86-002

SUMMARY OF THE 86-002

1980 EXPLORATION PROGRAM

DUBLIN GULCH

GOLD-QUARTZ VEIN-FISSURE SYSTEM

BEMA
Industries Ltd

1980 EXPLORATION PROGRAM

DUBLIN GULCH

GOLD-QUARTZ VEIN-FISSURE SYSTEM

Mayo Mining Division

N.T.S.: 106 D/4

64°02' Latitude, 135°50' Longitude

Located in the Central Yukon approximately 40 air kilometres northeast of Mayo, Y.T.

Owned by:

CANADA TUNGSTEN MINING CORPORATION LIMITED
Executive Office
Box 12525, Oceanic Plaza
Ste. 1600-1066 W. Hastings St.
Vancouver, B.C. V6E 3X1

Work by:

BEMA INDUSTRIES LTD.
19945-56th Avenue
Langley, B.C. V3A 3Y2

Stanley C. Bartlett, B.Sc.
Geologist

March, 1981

BEMA
Industries Ltd

TABLE OF CONTENTS CONT.

TABLE OF CONTENTS CONT.

TABLE OF CONTENTS CONT.

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES CONT.

LIST OF FIGURES CONT.

SUMMARY OF THE 1980 FIELD WORK GOLD-QUARTZ FISSURE SYSTEM

The 1980 field program was intended to test a zone parallel to, and within 350 metres of the Dublin Gulch stock in an area north of the stock, east of Suttle Gulch and west of Carscallen Gulch. A series of long parallel trenches were proposed to cut across the entire width of the zone at widely spaced intervals along the trend of the zone. The program was designed to test the known showings in the area and to further explore undeveloped areas within the zone. D-7G Bulldozer trenching was conducted in conjunction with geological mapping and sampling.

Exploration was first conducted in the Creek Zone West Fissure situated in Dublin Gulch at the mouth of Suttle Pup. The Creek Zone hosts a number of pyrite-arsenopyrite showings which occur sporadically over 175 metres in the south fork of Dublin Creek. There are two major showings in the Creek Zone. In the easternmost showing sulphide mineralization consists of massive pyrite and arsenopyrite with minor sphalerite and chalcopyrite. Sulphide lodes occur within 15 metres of a gouge zone extending over a length of 45 metres and a width of up to 7 metres. Assays from six grab samples of these lodes range from 0.126 to 0.474 oz/ton Au and 1.00 to 5.88 oz/ton Ag.

The second significant occurrence lies 125 metres to the west and consists of a narrow gouge zone which contains coarse euhedral pyrite cubes cemented by fine grained arsenopyrite. The zone is 1 metre wide and cuts through sulphide-rich, grey foliated quartzite. Six grab samples collected from this zone gave gold values of 0.094 to 0.156 ounces per ton. A total of 119 samples were collected from Creek Zone West and assayed for gold and silver and some for antimony, lead, tin and copper. Three specimens were submitted for 20 element semi-quantitative spectrographic analysis; no significant quantities of other elements were detected. The Creek Zone West is the largest structure discovered to date east of Haggart Creek. There is high potential for massive sulphide lodes in this Creek Zone West area and further exploration is required.

D7G bulldozer trenching began in mid-June on the ridge between Olive Gulch and Stewart Gulch where numerous quartz-arsenopyrite-scorodite showings were known. Trenches were cut to provide a continuous exposure across the zone from the granodiorite contact to the access road south of Dublin Creek. The first trenches were sampled along their entire lengths to test for the possibility of developing a bulk tonnage, low grade gold deposit. No significant gold values were obtained in the wall rock and the thrust of the exploration program was then oriented toward locating and sampling individual veins.

A number of veins were uncovered in the trenches and upon mapping and sampling the exposures it was realized that widely spaced trenches along the trend of the zone would not properly assess the economic potential of the area. A detailed trenching program to test the effectiveness of widely spaced bulldozer trenches was conducted in the area referred to as the Old Stewart and Catto group. This area is well mineralized, hosts three major underground developments and at least two smaller adits. When exploration of the area was complete 2,750 metres of bulldozer trenching in 30 trenches excavated 28,806 cubic yards of bedrock. A total of 194 samples were collected from these trenches. Of these 89 were assayed for gold and silver and some for lead, zinc and antimony. The remaining 105 were analysed geochemically for gold.

In areas of deep bedrock weathering a deep trenching program using a John Deere 690 excavator was conducted. The program was initiated on July 28, and continued until August 12, 1980. During this period 28 trenches were excavated for a total volume of 4,326 cubic yards. Depths of 6 to 7 metres below surface were common and a depth in excess of 10 metres was obtained by staging. A total of 252 samples were collected and assayed for gold and silver and some for lead, zinc and antimony. To complete exploration in this area 62 samples were collected from the de-iced section of the Aurum adit on the Victoria vein. All samples were assayed for gold and silver.

Twelve significant veins were discovered or examined in detail in the Stewart and Catto area. The most detailed work was performed on the Cabin vein which occurs in trenches GTR-4 and GTR-20 as well as in the Beaver Adit. Trenching and sampling indicates 332 tons of vein material averaging 0.479 ounces of gold per ton and 1.71 ounces of silver per ton. These figures represent approximately 160 ounces of gold. Projection of the vein along strike suggests that 200 to 300 ounces of gold could be mined from this vein structure. The Victoria and Aurum No. 2 Veins exposed in trenches GTR-3 and GTR-23 and the Aurum Adit form a strong structure containing 600 to 1500 ounces of gold. Reasonable downdip and strike-length projection of this vein could infer 2000 to 3000 ounces of gold. Calculations based on 27 samples from the Catto Vein of GTR-2 indicate approximately 70 tons averaging 0.885 ounces of gold per ton and 0.56 ounces of silver per ton. This structure contains more than 60 ounces and 100 ounces could easily be inferred. The remaining veins in the area are smaller or undeveloped and require further work to assess their potential. Several of these could probably produce

100 or more ounces of gold for a total of between 1000 and 1500 ounces from this area.

A total of 18 bulldozer trenches were cut on the ridge between Stewart Gulch and Eagle Pup. The 1,054 metres of offset trenches expose a continuous section of bedrock down the crest of the ridge from the Old Blue Lead shaft to the access road south of Dublin Creek. The total volume of material excavated was 13,321 cubic yards. From this area 16 samples were collected. All samples were assayed for gold and silver.

Four significant veins were explored. The Blue Lead Shaft Vein occurs in a shaft on the ridge between Stewart and Eagle Pup 80 metres south of the granodiorite-metasediment contact and to the west of the shaft in trench GTR-30. McLean (1914) reported the vein to be 66 centimetres wide in the 7 metre deep shaft and material in the dump beside the shaft suggests a similar width. Grab samples from the dump material collected in 1979 and 1980 assayed 0.472 ounces per ton gold and 2.17 ounces per ton silver and 0.402 ounces of gold per ton and 1.32 ounces of silver per ton respectively. This is a potentially significant structure and could prove to produce 100 ounces of gold or more. The Blue Vein crops out in trench GTR-3 approximately 70 metres northwest of the Blue Lead shaft. A sample across a width of 50 centimetres assayed 0.662 ounces of gold per ton and 0.64 ounces of silver per ton. The vein has been traced for approximately 10 metres and shows fault terminations in both directions. Trenching beyond the faults in both directions would relocate the vein. The Stewart vein is situated on the lower slope of the ridge toward Stewart Pup. The only exposure is float on a dump near a caved adit which apparently was driven on the vein. Further work is required to outline the vein. The Henderson Vein is located low on the crest of the ridge in trenches GTR-48, GTR-49 and GTR-50. It is the largest vein structure discovered during 1980 and ranges from 20 to 75 centimetres wide. Assays of samples collected from the vein range from 0.316 to 1.744 ounces of gold per ton and 0.52 to 5.51 ounces of silver per ton. An average grade of 0.922 ounces of gold per ton and 1.51 ounces of silver per ton over an average width of 37 centimetres was obtained from 10 samples. The Henderson Vein structure is very significant and could conceivably host in excess of 200 to 300 ounces of gold.

On the north side of the West Potato Hill two quartz-arsenopyrite-scorodite veins were located and trenched. Exploration adits driven on the veins in the past are now caved. At least 1,342 cubic yards of material was moved from 3 trenches over a total length of 208 metres. A total of 46 samples were col-

lected and assayed for gold and silver. Gold assay values from the CB No. 1 Vein ranged from 0.078 to 0.748 ounces of gold per ton and 0.12 ounces of silver per ton. An average grade of 0.122 ounces of gold per ton and 1.55 ounces of silver per ton over an average of 58 centimetres has been calculated from 10 samples. Further work is required to outline the production potential of this vein. The CB No. 2 Vein is considerably smaller and relatively untested. A sample assayed 0.294 ounces of gold per ton and 0.61 ounces of silver per ton over 5 centimetres.

The remaining work performed on the gold-quartz system consisted of prospecting and mapping of the few outcrops near the Old Eagle showing and in the vicinity of Suttle and Platinum Gulches. Five samples from near the Old Eagle workings were assayed for gold and silver. Three grab samples from the Eagle Vein assayed between 1.142 and 2.060 ounces of gold per ton and confirmed the presence of a significant vein structure in this area.

CONCLUSIONS AND RECOMMENDATIONS

The 1980 exploration program has outlined one of the few currently known significant precious metal vein systems in the Yukon Territory. The vastness of the system and its current economic implications were also realized. In addition, a successful exploration procedure was developed that would locate and investigate the gold-bearing quartz veins of this unique vein system. To date, deposits containing in the order of 1000 to 1500 ounces of gold have been located and sampled in some detail. The deposits investigated to the present time are generally small but contain high grade material. Individual structures may host up to 500 ounces of gold.

Larger structures in the area, similar to and including the Creek Zone West Fissure, the Peso No. 1 Vein or the REX Vein which host considerably larger ore shoots, could conceivably exist elsewhere within this system. The area covered by the 1980 survey represents not more than five percent of the total area underlain by gold-bearing quartz veins. The probability of developing additional reserves is excellent.

It is now apparent that the economic potential of the system lies in selective mining of 30 to 50 centimetre wide auriferous vein lodes. An aggressive program of continued exploration leading to production from selectively mined deposits

is recommended. The successful development of the system as a series of selectively mined deposits depends on the development of a feasible mining technique.

The feasibility of mining can only be investigated by conducting a prototype operation where various excavation and recovery techniques can be tested. A selective mining and experimental milling program is recommended for the 1981 season and would require a 10 to 20 ton per day pilot plant at Dublin Gulch.

Studies required to develop a pilot mill design have been initiated in the form of metallurgical testing of a bulk sample. Metallurgical test results of the vein material are very encouraging, demonstrating that 90 percent or more of the gold can be recovered by a combination of simple gravity, flotation and cyanidation processes. The cost of such a mill, including crushing, grinding, jigging, flotation and cyanidation units is estimated to cost less than $100,000.00. Rental costs of such equipment would be considerably lower than the purchase price of a mill. See Appendix III.

Surface mining equipment required for selective mining is minimal and includes a bulldozer, an excavator and a method of transporting material to the mill site. A truck, bulldozer-drawn cart or conveyor belt system would be suitable. It is important that the test mining operation be supplemented by an on-going exploration program which will locate and develop additional reserves.

An exploration program similar to the 1980 program should consist of a bulldozer and an excavator conducting detailed trenching. A priority list of development events should begin with delimiting the deposits presently discovered. Deposits which should be developed include the Henderson, Eagle, Blue Lead, Green and Olive veins. Exploration of the area south of Dublin Gulch and east of Haggart Creek should follow. When an adequate amount of mill feed has been developed, trenching should be conducted west of Haggart Creek in Gill Gulch and south of Fifteen Pup. The potential in this area for the discovery of large vein-fissures is excellent.

Continued exploration of the Creek Zone West Fissure is recommended for the 1981 exploration program. This strong structure hosts gold-bearing, massive sulphide lodes. A program of geophysics, possibly an electromagnetic survey or an induced polarization survey should be designed in cooperation with a

consulting geophysicist. The survey should be designed to delineate the structure prior to exploration drilling. Diamond drilling is recommended of the zone outlined by the geophysical survey perhaps initially on the zone located in 1979 and 1980. The drill program should consist of 700 metres of NQ core drilling in a series of holes along the trend of the structure. The drilling should define the geometry of fissure structure and indicate the strength of structure. Ideally the holes will define areas of mineralization but the lack of sulphide intersections in exploratory drill core does not disprove the presence of sulphide lodes within the structure.

A minor amount of diamond drilling is recommended in the Stewart and Catto area to test the down dip continuity of the Victoria and Aurum No. 2 Veins and the Cabin and Catto Veins. This program would require approximately 500 metres of NQ diamond core drilling. Such a program will provide valuable information of the behaviour of the veins in the granodiorite stock beneath the metasediment cover. The continuity or discontinuity of vein structures in the granodiorite is not presently known and could significantly alter the ore reserve potential of the system.

GEOLOGICAL REPORT

ON THE

DUBLIN GULCH GOLD-QUARTZ VEIN-FISSURE SYSTEM

1.0 INTRODUCTION

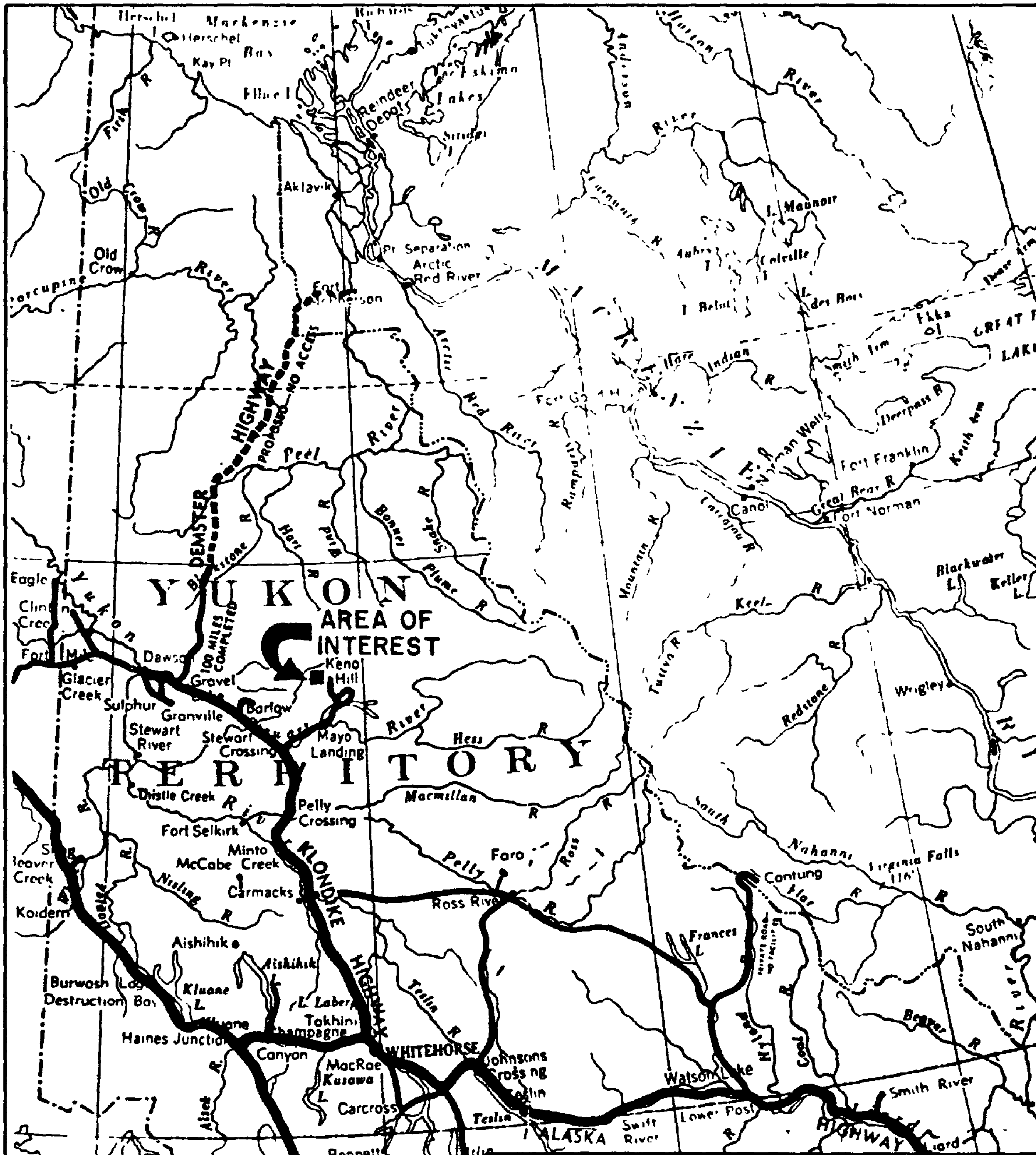
The Dublin Gulch Property consists of 1059 full or fractional quartz claims located in the Dublin Gulch - Haggart Creek - Lynx Creek area of central Yukon Territory. The claims, centred some 40 air kilometres northeast of Mayo, cover ground which potentially hosts significant lode deposits of tungsten, gold, silver and tin. Exploration work has continued in the area since 1978 and has resulted in discovery of two lode deposits, one of tungsten and the other gold.

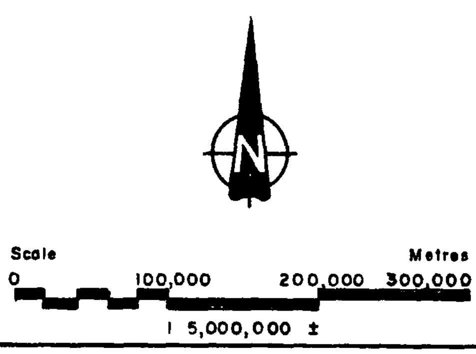
Three principal areas of interest are present on the Dublin Gulch Property. On the flat plateau at the head of Dublin Gulch, west of Ray Gulch tungsten-bearing skarns are located. Gold and silver-bearing quartz-arsenopyrite-scorodite veins occur in a north-easterly trending system extending for 12 kilometres (7.5 miles) from Secret Creek in the west to the Potato Hills. The third area of interest is on Tin Dome north of Dublin Gulch where a tin-bearing tourmalinized zone is located.

To date a total of 13,737 metres (45,069 feet) of diamond drilling has been completed in 86 holes on the tungsten skarn. Detailed geological mapping, extensive bulldozer trenching and surface geochemistry surveys have been conducted in the skarn area.

On the gold-quartz vein-fissure system, extensive bulldozer and excavator trenching was done on several significant showings during 1980. Geological mapping, sampling and surface geochemistry surveys have been conducted over much of the area underlain by the system during the past 2 seasons.

Recent exploration work on Tin Dome includes bulldozer trenching and extensive geological mapping performed in conjunction with surface geochemistry surveys. Intensive exploration programs have been conducted on Tin Dome in the past but the results were inconclusive. This report deals with the 1980 exploration program on the gold-quartz vein-fissure system.





CANADA TUNGSTEN MINING CORPORATION

DUBLIN GULCH Y·T·

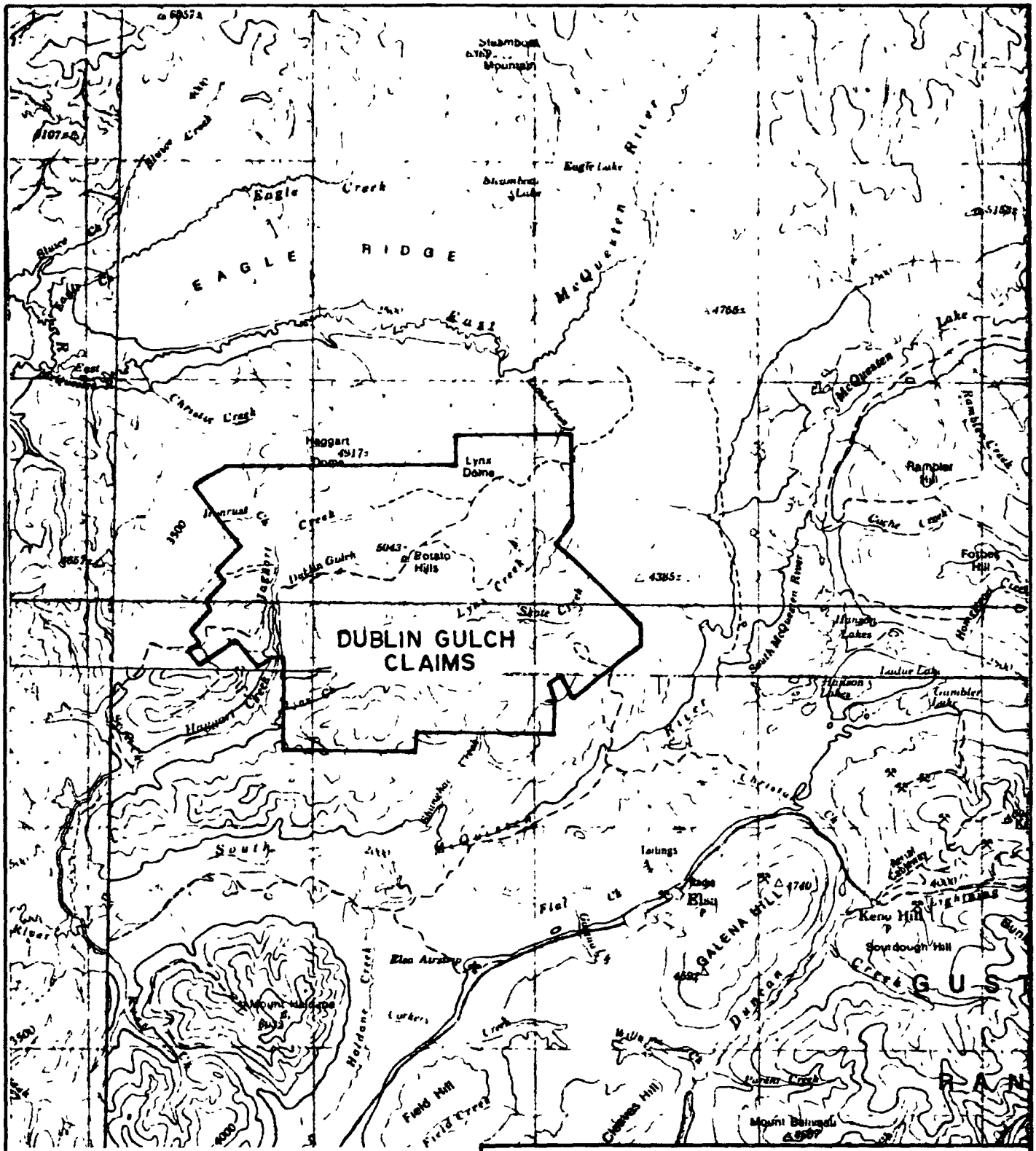
1980 GEOLOGICAL EXPLORATION PROGRAMME

KEY MAP

GOLD QUARTZ VEIN FISSURE SYSTEM

DATE	MARCH 1981	JOB NO	80-06
REVISED BY		FIG NO	1

BEMA INDUSTRIES LTD.



