \left \right. \right\} \right\}$	 	T /	T I					
Lufied gicon sillatore. 369.			•	-				† /	†					•
· · · · · · · · · · · · · · · · · · ·	Fin							\downarrow	369.96m					
cult zone clay gouge intermixed		fault zone	day						370.790					
with green siltstore. 371.		fault zone Jouge						1	1					•
372.				.			4	¥7	37/.64~					•
ely commated green sillstore with trace								\mathbf{k}	- 37=.5m					-
phillerile along laminations 373. x ends in Gractured Silfstore: 374	77		Зохыя -				†		373.+7~					
x ends in Gractured Siltstore. 374	TAL.		•	-			+	+	4				- N.	•
lay allered Gactured greens states. and your trace of spect + Giden a Try 35.	etitt	6						ľ	374.39m					
fracture Surfaces	<i>t////</i>						T	Ι /	T					
30% recovery shectived green = (1=tone. 376 -		E faut 30	ne -	-			1114	4 /	1					

DDH God 88-1	CORE SIZE NO	FROM 378 m	ТО <u>_346</u>	LOGGED BY	GLEASK	DATE

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			GRAPHIC LC	ogs			41N	ERA	L		It	RUN		A	NALYS	ES		
с. С	DESCRIPTIVE LOG	GEOLOGY			Π	Π] }	SHORT	#	INTERVAL				<u> </u>
	Broken dark green sitt store, silverfiel 379 Silverfiel green silfele 380			Box 70 -									- 379.45n - 380.85m					
	Clay gouged fault zone 281 rocks mainly clay altered 382 thinky (animated green self-stores. 383 Some B-10cm Solid proces 284 Amidst broken rock. 284		fuelt 3000										- 381.48m - 332.59 - 381.75m					
	Some silicification within thereby laminated sillstoned 385 387	11/1		- ור×ס -									-385.09m 385.45m 284.91n -386.43m -386.43m					
	Sud moyor fault zone 383 fine grained green sulfstone. 392	目目											-388.35n -387.26n -310.18n					
1 1	local high angle shearing. 39. 393			Brx 72 - 391.7 m							+		- - -					
1 1	394 395 391			1													 Concernent of	
स्ट्रॉ	and an and a second	n na								(TT) 								
														4 				

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			an a	
			∿∽ <i>1</i>	
		LOG OF DDH Goatfell E	38-C	
			1	• /
M.D. Nelson	Project Goatfell	Property Ga	Dat Claim_	GOAT 1
NTSUTM		Northing	-	vation
Collar Azimuth 267A2 Collar	Angle -70 Depth _	453 Date Started Au	1957/89 Date Completed	Oct. 17, 1988
			2	
Contractor Boundary	Driving	Drill		· · · · · · · · · · · · · · · · · · ·
	L L L L L L L L L L	Millo Allila I.		2 P. 1 5111
Objective 10 1	Merseci the Lower.	-Middle Aldridge time	- Noupon - Jallivan IV	po Entlothy massive supride
			<u>targe</u>	
	•			
ORIENTATION TESTS	CORE SIZE	CONVENTIONS & SYMBOLS		
Depth Inclination Azimuth	Depth Core Size			
·	<u> </u>			
16.1(m (511) 267° 69°				
269 66.50				
217.7m (714') 270° 61°				-
200 (874) 2732 60°	•••			
2740 <u>580</u>	Orientation test			J-M
	instrument			

Logged by <u>Leosk</u> EDMUNDS & ASSOCIATES West Vancouver, B.C.

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DDH Goat 88-2 CORE SIZE N& FROM _O			DATE 08/09/		
DESCRIPTIVE LOG	GRAPHIC LOGS	MINERAL	SHORT # 1	ANALYSES	
1. Massive Belded Quarts. Wocke 2. 3. thinnly Liminated to medium bedded Sillistone 5. medium bedded Quarts Wacke 8. Thick bedded Quarts Wacke 9. Think laminated to Medium bedded Siltstine 8. Massive bedded Quarts Wacke 11. 12. Thick bedded Quarts Wacke 13. thinnly laminated to medium bedded Siltstone 14. Medium bedded Quarts Wacke 13. thinnly laminated to medium bedded Siltstone 14. Medium bedded Siltstone 15. Modum bedded Quarts Wacke 16. Thinky laminated Siltstone 17. Medium bedded Quarts Wacke 17. Medium bedded Quarts Wacke 17. Medium bedded Siltstone 17. Medium 17	Overburdes Nighly silicified and chloritized Po Po Po Po Po Po Po Po Po Po				