CANADA TUNGSTEN MINING CORPORATION

DUBLIN GULCH Y·T·

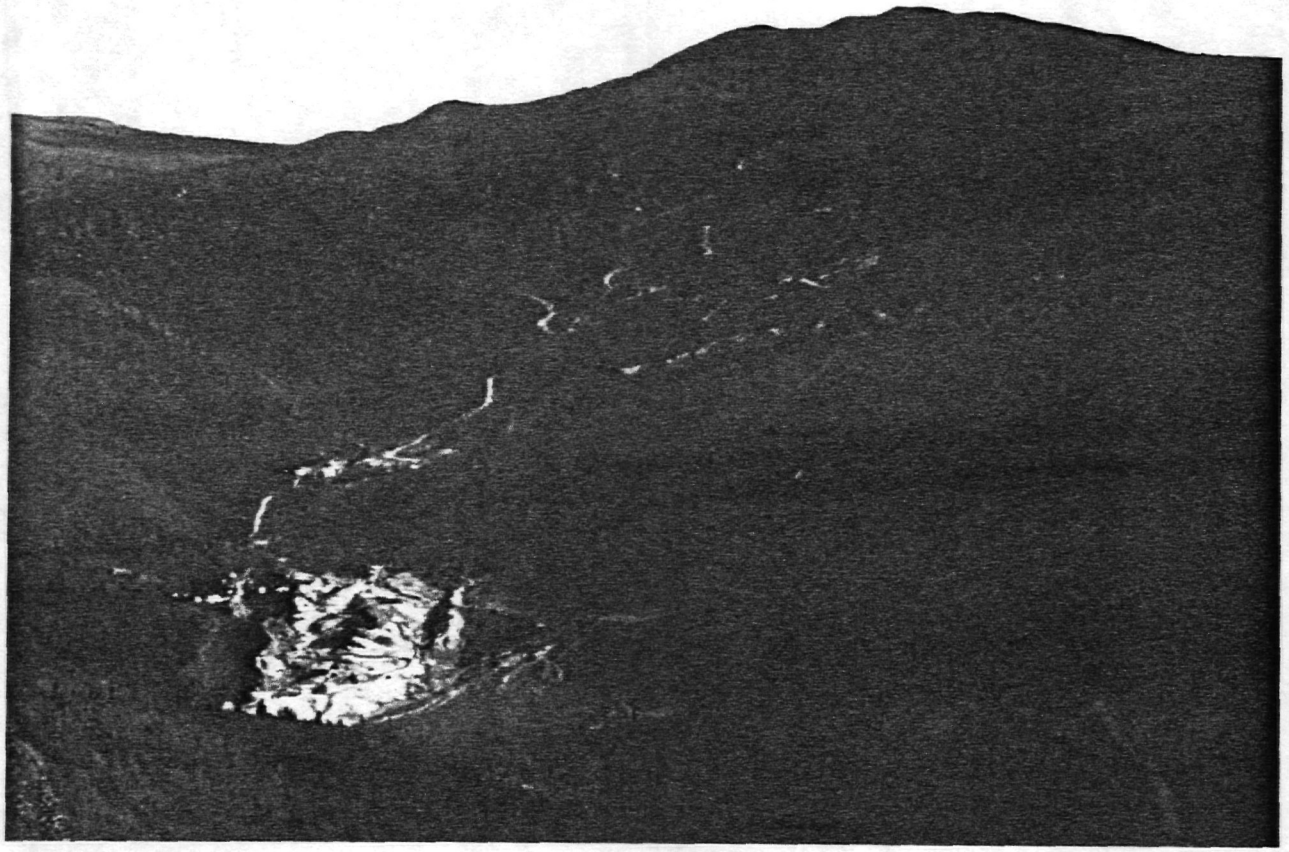
1980 GEOLOGICAL EXPLORATION PROGRAMME

REGIONAL PLAN

GOLD QUARTZ VEIN FISSURE SYSTEM

DATE	*MARCH 1981*	JOB NO	80-06
REVISED BY		FIG NO	2

BEMA INDUSTRIES LTD.



Dublin Gulch - Looking northeast from the head of Fifteen Pup

1.1 LOCATION AND ACCESS

Dublin Gulch is located in central Yukon approximately 40 kilometres in a direct line northeast from Mayo. The gulch is centered at approximately 64°02'N latitude and 135°50'W longitude. The property is roughly 90 kilometres by road from Mayo; 50 kilometres by all-weather road to the South McQuesten River Bridge and 40 kilometres by a rough gravel road along Haggart Creek to the camp.

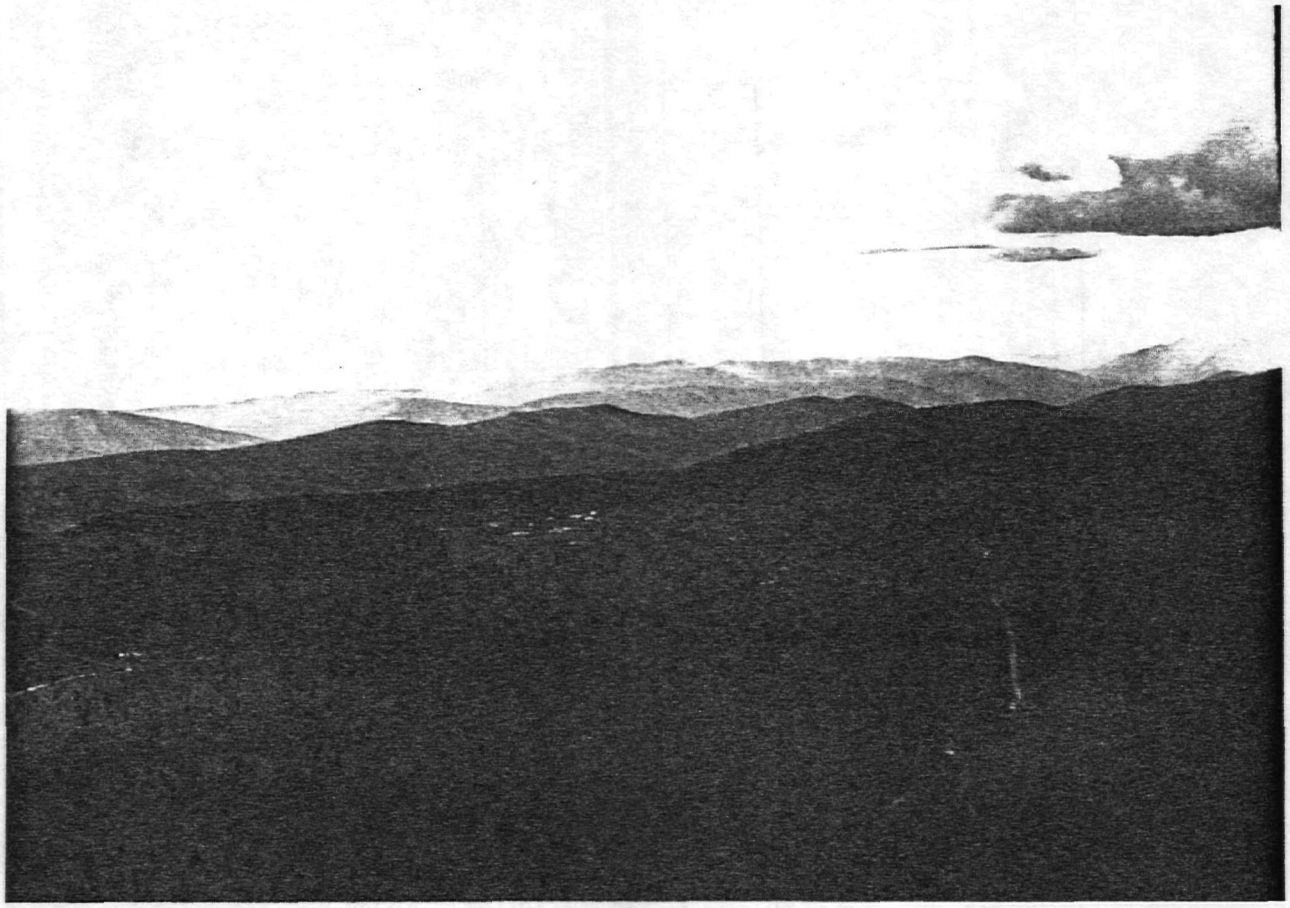
Access to the tungsten skarn and quartz vein system is by a rough gravel road which follows Dublin Creek to Olive Gulch then, by means of switch backs, climbs to the flat plateau southwest of the Potato Hills. Several old roads which branch from the main road lead to various showings of the quartz vein system. A well developed network of bulldozer roads on Tin Dome provide easy access to those workings.

1.2 PHYSIOGRAPHY

In the Dublin Gulch area flat plateaus and rolling hills are dissected by a network of deep creek gulches and lesser stream valleys or "pups". The southwest trending Dublin Gulch system is typical of the area having a main gulch with several tributary gulches and "pups". Dublin Gulch forms a major subsystem of the Haggart Creek drainage system which flows southward into the South McQuesten River. Elevations in the area range between 800 metres (2,625 feet) at the mouth of Dublin Gulch and 1654 metres (5,427 feet) at the Potato Hills.

Slopes in the area are moderately steep but are locally steeper in Ray Gulch and to the west within the main granitic pluton. Bedrock or boulder talus is found on the steeper slopes. Moderate slopes are covered by felsenmeer or by residual soil and glacial till. Permafrost is found in poorly drained areas on north facing slopes.

Vegetation is typical of central Yukon and locally varies between lichen and moss, buckbrush and spruce. Moss and lichens occur on steep, north facing, felsenmeer covered slopes. Buckbrush is ubiquitous in the Dublin Gulch area while spruce, to 30 centimetres (12 inches) in diameter, is normally restricted to valley bottoms and areas underlain by glacial till or residual soil.



Diamond Drill Area - Southwest of the Potato Hills

1.3 CLAIM STATUS (See Figure 3 and Appendices VI and VII.)

The Dublin Gulch property consists of 878 full mineral claims and 181 fraction mineral claims. Of the total 1059 claims, only 453 claims were staked prior to the 1980 field season. For assessment purposes 433 of the claims were organized into 37 groups and 33 claims were ungrouped.

A statement of representation work was submitted for the 466 claims on October 10, 1980. For the 37 groups only physical work, such as drilling and trenching, was applied toward assessment credit. The remaining 33 ungrouped claims are situated such that they cannot be reached by the grouping method and therefore the physical work performed could not be applied toward assessment credit for these claims. The work submitted as representation work for the 33 ungrouped claims was not accepted, therefore, the renewal date for these claims remains October 1, 1986.

A sum of $9,432.00 was submitted with the application for a Certificate of Work form as Filing fees. This sum was calculated for 466 claims for 4 years assessment credit. A miscalculation by the Mining Recorder resulted in the charges for some claims being doubled. As a result those funds submitted in excess will be refunded. The amount of the refund will also include those fees paid for the 33 claims for which representation work was not accepted.

During 1980 field season 606 new claims or fractions were staked for Canada Tungsten Mining Corporation. Assessment work and reports are due on these claims in 1981 with the earliest anniversary date falling on September 2.

The following is a synopsis of the Dublin Gulch claim status:

CLAIMS	RENEWAL DATE
ALEC 1 - 60	October 1, 1990
BOB 1 - 27, 32, 34, 36 - 65, 69 - 73	October 1, 1990
BOB 28 - 31, 33, 35, 66 - 68	October 1, 1986
C.J. 1 - 200	September 2, 1981
DAVE 1 - 24	October 1, 1990
D.G. 1 - 14, 27, 29 - 56	October 1, 1990
D.G. 15 - 26, 28	October 1, 1986
JEFF 1 - 93, 97 - 103	October 1, 1990
JEFF 94 - 96, 104 - 112	October 1, 1986
MAR 1 - 24	October 1, 1990
MAR 25 - 30	October 5, 1989
MOLE 1 - 11, 14, 16	October 1, 1986
MOLE 17, 18	October 1, 1981
R.D. 1 - 16	October 1, 1990
SMOKY 1 - 82	October 1, 1990
WEASEL 1 - 20, 25 - 210	September 15, 1981
WEASEL 21 - 24	November 28, 1981

FRACTIONS	RENEWAL DATE
ALEC 61F - 76F	October 1, 1981
BOB 74F - 84F, 86F	October 1, 1981
D.G. 57F - 83F, 85F - 105F	October 1, 1981
DAVE 25F - 30F	September 29, 1981
DAVE 31F - 34F	October 1, 1981
JEFF 113F - 120F	September 29, 1981
JEFF 121F - 135F, 137F - 154F	October 1, 1981

FRACTIONS	RENEWAL DATE
MAR 31F	September 29, 1981
MAR 32F - 43F	October 1, 1981
MOLE 19F - 24F	October 1, 1981
SMOKY 83F - 114F	October 1, 1981

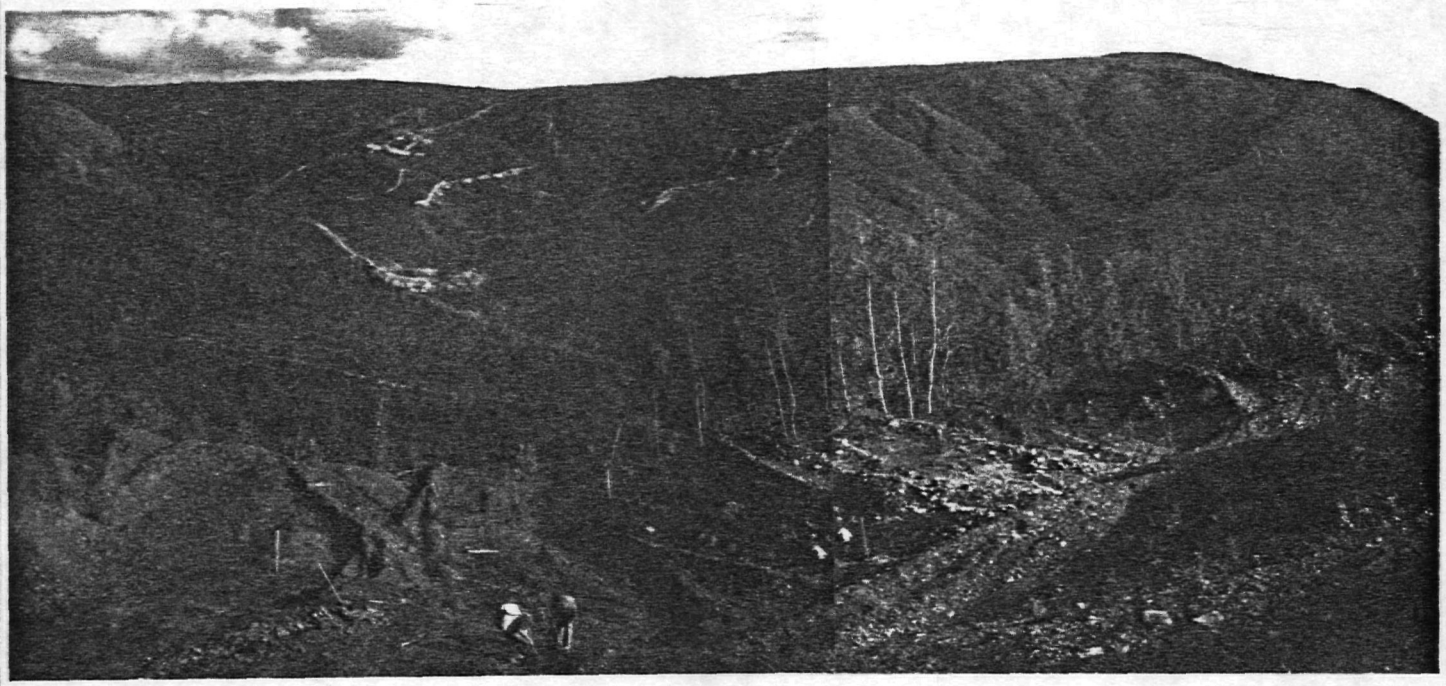
TOTAL NUMBER OF CLAIMS - 878 TOTAL NUMBER OF FRACTIONS - 178

1.4 HISTORY

The Dublin Gulch area has had a long history of mining activity dating back to the Klondike gold rush days of the last century. Placer gold was discovered in Haggart Creek and Dublin Gulch in 1898 and 1899. The creeks were worked sporadically during the early stages and it wasn't until 1904 that scheelite was identified in the placer deposits. In 1908 Cockfield located scheelite and wolframite in quartz veins and pegmatitic veins at the head of Dublin Gulch. These lode discoveries coupled with increasing amounts of gold and tungsten being recovered from placer operations resulted in a flurry of exploration activity for additional lode deposits from 1913 to 1916.

A major vein fissure system containing gold, arsenopyrite and silver was discovered on the north facing slopes of the ridge to the south of Dublin Creek. In 1907 J. S. Stewart and Dr. William Catto located the Victoria claim, the first quartz claim staked in Dublin Gulch. Eventually ten veins were discovered between Stewart and Olive Gulches. Other veins belonging to this vein-fissure system were discovered in Eagle Pup, Suttle Pup, Platinum Pup, Bawn Boy Pup and near the junction of Cascallen Pup and Dublin Creek. One prospect, covered by the Independence claim, was located on the ridge above Gill Gulch, west of Haggart Creek. A number of the veins were reported to extend for more than 61 metres (200 feet) with widths up to 3 metres (10 feet) (McLean, 1914).

The early history of the area is detailed in the reports of the Federal Department of Mines; particularly in reports by T. A. McLean, 1914, and D. D. Cairnes, 1915. Dr. W. E. Cockfield of the



- Vein of Gold-Quartz Vein-Fissure System -
Looking southeast from Tin Dome

Geological Survey of Canada reported many of the above occurrences in 1918.

From 1916 to 1918 Mr. Robert Fisher prospected around the headwaters of Dublin Gulch and located several small lode occurrences of scheelite. Little or no work was conducted on these showings. Cockfield (1928) reported that the scheelite in the placer deposits was emanating from quartz veins and pegmatitic veins found in and adjacent to the main Dublin Gulch Stock, located south of Dublin Gulch. The veins are varied in width from 1/8 of an inch (3 millimetres) to over 5 feet (1.5 metres). Assays range from nil to 10% WO_3.

During the period 1916 to 1918 some scheelite concentrate was saved and shipped from the placer operations. From 1934 into the 1940's, Taylor, Blyler and others worked the placer deposits at Dublin Gulch. In 1916 cassiterite was first recognized in placer concentrates. The placer cassiterite appeared to emanate from Ann Gulch and further prospecting led to the discovery of two tin, tourmaline-quartz veins on Tin Dome in 1943. In 1945 Cominco drove a short adit of 56 feet (17 metres) but did not intersect the vein. No assessment work has been recorded since 1945. In April of 1977 Gordon Dickson staked 56 mineral claims over the Tin Dome showings. The claims were optioned to Canada Tungsten Mining Corporation Limited in 1978.

Some historical notes pertaining to other areas around Dublin Gulch, particularly Ray Gulch, follow.

Harvey Ray, a prospector, located scheelite-bearing float in Ray Gulch in 1942. The source areas were not located until 1943 when a G.S.C. party member located several skarn zones at the headwaters of Ray Gulch and other gulches cutting the steep southerly facing slope. All the gulches lead into Lynx Creek.

Mayo Silver Mines Ltd. located a 2½ foot (76 centimetre) arsenopyrite-quartz vein on the east side of the headwaters of Ray Gulch. They did not explore for tungsten.

Mr. C. Provencher staked the Ray Gulch and Dublin Gulch area in 1968. The ground was optioned to Great Plains Development Ltd. in 1968, Tam Mining in 1969 and Connaught Mines Ltd. from 1969 to 1971. In 1970 Connaught subleased the property to Canex-Placer. In 1970 and 1971 Canex-Placer conducted an extensive

soil geochemistry program that extended from Platinum Pup to the Potato Hills and covered the south side of Dublin Gulch.

Canex drilled 2,000 feet (610 metres) and cut 20 bulldozer trenches in the Dublin Gulch - Bawn Boy Pup area. The work was primarily confined to the granodiorite stock with the intent of developing a large, low-grade, scheelite-bearing quartz vein stockwork system. No work was done in the Ray Gulch area.

In March of 1977 Gordon Gutrath of Queenstake Resources Ltd. staked 24 Mar Claims in the Ray Gulch drainage area. In October of 1977 Mr. Gutrath staked the Mar 25 to 30 claims which lie adjacent and to the east of the Mar 1 - 24 claims. Queenstake conducted a small program of geological mapping and sampling of the skarn zones in the Ray Gulch areas. Canada Tungsten Mining Corporation Limited optioned the Mar claims from Queenstake during the summer of 1978. Following ground acquisition by staking in 1978 by Canada Tungsten Mining Corporation Limited, a preliminary field program was conducted. Encouraging results in that year led to an extensive 1979 exploration program involving 2,422 metres (7,946 feet) of BQ core drilling in 21 holes. In 1980 Bema Industries Ltd. was retained to manage the project and a large program including 11,315 metres (37,123 feet) of NQ and BQ core drilling was conducted.

1.5 PRESENT WORK

Fieldwork during 1980 was conducted on three major metal systems in the Dublin Gulch area. Most of the exploration effort was expended toward developing the scheelite-bearing tungsten skarns southeast of the Dublin Gulch stock. A detailed investigation of the Dublin Gulch gold-quartz vein-fissure system was also conducted. Work was concentrated in the area between Olive Gulch and the Blue Lead ridge and on the Creek Zone fissure in Dublin Creek. Only a minor amount of attention was afforded to Tin Dome; a re-evaluation of the tin system is required.

TUNGSTEN SKARN-ZONE

Geological Mapping

Detailed geological mapping at a scale of 1:1,000 metric was conducted on the south facing slope, north of Lynx Creek and in Ray Gulch. Some additional mapping was performed in the vicinity of the Potato Hills. This mapping served to gain a sense of stratigraphic control in the drill area and was used to project favourable skarn units downdip for diamond drill targets. An improved reference grid and the use of orthophotographs enabled an accurate geological map to be compiled. This data has been transferred to a reduced scale of 1:5,000 metric for the purpose of this report. This mapping is shown on the Detailed Geological Compilation.

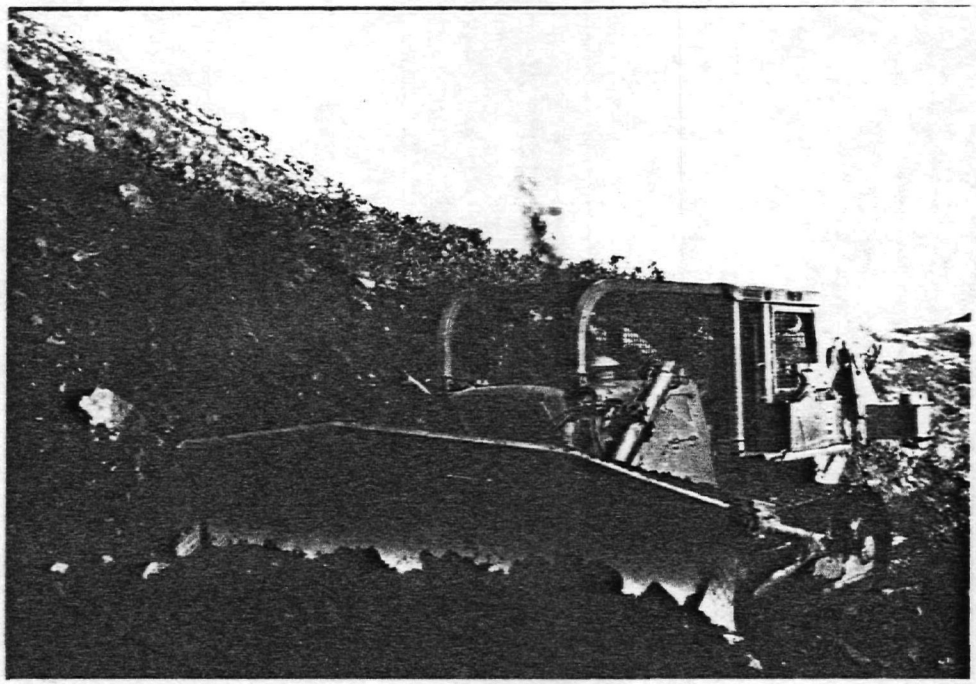
A limited amount of sampling was conducted in conjunction with mapping. A total of 40 grab and chip samples were collected and submitted for assay. Assay values ranged from a trace to 4.99 percent WO_3 in a grab sample.

Bulldozer Ripping

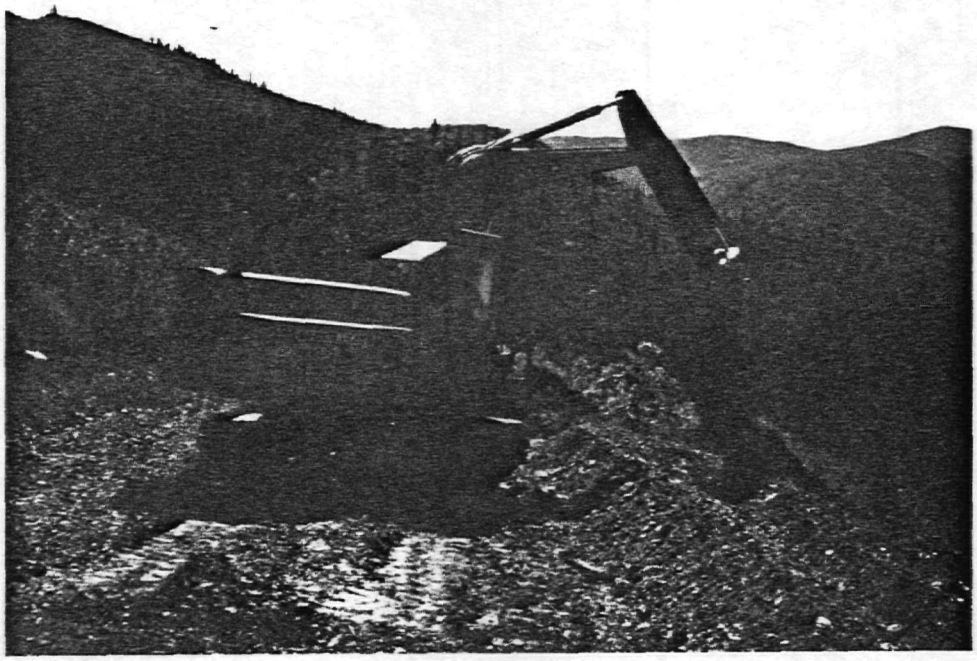
To facilitate geological mapping on the overburden covered plateau southwest of the Potato Hills, bulldozer ripping was employed. Long lines of bulldozer rips expose bedrock in areas of shallow overburden and felsenmeer blocks in areas of moderate overburden cover. No bedrock was exposed in areas of deep overburden. Rips were cut in roughly parallel rows and where possible perpendicular to the strike of the units. The rips were geologically mapped and where skarn material was observed 3 metre (10 feet) chip samples were collected. Approximately 9 kilometres (9,840 yards) of bulldozer rips were cut from which 68 samples were obtained. Tungsten assays for these samples range from a trace to 0.5 percent WO_3 over 3 metres (10 feet).

Bulldozer Trenching

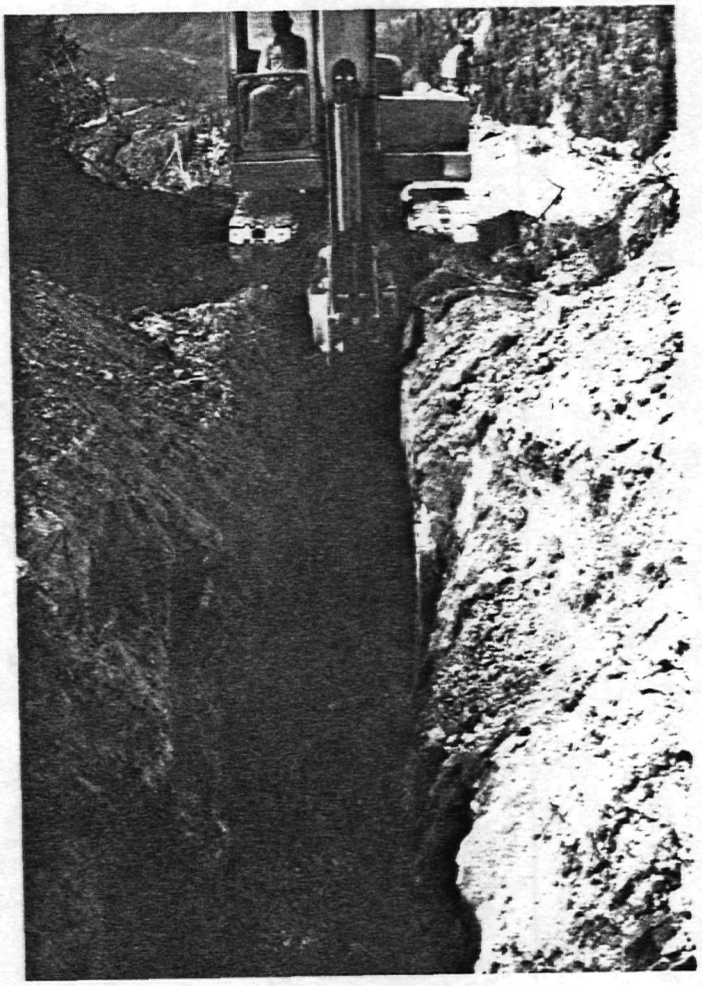
Favourable skarn units located by bulldozer ripping or projections to surface from drill data were followed up by bulldozer trenching. Approximately 1,491 metres (1,630 yards) were excavated in 25 new trenches and one 1979 trench was extended. The total volume excavated was in excess of 12,647 cubic metres (16,540 cubic yards).



Caterpillar D-8K Bulldozer with Ripper



John Deere 690 Excavator at Trench GET-4 on Cabin Vein - Looking southwest



Bedrock Trenching with John Deere 690 Excavator. Looking northwest at Trench GTR-16. Note intense weathering.

Deeply weathered vein structure. View looking east at No. 5 Structure in Trench GET-5. Rock pick is approximately 30 centimetres (12 inches) long.

The trenches were geologically mapped and here skarn zones were sampled. A total of 106 samples, one to four metres (3.3 to 10 feet) in length were collected and submitted for assay. The values returned from a trace to 1.13 percent WO_3 over 3 metres (10 feet).

Diamond Drilling

To date a total of 13,737 metres (45,069 feet) in 86 holes has been diamond drilled on the tungsten-skarn area, of this a total of 11,315 metres (37,123 feet) of NQ and BQ core was obtained from 65 diamond drill holes during 1980. Drilling was concentrated on the flat plateau southwest of the Potato Hills. Two Longyear drills, a Model Super 38 and a Model 38 were operated by Longyear Canada. Drill core was logged, split, crushed and sampled at Dublin Gulch. Drill core and sample splits are stored in the core storage facilities on the property.

GOLD-QUARTZ VEIN-FISSURE SYSTEM

Geological Mapping

Geological mapping on the gold-quartz vein-fissure system was conducted at several scales during the 1980 field season. Most of the detailed mapping was confined to the Stewart and Catto area and in the Creek Zone Fissure. Limited detailed geological mapping was performed north of the West Potato Hill. A minor amount of property scale mapping was performed in the Platinum Pup area.

In the Stewart and Catto area outcrop and trench geology was initially mapped at a scale of 1:1,000 metric. Later with the aid of survey control,mapping was conducted at a scale of 1:200 and 1:100 metric. Geological mapping of the Creek Zone fissure in the south fork of Dublin Creek was conducted at a scale of 1:200 metric. West of Stewart Pup the Blue Lead ridge was mapped at a scale of 1:1,000 metric. Mapping west of the Potato Hills was performed at a scale of 1:400 and 1:100 metric.

Trenching

Trenching was conducted in 3 main areas of the gold-quartz vein-fissure system during the 1980 program. Extensive bulldozer and excavator trenching was conducted in the Stewart and Catto area where 48 bulldozer and 26 excavator trenches were cut. In the Creek Zone fissure bulldozer and scraper excavation, mostly for placer mining, exposed large areas of bedrock. A total of 11 trenches were cut in the East and West Creek Zone fissures. Northwest of the West Potato Hill, 3 trenches were cut.

The total volume of material excavated in these trenches was in excess of 60,098 cubic metres (78,600 cubic yards). A table of trench data is provided in Appendix I of this report.

Sampling

Gold-quartz vein-fissure systems were extensively sampled during the 1980 field season. Most of the 698 samples collected were obtained from trenches discussed in the section above. The remainder came from outcrop, mine dumps or float occurrences throughout the property. The results of this sampling program are discussed in section 2.4 of this report and the details of the individual samples are listed in the Rock Chip Sample Data forms in Appendix IV of this report.

TIN DOME

Only a limited amount of time was expended on the tin prospect at Dublin Gulch. As a result of an examination of the Tin Dome showings by the project geologists early in the season, a low priority was established for the diamond drill program proposed for this area. Some time was spent studying the geochemical signature of the Tin Dome showings and the geochemical background of the Dublin Gulch area. From this study it was recognized that the Gill Gulch and Fifteen Pup area showed as pronounced or more pronounced tin geochemical expressions than Tin Dome. Ground acquisition in the head of Fifteen Pup was recommended to cover areas responsible for favourable tin geochemical results from Gill Gulch and Fifteen Pup. The MOLE claims were staked to cover this area.

Examination of the Tin Dome showings, in company of D. J. Tempelman-Kluit, Ph.D., P.Eng. of D.I.A.N.D., provided some insight into the problems of exploring tin occurrences. It was established

that a re-evaluation of the Dublin Gulch tin system is required. Emphasis should be placed on developing an exploration format which can be applied throughout the entire system. For details of previous work performed on Tin Dome see Lennan (1980).

1.6 BIBLIOGRAPHY

Barclay, R.J., Bartlett, S.C., Elliott, T.M., Philpot, M.D., Orssick, C.N.;
1979: "Keno Hill Geological Report, 1979, McQuesten Valley and Keno Hill Area, Mayo Mining Division, Elsa, Yukon Territory"; private report for Canada Tungsten Mining Corporation Limited by Bema Industries Ltd.

Bartlett, S.C.;
1980: "Geology of the Dublin Gulch Gold-Quartz Vein-Fissure System"; private report for Canada Tungsten Mining Corporation Limited by Bema Industries Ltd.

Cairnes, D.D.;
1916: "Summary Report for 1915" Geol. Surv. Canada in Bostock, H.S. (1917) "Selected Geological Reports of the Geological Survey of Canada 1898 to 1933"; Geol. Surv. Canada, Mem. 284, pp 29 - 34.

1917: "Summary Report for 1916"; Geol. Surv. Canada op. cit. pp. 426 - 433.

Cathro, R.J.;
1968: "Potato Tungsten Showing, Dublin Gulch, Mayo District, Yukon Territory"; private report for Archer, Cathro and Associates Ltd.

Cockfield, W.E.;
1919: "Summary Report for 1918"; Geol. Surv. Canada op. cit. pp. 468 - 470 and pp. 472 - 476.

Green, L.H.;
1971: "Geology of Mayo Lake, Scougale Creek and McQuesten Lake Map-Areas, Yukon Territory"; Geol. Surv. Canada, Mem. 357.

1972: "Geology of Nash Creek, Larsen Creek and Dawson Map-Area, Yukon Territory"; Geol. Surv. Canada, Mem. 364.

Green, L.H., and McTaggart, K.C.;
1960: "Structural Studies in the Mayo District, Yukon Territory"; Proc. Geol. Assoc. Canada, Vol. 12, pp. 119 - 134.

Green, L.H., and Roddick, J.A.;
1962: "Dawson, Larsen Creek, and Nash Creek Map-Areas, Yukon Territory"; Geol. Surv. Canada, Paper 62-7.

Lennan, W.B.;
1979: "1978 Project Report-Dublin Gulch Property, Mayo Mining District"; private report for Canada Tungsten Mining Corporation Limited.

1980: "1979 Project Report-Dublin Gulch Area, Mayo Mining District"; private report for Canada Tungsten Mining Corporation Limited.

McLean, T.A.;
1914: "Lode Mining in Yukon"; Mines Branch, Dept. of Mines, Ottawa, pp. 127 - 159.

McTaggart, K.C.;
1960: "The Geology of Keno and Galena Hills, Yukon Territory"; Geol. Surv. Canada; Bull. 58.

Tempelman-Kluit, D.J.;
1964: "Geology of the Haggart Creek-Dublin Gulch Area, Mayo District, Yukon Territory"; unpublished M. A. Sc. thesis, U.B.C.

1970: "The Stratigraphy and Structure of the Keno Hill Quartzite in Tombstone River - Upper Klondike River Map-Areas, Yukon Territory"; Geol. Surv. Canada; Bull. 180.

2.0 GENERAL GEOLOGY (See Figures 4 to 8.)

The Dublin Gulch - Keno Hill area lies within the geological province known as the Selwyn Basin. The regional geology of the area is complex and the local stratigraphy remains subject to controversy. Stratigraphic order from the lowest to highest structural position in the section consists of the Lower Schist, the Central Quartzite and the Upper Schist formations. The Lower Schist and Central Quartzite formations are believed to be part of a normal autochthonous stratigraphic sequence of Jurassic and Cretaceous age respectively, and represents some of the highest stratigraphy in the Selwyn Basin. The Upper Schist formation is thought to be allochthonous, correlative with the Klondike Schist of the Dawson area which is part of the Yukon Group of Precambrian and/or Paleozoic age (Green, 1972).

The stratigraphic sequence is cut by a number of plutonic rocks ranging in age from probably Jurassic to Tertiary. Greenstone sills and dykes are common in the Lower Schist and Central Quartzite formations and are less common in the Upper Schist formation. These intrusions are of gabbroic composition but are now strongly deformed and metamorphosed. They are believed to be of Jurassic age (Green, 1972) but the presence of these units in the Upper Schist formation conflicts with the hypothesis of regional overthrusting.

The second oldest plutonic rocks in the Dublin Gulch - Keno Hill area are the mid-Cretaceous intrusions of biotite-granodiorite. Radiometric dating by Wanless et al, (1966, 67, 71, 73, cited in Barclay et al, 1979) gave potassium-argon ages between 81 My and 109 My for granitic plutons in the district. The Mayo Lake Batholith, Hanson Lake Intrusion, Hit Intrusion and the Dublin Gulch Stock are all members of this series. Numerous hypabyssal phases and apophyses of these plutons are present in the district, several of which have been recognized in the Dublin Gulch area.

The youngest plutonic rocks recognized in the Mayo area are the lamprophry dykes and sills of Tertiary age. These mafic intrusions are more common south of Dublin Gulch in the Keno Hill - Galena Hill area and are observed to crosscut all other units present.

The Dublin Gulch - Keno Hill area has been subjected to several periods of structural deformation. The oldest phase is

thought to be related to overthrusting of the Upper Schist formation. Several types of deformation including the development of a pervasive shear foliation and recumbent folding observed particularly in the Keno Hill area (Green and McTaggart, 1960, Green, 1972). During a later phase of deformation, broad open folds were developed. These include the Mayo Lake anticline and the subsidiary McQuesten River and Lynx Creek anticlines. Subsequent to the development of these large folds, a crosscutting anticlinal arch developed from Keno Hill to the Lynx Dome area. Central Quartzite formation is exposed in the core of this structure on the ridge north of the McQuesten Valley and at the base of Lynx Dome. Several plutons also occur along the hinge zone of this arch.

Several periods of economic mineralization involving several important elements have occurred in the vicinity of Dublin Gulch. Tungsten is associated with the local Cretaceous granodiorite intrusions. Tungsten occurs as scheelite in quartz stockwork veinlets cutting the Dublin Gulch stock and within the Hit intrusion. Minor amounts of wolframite have also been observed in the quartz stockworks. Scheelite occurs in irregular pyroxene skarn units peripheral to the Dublin Gulch stock. Scheelite-bearing skarns are the target of the present exploration endeavour.

Tin mineralization on Tin Dome, in Gill Gulch and in Fifteen Pup consists of fine grained, sugary-brown cassiterite. On Tin Dome mineralization occurs in a tourmalinized shear zone which trends northeasterly across the hill. West of Haggart Creek, in Gill Gulch and Fifteen Pup, anomalous tin-bearing stream sediments are more closely associated with granitic rocks. Tin appears to be widespread in the Dublin Gulch area and the significance of its numerous occurrences has not been fully realized.

The youngest event of primary economic mineralization appears to be the emplacement of the quartz-arsenopyrite-pyrite and siderite-pyrite-jamesonite-arsenopyrite veins of the gold-quartz vein-fissure system. The system can be differentiated into the two vein types which may reflect variation of the physical properties of the hydrothermal system from which they were precipitated or local differences in source rock composition from which the metals were derived. The trend of the system parallels that of the Dublin Gulch Stock and also that of major regional structures such as the Lynx Creek anticline. The quartz-arsenopyrite-jamesonite veins are also the target of the current exploration project.

Within the system, veins are erratically distributed and vary widely in length, width, and downdip extension. The veins are envisioned to occur as elongate, tabular, en echelon bodies. Their emplacement in structurally high-level extension fractures is indicated by the presence of chalcedony in many of the veins (Morin, 1980, personal communication). It appears that the vein system was developed in a zone dominated by tensional stress by a hydrothermal system operating contemporaneously with the emplacement and cooling of the Cretaceous granitic rocks.

2.1 STRATIGRAPHY (See Figures 4 to 8)

Controversy exists as to the relative ages of the stratigraphic units in the Dublin Gulch - Keno Hill area. Tempelman-Kluit (1970) suggested, on the basis of stratigraphic mapping, in the Tombstone Range, that the Upper Schist formation of Precambrian and/or Paleozoic age was allochthonous and underlain by Mesozoic stratigraphy. Little or no evidence is apparent locally that could serve to confirm or disprove this hypothesis. Awareness of the possible implications of such tectonic activity may lead to more realistic interpretation of the local geology.

In a discussion of the stratigraphy of the area, it is convenient to discuss the units in order of their structural positions from lowest to highest.

The lowest unit in the Dublin Gulch - Keno Hill area is the Lower Schist formation of Jurassic age (Tempelman-Kluit, 1970). The Lower Schist crops out in the south McQuesten River Valley, on Keno Hill and on the ridge north of the McQuesten Valley near the Hit intrusion. The unit has not been mapped in the Dublin Gulch Project area and therefore, is not included in the Lithological Legend.

Unit #2 - Central Quartzite Formation

The Central Quartzite formation conformably overlies the Lower Schist formation. This unit consists predominantly of bedded quartzite of varied thickness intercalated with graphitic phyllite, argillite and schist. Between southern base of Lynx Dome and Lynx Creek a thick section of quartzite occurs. From the base of the section near Lynx Creek the sequence is comprised of clean, massive

quartzite which grades upward into graphitic quartzite and argillite and finally into graphitic phyllite. The contact with the overlying rocks appears to be gradational and conformable as observed by Green (1972). It is possible that this transition from graphitic quartzite to buff phyllites and schist is an intraformational boundary and not the contact between the Central Quartzite and Upper Schist formations. (Tempelman-Kluit, 1980, personal communication.) The Central Quartzite formation appears as Unit #2 on the Lithological Legend.

Unit #1 - Upper Schist Formation

Structurally overlying the Central Quartzite formation is the Upper Schist formation. Most of the Dublin Gulch area is underlain by this unit. The formation has been correlated with the Klondike Schist of the Dawson area and is thought to be of Precambrian and/or Paleozoic age. The Upper Schist is comprised of a series of foliated quartzite, phyllite, schist, marble and skarn units. The formation has been subdivided into mappable lithologic units for detailed mapping and core logging purposes. These are not stratigraphic members.

Unit #1a - Biotite-Quartzite-Schist/Hornfels

This term is a useful field term which describes a wide range of biotite-and muscovite-schists, hornfels, and foliated often micaceous quartzites. This rock is often composed of discontinuous, compositionally distinct mica-rich and quartz and feldspar-rich lamellae. Samples of this material submitted for thin section analysis contain from zero to 80 percent quartz and from zero to 50 percent biotite and/or muscovite (Vancouver Petrographics Ltd. report in Lennan, 1980).

Biotite-quartzite-schist/hornfels, abbreviated BQS, is widespread in the property area, particularly in the vicinity of the Dublin Gulch stock. This portion of the stratigraphy represents roughly the middle series of the Upper Schist formation in the Dublin Gulch area.

Unit #1b - Massive and Gritty Quartzite

Massive quartzite in the Upper Schist formation is strongly foliated and often contains various amounts of mica along foliation planes. In thin sections the massive quartzite contains up to 80 percent or more quartz with minor amounts of a variety of other minerals. Gritty quartzite, usually found to the west of Haggart Creek, contains granule size grains of quartz and feldspar. Thick units of quartzite occur north of the Potato Hills but generally the thickest sections of quartzite and gritty quartzite occur west of Haggart Creek. Units, west of Haggart Creek, are interpreted to be in the highest structural position.

Unit #1c - Micaceous Phyllite and Unit $1c_i$ - Graphitic Phyllite

Micaceous phyllite describes the orange weathering, buff-coloured phyllite that occurs extensively northeast of Potato Hills and southwest of Lynx Dome. The rock has a strongly developed foliation which is sometimes highlighted by weakly developed mica. Stratigraphically phyllite is more common to the east, lower in the section. In other parts of the stratigraphic section, phyllite grades with biotite-quartzite-schist/hornfels and massive quartzite and is rarely distinguished as a mappable unit.

The graphitic phyllite unit comprises the black to silver phyllite members which are found scattered about the property. Sections of graphitic phyllite are present above the inferred contact of Central Quartzite formation. In Dublin Creek, on Tin Dome and on North Ridge graphitic phyllite interbedded with minor amounts of quartzite and limestone form a moderately thick section. Usually graphitic phyllite units occur over restricted stratigraphic intervals and are treated as mappable units.