2.2		6.5	GRAPHIC LO	DGS		MINE	RAL		4	RUN		A	NALY	SES		di da	2 (1). 2 (1).
	DESCRIPTIVE LOG	GEOLOGY			Ш				A	SHORT	#	INTERVAL		ŀ			
1	Medium bedded Quartz Walke	Pl Pl			111	fff		\ddagger		1					ti je.		
	thin bedded Siltstone Quartzite 19.	P6						•		/ -	•			1			
	20.	P6								/							1. 2
			Intensely silicit	ieb-chloritized					[]	[/]			· ·				
	Massive Bedded Quartz Wacke 21.	6000 8	Quartz - Albit	e-pyrite*					╞╶┨	- / -	•						
	22 .		outry .									-					[·
		000 PY		Bass						\square							
	thinky laminated siltstone 23. Modum bedded Bunitz Wicke		Intencely silip chlucitized	ified 🕴 🕇						/		$ \begin{array}{c} \left\{ x_{0}^{2}, \ldots, x_{n}^{2} \right\} \\ \left\{ x_{0}^{2}, \ldots, x_{n}^{2} \right\} \\ \left\{ x_{0}^{2}, \ldots, x_{n}^{2} \right\} \end{array} $			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		
	Silpheni																
	Thick bedded Quartzite		Intensaly silica Po rich	fied						/							
	Ζ5.												14.9				
	Thinnly laminated Siltstone-Mudstone 26.		Abundant							1. / I			·			1	
	Siltstone - Mudstone		P& Lamina	tions I					Ī								
	27 -		up to 2m	m thick .					┝╂		•			1.400 g. 1.10 g. (1.10 g.)	1 - 13 - 14 - 14		
	28 -	+7												1.00	i dina Tanàna		
		37	Chlorite in 1	pinlets Box 6													
	29.			+					┝╺╋	·/ 🛉				1	122	1	1
	Massive beldel Quartz Worke 30		- Abundant .	licconical					ł								
		(-) -> -) 7												10			
	thick bedded (write Worke 31.		intensely si	licitied					- +	· / 🛉	·			Ľ			
	think Langested 32.		intensely si and chlorit chlorite	veinlets.													
	Siltstone	Pé Pé	Chilorite Silicif: aminiting	reinlets					ľ								
	Metanobethed Ozt. Acente 33.	== Pi	aminting	ει. Βεκ7					٠ŧ							ľ	
	2//	T] .								
	Maine Endland Quarty Marker	1. 11 - 14	Intensaly	lets				T	T	- / I							

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				-		
DDHGoot 88-2 CORE SIZE NO FROM 36 m	TO 54 LOGGED BY J.M. L	.eask	DATE 10/9	1/88	PAGE 3_	
DESCRIPTIVE LOG	GRAPHIC LOGS	MINERAL	RUN	ANAL	'SES	
thinkly laminated to medium bedded Siltstane 37. 38. 39. 40. Massure bodded Quartz Wacke 41. 42. 42. 43. 44. 42. 43. 44. 45. 44. 45. 44. 45. 46. 51.11stone 44. 46. 51.11stone 54. 47. 48. Massive bedded 49. 48. Massive bedded 49. 49. 48. 49. 49. 49. 49. 49. 49. 49. 49. 49. 49	GEOLOGY P Abundant pyrhodite chlorite on veinlets parvaile R sillistone chip Intenalus chior itreot hemotize t-cilicified Calurite veinlets (morning) mud Box7 abandant Pø in Lonination, belo and veins Silicified Henatized Silicified					

	GRAPHIC LOGS	MINERAL	RUN		ANALY	SES	
DESCRIPTIVE LOG	GEOLOGY		SHORT	# INTE	RVAL		
Medium bodded Quarte Wacks 55	hemotized Silicified Chlorified Box/						
thin to thick boddod 56 siltstme thick hodded Otz Vacke. 57	Porich Mudstone Siltstone						
this to thick bodded 59	== PP Princh Mudstors						
60	NA THE REAL						
Massive Bedded 62 Onoitz Wocke 63	On O + Br R. Tritonse Silic fration						
64	0.0.1 Pier distance of shakete						
thin beddeste Thick bedded 65 Sitstere-Musstere 66	Boy 13						
Thus - belde: Growtz Worke 69	Quarte-Albite-Pyrite*	-					
thinkin lamatel to thickly baddod. 69 Siltstone - Anudistone.	Bedding to core < 48° Be abundant Purchatite-Ricitie in blabs and laminations		↓ ↓ / ·	-			

HGoat 832 CORE SIZE NQ FROM 72m	TO <u>90m</u> LOGGED BY <u>J.N</u>	Y Leu <k< th=""><th>DATE 12/09/89</th><th>PAGE _5_</th><th></th></k<>	DATE 12/09/89	PAGE _5_	
DESCRIPTIVE LOG	GRAPHIC LOGS	MINERAL	RUN # INTERV	ANALYSES	
Hin terthick bedded Subwacke with miner Sitterne Linny Gittstones Thin to medium bedded Sittstone-Mudstone Medium bedded Qtz Wacke Medium bedded Qtz Wacke Mudstone Medium bedded Qtz Wacke Mudstone Medium bedded Qtz Wacke The Mudstone Mudstone Thindy be noted Sittstone thindy be noted Sittstone thindy be noted Sittstone thindy be noted Sittstone thind to thick bedded Subwacke thindy be noted Sittstone thind to thick bedded Subwacke thind to thick bedded Subwacke	GEOLOGY Production of the second sec				

<u>88-2</u> CORE SIZE <u>No</u> FROM <u>90m</u> T	GRAPHIC LOGS	MINE	RAL A RU	N	A	NALYSES	
DESCRIPTIVE LOG	GEOLOGY		TTTT A SH	ORT #	INTERVAL		
	Titied 110/			7			
	1-56 disseminated P	+		/*			
Mossive Belled 92	silicified	Baxle		/ 1			
Quarte Nacke bases with /	Z=38 d. 7500 inoted Pb						
Sillistic tops (93+ 'AE Turbidites') 94		•		-1			
'AE Turbidites' 94	abundant dissimente Ryrchotite	ده له		/1			
	Silicified Qua	rtz Wacke		/			
/ 95 -	base s		 † † /	1		靈	
96				7	70 /92 -	1997 (1997) 1997 - 1997 1997 - 1997 (1997)	
thin to Medium beddod siltstone 97	inter and the second			1			
· · · · · · · · · · · · · · · · · · ·		Bx19		/ 1			
thick bedded Quartz Wacke 99	Sulicified	4111		/ +			
this bedded siltstone-multiline medium bedded Quartz Wycku 99							
med un bedded Siltstone + sodded Quertz + e medium bedded Siltstone 100		···· ↑		- T			
medium bedded siltstone 100				/+			
Thick pudded Quarte Wacka				′ .]			
Thin beddod siltstone Medium bedded Quarte Nocke 101							
Medium to thick bedded 102	Pd Abundant disse ninu	ted +		/			
5, 15, 10, 2	Pø Pø	BoxZC		/]			
M-diwin bodded Silistation	Pp						
TI 28 bestol Quorts Wacks 164	Pp silicified chloritized	╋╎╽╽╽╽	+ +				
165				/ L			
this to this bedded							
Sillatar - Subworke 106	TIEL Caloz Minor Limy Sections	†					
107	TEE Calos. Minor Limy Sections	L		/↓			