Unit #1d - Muscovite-Sericite-Quartzite-Schist

Though similar to Unit 1a, this rock unit occurs on the western end of North Ridge and on the south side of Dublin Gulch toward Platinum Pup. The presence of muscovite and sericite gives the rock a light buff colour which makes it difficult to distinguish from some of the above units.

Unit #1e - Calc-Silicate Skarn

Calc-silicate skarn includes all massive and laminated dark green skarns that occur in the Dublin Gulch area. The composition and therefore the colour of the skarns are widely varied, depending on the selective replacement by calc-silicates of the regionally metamorphosed sediments. The dark green calc-silicate skarns contain up to 89 percent pyroxene, thought to be diopside and up to 35 percent plagioclase (An 50). Uralite is commonly present and comprises up to 15 percent of the mode. Garnet is notably present in some massive pyroxene skarns but is not exclusive to calc-silicate skarn. Calcite is present in some skarns and represents up to 10 percent of some specimens examined. Scheelite is very closely associated with calc-silicate skarns at Dublin Gulch. In thin sections, scheelite appears to selectively replace quartz and encloses pyroxene and plagioclase, suggesting that scheelite mineralization occurred later than the main skarn mineralizing event (in Lennan, op.cit.).

Unit #1f - Calc-Silicate Subskarn

The term calc-silicate subskarn refers to a variety of rock types all considered to be more or less poorly developed calc-silicate skarn units. Subskarn is generally composed of light green streaky layers containing light green pyroxene and uralite intercalated with discontinuous biotite and quartz-rich laminae. One sample of laminated subskarn examined in this section, contained 59 percent quartz, 25 percent pale green pyroxene and 15 percent plagioclase. The light colour of this specimen is clearly related to the abundance of light coloured minerals. The colour banding demonstrated in subskarn is a result of varied pyroxene-quartz and plagioclase ratios. The specimen also contained one percent scheelite (in Lennan, op.cit.).

Calc-silicate subskarn is widespread in the Dublin Gulch area. It is most abundant on the southeast side of the Dublin Gulch stock, where it is intercalated with calc-silicate skarn and biotite-quartzite-schist/hornfels. Some sections, particularly near diamond drill hole 80-7, contained dark red, massive, anhedral garnet crystals. Other sections of calc-silicate subskarn are located north of the West Potato Hill and near the stock east of the Potato Hills. North of the Dublin Gulch stock subskarn occurs on the North Ridge and in the Stewart and Catto area of the gold-quartz vein-fissure system.

Unit #1g - Marble

Thick sections of white to grey marble are intercalated with biotite-quartzite and biotite-quartzite-schist/hornfels, southeast of the Dublin Gulch stock. On the south facing slope above Lynx Creek and in Ray Gulch, numerous large marble-bearing bluffs are present. Some of the units show pervasive silica alteration and a few show pyroxene skarn development in narrow envelopes along fractures in silica altered marble. East of Ray Gulch and south of Lynx Dome, marble units are present in the stratigraphy. A very thick section is present to the northeast of the property, east of Lynx Dome.

Unit #3 - Greenstone

The sheared greenstone bodies observed throughout the Dublin Gulch - Keno Hill area are recognized as of the oldest intrusive phase in the district. Greenstones are best exposed in the Keno Hill area where they occur as elongate resistant knobs throughout the stratigraphic section. They are thought to have been basic sills now altered to varied degrees and commonly exhibit intense shearing along their margins. More strongly deformed greenstones occur as boudins,or tectonic "fish". Deformation of the greenstones is probably synchronous with older regional deformation. Green and McTaggart (1960) suggest that the greenstones may have intruded into the dilated hinge zones of overturned folds.

The composition of the greenstones generally ranges from diorite to gabbro although peridotite has been described. In some units the predominant mineralogy consists of chlorite after amphibole and/or pyroxene. In others a roughly equal amount of chlorite after amphibole or pyroxene and altered plagioclase is present.

In the Dublin Gulch area greenstones are relatively few in number. In the Central Quartzite formation, south of Lynx Dome, a greenstone occurs in two areas near the top of the formation. On the south facing slope, above Lynx Creek, near the proposed portal site "C", a small greenstone is present. Another greenstone on the east side of Stewart Gulch, is in contact with the Dublin Gulch Stock.

Unit #4 - Plutonic Rocks

Four types of Cretaceous plutonic rocks are mapped in the Dublin Gulch area. The rocks include the main Dublin Gulch stock of granodiorite composition, quartz diorite recognized in diamond drill core only and various apophyses of quartz-feldspar porphyry, aplite and leucocratic granite.

Unit #4a - Aplite and Leucocratic Granite

These bodies occur peripheral to the main stock and cut the regional foliation both concordantly and discordantly. Aplite and leucocratic granite occurs as thick sills southeast of the main stock and on the East Potato Hill. A few small aplite dykes are observed in the Stewart and Catto area.

Unit #4b - Granodiorite

The Dublin Gulch Stock is the largest granodiorite body in the Dublin Gulch area and extends for over 5 kilometres from Platinum Pup to the Potato Hills. In addition to this large stock, numerous other granodiorite bodies occur about the property. West of Haggart Creek several sill-like bodies of medium grained granodiorite are present. In Dublin Gulch at the junction of Olive Gulch, a small granodiorite plug formerly mapped as quartz monzonite occurs. Another small plug occurs east of the Potato Hills.

The Dublin Gulch Stock consists of medium to coarse grained, uniformly textured pyroxene-biotite granodiorite. A typical sample contained 40 - 45 percent plagioclase, 20 - 25 percent biotite, 2 - 3 percent pyroxene and lesser amounts of several accessory minerals (Lennan op.cit). Locally coarse Na-feldspar phenocrysts give the rock a porphyritic appearance. This rock type has been referred to as a megaporphyry. The plug at the junction of Olive and Dublin Gulch is a subsidiary of the main stock and differs only in the amount of silica alteration. The small intrusion shows zones of strong silica alteration adjacent to closely spaced quartz veined fractures.

Dyke and sill apophyses of the main Dublin Gulch Stock occur both north and south of the intrusion but are more strongly developed south of the pluton. Several large sill and dyke-like sheets cut the stratigraphic section and may exert some control on the emplacement of scheelite-bearing skarns.

Unit #4c - Quartz-Feldspar Porphyry

Quartz-feldspar porphyry dykes and sills are common in the vicinity of the main pluton, particularly on the northwest side of the Dublin Gulch stock. These intrusions usually contain altered feldspar phenocrysts ranging in length to 5 millimetres and various quantities of quartz phenocrysts of about the same size. The groundmass is often strongly altered to clay, sericite and iron oxide. Many of the dykes and sills are highly deformed, predating a period of fault deformation.

Unit #4d - Quartz Diorite

Quartz diorite occurs as sill and dyke-like sheets on the southeast side of the main granodiorite stock. This unit has only been recognized in diamond drill core and is distinguished by its darker colour. The dark colour of this rock is owing to the presence of more mafic minerals and calcium-rich plagioclase.

Unit #5 - Quartz-Arsenopyrite-Scorodite Vein Rock

This unit describes the gold and silver-bearing quartz-arsenopyrite-pyrite and siderite-pyrite-jamesonite-arsenopyrite veins of the gold-quartz vein-fissure system. Two types of veins are present. The quartz-arsenopyrite-pyrite veins generally are more abundant east of Haggart Creek. The mineralogy of these veins is varied but includes banded quartz, arsenopyrite as selvages and as cores, pyrite in cores, minor siderite and jamesonite in cores and traces of gold, galena and chalcopyrite. Scorodite and limonite are very common weathering products.

Siderite-pyrite-jamesonite-arsenopyrite veins are found west of Haggart Creek and include the Peso No. 1 to 6 and the Rex Vein. The mineralogy of these veins is varied but includes siderite as the main gangue mineral, jamesonite, arsenopyrite, pyrite, galena, chalcopyrite, stibnite and tetrahedrite as the main ore minerals. Scorodite, limonite, covellite, malachite are the main weathering products.

Unit #6 - Mafic Dykes and Segregations

Young mafic dykes and segregations are not very common in the

Dublin Gulch area, though they are reported by Green (1971) and Tempelman-Kluit (1964). West of Haggart Creek, Tempelman-Kluit mapped two dyke-like units of augitite. The rock is dark green, fine to coarse grained and contains augite, amphibole, biotite and feldspar. The origin of the rock is uncertain and its contacts with the metasediments are not exposed. The bodies are unfoliated and trend across the regional foliation.

2.2 STRUCTURAL GEOLOGY

Early geological surveys in the Dublin Gulch - Keno Hill district mapped a simple stratigraphic sequence which was folded into broad structures related to the Mayo Lake anticline. The discovery of fossils in sediments immediately below the Upper Schist formation (Green and Roddick, 1962) destroyed the concept of a conformable Precambrian and/or Paleozoic section. McTaggart (1960) was the first to suggest the presence of large scale recumbent folds in the Keno Hill area. This was the first suggestion of deformation of the magnitude required to explain the presence of younger rocks below the Upper Schist formation. Stratigraphic mapping in the Tombstone Range by Tempelman-Kluit (1970) supports the concept of overthrusting of the Upper Schist formation. Tempelman-Kluit (1980, personal communication) is currently developing a concept of regional tectonics which explains the overthrusting of the Upper Schist formation and can explain the internal deformational features observed within the unit.

Two major periods of deformation are recognized in the district. The first resulted in large scale overthrusting and both large and small scale complex folding. It was during this earlier deformation that the pervasive foliation observed throughout the district was developed. This was a period of intense shearing and is probably the time during which the greenstone units were deformed and developed their characteristic boudinage. A younger period of deformation is characterized by the development of broad open folds such as the Mayo Lake anticline and the subsidiary McQuesten Valley and Lynx Creek anticlines. It is during this younger period of deformation that the emplacement of the Dublin Gulch stock occurred.

Structural features in the vicinity of Dublin Gulch are described in detail by Tempelman-Kluit (1964). Although large scale structures were not observed, his study of minor structures led to the conclusion that large scale structures are probably present.

Foliation

The most prominent structural feature of the Dublin Gulch area is the strongly developed, pervasive foliation. Virtually every outcrop of pre-granodiorite rock shows this foliation. Foliation planes are usually only millimetres apart and are commonly highlighted by growths of micaceous minerals on foliation surfaces.

The attitude of the foliation in the area varies widely. The general geology map of the property shows that east of Haggart Creek the foliation generally dips to the west and northwest. Northerly dipping foliation south of Lynx Dome and westerly dipping foliation south of the Potato Hills forms a northwesterly plunging antiform which terminates near Lynx Dome.

Foliation in the Upper Schist formation is usually thought to be parallel to bedding and in fact is commonly considered to represent bedding. On close examination, individual units between foliation planes are observed to pinch out over short distances. Rootless minor folds described as 'Gleitbrett' folds in the Keno Hill area by McTaggart (1960) are also widely abundant. These features are evidence that an intense pervasive shear stress has acted in the region. It is apparent that these rocks are deformed beyond the recognition of original bedding planes.

In his regional tectonic hypothesis which includes overthrusting of the Upper Schist formation, Tempelman-Kluit (op.cit.) offers a mechanism for overthrusting and an origin for the pervasive foliation. He suggests that the foliation developed as a result of severe internal shear stress. This hypothesis offers an alternative explanation for the discontinuous nature of the Upper Schist stratigraphy. Mapping in these rocks is extremely difficult as it is often impossible to trace units through the map area. Individual units are discontinuous and probably represent compositional "horizons" observed are the product of the translocation of stratigraphic horizons along the shear foliation. Foliation is oblique to bedding and incremental translations along individual shear planes have produced the present effect. Tempelman-Kluit (op.cit.) prefers to describe the rocks as mylonites rather than schists.

PHASE I - Folds

Two types of Phase I folds are conceivably developed in the tectonic environment proposed by Tempelman-Kluit (1970) and Green (1971). These are similar folds and cylindrical folds. Similar type folds in the Upper Schist unit developed as a result of differential translation along individual shear planes. Overturned and recumbent, cylindrical folds with fold axis perpendicular to the direction of thrusting developed in stratigraphic units below the proposed thrust fault. Of the two types, the first type occurs in the Upper Schist formation of the Dublin Gulch area and is discussed in more detail below. The second type occurs in the Central Quartzite and Lower Schist formations of the Keno Hill area and is discussed by Green and McTaggart (1960).

The hypothesis that the original stratigraphic continuity has been disrupted by translation along shear foliation planes is useful as an alternate mechanism to explain the abrupt terminations of lithologic units both observed on surface and inferred from diamond drill holes. The same deformation mechanism could conceivably develop similar-type fold structures when a section is subjected to inhomogeneous stress.

The strain effect of an inhomogeneous applied stress is the differential translocation of stratigraphic units along shear foliation planes. Folds developed in this manner are termed similar folds. Ideally similar folds show thickening in the hinge areas and thinning in the limbs. This mechanism for Phase I folds adequately explains the complex configuration of calc-silicate skarn units inferred from diamond drill holes. It assumes that the skarn-forming solutions selectively replaced discontinuous units of chemically susceptible rocks after folding. It is apparent that the strain product of inhomogeneous stress is the differential translocation of stratigraphic units into fragmented, compositional units and possibly into tight to isoclinal, overturned or recumbent similar folds.

PHASE II - Folds

A younger period of deformation occured in the Dublin Gulch - Keno Hill district following the intense deformation during which pervasive shear foliation and Phase I folds developed. This younger period is characterized by broad open folding and is

largely responsible for the present spatial distribution of units in the area. Folding along northeast trending axis is reflected in the present attitude of the pervasive shear foliation. The Mayo Lake and subsidiary McQuesten River and Lynx Creek anticlines are typical of this period. The Dublin Gulch stratigraphy lies on the west flank of the Lynx Creek anticline and dips moderately to the northwest.

Faults

Several generations of faults may be present in the Dublin Gulch area but these are not well recognized and their development is poorly understood. Tempelman-Kluit (1964) conducted the most thorough structural investigation and located several faults and proposed several others. In addition to these, a major zone of structural weakness trends northeasterly across the property. The Dublin Gulch Stock and the gold-quartz vein-fissure system occur within this zone of weakness. Numerous minor faults possibly related to the emplacement of the granitic rocks are present.

The most prominent faults occur in the creek valleys of the major drainage systems. Both geological and physical evidence exists to support the presence of large faults in Haggart Creek and Dublin Creek. Similar faults could conceivably occur in upper Haggart Creek, Fisher Gulch and in Gill Gulch.

Several other important faults are present. The Tin Dome Fault which crosscuts the southeast slope of Tin Dome has been explored for cassiterite. A fault up Ray Gulch which passes between the Potato Hills and the subsidiary West Ray Gulch fault are apparent. Numerous faults have been observed in diamond drill core, some of these faults may be related to intrusive activity while others might be much later with no relationships to intrusions.

2.3 GOLD-QUARTZ VEIN FISSURE SYSTEM

Introduction

The Gold-Quartz Vein-Fissure System describes a system of sub-parallel, en echelon gold and silver-bearing quartz-arseno-pyrite-pyrite and siderite-pyrite-jamesonite-arsenopyrite veins which occur along a north 60° east trend between Secret Creek in the west and the Potato Hills to the east. Veins occur over more than 12 kilometres (7.5 miles) on trend and are exposed over a width of more than 4 kilometres (2.5 miles) west of Haggart Creek and over a width of 2 kilometres (1.25 miles) east of Haggart Creek. A number of quartz-arsenopyrite-pyrite veins have been observed in diamond drill core from the skarn-zone south of the Dublin Gulch stock and indicates that the zone of economic potential is wider than that indicated by surface exposures. To date more than 50 individual veins have been discovered ranging in width from several millimetres (¼ inch) to in excess of 9 metres (30 feet). The system is divided physically into two distinct areas by Haggart Creek. The area east of Haggart Creek has been prospected extensively for gold both in the past and in the course of the present exploration program. The area west of Haggart Creek has been explored extensively by Peso Silver Mines Ltd. in search of silver but has not been evaluated for gold. This area which is favourable for potential gold and silver-bearing veins has not been examined during this program. The information presented pertaining to this area is drawn from the work of D. J. Tempelman-Kluit (1964) and from the limited 1980 assessment program conducted by R. H. Rainbird for Bema Industries Ltd.

The geology and mineralogy of the system east of Haggart Creek has been described in detail by Bartlett, 1980. Detailed trenching of portions of the zone during 1980 has provided valuable new information on the nature of the vein system and in some areas has revealed a more complex mineralogy than described in the 1979 report. From the 1980 fieldwork it is recognized that the veins occur in a zone more than 2 kilometres (1.25 miles) wide. Veins observed in 1979 were in or sub-parallel to the Dublin Gulch stock and occurred within a few hundred metres (¼ mile) of the exposed contact. The 1980 program was initially planned to test the area along the length of the stock but was modified as the potential of areas farther away from the pluton was realized. As a result of the 1980 program numerous veins have been discovered in Dublin

Creek and an occurence has been noted on the north side of Tin Dome. West of Haggart Creek gold and silver-bearing veins occur in metasediments where no granitic rocks are observed.

Summary of the 1980 Fieldwork (see Figures 9 to 14)

The 1980 fieldwork program was designed to test a zone parallel to, and with 350 metres (1,150 feet) of the Dublin Gulch stock in an area north of the stock, east of Suttle Gulch and west of Carscallen Gulch. To explore this zone a series of long parallel trenches was proposed to cut across the entire width of the zone at widely spaced intervals along the trend of the zone. The program was designed to test both known showings and unexplored areas within the zone. D-7G Bulldozer trenching was conducted in conjunction with geological mapping and sampling.

Early exploration was conducted in the Creek Zone West Fissure which is situated in Dublin Gulch at the mouth of Suttle Pup. Nine bulldozer trenches were cut in the bottom of Dublin Gulch from which approximately 4,320 cubic metres (5,650 cubic yards) of material was moved. In addition to these bulldozer trenches, Canada Tungsten Mining Corporation Ltd.'s placer mining operations moved approximately 19,000 cubic metres (25,000 cubic yards) of gravel and loose rock to produce two bedrock exposures measuring 9,030 square metres (10,800 square yards) and 1,880 square metres (2,250 square yards) using two 30 cubic yard caterpillar scrapers and two caterpillar D-8K bulldozers. Details of these excavations are shown in table forming Appendix I of this report. Most of the exposures in the Creek Zone have been mapped at a metric scale of 1:200. A total of 119 samples were collected and assayed for gold and silver of which 105 were assayed for antimony, 103 assayed for lead, 12 for tin and 1 for copper. To determine that no elements of economic significance were overlooked three specimens were submitted for 20 element semi-quantitative spectrographic analysis.

D-7G bulldozer trenching began in mid-June on the ridge between Olive Gulch and Stewart Gulch where the numerous quartz-arsenopyrite-scorodite showings of the Stewart and Catto area occur. Several old bulldozer trenches were re-excavated and several new trenches were cut to form a continuous line of trenches across the zone from the granodiorite contact to the access road south of Dublin Creek. A number of veins were uncovered in these trenches and upon mapping and sampling the exposures the discontinuous nature of the veins was apparent and it was realized that widely

spaced trenches along the trends of the zone would not adequately assess the economic potential of the area. The concept of continuous lines of trenches across the zone was maintained but additional trenching between lines was necessary for thorough evaluation of the area.

The ridge between Olive and Stewart Gulches was known to be well mineralized and was chosen for a detailed examination. This area referred to as the old Stewart and Catto group, hosts three major underground developments and at least two smaller adits. In this area at least 2,515 metres (2,750 yards) of bulldozer trenching was conducted in 30 trenches. A total volume of 28,806 cubic yards was excavated. From those trenches 194 samples were collected of which 89 were assayed for gold and silver, 4 of these assayed for lead and zinc and 3 assayed for antimony and 105 were analysed geochemically for gold.

When areas of deep bedrock weathering were encountered during bulldozer trenching on the Stewart and Catto ground, the question of gold enrichment or depletion in the weathered material arose. It was recognized that to properly assess the gold content of the veins fresh material must be obtained for chemical analysis. A deep trenching program using an excavator was proposed and, shortly after, a John Deere 690 excavator was contracted for a two week trial. The program was initiated on July 28, 1980 and continued until August 12, 1980. During this period 28 trenches were excavated for a total volume of 3,308 cubic metres (4,326 cubic yards). These trenches provided three dimensional exposures of the vein system for geological mapping in excavations both across the trend of the veins and along strike. Depths of 6 to 7 metres (20 to 23 feet) below surface were usual and where necessary depths in excess of 10 metres (33 feet) were obtained by staging. These depths were easily obtained where bedrock was either fractured, weathered or both. The excavator proved to be a very useful sampling tool and provided large volumes of vein material for sampling. A total of 252 samples were collected and assayed for gold and silver of which 21 were assayed for lead, 16 assayed for zinc and 12 for antimony. To complete exploration in this area, part of the Aurum adit on the Victoria Vein was de-iced and 62 samples were collected. The sample array used was to collect a separate hanging wall, good footwall and vein sample at each 3 metre (10 foot) interval along the drift. All samples were assayed for gold and silver.

A total of 18 bulldozer trenches were cut on the ridge between Stewart Gulch and Eagle Pup. The 964 metres (1,054 yards) of offset trenches expose a continuous section of bedrock down the crest of the ridge from the old Blue Lead shaft to the access road on the south side of the Dublin Creek. The volume of material excavated totalled 10,185 cubic metres (13,321 cubic yards). Sixteen (16) samples were collected and assayed for gold and silver.

On the north side of the West Potato Hill two quartz-arsenopyrite-scorodite veins were located and trenched. In the past exploration adits were driven on both veins but these are now caved. Three trenches were cut for a total length of 190 metres (208 yards) and a total volume of 1,026 cubic metres (1,342 cubic yards). Samples were collected at 3 metre intervals along the vein in trench PGT-1 and of both the hangingwall and footwall material at each site. A total of 46 samples were collected and assayed for gold and silver.

The remaining work performed on the gold-quartz system consisted of prospecting and mapping near the old Eagle showing and in the vicinity of Suttle and Platinum Gulches. Five samples were collected near the old Eagle workings and assayed for gold and silver. These samples confirmed the presence of significant vein structures in this area.

Results

In the area east of Haggart Creek more than 50 veins or float occurrences have been discovered. Twenty-nine of these showings are considered to be significant, of which 25 are veins and 4 are float occurrences. The following is a list of the significant veins and float occurrences and their locations. The distribution of these showings is illustrated on the detailed Geological Compilation maps, Figures 5 - 6, Index - Trenches and Vein Structures, Figure 9 - 10 and Gold Trench and Geology maps of the Stewart-Catto Area, Figures 11 - 14.

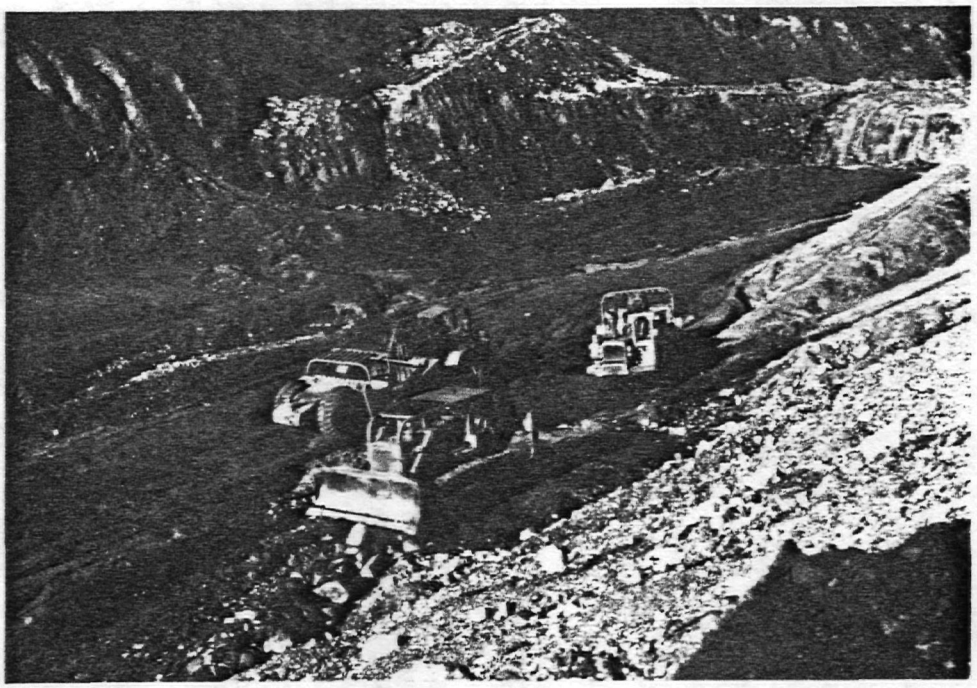
TABLE 1

DUBLIN GULCH GOLD-QUARTZ VEIN-FISSURE SYSTEM

Vein or Occurrence	Location
1. Creek Zone West Fissure	Dublin Creek at the mouth of Suttle Gulch.
2. Creek Zone East Fissure	Dublin Creek 150 metres (492 feet) upstream from Eagle Pup.
3. Eagle Vein	Ridge west of Eagle Pup.
4. Scarp Vein	Ridge west of Eagle Pup, 100 metres (328 feet) north of the Eagle shafts.
5. Henderson Vein	Ridge west of Stewart Gulch, 100 metres (328 feet) south of access road (Trenches GTR-48 to GTR-50).
6. Blue Lead Shaft Vein	Ridge west of Stewart Gulch, 80 metres (262 feet) south of granodiorite stock-metasediment contact.
7. Blue Vein	Fifty metres south of the Blue Lead shaft.
8. Stewart Vein	West side of Stewart Gulch at L36+800E and 11+075N.
9. No. 15 Vein	East side of Stewart Gulch in trench GTR-15 at L37+000E and 11+125N.
10. Cabin Vein	East side of Stewart Gulch in Beaver Adit and in trench GTR-4.
11. Klippert Vein	Ridge east of Stewart Gulch in trenches GTR-8 and in GTR-9.
12. No. 45 Vein	Ridge east of Stewart Gulch in trench GTR-45 at L37+325E and 11+019N.
13. No. 5 Structure	Ridge east of Stewart Gulch in trenches GTR-5, GTR-5W, GTR-16 and GTR-17.

Vein or Occurrence	Location
14. No. 17 West Vein	Trenches GET-17W, GET-43 and GET-44, 25 metres (82 feet) south of No. 5 Structure.
15. No. 24 Vein	Ridge between Olive and Stewart Gulches in trench GTR-24, 50 metres (160 feet) west of Aurum Adit.
16. No. 23 Vein	Seventy-five metres (240 feet) south of Aurum Adit in trench GTR-23, ten metres (33 feet) from the south end.
17. Victoria Vein	Aurum Adit 27 metres from the portal and in trenches GTR-3, GTR-23 and GTR-25.
18. Aurum No. 2 Vein	Aurum Adit, 5 metres (16 feet) south of Victoria Vein.
19. Catto Vein	GTR-2, 100 metres (328 feet) south of Aurum Adit portal.
20. Green Vein	Olive Gulch, 20 metres west of the Creek at L37+600E and 10+880N.
21. Olive Vein	West side of Olive Gulch near L37+900E and 10+975N.
22. Shamrock Vein	On the old Carscallen Claim 15 metres (49 feet) north of Dublin Creek near L38+650E and 11+050N.
23. Carscallen Vein	On the old Carscallen claim at L38+650E and 11+100N.
24. C.B. No. 1 Vein	North side of West Potato Hill in trench PGT-1.
25. C.B. No. 2 Vein	North side of West Potato Hill in trench PGT-2.
26. Tin Dome Occurrence	North side of Tin Dome near the summit.
27. Kuzmiski Occurrence	Dublin Creek, 100 metres (328 feet) upstream from the Holoway placer workings.

Creek Zone West Fissure - Looking southwest. Main showing is 20 metres (66 feet) to left of photo. L35+367E - 12+100N showing is located in centre of photo. Note iron oxide staining.



Creek Zone West Fissure. Caterpillar D-8K and 30 cubic yard Caterpillar scrapers. View looking southwest.

Vein or Occurrence	Location
28. JM Occurrence	On the Potato Hills access road, south of Dublin Creek upstream from the mouth of Olive Gulch.
29. Road Occurrence	On the Potato Hills access road, 200 metres (656 feet) south of the Olive Vein showing.

CREEK ZONE WEST FISSURE (See Figure 9 general, 37-38 detail)

The Creek Zone West Fissure hosts a number of pyrite-arsenopyrite showings which occur sporadically over 175 metres (574 feet) in the south fork of Dublin Creek. The occurrences crop out in the creek bed exposed by recent placer mining and are centred at the confluence of Suttle Pup approximately 500 metres (1,640 feet) downstream from the Bema Industries Ltd. camp. There appears to be no record of the occurrences prior to their discovery in August of 1979.

Pyrite and arsenopyrite as well as minor amounts of sphalerite and chalcopyrite occur as masses and disseminations in a north 70° east-trending shear zone which ranges to 60 metres wide. Rocks within this zone consist of interbedded phyllite and quartzite with very minor limestone which strike northeasterly. Phyllite is grey to black in colour and is commonly highly contorted. Minor fold structures believed to be drag folds are common in the exposed bedrock. Quartzite is light grey to black and often contains up to 10% disseminated pyrite and euhedral arsenopyrite. Individual units to 1 metre thick are present and comprise about 15% of the section. It is usually fine grained and is sometimes bleached showing evidence of hydrothermal activity. One horizon of black micritic limestone is present and occurs near the top of the section in the northwest portion of the area.

Crosscutting the stratigraphy at a low oblique angle is a pervasive shear foliation which forms clay gouge zones. These zones range up to 7 metres in width and consist of soft grey-blue clay with phyllite fragments. Some sections contain irregular pods of massive pyrite with arsenopyrite. Where the gouge is

eroded blocks of massive sulphide are found in the creek bed. Large blocks found indicate that sulphide pods up to 60 centimetres wide occur in this shear zone. These sulphides plus the minor amount of disseminated sulphide present weather to create a widespread orange limonite stain. In addition white crusts of sulphate occur on surface throughout the zone.

There are two major showings in the Creek Zone West, one discovered in 1979 at 35+490E and 12+056N and the other discovered during 1980 at 35+367E and 12+100N. The material at 35+490E and 12+056N consists of massive pyrite with arsenopyrite and minor sphalerite and chalcopyrite. The sulphide occurs for 15 metres in a gouge zone which has a strike length of at least 45 metres and is over 7 metres wide. Six grab samples of the material have been collected from an area in which the gouge zone crops out in the south bank of the creek. Assay values for gold range from 0.126 ounces per ton to 0.474 ounces per ton. Silver values from these same samples range from 1.00 ounce per ton to 5.88 ounces per ton.

The second significant occurrence lies 125 metres to the west at 35+367E and 12+100N and consists of a narrow gouge zone which contains coarse euhedral pyrite cubes cemented by fine grained arsenopyrite. The zone is 1 metre wide and cuts through sulphide rich, grey, foliated quartzite. Six grab samples collected from this zone gave gold values of 0.094 ounces per ton to 0.156 ounces per ton.

In addition to the 12 analyses mentioned above another 101 grab and channel samples were collected. Most of the samples were 1 metre channel samples but samples across widths of up to 7 metres were also collected. The remaining samples were grab samples of which three were submitted for a 20 element, semi-quantitative, spectrographic analysis. The results of these samples are listed on the Rock Chip Sample Data forms in Appendix IX of this report. Of the samples submitted 13 contained more than 0.100 ounces of gold per ton and all but one of these samples are intimately associated with sulphide material. The Creek Zone West is the largest structure discovered to date east of Haggart Creek. The potential for the zone to host a massive sulphide lode cannot be discounted and further work is definitely warranted.

CREEK ZONE EAST FISSURE (See Figure 9 general, 39 detail)

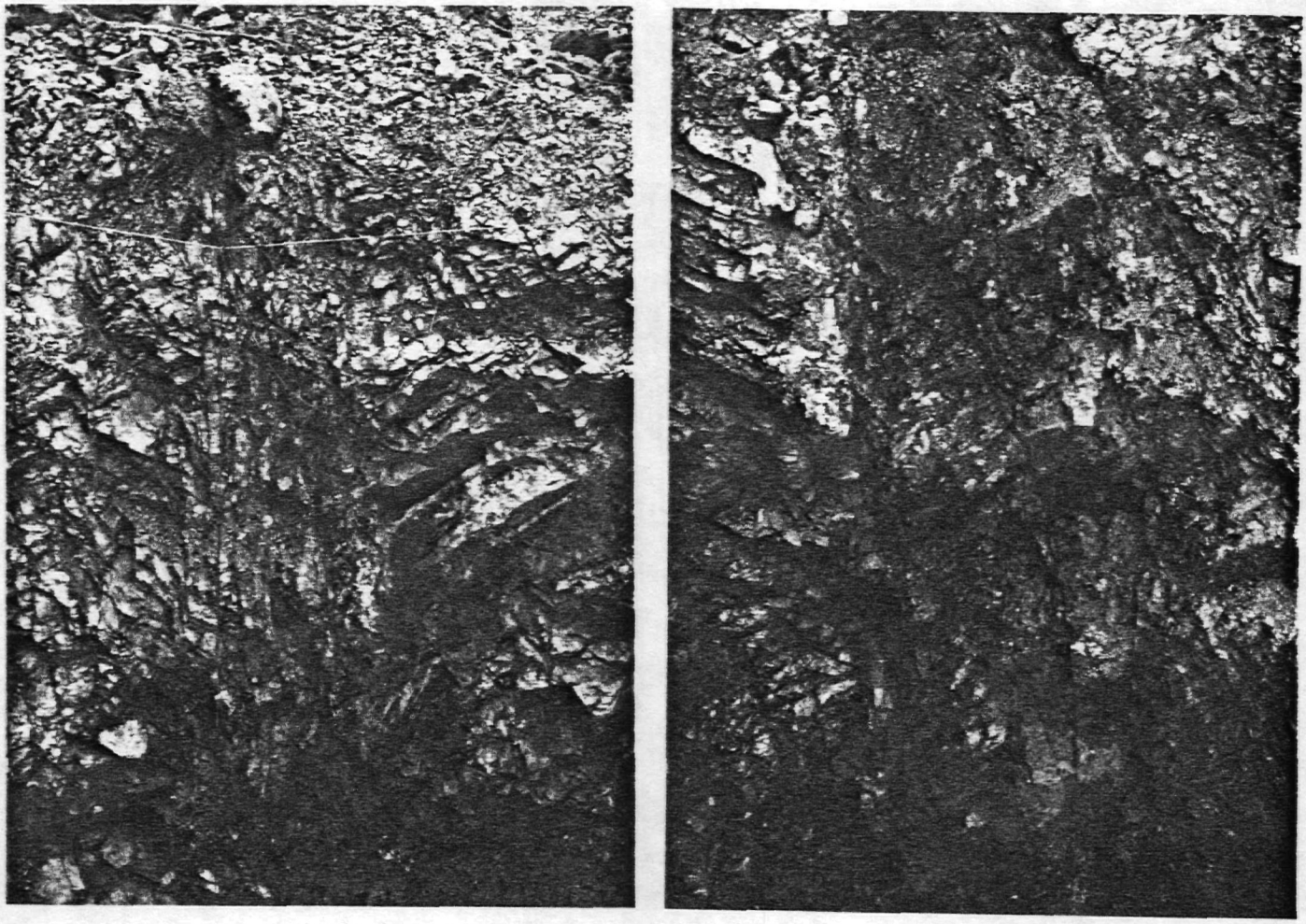
Massive pyrite, disseminated pyrite and arsenopyrite occur in a shear zone in the south fork of Dublin Creek 150 metres upstream from the confluence of Eagle Pup. This position is at L36+100E and 12+000N on the cut-line grid, approximately 150 metres southeast of the Bema Industries Ltd. camp. Recent placer mining operations have exposed a strip of bedrock measuring 80 metres by 45 metres. The bedrock is strongly weathered and an orange limonitic stain covers the entire area.

The geology of the area consists of a northeast striking section of phyllite and quartzite which is cut obliquely by a mineralized shear zone up to 5 metres wide. The lowest unit is a silver phyllite which hosts a 5 metre wide, northeast trending feldspar-biotite porphyry dyke. The phyllite unit is overlain by a thin unit of black graphitic phyllite in which the mineralized portion of the shear zone is localized. The graphitic unit is in turn overlain by limonitic, buff to white bleached quartzite.

Mineralization in the shear zone occurs along a northeast trend for over 35 metres. Grey pyritic gouge 30 centimetres wide occurs on the southwest end of the structure and trends northeasterly for approximately 10 metres. On the east end of the zone, pyrite and arsenopyrite occur as fracture fillings and as disseminations in quartzite. Mineralization occurs discontinuously over widths up to 3.5 metres. Bulldozer trenching to the northeast failed to locate a mineralized portion of the zone.

Eleven grab and chip samples were collected from this area and were assayed for silver and gold. Of these, two were assayed for antimony and one for copper. Gold values of 0.220 ounces per ton and 0.232 ounces per ton were obtained from pyritic gouge. All other samples contained little gold and gave values of less than 0.100 ounces of gold per ton. Silver values of 1.12 ounces per ton and 1.13 ounces per ton for the pyritic gouge were received but all other values were 0.30 ounces per ton or less.

The Creek Zone East Fissure is an extension of the large Creek Zone linear and is on trend with the Creek Zone West Fissure. The presence of massive sulphides is encouraging and further exploration is warranted. A proposed program for work in 1981 is outlined in Recommendations section of this report.



Trench GET-9 and GET-9E. Klippert Vein. Vein consists of poorly developed mineralized fracture zone.

EAGLE VEIN (See Figure 9)

The Eagle Vein is located on the flat-topped ridge above and to the west of Eable Pup, 45 metres east of L35+800E and 10+800N. The vein trends down the west slope of Eagle Gulch and has been traced along strike for approximately 50 metres in a series of trenches, shafts and an adit. The area was mapped in detail in 1979 and was only briefly examined in 1980.

The showings consist of banded quartz-scorodite-arsenopyrite vein float which occurs in shaft and adit dumps and in hand and bulldozer trenches. Material collected near the westernmost shaft in 1979 assayed 1.010 ounces of gold per ton and indicated a vein width of at least 30 centimetres. Three grab samples were collected from the Eagle Vein shaft in 1980 and were assayed for gold and silver. The gold values were 1.142, 1.970 and 2.060 ounces per ton and silver values were 0.40, 0.90 and 0.52 ounces per ton. This mineralized vein is significant and warrants investigative trenching.

SCARP VEIN (See Figure 9)

The Scarp Vein occurs on the ridge on the west side of Eagle Gulch, 100 metres north of the Eagle Vein.

The vein strikes at an azimuth of 060° and dips 80° to the southeast. It consists of banded quartz-scorodite-arsenopyrite and is up to 10 centimetres wide. The area around the vein was mapped and sampled in detail in 1979 and was not resampled during 1980. One sample collected in 1979 assayed 0.196 ounces gold per ton and a trace of silver over 10 centimetres. Follow-up trenching on the vein is warranted and should be conducted in conjunction with work on the Eagle Vein.

HENDERSON VEIN (See Figure 9, 11 general, 34 detail)

The Henderson Vein was discovered by bulldozer trenching in August of 1980 and is the largest vein outside of the Creek Zone discovered by Bema Industries Ltd. Banded quartz-scorodite with arsenopyrite vein material occurs in trenches GTR-48, GTR-49 and GTR-50 low on the crest of the ridge west of Stewart Pup. The vein

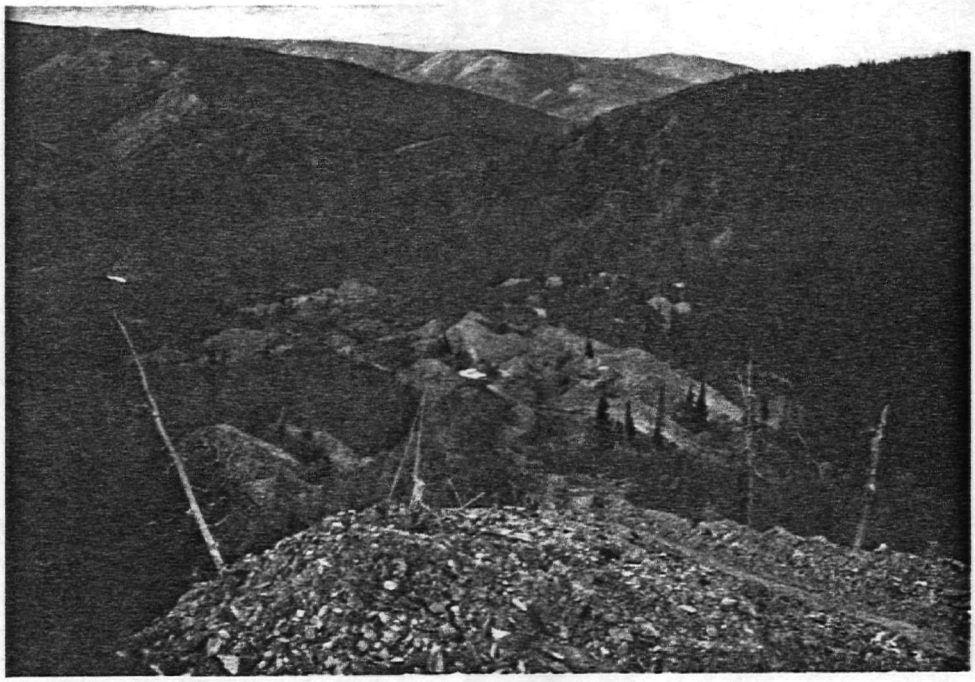
is faulted and broken into several sections but generally trends in an east-west direction. Ten chip samples were collected along the vein which varies between 20 centimetres and 75 centimetres in width along strike. Gold assays range from 0.316 ounces per ton to 1.744 ounces per ton. Silver values of 0.52 ounces per ton to 5.51 ounces per ton were obtained. This vein is considered to be very significant and requires further exploration. A program of backhoe trenching to trace the vein and detailed sampling is proposed.

BLUE LEAD SHAFT VEIN (See Figure 9)

As suggested by its name, the Blue Lead Shaft Vein occurs in the shaft on the ridge of the old Blue Lead claim. The shaft is located 80 metres south of the granodiorite-metasediment contact 25 metres east of L36+550E at 10+800N. McLean (1914) reported that the shaft was 25 feet(8.2 metres) deep and that the vein was 2 feet (66 centimetres) wide. A grab sample from the dump beside the shaft collected in 1979 assayed 0.472 ounces of gold per ton and 2.17 ounces of silver per ton. The same dump was grab sampled again in 1980 and the material collected assayed 0.402 ounces of gold per ton and 1.32 ounces of silver per ton. Southwest of the shaft the vein occurs in trench GTR-30. Here the vein is 15 centimetres wide and appears to strike 085° and dips 60° to the north. A sample of this vein assayed 0.336 ounces of gold per ton and 0.25 ounces of silver per ton. More trenching is required to delimit this vein structure.

BLUE VEIN (See Figure 9)

The Blue Vein crops out in trench GTR-31 approximately 70 metres northwest of the Blue Lead Shaft. A pale green scorodite and crushed quartz vein strikes 095° azimuth and dips 80° to the north. The vein is cut off to the west by a fault and terminates against granodiorite. To the east the vein continues for approximately 10 metres before terminating against a fault. The vein is varied in width between 30 and 60 centimetres. In trench GTR-31 a chip sample across 50 centimetres assayed 0.662 ounces of gold per ton and 0.64 ounces of silver per ton. Further trenching is required to trace the vein beyond the faults in both directions.



View of Stewart and Catto Area - Looking northwest from Trench GTR-2

STEWART VEIN (See Figures 9, 11)

Low on the west side of Stewart Gulch an adit dump 3 metres east of L36+800E at 11+075N contains blocks of banded limonitic quartz-scorodite vein rock. The adit is caved which prevents examination but appears to trend at 222° azimuth into the hillside. Float material from the dump indicates that the vein is at least 40 centimetres wide, a sample of this material assayed 0.068 ounces of gold per ton and 0.06 ounces of silver per ton. Permafrost on the slope north of the portal prevented bulldozer access to this vein but excavator trenching may be more easily performed and is recommended.

NO. 15 VEIN (See Figures 9, 11 general, 27 detail)

The No. 15 Vein occurs on the west side of Stewart Gulch in trench GTR-15, 45 metres from the south end. The vein is the largest of sixteen small veins discovered in trench GTR-15 during 1980. The veins occur over a distance of 75 metres and range to 10 centimetres wide. A sample of banded quartz-scorodite with arsenopyrite weathered to hematitic limonite contained 0.064 ounces of gold per ton and 0.04 ounces of silver per ton. Several of the veins in this zone show potential for attaining greater widths along strike. More detailed excavator trenching is required to properly assess the potential of these veins.

THE CABIN VEIN (See Figures 9, 11 general, 14, 18, 29 detail)

The Cabin Vein occurs on the east side of Stewart Gulch at L37+325E and 11+200N. The vein is exposed in trenches GTR-4, GTR-20 and in the Beaver Adit. On surface, the vein has been traced over 80 metres. Widths of the banded quartz-scorodite-arsenopyrite vein range between 20 and 50 centimetres. Extensive excavator trenching has been conducted on the vein in 5 separate holes and a total volume of 1,622 cubic yards was removed. In the excavator trenches the vein ranges in width between 4 and 50 centimetres. In trench GET-4 the vein has been traced continuously for 41 metres and the hanging wall has been removed to expose the vein to a depth greater than 6 metres below surface. A total of 98 samples were collected from this trench and values range from 0.005 ounces of gold per ton with

1.89 ounces of silver per ton over 30 centimetres to 2.902 ounces of gold per ton and 5.72 ounces of silver per ton over 40 centimetres. A rudimentary reserve calculation for the vein over 54 metres gave 332 tons of material having an average grade of 0.479 ounces of gold per ton and 1.71 ounces of silver per ton.