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	a mara da seria de la companya de la	and a second		20/09		
DDH Goot 88-2 CORE SIZE NQ FROM 108m	TO 126 LOGGED	BY J.M Leask		DATE 12/09	89 PAG	E
	GRAPHIC LOG	s Mil	ERAL	RUN	ANALYSES	
DESCRIPTIVE LOG	GEOLOGY			SHOPT #	INTERVAL	na falence en la companya de la comp Na companya de la comp
Medium bedded Quartz Wocke	2-32 pyrchatite			SHORT T		
thin to medium bedded Siltstone 109.	Po 2-38 pyrrhadite	BoxZI		1 /1		
- thick bedded Quarte Wacke 110.	F.F.WF?) Po Intensely silicified 38 dessembled po	†		7		
+ thick bodded Quarte Wocke		-		+ / +		
thin bedded Siltston. 112 thick bedded Quarts worke						[2] Martin J.
thick bedded Quoitz wocke						
Massive bedded Quarte Wacke	7:11 Silicified			4		
				. 7		
Thick bedded Qtz Wacke Medium bedded Siltstone Lin	Otz-Albite-Chlorite.	Box22		-/		
- Medium Bedded Siltstone 115.						
- Massive Bedded Quartz Wacke 116.	BB chloritized					
	· · · · · · · · · · · · · · · · · · ·					
- Thinnly Laminated siltstone 117-	silicified - chlorid			r /t -		
- 118-	intensely silicif	T [[[]]]		• / •		
Massive Bedded Quariz Worke 119-						
this holded ciltshop	Silicified - chlo	citized Bax 23				
Medium bedded Qtz Wacke			 	┝╱╖╋╶╖╷		
	Po Abundant dissemi pyrchitite	↓	╎╎╎╎╎╷			
- Medium bedded siltstona - Sublicke	silicified, chloriti	ized				
	Pó Soh, Go, Py, CAY Thersely silicities	† †				
Mossive bodded Quartz Wacker 23. this bolded Siltstene 123.		richististiged	<u> </u>	- /- I		1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m
thin bolded Siltstene Massivo Bedded Quarte Viorse median bolded Siltstine 1211 median bolded Quarte Wackle II dian bolded Quarte Wackle II dian bolded Quarte Wackle						
median badded Siltshine. median badded Quarter Wackle	Po 2:33 Pyrcholite Silicitied -chor.	tized or 74				
- Siltstone 125		-+				
Massive beddelgroy Qtz Wocke						

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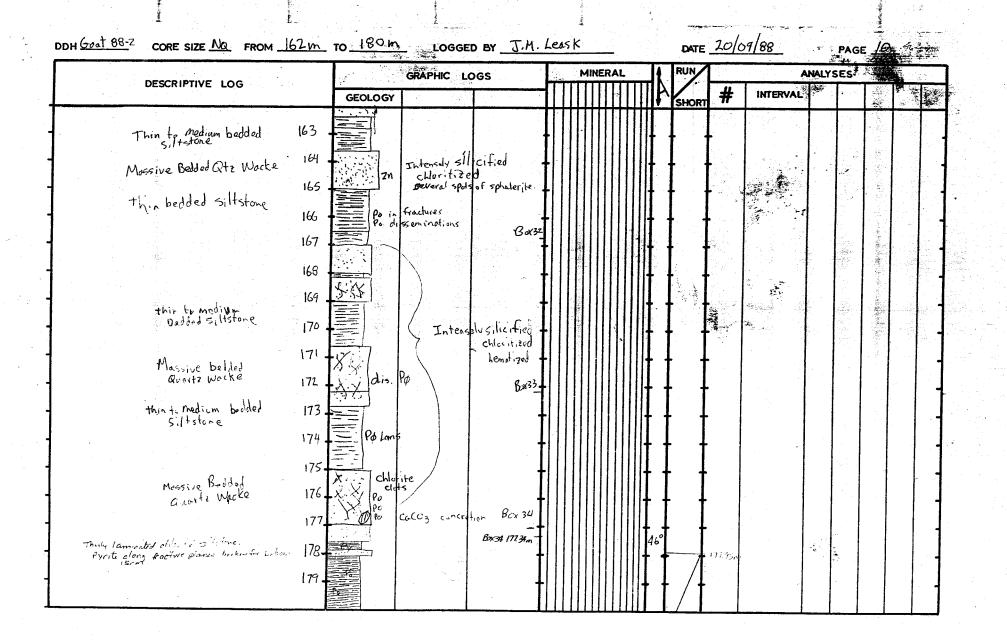
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		GRAPHIC LO	GS		MIN	ER/	AL		1	RUN			ANALY	SES	
DESCRIPTIVE LOG	GEOLOGY				Ш				4	SHORT	#	INTERVAL		•	
Massive bedded gray Quartz Wacke thin to medium bedded Siltstone 127.													10		
Marsive Bedded Quartz Wocke 128.		Silicified chloritized							45						
130. Massive Bedded Quarty Wacke 131. 132.	Part of the second seco	Intersaly sili Chloritized	Box 251 cified												
133 - 134 -	Pø														
Mossive belded Qtz Wocke 136. 137.		Intensity sill: Children to 200	Boy26 cified	*				•							
Medium bedded siltstone 138. thin bedded Qtz Avenite 139.		silicified chlorite on	veinle ^L s							/	•				
Thin bedded Qtz Avenite 140. Massive Bodded Atz Wacke 140. Thin bedded sillstine 141.	Ry	Intendy silic 2-38 dissen fyrite	inated Box 27							/					
Massive bedded Gtz Wacke 142.	N C Y	1-28 dissemi Intensely si Chloritize	inted Ryrite							. /	•				