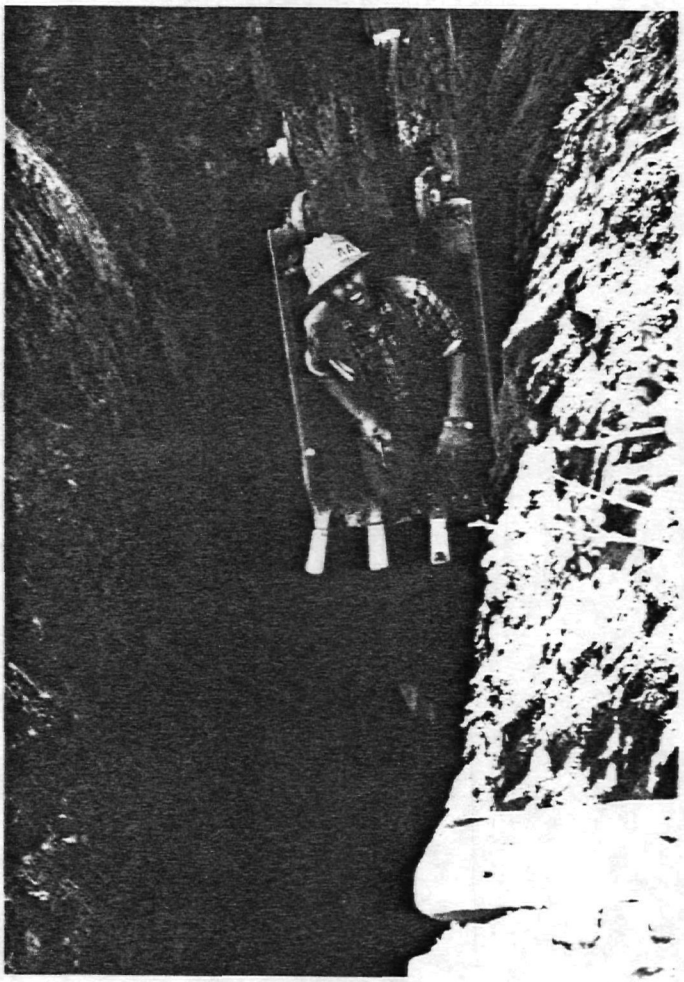
The Cabin Vein has been explored by underground drifting in the Beaver adit. The vein workings are described in detail in the 1979 report. No further underground work was performed during 1980.

KLIPPERT VEIN (See Figures 9, 11 general, 13, 22, 23 detail)

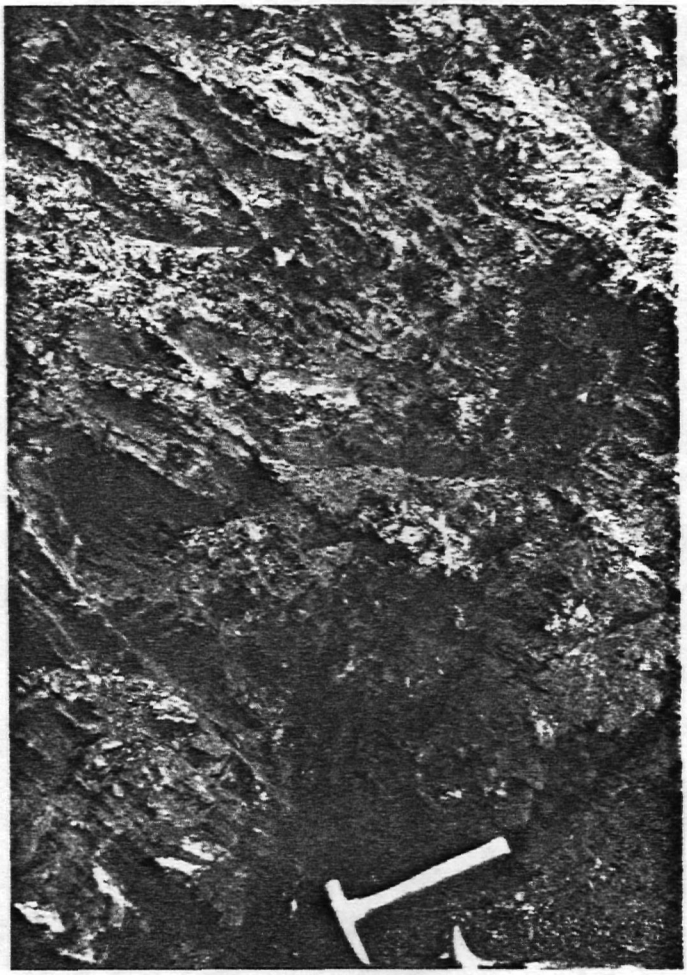
The Klippert Vein was discovered by bulldozer trenching in trenches GTR-8 and GTR-9 and was later traced in excavator trenches GET-8N, GET-9E2, GET-9E, GET-9 and GET-9W. The vein occurs over a strike length of 32 metres and is up to 40 centimetres wide. It occurs in a limonitic gouge zone and consists of quartz-scorodite-arsenopyrite with a minor amount of siderite and galena. Twenty-three samples were collected and assayed for gold and silver and of these, 9 were assayed for lead and 4 for zinc. Gold values range from 0.010 ounces per ton to 0.182 ounces per ton and respective silver values from 0.03 ounces per to to 0.76 ounces per ton. Representative samples gave lead and zinc values which ranged to 0.78% and 1.49% respectively. One sample of siderite and galena was assayed and contained 14.50 ounces of silver per ton, 0.020 ounces of gold per ton and 32.9% lead. The vein is unexplored to the west and further excavator trenching is recommended.

No. 45 VEIN (See Figures 9, 11 general, 13, 33 detail)

The No. 45 Vein occurs in trench GTR-45 at L37+325E and 11+019N. The vein is 10 centimetres wide and consists of limonitic quartz and scorodite with minor arsenopyrite. A sample of this material assayed 1.318 ounces of gold per ton 3.70 ounces of silver per ton. Further exploration trenching is warranted to test for strike length extensions of this vein.



Sampling No. 5 Structure to a depth of greater than 10 metres (33 feet). Rock is intensely weathered.



Trench GET-5W. No. 5 Structure.
Massive arsenopyrite and hematitic limonite.
View looking southwest.

NO. 5 STRUCTURE (See Figures 9, 11 general, 13, 19, 21 detail)

The No. 5 Structure is a structurally complex zone measuring up to 12 metres wide in which at least 3 veins occur. It is exposed discontinuously over 60 metres along a 075° azimuth trend and occurs in bulldozer and excavator trenches GTR-7W, E, 5W, 5, 16W, 16 and GTR-17 and GET-5W, 5, 16 and GET-17. The zone is dissected into several offset sections by north and northeast trending faults. In trench GTR-16, veins indicate fault offsets with right lateral and vertical displacement where rock east of the fault is down-dropped.

The largest vein structure in the zone occurs in trench GET-5. A deeply weathered quartz-scorodite vein with minor siderite, jamesonite and arsenopyrite; more than a metre wide is exposed. The vein has been trenched to more than 10 metres below surface but only strongly weathered sample material was recovered. Although strongly weathered gold values from this material were encouraging and ranged 0.302 ounces per ton to 0.524 ounces per ton. Silver values in this material were abnormally high for this structure and ranged from 2.03 ounces per ton to 10.18 ounces per ton.

A total of 38 sampls were collected from the No. 5 Structure for assay. Gold assay values ranged from 0.054 ounces per ton to 0.970 ounces per ton and averaged 0.264 ounces per ton. Except for the occurrences of jamesonite in a few veins, and the material in GET-5, the silver content of the veins is generally low and averages less than half an ounce per ton. The average width of the samples collected is 27 centimetres.

The No. 5 Structure occurs in one of the few areas of deep-weathering encountered on the property. Although the structure appears to be complexly developed at surface it is possible that it will be less deformed in competent host rocks. Further trenching is required to define the structure to outline reserves.

No. 17 WEST VEIN (See Figures 9, 11 general, 13, 19, 28 detail)

The No. 17 West Vein was discovered while exploring for a right lateral offset extension of the No. 5 Structure and may well be an extension of the No. 5 Structure. The No. 17 West Vein occurs in excavator trenches GET-17W, 43 and 44 and may extend into

trenches GTR-17E and 24. Quartz and scorodite with arsenopyrite occurs in irregular fractures in a zone up to a metre wide which generally trends 085° azimuth. Gold assays range from 0.086 ounces per ton to 0.252 ounces per ton and average 0.166 ounces of gold per ton over 9 centimetres. Silver values range from 0.05 ounces per ton to 0.63 ounces per ton and average 0.28 ounces per ton over 9 centimetres. The structure is unexplored to the west and appears to trend beneath the Aurum Adit access road. Continued trenching to the west is required to fully assess this structure.

No. 24 VEIN (See Figures 9, 11 general, 12, 32 detail)

The No. 24 Vein occurs in trench GTR-24 approximately 50 metres west of the Aurum Portal. The structure consists of two parallel veins which strike 071° azimuth and are exposed in the trench for over 28 metres. The northerly vein is the most prominent and ranges from 8 to 30 centimetres in width. The second vein is parallel to the first, one metre to the south, and is a 1 to 5 centimetre wide vein. Both veins consist of banded quartz-scorodite and arsenopyrite and some sections contain massive arsenopyrite. Gold assay values from the northerly vein range from 0.076 to 1.042 ounces per ton and average 0.207 ounces per ton over an average width of 15 centimetres. Silver values are low and range from 0.02 to 0.30 ounces per ton. One sample from the southerly vein assayed 1.006 ounces of gold per ton and 0.05 ounces of silver per ton. The vein may be related to the No. 17 West Vein but is small and is unlikely to produce a significant tonnage of vein material.

No. 23 VEIN (See Figures 9, 11 general, 12, 31 detail)

The No. 23 Vein is located 10 metres north of the south end of trench GTR-23. The vein strikes approximately parallel to the Catto Vein and lies 20 metres to the north. The mineralization consists of banded quartz-scorodite-arsenopyrite and is 12 centimetres wide. A sample across this width assayed 0.406 ounces of gold per ton and 0.03 ounces of silver per ton. Trenching to the west in trench GTR-25 did not locate the vein but it has not been tested for an eastern extension. It is unlikely that the vein will contain significant gold.

VICTORIA VEIN (See Figures 9, 11 general, 12, 15, 17 detail)

The Victoria and Aurum No. 2 veins comprise the most significant structure east of Haggart Creek explored to date. The veins occur in the Aurum Adit and can be projected to surface trenches GET-3, GET-23E, GET-23 and GTR-23. The Victoria Vein which is the most extensively developed vein has been drifted on in the Aurum Adit for 74 metres. On surface the vein can be traced for 42 metres from trench GTR-23 to GET-3. Where exposed the vein consists of banded green quartz-scorodite-arsenopyrite and ranges in width from 9 centimetres to 60 centimetres.

On surface 14 samples have been collected from the vein in the various trenches. The vein ranges in width from 5 to 45 centimetres and averages 19 centimetres. Gold assays from the surface range from 0.209 ounces per ton to 3.560 ounces per ton and silver values ranged from 0.06 ounces per ton to 1.18 ounces per ton. The average grade of the material sampled was 0.981 ounces per ton of gold and 0.42 ounces per ton of silver.

A total of 86 samples were collected from the Victoria Vein in the Aurum Adit. Of the 35 vein samples collected, gold values range from 0.012 ounces per ton to 3.794 ounces per ton. Only samples collected during 1980 were assayed for silver and of these vein samples values range from 0.06 ounces per ton to 1.00 ounces per ton. In 1979 a 25 metre section of the vein from the end of the right drift was calculated to grade 0.335 ounces per ton gold over a width of one metre using 9 vein samples. For the same section a grade of 0.156 ounces per ton of gold, over one metre, was calculated using 13 composite samples. De-icing of the left drift and subsequent sampling in 1980 has led to a computed grade value of 0.743 ounces per ton gold (25.47 grams per ton) for an average width of 28 centimetres along 74 metres of drift. This calculation is based on 35 samples. A similar calculation was conducted for the 24 silver assays collected over 49 metres of de-iced drift. A grade value of 0.39 ounces per ton of silver (13.37 grams per ton) was obtained.

Tonnage calculations were performed for samples from the Victoria Vein drift. The calculations were based on projecting the vein sample information halfway between sample sites which was usually two metres and by projecting the vein vertically one metre above the back of the drift. The value obtained gives tonnage and grade per vertical metre. A value of 59.35 tons per vertical metre grading 0.743 ounces per ton of gold was obtained for the 74 metre

length. Because silver values are only available for the 1980 samples the tonnage value represents only 49 metres of drift. A value of 41.62 tons per vertical metre grading 0.39 ounces per ton of silver was calculated.

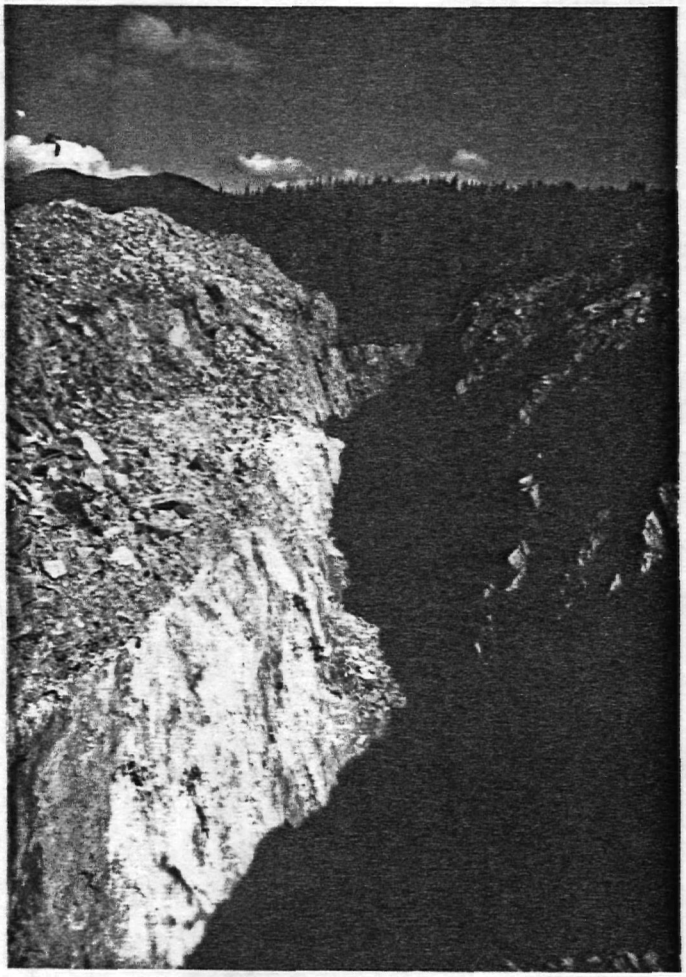
Survey data indicates that the back of the drift is 13.7 metres below the surface of trench GTR-3. Projection of the vein conditions in the adit to surface infers 813 tons grading 0.743 ounces per ton of gold. These figures indicate a reserve of 604 ounces of gold. Reasonable projection downdip and along strike could easily infer 1,200 ounces of gold. These estimated do not take into account the possible gold reserves on the nearby Aurum No. 2 vein. Further study is required to consider the economics of mining this vein in conjunction with the Aurum No. 2 and Green Veins. A diamond drill program to test the downdip extension of the veins is imperative.

AURUM NO. 2 VEIN (See Figures 9, 11 general, 12, 15, 31 detail)

The Aurum No. 2 Vein is the second major structure encountered in the Aurum crosscut and occurs for 8 metres in the Dog Leg Drift. It is also exposed in trenches GET-25, 23, 23E and 3. In the drift the structure consists of two veins each 10 centimetres wide. From the crosscut where they are separated by 1.1 metres, the veins converge to within 20 centimetres on the face. On surface the structure is much stronger and ranges to 60 centimetres in width in trench GET-3. In trench GET-3 a 60 centimetre wide portion of the vein consists of 20 centimetres of quartz-scorodite-arsenopyrite material adjacent to both the footwall and hanging wall and a 20 centimetre core of limonite-siderite-jamesonite vein material.

Twenty-two vein and composite samples were collected from the Dog Leg Drift in 1979 and assayed for gold. Vein samples ranged from 0.035 ounces of gold per ton to 3.540 ounces of gold per ton and an average grade of 0.291 ounces per ton was calculated. No new samples were collected in 1980 but the grade and tonnage of the 1979 sampling was recalculated.

Twenty-three samples were collected from surface exposures of the vein. Gold assay values range from 0.044 to 2.844 ounces per ton and averaged 0.421 ounces per ton over an average width



Trench GET-2. View of Catto Vein (left side) Looking east. Hanging wall removed. Trench is 36 metres (40 yards) long.

of 27 centimetres. Silver values were generally low except where concentrations of jamesonite were encountered. Values ranged from 0.17 to 20.78 ounces of silver per ton.

Transit survey data of trenches and the Aurum Adit reveals the relationship between the Victoria vein and the Aurum No. 2 vein. The Aurum No. 2 Vein is an untested parallel structure which, on the ground surface , is stronger than the Victoria Vein. The left drift of the Aurum Adit is on the Victoria Vein and not on the Aurum No. 2 Vein which when projected to the level of the Aurum Adit should lie approximately 10 metres to the north.

The Aurum No. 2 Vein also projects toward the Green Vein Adit portal and it may in fact be the same vein. The Green Vein Adit portal is 56.8 metres lower than the Aurum Adit portal and continuity of the vein over such a vertical distance greatly enhances the tonnage potential and gold reserves of this structure. Testing by diamond drilling is required to prove this theory.

CATTO VEIN (See Figures 9, 11 general, 12, 16, 20 detail)

The Catto Vein is exposed in trench GTR-2 (GET-2) which is on the ridge between Olive and Stewart Gulches above the Aurum Adit. Mineralization has been traced in this trench for over 35 metres along a strike of 090° azimuth. The northern vein section is 40 centimetres wide, and consists of crushed quartz, scorodite and arsenopyrite, crosscut by a network of pale green chalcedony veinlets. The southern vein structure occurs as an offshoot of the northern structure and is up to 12 centimetres wide. It consists of quartz, siderite, jamesonite and limonite in a vein up to 12 centimetres wide. The zone containing these two structures occur primarily in schistose metasediments but cuts granodiorite in the easternmost 6 metres of the trench. To the west in trench GTR-6 the vein splays into a few scattered quartz-scorodite fracture fillings up to a centimetre wide. To the east the vein splays into 5 or more fracture fillings and trends into the granodiorite for an unknown distance.

Fourteen one metre channel samples were collected across the vein in 1979 and analysed geochemically for gold. Six samples contained more than 5,000 parts per billion gold and were, therefore, assayed for gold. The assay values obtained varied from

0.106 to 0.746 ounces of gold per ton across one metre. Follow up excavator trenching and sampling was conducted during 1980 along trench GTR-2. A total of 35 samples were collected and assayed for gold and silver. One of these samples was assayed for lead, antimony and zinc. Gold values from the vein samples ranged from 0.040 to 5.568 ounces per ton. An average grade of 0.885 ounces of gold per ton and 0.56 ounces of silver per ton was obtained from 27 samples from the main vein structure over an average width of 13 centimetres. A sample of siderite-jamesonite assayed 4.22 ounces of silver per ton, 0.080 ounces of gold per ton, 13.50% lead, 7.17% antimony and 1.08% zinc over 12 centimetres.

The exposed portion of the Catto Vein is inferred to contain 60 ounces of gold and could conceivably be inferred to host 100 ounces. The section of the vein which was sampled is well-exposed and is readily accessible to exploitation. Additional reserves may be developed by trenching the veins along strike to the east.

GREEN VEIN (See Figure 9)

The Green Vein occurs in an adit on the west side of Olive Gulch about 550 metres upstream from the point at which the Olive Creek crosses the main access road to the Tungsten-Skarn Zone area. A grab sample for the mine dump material consisted of massive arsenopyrite and pyrite with minor jamesonite in a quartz boxwork and assayed 0.178 ounces of gold per ton and 1.02 ounces of silver per ton. The vein has not been examined during this program but was explored extensively by underground drifting prior to 1914. McLean (1914) states that a 10 foot (3 metre) adit was driven to the vein and then a 180 foot (54.9 metre) drift was driven along it. At the end of the drift a 27 foot (8.2 metres) raise was driven. Two small crosscuts of 20 feet (6.1 metres) and 30 feet (9.1 metres) have been driven off the vein adit. The vein is of varied thickness and ranges from 3 inches (8 centimetres) to 3 feet (91 centimetres). The proximity of this structure to the Victoria and Aurum structures enhances the importance of this vein. It may prove to be a very significant source of gold. The possibility of developing the Green Vein in conjunction with the Victoria and Aurum No. 2 Vein requires consideration. Excavator trenching to open the portal for mapping and sampling access is required.

OLIVE VEIN (See Figure 9)

The Olive Vein occurs on the east side of Olive Gulch about 600 metres upstream from the junction of Olive Creek and the main access road. Quartz-scorodite-arsenopyrite vein material which occurs in a dump near the top of the gulch is presumed to be from the Olive Vein. A grab sample of this material assayed 1.650 ounces of gold per ton and 2.45 ounces of silver per ton. An adit located about halfway down the side of the gulch is reported by McLean (1914) to include 8 feet (2.4 metres) of adit and 60 feet (18.3 metres) of drift. The vein at the end of the drift is reported to be 20 inches (51 centimetres) wide. This structure could host important gold reserves and requires further trenching to define its potential.

SHAMROCK VEIN (See Figure 9)

Quartz-scorodite with massive arsenopyrite and pyrite occurs in a dump 15 metres north of Dublin Creek upstream from the confluence of Carscallen Pup. The dump is adjacent to the portal of a caved adit driven on the Shamrock Vein. A grab sample of the mine dump material indicated that the vein is at least 10 centimetres wide and assayed 0.926 ounces of gold per ton and 2.58 ounces of silver per ton. The vein occurs within a shear zone in granodiorite and is associated with a limonitic bleached alteration envelope. A program of detailed excavator trenching is required to assess the significance of this vein.

CARSCALLEN VEIN (See Figure 9)

The Carscallen Vein occurs approximately 50 metres northwest of the Shamrock Adit along cutline L38+650E. The adit is now caved but dump material beside the portal indicates a strong vein structure. A grab sample of the material assayed 0.768 ounces of gold per ton and 1.24 ounces of silver per ton. Granodiorite is the host rock and the vein occurs in a strongly altered shear zone. A program of excavator trenching is required to outline gold reserves.

TIN DOME OCCURRENCE (See Figure 9)

Vein float material consisting of quartz-scorodite with minor arsenopyrite occurs on the north side of Tin Dome, north of Dublin Gulch. A grab sample assayed 0.228 ounces of gold per ton, 2.40 ounces of silver per ton and contained less than 0.01% tin. The presence of this vein material demonstrates that gold-bearing quartz veins occur in a zone at least two kilometres wide north of the Dublin Gulch stock. This area is untested and exploration trenching on the north and south slopes of Tin Dome is required.

CB NO. 1 VEIN (See Figure 10 general, 35, 36 detail)

In trench PGT-1 on the north side of the West Potato Hill a quartz-scorodite-arsenopyrite vein is exposed for 33 metres. The structure known as the CB No. 1 Vein was first discovered early this century and was explored by a series of hand trenches and by an adit.

The adit and portal is now caved but the dump lying to the east of trench PGT-1 was examined. In trench PGT-1 quartz-scorodite-arsenopyrite vein material occurs in irregular zones of various lengths and widths. Individual pods of mineralization ranging to one metre wide occur in a 2.5 metre wide vein structure.

A total of 37 samples were collected from the CB No. 1 structure including vein, footwall and hanging wall samples. Ten samples of vein material indicate an average width of 58 centimetres. Gold assays ranged from 0.078 to 0.748 ounces per ton and averaged 0.122 ounces per ton. Silver values ranged from 0.12 to 6.05 ounces per ton and average 1.55 ounces per ton. The remaining 27 samples carry various amounts of gold and silver and indicate that less than 0.100 ounces of gold per ton is present in the altered wall rocks beside the vein. The structure is one of the largest trenched to date and could prove to host significant metal reserves. The vein is open and untested in both strike directions and detailed excavator trenching is required. Early overburden stripping is recommended to permit the permafrost to thaw.

CB NO. 2 VEIN (See Figure 10 general, 35 detail)

The CB No. 2 Vein occurs in trench PGT-2 approximately 325 metres west of the CB No. 1 Vein on the north side of the West Potato Hill. The showing consists of a 5 centimetre quartz-scorodite vein which crosscuts a section of biotite-quartzite schist and subskarn. An adit northeast of the occurrence may have been driven on the vein or on a related structure. A grab sample of vein material assayed 0.294 ounces of gold per ton and 0.61 ounces of silver per ton. Trenching in the area is required to evaluate this showing. Permafrost is present in the area and overburden stripping should be conducted as early as possible in the season to allow the permafrost to thaw.

KUZMISKI OCCURRENCE (See Figure 9)

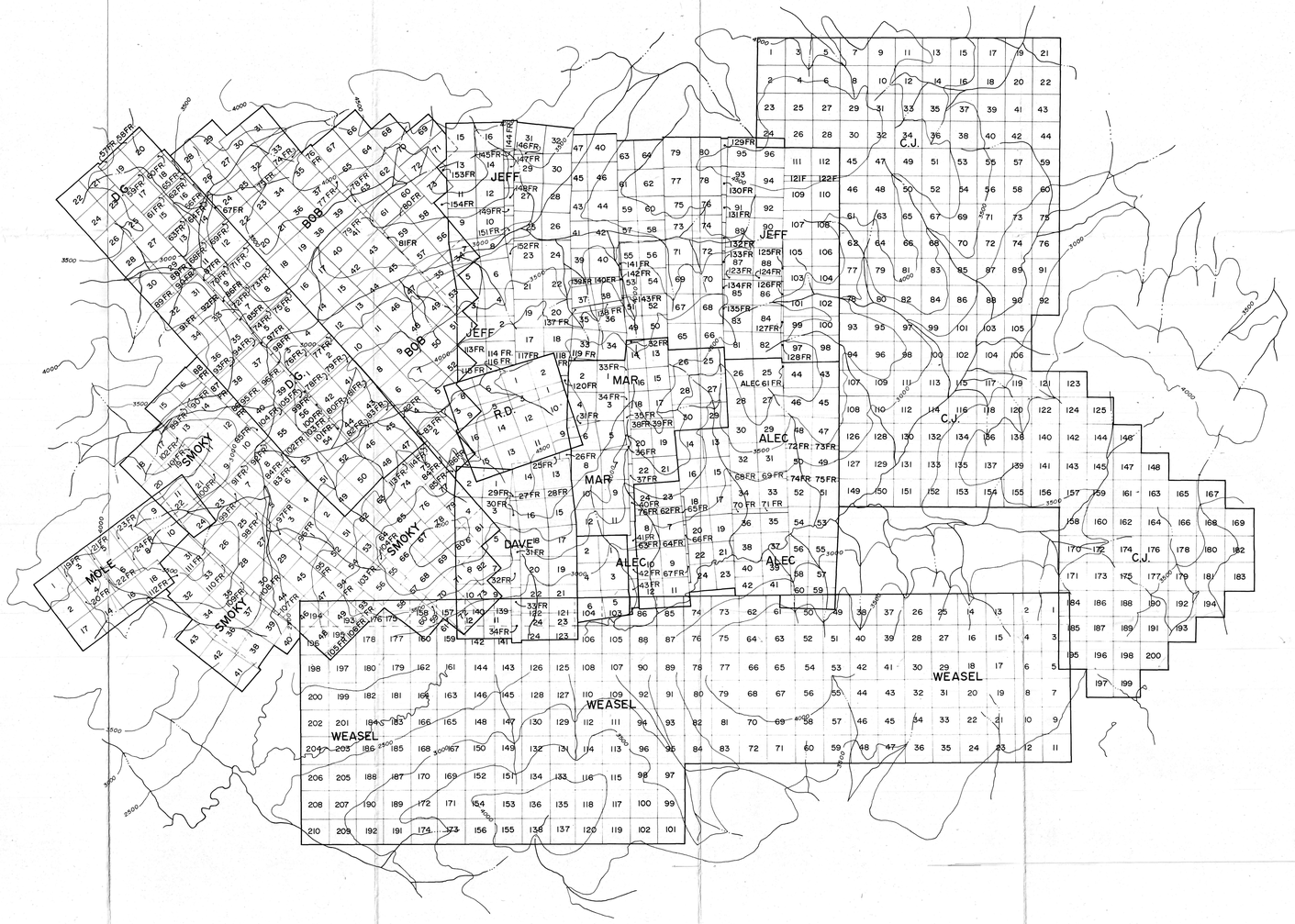
The Kuzmiski occurrence consists of a series of large mineralized float boulders which occur in Dublin Creek 100 metres upstream from the Holoway placer workings. Boulders greater than one metre across host quartz-scorodite-arsenopyrite veins up to 50 centimetres wide. The material appears to be locally derived and indicates the presence of a large, significant vein in the area. Exploratory excavator trenching is required to locate the vein followed by detailed trenching and sampling to develop the structure. No assays are available at this time.

JM OCCURRENCES (See Figure 9)

Three quartz-scorodite-arsenopyrite showings are located on the main Potato Hills' access road south of Dublin Creek, 100 metres upstream from the confluence of Olive and Dublin Creeks. Bulldozer work on the road uncovered the veins late in the 1980 field season and no follow up work was conducted. The veins are of varied width and range up to 10 centimetres wide. Detailed excavator trenching is required to evaluate the significance of the veins.

ROAD OCCURRENCES (See Figure 9)

Several quartz-scorodite-arsenopyrite occurrences are located on the Potato Hills' access road, two hundred metres south of the Olive Vein showing. The veins were discovered during routine bulldozer road maintenance and no follow up trenching has been conducted. Excavator trenching in the area is required to locate and trace these veins and others that may be present in the area.



Scale 0 1 2 3 Miles

CANADA TUNGSTEN MINING CORPORATION
DUBLIN GULCH
1980 GEOLOGICAL EXPLORATION PROGRAMME

CLAIM STATUS
FALL 1980

DATE: MARCH 1981	JOB NO: 80-06	FIG. NO. 3
DRAWN BY: CEN-TEC		
REVISED BY:	SCALE: 1" = 1/2 MILE	

BEMA INDUSTRIES LTD.

CEN-TEC ● 5113

YEIP 86-002 Vol. 1

DIAMOND DRILLING REPORT

ON THE

MAR GOLD PROJECT
DUBLIN GULCH, YUKON

NTS: 106D/4, 64°02', 135°50'

FOR

(owner)
QUEENSTAKE RESOURCES LTD.
9th Floor, 850 West Hastings Street
Vancouver, B.C. V6C 1E1

BY

J.T. SHEARER, M.Sc., FGAC.

TRM ENGINEERING LTD.
701 - 744 West Hastings Street
Vancouver, B.C. V6C 1A5

September 18, 1986
Vancouver, B.C.

FIELDWORK COMPLETED BETWEEN AUGUST 9, 1986
AND AUGUST 29, 1986

CONTENTS

LIST OF ILLUSTRATIONS AND TABLES

TABLES

SUMMARY

(1) The Mar Gold Project at Dublin Gulch is located in central Yukon approximately 40 km northeast of Mayo, centered at 64°02' and 135°50', NTS 106D/4.

(2) Access is by gravel road 88.5 km from Mayo. An all weather road (Highway 11) leads to the South McQuesten River turn-off, 39.2 km northeast of Mayo and 9 km southwest of Elsa. The Dublin Gulch camp is 49.35 km from Highway 11 over good gravel and dirt road.

(3) Coarse, placer gold was discovered in Dublin Gulch in 1898. Placer mining has taken place in most years since discovery.

(4) The claims are underlain by highly deformed and metamorphosed Grit Unit of probable Late Proterozoic age which has been intruded by Cretaceous granodiorite.

(5) Numerous, narrow gold-arsenopyrite-pyrite-sphalerite-jamesonite vein and shear zones have been found near the intrusive contact within an area 12 km long and 3 km wide.

(6) The veins are mineralogically zoned around the pluton and are probably genetically related to the intrusive event.

(7) Previous work included extensive deep trenching, early underground drifting, detail geological mapping and preliminary metallurgical testing.

(8) The 1986 diamond drill program consisted of 4 holes totalling 2,314 feet (705.32 m) below the Victoria Vein System in the Stewart-Catto Area (Bob #1 claim).

(9) A short trenching program was conducted on the DG #53 claim to investigate a new massive pyrite zone found in August 1986. This zone is over 1.5 m wide (true thickness) and averages 0.078 oz/ton gold.

(10) In general, the 1986 diamond drilling indicates very low gold values down dip in the Victoria vein system.

(11) Assay results in the Catto and "New Vein" systems are in the 0.2 to 0.3 oz/ton range for holes 86-1, 2 and 3. However, in Hole No. 86-4 the Catto Vein grades 1.300 oz/ton gold.

(12) High grade gold values were found in the vicinity of the No. 23 structure in Hole 86-4. This vein assayed 2.177 oz/ton gold over 0.5 m.

(13) A short diamond drill program is recommended to investigate the variation of gold values in relationship to the north contact of the main granodiorite pluton.

(14) Associated studies should be conducted to define the mode of gold-sulphide composition with emphasis on the degree of surface enrichment. The soil anomaly south of the Eagle Vein should be trenched.

INTRODUCTION

The first drilling program on the narrow but extensive gold-arsenopyrite-quartz veins at Dublin Gulch, Yukon, was completed in August 1986 by Queenstake Resources Ltd. This report discussed the results of this drilling program.

Numerous veins were discovered prior to 1904 as a result of follow-up to rich placer mining in Dublin Gulch and Haggart Creek. Over 450 meters of underground work had been completed on the four principal vein systems before 1930. Although an extensive surface trenching and geological mapping program was carried out in 1980, no drilling was attempted. Considerable diamond drilling was done on the Ray Gulch scheelite skarn deposit in 1979 to 1982.

Previous work indicated that the veins are narrow and range from a few centimeters to a maximum of about one meter. Gold content in the near surface portion of the veins appeared to be fairly irregular but relatively high grade and ranged between 0.5 oz/ton Au to several ounces per ton gold.

Objectives of the 1986 diamond drilling were:

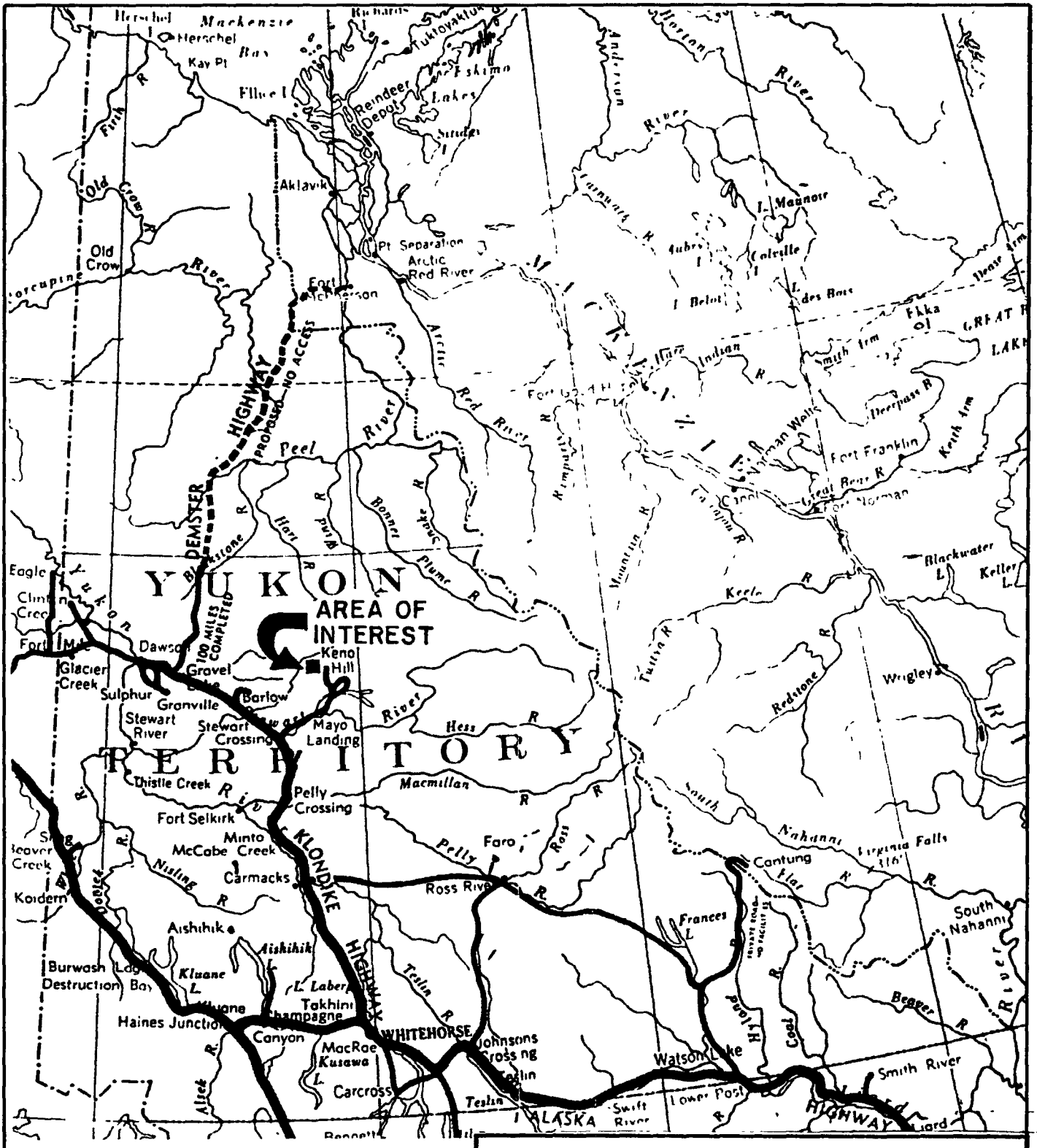
(1) test the down-dip continuity of the Catto and Victoria vein systems (Stewart-Catto Area);

(2) test the strike continuity at depth of the Catto and Victoria vein systems (Stewart-Catto Area);

(3) check for possible sampling errors in the surface trenching program (especially surface enrichment of gold values);

(4) generally assess the exploration potential of the numerous other vein systems.

Infrastructure for a small-scale hardrock mining operation is surprisingly well developed at Dublin Gulch. For example, there is a good road access, United Keno Hill Mines Ltd. has a currently unused cyanide circuit at the nearby Elsa concentrator and large scale, public hydro-electric power is available at Mayo Lake.



QUEENSTAKE RESOURCES LTD.

DUBLIN GULCH AREA

MAYO M.D., YUKON

LOCATION MAP

PROJECT:	MAR GOLD
ENG.:	TRM ENGINEERING LTD.
DATE : AUGUST, 1986	FIGURE 1

LOCATION AND ACCESS

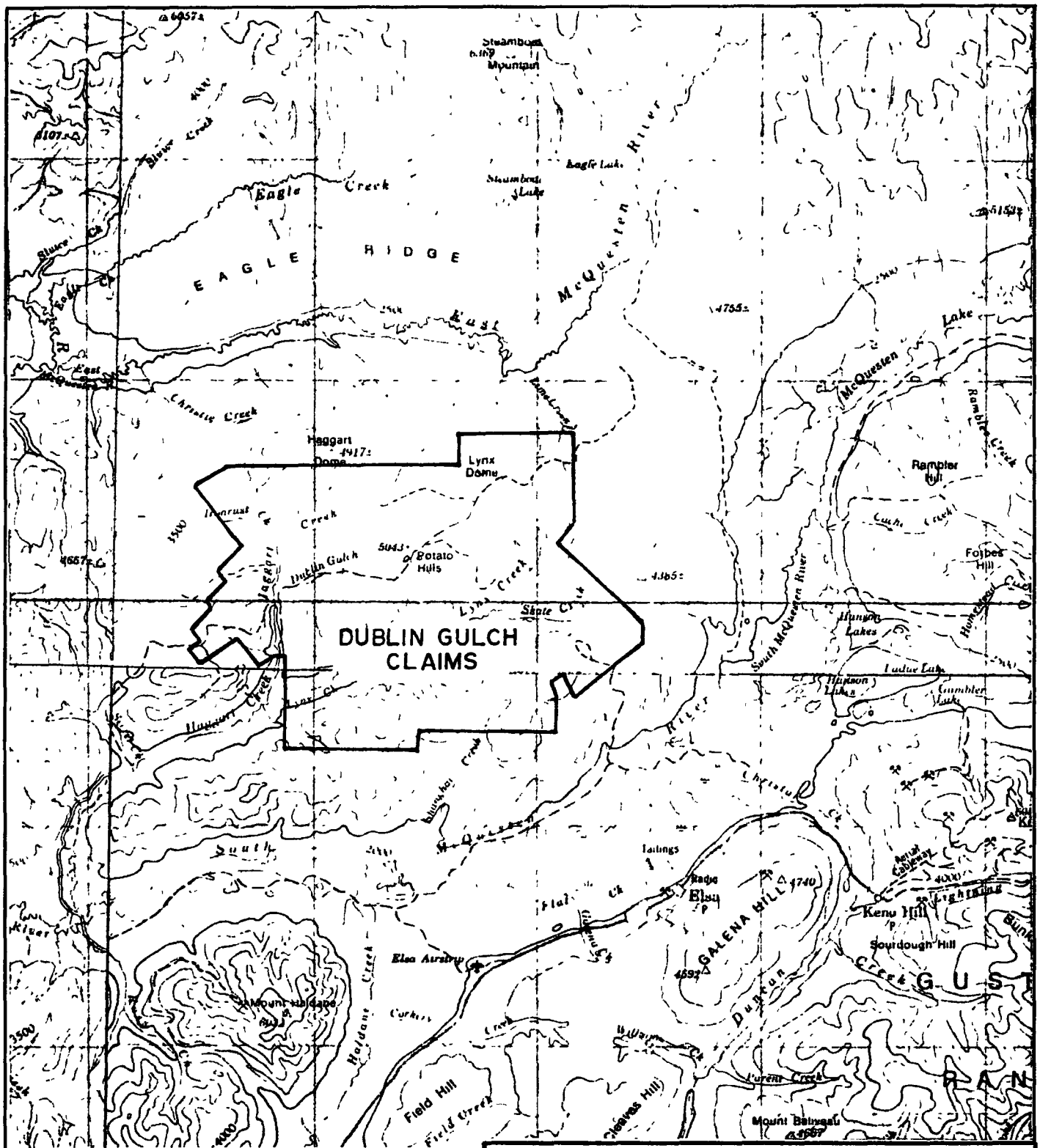
The Mar Gold Project is located in central Yukon approximately 40 km northeast of Mayo centered at 64°02' and 135°50', NTS 106D/4, Figure 1. Access is by gravel road 90 km from Mayo. An all-weather road (Highway 11) leads to the South McQuesten River turn-off, 39.2 km northeast of Mayo and 9 km southwest of Elsa. An excellent secondary gravel road of 42.9 km connects Highway 11 to Haggart Creek. The improved dirt road along Haggart Creek to Dublin Gulch is 6.5 km long.

The area is characterized by a plateau at about the 1,400 meter level which is incised by broad, steep walled valleys. Overburden is relatively thin, generally less than 2 meters near the drillsites. Lower elevations are covered with dense spruce forests which thin to buckbrush sub-alpine vegetation at the 1,200 meter level.

CLAIM STATUS

A large number of claims were located in 1980 to cover the periphery of the older claims groups, Figure 3. Most of these peripheral claims are no longer part of the claim group under consideration. A series of complicated, overlapping option agreements have resulted in a transfer of claims between owners. In 1986, Canada Tungsten Mining Corp. assigned its ownership and option agreements to Queenstake Resources Ltd. A one-mile radius clause in the agreement with G. Dickson covers the main Stewart-Catto Area where the 1986 diamond drilling was completed.

A summary of hardrock claims in the Dublin Gulch Area held under option by Queenstake Resources Ltd. is contained in Table 1.



QUEENSTAKE RESOURCES LTD.