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Goat 88-2 CORE SIZE NR FROM 144m		BY J.M. Leas	K	DATE <u>20/04</u>		PAGE	B 2	
DESCRIPTIVE LOG	GRAPHIC LOG			SHORT #	the second s	NALYSES		
Massive Bedded Quartz Wocke 145 146 Mossive Bedded Quartz Wocke 147 149 149 thinkly laminited to 150 medic in bedded Siltstone - Mudstone 151 152 Thick bedded Qtz Wocke 153 thin bedded Siltstone 154 Thick bedded Qtz Wocke 155 Thick bedded Qtz Wocke 155 Thick bedded Qtz Wocke 157 Thick bedded Qtz Wocke 157	GEOLOGY Po, Ry Po Py Charite ve. Alet silicified Chlocitized	Box 29 Box 29 Box 30 Box 30		58-1				
Massire Beddod Otz Wacke 161.	Pervasivo	Box 3/_		† † /†		1.000		1



			GRAPHIC LO	GS		MINE	ERAI	1	RUN		٨	NALYS	SES		1
•	DESCRIPTIVE LOG	GEOLOGY			TTT			ΠA	SHORT	#	INTERVAL			18 <u>1.9</u> 39	
	disseminated P. Laminations within Enely Lawinghod Occur chlorine Sillistons. Some more gritty Sillistone within the Sillistone. 181 -		2- Kennelm the	k corboutte	•					-180.27m					
-	massive s. h. fied, chloritized, have lined 182 - factured and attered quartistic 183	χ_{λ}		B∞35 -						192.70m					
•	Quartyte; and grower grower cham 139- per transience scherficht 125-		an Altan Altan							/34,54 m			8		
	suborasile; some chlantic traces it here the guardate; some sign chlantiger contract (36-							 		125.404					
-	Rules and James denies sendente Mato - Iding 137 That low we chouse a still a still a state of the state of the state of the state of Dearth marks, on Cacher 138 Surface	Sphale	Po, Ry Ce Coz Hariza	Box 34				·							
-	Saranyi from a lite Site And aport internation		Osortzile, sin	and the					\sim						
-	S. title: Stor bining over base 190. Thinky icon wind banded S. Halow. 191.	B						4 <i>3</i> °		190.52m					
	Po d'ssemination on 5, H layer bases Greenstister gring 192			67.57											·
_	Po poloins with substance		C.Cog Horiza	lign notes Sump traduces in bridding						193.57m					· · · ·

DDH GAA 33-2 CORE SIZE NO FROM 180m TO 198m LOGGED BY ______ G. LEASK

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301 30

DATE 27/09/88

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197.29,

PAGE _

Blordy worke siterfield sourcesson. massive group to

		GRAPHIC L	065		MIN	ERA	L	14	RUN			ANALY	SES			
DESCRIPTIVE LOG	GEOLOGY		T	൬	ΠΠ		ĪT	AITI	SHORT	#	INTERVA		1.			Т
	1.7			Ht	╏╏╏╽	$\dagger \dagger \dagger \dagger$			SHORI							+
199 -									$\frac{1}{4}$	-						
200									/ -							
think commented childrentic sitile									V]	- 200.3:	A					
sorts waster mossive bridded, chloritized, preitic									 /	•				T		
and time georges. 242																ł
had well a second								I	[/]							
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onder fahren der Stationen der son er der der son auf die son auf der son auf der son auf der son auf der son a Auf der son auf	N. M. 22		Brx 39 -							203.38.					ain Tarti	
nia malan Sina malani										204.6Am						
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3 mar 1 65 GBAR.		Corbs de his	4 <u>2</u> 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4						\lfloor / \rfloor						문문	
totone ; where animine banded, where ????								45		a ngti A ta						
the wacker sulicifed, charged, fraction altered.			1	-					/ +	207.41m						
				.					. /	-07.41m					251	
	1 × 1	along frontine f	Bax 40 -													
Istore: think low method. Co. Pro Jisseminated			1 1	•				†	ŀ / †	· · · · [
g bodding planes	Son Py 7-	traces of sph along fractor	Cericipy Dames	.					└ ↓							
local albite; altrales:		along traction							<u> </u>	219.40 m						
Assure mining freed and the state of the state of the	S O	trains sphalers	t, Interprite	·				† †	· /†							
Islaws trans populate scales and	U	- disconverted 0	it become					↓ ↓	./ ↓							
show allowing the		- Ohissen wated P 2 2 Cm Heat	and the lot						/	215 gard						
that the had species usually liked aible the			· · 1					11	· Æ							
is transited and the sol disseminated por the		-gray sillston	+ clast					∔ ∔	• /‡							1
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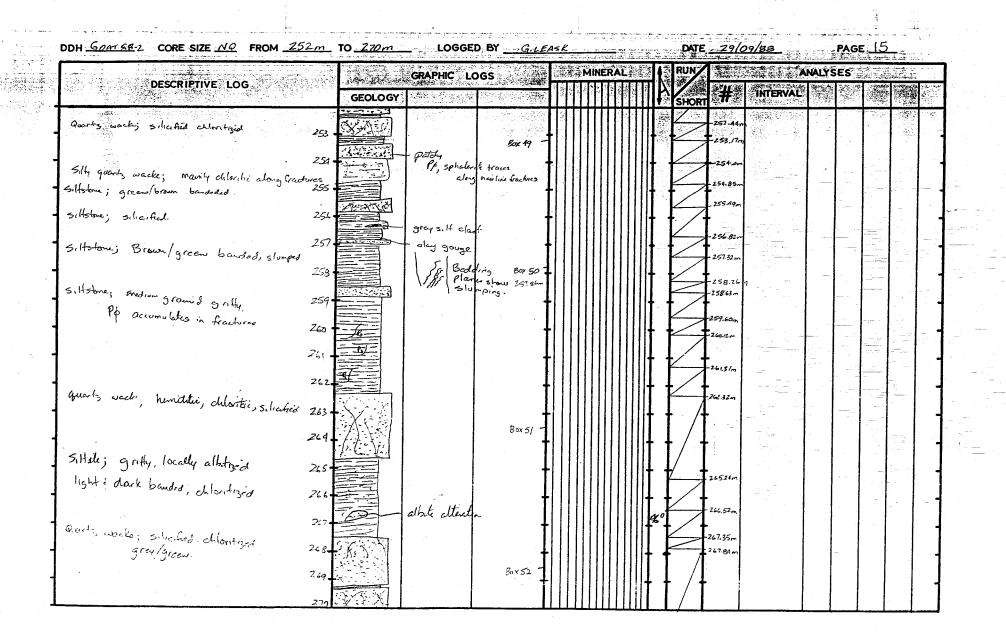
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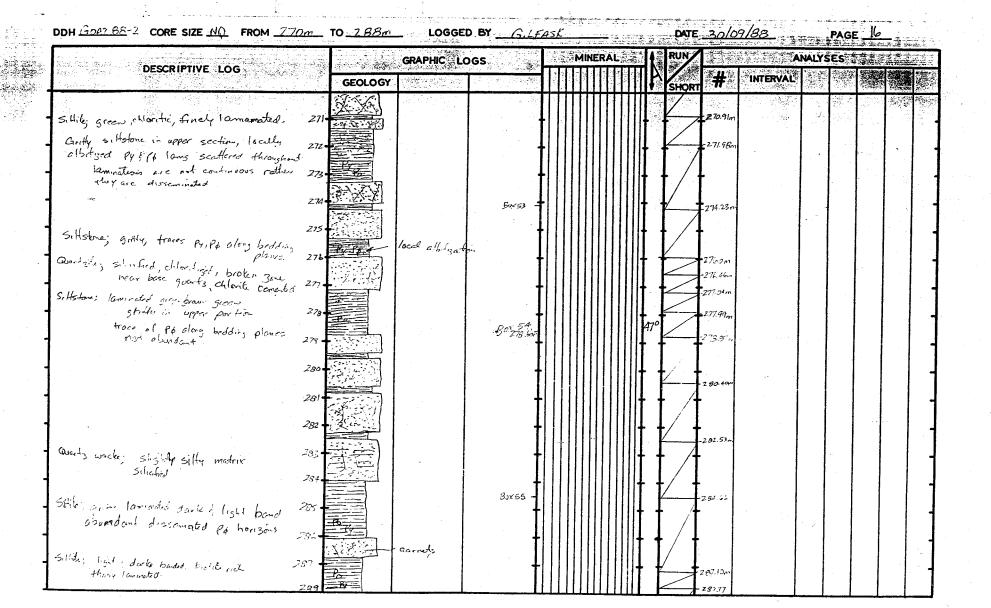
DDH GOOT BB-2 CORE SIZE NO FROM 216m TO 234m LOGGED BY DATE PAGE 13 GRAPHIC LOGS ANALYSES MINERAL 2:50 DESCRIPTIVE LOG # INTERVAL GEOLOGY SHOR 30.3 217 Albile atteration 217.12. avorts wocke; albite patches. Scheified, chlorotison. Sittston clast 000 23 Albite alteration P.s-Think lawinsted light & dark gray banded sittstone with po, disseminated laws abundant 2 B0X42 219 218.93m ce spraterite 218.69m on fracture surface 22 quarts wackey med grained abundant petday chlorific sillistore. 2 20.52 Po throughout 221 Quartz wocke; gray, locally intersty silverfield policy dissortinated po situle; talcon surfaces, chlaritie. Z22 2.22.16 Poorts wacke ; solicified sericite rich disseminated hemilite 223 : Po Quart, weeke; fractured; silcakemented at base, abundand chlorite along fractures Box 43. Note: This Lithology may 224 S. Hitz; dark & light gray bunded sulfite Po, Py have beer note as 224.30 Ma kar Cominations abundant. 22: albite blotche B-a Mossive Quarts wacks; silve field, chlorifized in 88-225.64. 221 Gritty chloritic si Hite 22 Pyritic fracture plane in goorty warks Sille, grilly chleritici, grey/green medium tiores lanningtod 229 sphale il don BAYAS he dded 229.02n brodding plane. Quarts works; Siry, Medium grain sized 230 Grand works; massive bedded elern 231 Grand while quarticle, silver first, chloritised 232 231 hemitike along bolding plane 7 21.14 Quart's works; grey green medium gramit Sensifized silvefied good chloritized 233

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		GRAPHIC L	OGS		MINERAL	24	RUN	12.23		NALYS	ES		
DESCRIPTIVE LOG	GEOLOGY.		ogs I			ΠP	SHORT	##	INTERVAL	S. Caller			
Hile; green chlontic, talcy , fractures, broken up 235.			Box45					-23430m			N. 4.		
thy sillite, brokens, fine - med graving . 236 .				\mathbf{I}			\mathbf{I}	- 235					
Town grey suffstore, locally grify 237. Pyrile along fracture surfaces local po disservinitions along bodding planes. 238.							\mathbb{P}	-236.40n -237.10m					
Works wackes she find 239.			Box 46 -			40		-238.84~					
Hile; modern bedded, glay while colores 240. Decasional Po/R. lamonations	B		2393Tz					- 239.73m					
24/•	the second	patty, Pr, Po,	race chalements				7	-240.73m					
Wartz works; grey grify 202.							\mathbf{V}	-242.65m					
tile; medium bodded, chlorite laninuted sittatione. 243.	1/2			-		-	\geq	243.23m	. •				
its wacke; Silicfied, chloritized. 241.	e, - 49	- carbobate .	Box 47			╎╉		-244.11m					
ful chierde rich, broken poker chip dearage 245.		~ garnets clay gauge zon				+ .	\leq	245m					
incitied quartz wacke, chloritzed. 246.		, July 2 300	in base	-			\geq	-245.43n -246.10m					
Hotore; Several gouge 30000 × 300 thek 297. Chlorite rich. Silicified fine grained. Banded light i dert			-	-				244.86					
* Lower Aldridge to a 1/11			Eox 48 -	•			\leq	248.35					
Stand sticked	Versie	Clay gouge	Jug t in	•				·249.51m	* Lou	ser A	Idrig	tge -	type
the; chlorite baddys broken. 250				·			\cdot		NB. 146 Pa	rhap:	5 CC	hlor to	tizra
Dortzwacke, mad-massive badded, selectived Choosetized 25			-	.			- /	- 2-50.492			5,14		-





DATE _30/19/88 PAGE 17 DDH GOM ROLL CORE SIZE NO FROM 288m TO 306 m LOGGED BY G.LEASK RUN ANALYSES MINERAL GRAPHIC LOGS DESCRIPTIVE LOG # INTERVAL SHORT GEOLOGY .12075-11 288.96 Siffstone; thinky laminuted ablandic sittete. 289 Box 5t 289.51 290 Quartz worke; sile first, defortiged, carbonate 291 Concretion. GARNET IN COREMIATE Q.V. Py, Py Salana sphel. Chales Sittile; gritty aminated . 21 quarty varian 291.95 Co-planer. traces of Extense sphaleite, chaloppente-patche på in bose patrin of siltite. 292 minin -5, 292.63dissen inter Prete Quartzite, she find chladized . 293 Caroz harizan -----Sillite green, chlorite fini growier Sarnet. 293.54 244 Assund is moore site find, chloridized. Sar 57 295 256 ينج تر 298-299. 3000 301. 302-303-304. 305-305

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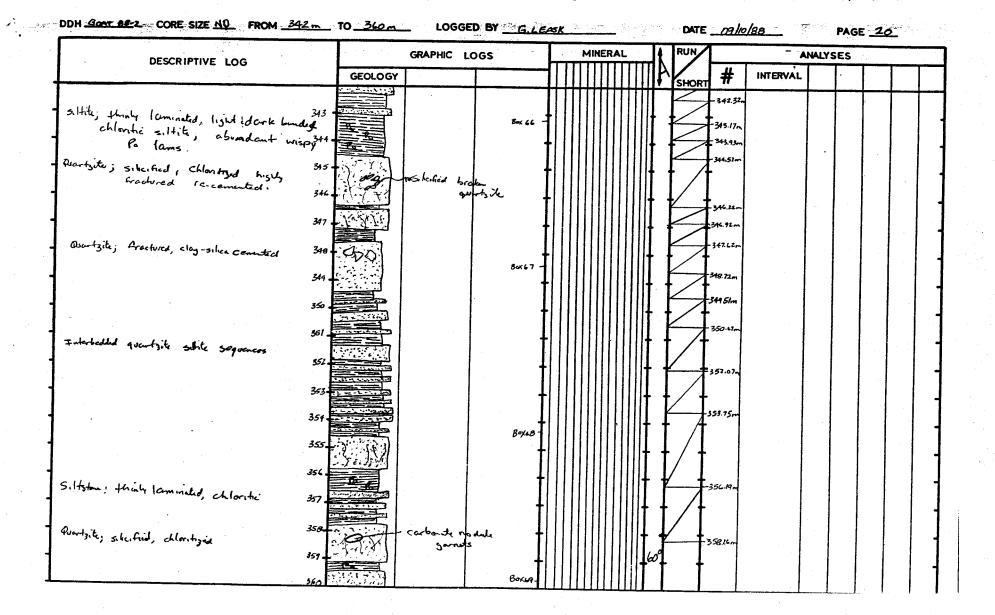
DH STORT 88-2 CORE SIZE NO FROM 306	TO <u>324 m</u>	LOGGED BYG.	EASK	·	ж. 2	DATE	09/1	0/88_		PAGE		
DESCRIPTIVE LOG	GR	APHIC LOGS	. N	INERAL		RUN		_ A	NALYS	ES	-	
DESCRIPTIVE LUG	GEOLOGY		-			SHORT	#	INTERVAL	· .	1 1.		
Sultatione; laminited, banded, po along ban traces of pyrik upto 2% in bro zone.	ds						•		-			
	349 -		†				308.32m		·			
Vartzile; blotchy tophered	310		\mathbf{F}				309.42m					
11 1	372	B0%60					311.43m 311.65m					
tatine; gritty chloritic, pi laminution locally light: dark build.	313		+				312.71m	-				
	315		$\left[\left[\left$				314.42 m			an Ang		
the; think laminted, light; dark budd coundards have line fractures w/ sphalichald 10 cal s/umping 54, Po		alerity chilcorverite ite. Marrow Stringers Box 61					316.73m	. ·				
abundant pyrite lams 1 mm unde	318 Per ab.	ndont sulphide lans	4 4				318.08m					
Hyber; think laminated, frequently	garne	- sophalente, chalcopynte 111 dissimations Warbonat.	† +				318.96m					
banded abundant po lams	32/	white disseminated Box 62	$\left \left \left \left \left \left \right \right \right \right \right $		+ •		/021.43					
	322		╋╎╎╎╎╎ ╅╎╎╎╎			1						
	haurlin tra	-fractives				<u>لر</u>	23.8m	· · · ·				

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D DESCRIPTIVE LOG	GEOLOGY	GRAPHIC LOGS						-			
		GRAPHIC LOGS		· ····································	DATE	01 10	.		05.16)	-
suburfied Sericitie, chloritie						-9/10/8/ #	A INTERVAL	WALYSES			
	325				. [-326.09m					
silicificit, senufic	324				† /					· · · · · · · · · · · · · · · · · · ·	
n Hy, occasional p. lamination	320	e	7 43 - -	•		-328.75m					
	321				[/]						
Sity type interbeds occassionally commeted	331				/	-330.40m					
green chloritic I cn side q.V. with trace sphaling	343	olay Jooge to mik	+			332.32 m • 332.46 m • 333.41 m			-44 - 2014 2014 - 71 - 24 2014 - 21 - 24 2014 - 21 2014		
	334		533.// ,			333.71m 334.27m 334.79m					•
chloritic, locally light & dor banded.	* 314					- 335 51 n - 336 /6m					' '
and the second	337					33448m 337.10m 				/ 	
broken Pe lans.	337		x o J 								· ·
	340		+ +			340.9am					
	; hg4! dark proded, chloritic	Sty, accasional p. lamination 328 327 329 329 329 320 320 320 320 320 320 320 320	anthy, accasing pilaninteni 220 330 Dry, med granied grith with Sity type interbods accassinally lamineted 332 Srew chloritic 1 cm wide g.V. with trace sphelerite 333 this promied thinky lamineted 335 chloritic i locally light i dorte banded. 1000 the proded, chloritic 337 For 1000 k proded, chloritic 339 For 1000 k For 1000 k For 1000 k For 1000 k For 1000 k Standed, Chloritic 339 Standed	Sirty, and gravid grith with 320 Sity type interbods occassionally laminated 320 Sity type interbods occassionally laminated 322 Sith type interbods occassionally laminated 322 Sith trace sphaling 335 the gravid thinks laminated 335 the gravid the gravid the gravit the g	2144, accasing pilaninteni 328 329 2144, mid granid grithe with 329 Site type interbeds 339 accassinally lamineted 322 Gran chloritic ten wide Q.V. 323 accassinally lamineted 322 Sran chloritic ten wide Q.V. 323 att free sphalents 334 att free sphalents 335 att free sphalents 335 at	Sty, and gravid grithy with 339 Sity type interbody sity type interbody sith type interbody sith type interbody socially termineted 332 Sraw chloritic termineted 335 trace gravid, thicky termineted 335 this type is the formed 335 this type is the formed 335 the formed the form	Dry, med granied gritty with 320 320 320 320 320 320 320 320	Breve of the granied gritty with 323 - 320 - 332	Barch - Barch	1144, accessing pilaninten 238 329 329 320 320 320 320 320 320 320 320	British Start for a second prilaminten 337 Start for a formed grither with 338 Start for a formed grither with 338 Start formed grither with Start formed grither wi



DESCRIPTIVE LOG		GRAPHIC L	ogs	- 1	MINE	RAL		RUN		/	NALYS	SES			
DESCRIPTIVE LOG	GEOLOGY						 }	SHORT	#	INTERVAL		1 1 - 11			T
ertsite; subcified, chlorifized, sericific Hotone; thinly laminitid, chlorific	361	Tourmaline \$						$\langle \rangle$: 360 9 4		-				T
Holow; thinly laminated chloritic siltstore. ul disconinded po laminations	362	hairline fractu	* w/sphalerite						362.13m					8	
	324	Blotchy texture	I T						263.75m				····		
portaile; silicitied, chloritized, servicitic	26 20 20 20 20 20 20 20 20 20 20 20 20 20	gray sillstone of	Bax 70 Sf.				ļ		365.64 m						
Home, green, light ide 4 la	347-						560		367.96m	· · · · · · · · · · · · · · · · · · ·	- 19 - 1 	 		 	
abundant po lans	367-							\square	368.96m						
	\$70	:	Box 71 - 370-58-						370.43m						
Hile; think laminuted banded light stark	372		, 10.124				$\left[\right]$		371.77m						
in places chloritic	373		ł						372.84m 373.36m		· · · · · · · · · · · · · · · · · · ·	- 			
artsite; sulicified, chloritic, sericitic	375-						╞╏	· ⁄ ł	374.42						
	374		Box72				<u></u> 		175 6 7m				·		

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DESCRIPTIVE LOG	(RAPHIC LO	GS		MIN	ERA	L		RUN			NALY	SES	
	GEOLOGY							1 A	SHORT	#	INTERVAL			
article, subc.fed, chloritiged, servicite, Sritty. 37				Π					7			<u> </u>		
37								1		379.20 m				
Hytow, green, chlorite occossionally broken			•	•				 ·		379.93m				
locally light + dark banded 36	·			.				4	K-	380.85 ~				
38	2		- BOX75 -					L .	\lfloor / \rfloor					
tstore, luminited, delontic.	La la	latures of								· · ·				
		2-4 am	hik by					1		3B3.60m		i		
delle et	- A	airline fracture	w/sphalerite					† †				-		
stile, chlorite, silved, servettic, locally gritty. 38:	5-		ł					+	- /	384.60m				
384			· · ·]					↓ ↓	/					
tsile; es abore 387			B0x74 -							306 43 m				
			-						\Box	387.68-				
like; chloritic, finely laminited, green.			t					t t	· /t					
389			· †					ŧŧ		389.51				
3%			· +					Į Į		389.61				
341			ļ				.	l 1	./]					
392		trace sphal Py, P.	Box 75-							391.46				
39 3		kygoige	391920					T I		392.7/m				
Hele a state with		0.00-	1					t t						
fatore; abundant by blotches 394.	the second the	race sphalarch,	deko, py					╞╺┫		13.65m				
315	· y vitil - h	airline sphal	inter					ļĮ	\overline{A}					

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CORE SIZE NO FROM 396m TO 414 m DDH GDAT 88-2 LOGGED BY GLEASK DATE _23/10/88 PAGE 23____ MINERAL RUN ANALYSES GRAPHIC LOGS DESCRIPTIVE LOG # INTERVAL GEOLOGY SHORT tran of sphalerite in Grachurs Silich, green, phonitic, griffy Py, Py, frace Spalerite -396.73m 397 Quartzite, arente? massive, gray., Box 76 Q.V. abundant 10 39B medium grained . Q.V. 399 399.12 Py on Fractures 400 401 402 401.98 Box 77 403 401.54m quartile, massive; great great silve. For chloritized locally showed. 404 Cracture , sphale it 405 s. Hstor, chlortic, free chlorite, locally folicited 105.42. sphelande, in fill Kmm wide coplaner doesn't fill active 407 bedding plane . Quartistic; thick hadded, silicified, grean quartistic 408 where Q.y. B0×78 100.350 509 Quartish; green chloritic mod grained Q.V trace those P.P. 410. **4**1i M 1551 A blook 41Z S. Halme; chloritie; pyrib along bractures traces py 4/3

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H GOAT 08-2 CORE SIZE NO FROM 414-		GRAPHIC LO	GS		MIN	ERAL		RUN			VALYS	15	
DESCRIPTIVE LOG	GEOLOGY							SHORT	#	INTERVAL		·	
An Intzik; Boctured, gecen, mediningram sized History: Solided, Chloritic Sull gauge. Day - chloritic silt store. Histore: Sudly broken. Histore; chloritic, locally gritty 42 42 42 42 42 42		5 fault z faulted s. faulted s.	Baxer 521 9. Hostone.				•		414-90m -415.40m -415.56m -418.33m -418.33m -418.33m -418.33m -418.33m -410.27h -420.27h -420.27h -421.03m -422.32m -423.32m -423.56m				
42 42 42 42 43 43	6 17 17 11 1 1 1 1 1 1 1 1 1 1 1 1	fourthed sitts	0°×81	+ + + +			+		425 455 426.77m 428.20m 428.20m 430.33m 430.60m				

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		GRAPHIC LO	DGS		MINER	AL		RUN	A	NALYS	ES					
DESCRIPTIVE LOG	GEOLOGY,		r				TP:	SHORT #	INTERVAL	_						
	1/1 /							452 5 ⁷ m								
	433 - / / /	-						433,44m	1997 - 19							
	431		-				+ +	B1.08.	1							
	135 -	2	Box 83- 134-15-													
ultrai estatus Parte 10				. 7					an to an				-			
quartzile remains infact	436							134.34m	a star et							
badly broken zone with	437						H E	436 3ªm			· · · · ·					
	438							437, 87		in in the second se			· · · ·		· · · · · · · · · · · · · · · · · · ·	
								438.44m	·			1 di 1				
	439							+39 AB.						1	· · · · ·	
GOAT 88-1 only guartates	140			$\left \right \left \right $			+ +			· · · · · · · · · · · · · · · · · · ·		-1 				
rervitain un broken ie/altered			Box 84 -					440.97			алан 1917 - Алан 1917 - Алан	-			***	
9 9 90 96	441-		por b +				IT T									
	42		•				ŧŧ	441.92		- 11. 						
	43 .						ll ⊧	447 Bhm	·	14 M	1					
											-					
	44 - 1 / 1		•				IT I	444.70					-			
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