DUBLIN GULCH AREA
MAYO M.D., YUKON

DETAIL LOCATION MAP

PROJECT :	MAR GOLD
ENG. :	TRM ENGINEERING LTD.
DATE : AUGUST, 1986	FIGURE 2

Table 1

Summary List of Claims

CLAIM	GRANT NUMBERS	EXPIRY DATE
Alec 1- 8	YA30048-YA30055 inclusive	October 1, 1992
Alec 9-40	YA30088-YA30119 inclusive	October 1, 1992
Alec 41-45	YA17996-YA18000 inclusive	October 1, 1992
Alec 46-60	YA30001-YA30015 inclusive	October 1, 1992
Alec 61Fr-76Fr	YA42987-YA43002 inclusive	October 1, 1990
Bob 53-65	YA17781-YA17893 inclusive	October 1, 1992
Bob 66-73	YA17794-YA17801 inclusive	October 1, 1990
Bob 76Fr-81Fr	YA43005-YA43010 inclusive	October 1, 1990
Dave 1, 3	YA17802, YA17804	October 1, 1992
Dave 5-12	YA17806-YA17813 inclusive	October 1, 1992
Dave 17-24	YA17818-YA17825 inclusive	October 1, 1992
Dave 26Fr/29Fr/30Fr	YA42971, YA42974, YA42975	September 29, 1990
Dave 31Fr-34Fr	YA43015-YA43018 inclusive	October 1, 1990
Fiji 1Fr	YA63884	October 1, 1987
Fiji 3Fr-6Fr	YA63886-YA63889 inclusive	October 1, 1987
Jeff 1-93	YA17826-YA17881 inclusive	October 1, 1992
Jeff 64-93	YA30120-YA30127 inclusive	October 1, 1992
Jeff 94-96	YA17882-YA17929 inclusive	October 1, 1990
Jeff 97-103		October 1, 1992
Jeff 104-112		October 1, 1990
Jeff 113Fr, 114Fr	YA42976, YA42977	October 1, 1990
Jeff 116Fr-120Fr	YA42979-YA42983 inclusive	September 29, 1990 (except Jeff 117Fr, 1986)
Jeff 121Fr-154Fr	YA43067-YA43099 inclusive	September 29, 1990
Mar 1-24	YA14896-YA14919 inclusive	October 1, 1992
Mar 25-30	YA17104-YA17109 inclusive	October 5, 1992
Mar 31Fr	YA42984	September 29, 1990
Mar 32Fr-43Fr	YA3100-YA3111 inclusive	October 1, 1990
Mary 1Fr-8Fr	YA63876-YA63883 inclusive	October 1, 1987
Mole 1- 6	YA41643-YA41648 inclusive	October 1, 1986
Mole 6-11	YA41649-YA41653 inclusive	October 1, 1990
Mole 14, 16	YA41654, YA41655	October 1, 1996
Mole 17-24Fr	YA43112-YA43119 inclusive	October 1, 1986
R.D. 1- 8	YA1393-YA1400 inclusive	October 1, 1992
R.D. 10, 12	YA1402, YA1404	October 1, 1992
R.D. 14-16	YA1406-YA1408 inclusive	October 1, 1992

Expiry Date
Oct., 1986

Expiry Date
Oct., 1986

Expiry Date
Oct., 1986

N

Magnetic
declination
33° 24'
1986

LEGEND

Claim outline 1990

DG Option

1986
DRILLED
AREA

AREA
TRENCHED

TIN
DOME

DG.1

BOB

JEFF

MAR

ALEC

DAVE

SMOKY

MOLE

R.D.

C.J.

LEN CLAIMS
(G. DICKSON)

WEASEL

Haggart Creek

Dublin Gulch

REDUCED FROM BARTLETT 1981
FROM 1:31,680

0 1000 2000 m
SCALE 1:50,000

QUEENSTAKE RESOURCES LTD.

DUBLIN GULCH AREA
MAYO M.D., YUKON
CLAIM MAP

PROJECT:	MAR GOLD
ENG.	TRM ENGINEERING LTD.
DATE AUGUST, 1986	FIGURE 3

FOLD OUT

Table 1 (cont'd)

Summary List of Claims

CLAIM	GRANT NUMBERS	EXPIRY DATE
Smoky 18, 20, 22	YA17947, YA17949, YA17951	October 1, 1992
Smoky 24, 26, 28	YA17953, YA17955, YA17957	October 1, 1992
Smoky 30-31	YA17959-YA17960 inclusive	October 1, 1992
Smoky 32	YA17961	October 1, 1992
Smoky 33	YA17962	October 1, 1992
Smoky 34	YA17963	October 1, 1992
Smoky 35	YA17964	October 1, 1992
Smoky 36, 37	YA17965, YA17966	October 1, 1992
Smoky 38-40	YA17967-YA17969 inclusive	October 1, 1992
Smoky 41-43	YA17970-YA17972 inclusive	October 1, 1992
Smoky 44, 46, 48, 50	YA30072, YA30074, YA17973, YA17975	October 1, 1992
Smoky 58-61	YA17979-YA17981 inclusive	October 1, 1992
Smoky 61	YA17982	October 1, 1990
Smoky 70-72	YA17987-YA17989 inclusive	October 1, 1992
Smoky 73	YA17990	October 1, 1990
Smoky 80-82	YA17993-YA17995 inclusive	October 1, 1992
Smoky 105Fr-112Fr	YA43142-YA43149 inclusive	October 1, 1990
	TOTAL - 414	

FIELD PROCEDURES

The drillsites were selected on the basis of information gathered initially by Stewart and Catto around 1910 from limited underground drifting and from the extensive trenching program conducted in 1980. No diamond drilling has been done on these gold-quartz veins in the past.

A metric property grid was established in 1978 to facilitate an evaluation program which outlined a large tungsten deposit on the nearby Mar claims at Potato Hills (Ray Gulch). Transit survey points in the Stewart-Catto Area established in 1980 were used to orient the present drillsites. More precise points on iron rods placed later by Underhill & Underhill Ltd. were noted near the first drillsite. The 1986 diamond drill collars were surveyed by Underhill and Underhill as well. Because the majority of the previous work had been done in metric units, a decision to

continue with metric work for the 1986 diamond drilling was appropriate. The magnetic declination used was 33°24' W. Drillsites were placed in relationship to transit points and distinctive trenches using a Brunton compass and chain. Preparation of drillsites was done with a D8K Caterpillar tractor bulldozer. Exceptionally wet weather during the start of the drill program necessitated the used of a Polaris all-terrain vehicle to transport drill personnel and core along the steep hillside.

All mineralized drill core was split in a shed on the property and one-half sent to Bondar Clegg & Company Ltd. in Whitehorse for gold and silver determination by fire assay. Analytical procedures are outlined in Appendix V. The splitting shed was locked at all times when splitting was not taking place. Sample intervals were marked in red lumber crayon with the appropriate assay ticket placed at the end of the interval. This assay ticket was left in the core box as an additional record of the exact interval and checked carefully against the prepared bag into which the sample was placed. These procedures assist in eliminating errors in sample preparation.

Drill logs are contained in Appendix VII. Each hole was logged in a comprehensive fashion before splitting, and percentage of core recovery was calculated against the drilling interval, marked on wooden blocks. Final logging was carried out after the core was split. Drilling was done in feet and converted to meters for logging and sampling using the conversion 1 foot = 0.3048 meters. Core recovery was consistently high except for the initial 3 to 4 meters of most holes and some mineralized zones.

The distinctive elements of the drill logs (Appendix VII) include a visual pattern log with symbols for rock type and other columns for: (1) alteration such as silica, sericite, chlorite and calcite; (2) fracturing; (3) sulfide content; (4) box number; (5) drilling interval; and (6) associated core recovery for each interval. A normal written log accompanies the appropriate part of the visual log. Gold values are shown in the far right column. Colour photographs were taken of all core to supplement the fracture record (on back of drill records) in the event rock mechanic calculations are required.

Each wooden core box was labelled with a metal Dymo strip showing hole number, box number and contained interval. All core from the present program is stored in steel racks at the Upper Placer camp core handling facility, under a metal reinforced roof. The grid coordinates of the core storage building are 459,650 E + 7,101,090 N.

HISTORY

The following historical summary is taken mainly from Bartlett (1981) and notes from Atled Exploration Management Ltd. (May 1978).

The Dublin Gulch area has a long history of mining activity dating back to the Klondike gold rush days of the last century. Placer gold was discovered in Haggart Creek and Dublin Gulch in 1898 and 1899. The creeks were worked sporadically during the early stages and it wasn't until 1904 that scheelite was identified in the placer deposits. In 1908 Cockfield located scheelite and wolframite in quartz veins and pegmatitic veins at the head of Dublin Gulch. These lode discoveries, coupled with increasing amounts of gold and tungsten being recovered from placer operations, resulted in a flurry of exploration activity for additional lode deposits from 1913 to 1916.

A major vein fissure system containing gold, arsenopyrite and silver was discovered on the north facing slopes of the ridge to the south of Dublin Creek. In 1907 J.S. Stewart and Dr. William Catto located the Victoria claim, the first quartz claim staked in Dublin Gulch. Eventually ten veins were discovered between Stewart and Olive Gulches. Other veins belonging to this vein-fissure system were discovered in Eagle Pup, Suttle Pup, Platinum Pup, Bawn Boy Pup and near the junction of Cascallen Pup and Dublin Creek. One prospect, covered by the Independence claim, was located on the ridge above Gill Gulch, west of Haggart Creek. A number of the veins were reported to extend for more than 61 meters (200 feet) with widths up to 3 meters (10 feet) (McLean, 1914).

The early history of the area is detailed in the reports of the Federal Department of Mines; particularly in reports by T.A. McLean, 1914, and D.D. Cairnes, 1915. Dr. W.E. Cockfield of the Geological Survey of Canada reported many of the above occurrences in 1918.

From 1916 to 1918 Mr. Robert Fisher prospected around the headwaters of Dublin Gulch and located several small lode occurrences of scheelite. Little or no work was conducted on these showings. Cockfield (1928) reported that the

scheelite in the placer deposits was emanating from quartz veins and pegmatitic veins found in and adjacent to the main Dublin Gulch Stock. The veins varied in width from 1/8 of an inch (3 millimeters) to over 5 feet (1.5 meters). Assays range from nil to 10% WO_3.

In 1916 cassiterite was first recognized in placer concentrates. The placer cassiterite appeared to emanate from Ann Gulch and further prospecting led to the discovery of two tin, tourmaline-quartz veins on Tin Dome in 1943. In 1945 Cominco drove a short adit of 56 feet (17 meters) but did not intersect the vein. Gordon Dickson staked 56 mineral claims over the Tin Dome showings. The claims were optioned to Canada Tungsten Mining Corporation Limited in 1978. From 1934 into the 1940's, Taylor, Blyler and others worked the placer deposits at Dublin Gulch.

Harvey Ray, a prospector, located scheelite-bearing float in Ray Gulch in 1942. The source areas were not located until 1943 when a G.S.C. party member located several skarn zones at the headwaters of Ray Gulch and other gulches cutting the steep southerly facing slope. All the gulches lead into Lynx Creek.

Mayo Silver Mines Ltd. located a 2-1/2 foot (76 centimeter) arsenopyrite-quartz vein on the east side of the headwaters of Ray Gulch. Mr. C. Provencher staked the Ray Gulch and Dublin Gulch area in 1968. The ground was optioned to Great Plains Development Ltd. in 1968, Tam Mining in 1969 and Connaught Mines Ltd. from 1969 to 1971. In 1970 Connaught subleased the property to Canex-Placer. In 1970 and 1971 Canex- Placer conducted an extensive soil geochemistry program that extended from Platinum Pup to the Potato Hills and covered the south side of Dublin Gulch.

Canex drilled 2,000 feet (610 meters) and cut 20 bulldozer trenches in the Dublin Gulch-Bawn Boy Pup area. The work was primarily confined to the granodiorite stock with the intent of developing a large, low-grade, scheelite-bearing quartz vein stockwork system. No work was done in the Ray Gulch area.

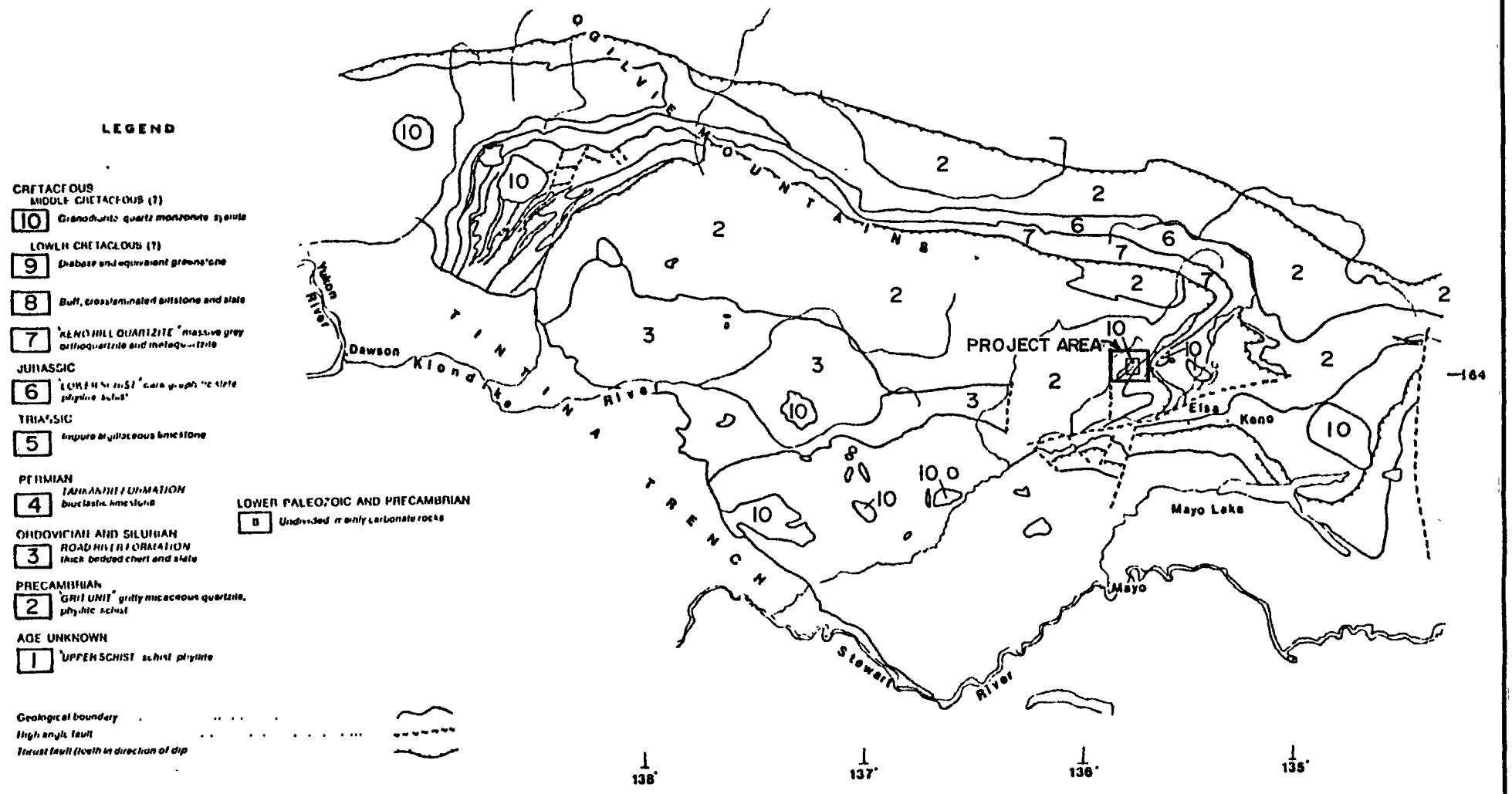
In March of 1977 Gordon Gutrath of Queenstake Resources Ltd. staked 24 Mar claims in the Ray Gulch drainage area. In October of 1977 Mr. Gutrath staked the Mar 25 to 30 claims which lie adjacent and to the east of the Mar 1-24 claims. Queenstake conducted a small program of geological mapping and sampling of the skarn zones in the Ray Gulch areas. Canada Tungsten Mining Corporation Limited optioned the Mar claims from Queenstake during the summer of 1978. Following ground acquisition by staking in 1978 by Canada Tungsten Mining Corporation Limited, a preliminary field program was conducted. Encouraging results in that year led to an extensive 1979 exploration program involving 2,422 meters (7,946 feet) of BQ core drilling in 21 holes. In 1980 Bema Industries Ltd. was retained to manage the project and a large program including 11,315 meters (37,123 feet) of NQ and BQ core drilling was conducted.

GEOLOGY - (A) REGIONAL

Due to the extensive placer mining activity in the Haggart Creek-Dublin Gulch area and nearby Keno Hill Silver District, the regional geological environment is relatively well known (Figure 4). Short geological investigations were initiated by Keele in 1904 and detail mapping completed by H.S. Bostock around Potato Hills in 1942 and 1943 at a scale of 1 inch = 2,000 feet. Regional geological compilations were published by Bostock (Map 890A - Mayo, 1946) and Green and Roddick (Map 1282A - Nash Creek, work in 1961 published in 1972). D.J. Tempelman-Kluit completed a M.A.Sc. thesis in 1964 entitled Geology of the Haggart Creek-Dublin Gulch area.

In spite of this large volume of work, the structural and lithological details are obscure due to complex conditions and lack of marker or datable fossil horizons. Large-scale isoclinal folding and possibly overthrusting of Proterozoic units structurally above apparently Lower Paleozoic quartzite has resulted in the juxtaposition of lithologically similar rocks of widely differing age.

The following discussion is largely taken from the above work and Orssich, 1981.



Redrawn from D.J Tempelman-Kluit 1970

QUEENSTAKE RESOURCES LTD.	
DUBLIN GULCH AREA MAYO M.D., YUKON **REGIONAL GEOLOGY**	
PROJECT.	MAR GOLD
ENG.:	TRM ENGINEERING LTD.
DATE: AUGUST, 1986	FIGURE 4

The Lower Schist division is the lowest unit in the stratigraphic column in the area and is overlain successively by the Keno Hill Quartzite, Upper Schist division and Grit Unit. The Lower Schist division consists of graphitic phyllite and schist, quartz-sericite phyllite and schist and thinly bedded fine-grained phyllitic quartzite. The Keno Hill Quartzite consists predominantly of a thick-bedded, massive, light grey quartzite with small interbeds of graphitic phyllite and schist. The Upper Schist strongly resembles the Lower Schist but has interbeds of limestone and some thick bedded quartzite resembling that of the Keno Hill Quartzite as well. The Grit Unit is composed of light buff to grey-green, recrystallized gritty quartzite, phyllitic quartzite, green, grey, black and maroon argillite and phyllite and thin bands of limestone.

Green and Roddick found fossiliferous limestone immediately below the Lower Schist. The fossils, examined by E.W. Barber of the Geological Survey of Canada, date the limestone as Permian in age (Green, 1972). Tempelman-Kluit (1970) mapped two formations the length of the Keno Hill-Tombstone River belt, which may be equivalent to the Lower Schist and Keno Hill Quartzite in the Keno Hill area. Stratigraphic evidence in the Tombstone area indicates a Jurassic age for the Lower Schist and a Lower Cretaceous age for the Keno Hill Quartzite. This Cretaceous age is somewhat controversial. Recent conodont studies for the Keno Hill Quartzite give a preliminary Ordovician date (G. Lynch, pers. comm. 1986).

Granitic intrusions postdate the deformation of the metasediment and Tempelman-Kluit (1970) postulated an early Late-Cretaceous time of emplacement based on K-Ar dating of plutons in the Selwyn Fold Belt. The intrusions are generally granite, quartz monzonite, granodiorite or quartz diorite in composition.

Most of the intrusions occur in the Grit Unit with a few in the Upper Schist and Road River formation and even fewer in the Keno Hill Quartzite and Lower Schist. The stock at Dublin Gulch occurs near the contact between Upper Schist and the Grit Unit and different authors have placed the contact in different places so that on some maps the rocks at Dublin Gulch occur in Upper Schist and on others in the Grit Unit. Based on lithologic descriptions of the two rock units by Green (1971), the rocks at Dublin Gulch are considered to belong to part of the Grit Unit. All the more recent publications place Dublin Gulch in the Grit Unit.

The dominant structures of the northern Ogilvie Mountains are a series of open, east-west trending folds with several minor south-dipping thrust faults. An older period of deformation affected only Precambrian strata. The structure of the southern Ogilvie Mountains, the Keno Hill-Tombstone River belt, is characterized by two major south-dipping thrust faults or fold limbs that repeat Precambrian and younger rocks bringing them up above late Paleozoic and Mesozoic strata (Tempelman-Kluit, 1970; Green and Roddick, 1962). In the Mayo district the thrust faults and the strata between them have been folded and faulted by younger deformation. The "McQueston Anticline", an east-west trending structure, was accompanied by the development of foliation and isoclinal folding. Isoclinal folding is best seen in the Keno Hill Quartzite in which folds from a meter to a few hundred meters between the limbs occur. The axial planes of the folds are usually parallel to the regional strike and dip of the units. A younger period of deformation then folded the already complexly folded and faulted rocks of the Mayo Lake area along a southeast plunging axis to form the Mayo Lake Anticline (Green, 1971; McTaggart, 1960).

Green (1972) suggested the possibility that the McQueston and Mayo Lake Anticlines may have formed in the same phase of deformation in which the thrust faulting occurred by buckling of the thrust sheet.

The rocks in the Keno Hill-Tombstone River belt are relatively unmetamorphosed, with a zone of greenschist metamorphism centered on Keno Hill. The geometry of the McQueston Lake and Mayo Lake anticline with respect to the zone of greenschist metamorphism suggests that the rocks now exposed in the Mayo district originated at greater depth and that they have been brought up to the surface by folding (Tempelman-Kluit, 1970).

GEOLOGY - (B) LOCAL

Detail geological mapping has been completed in the Dublin Gulch area by Bostock (1943), Tempelman-Kluit (1964) and Bartlett (1980), Figure 5.

Common rock types are quartzites, schists and andalusite hornfels and gneisses. Quartzites are generally micaceous and contain interbedded phyllite. The quartz-biotite schist consists of interlaminated biotite and quartz-rich laminations. The biotite laminations are generally about 3 mm thick and the individual grains about 0.05 to 0.1 mm in size. The biotite grains show a weak preferred orientation parallel to the laminations. The quartz laminations vary from 0.5 to 3.0 cm in thickness and individual granoblastic quartz grains are about 0.1 to 0.5 mm in size.

The Dublin Gulch Stock is the largest granodiorite body in the area and extends for over 5 kilometers from Platinum Pup to the Potato Hills. In addition to this large stock, numerous other granodiorite bodies occur about the property. West of Haggart Creek several sill-like bodies of medium grained granodiorite are present. In Dublin Gulch, at the junction of Olive Gulch, a small granodiorite intrusion formerly mapped as quartz monzonite occurs. Another small intrusion occurs east of the Potato Hills.

The Dublin Gulch Stock consists of medium to coarse grained, uniformly textured biotite granodiorite. A typical sample contained 40-45% plagioclase, 20-25% biotite, 2-3% hornblende and lesser amounts of several accessory minerals. Locally coarse Na-feldspar phenocrysts give the rock a porphyritic appearance. This rock type has been referred to as a megaporphyry. The intrusion at the junction of Olive and Dublin Gulch is a subsidiary of the main stock and differs only in the amount of alteration. The small intrusion shows zones of strong silica alteration adjacent to closely spaced quartz veined fractures.

Dyke and sill apophyses of the main Dublic Gulch Stock occur both north and south of the intrusion. They are more strongly developed south of the pluton where several large sill and dyke-like sheets cut the stratigraphic section and may control the emplacement of scheelite-bearing skarns.

Two major periods of deformation are recognized in the district. The first resulted in large scale overthrusting and both large and small scale complex folding. It was during this earlier deformation that the pervasive foliation observed throughout the district was developed. This was a period of intense shearing and is probably the time during which the greenstone units were deformed and

developed their characteristic boudinage. A younger period of deformation is characterized by the development of broad open folds such as the Mayo Lake anticline and the subsidiary McQuesten Valley and Lynx Creek anticlines. It is during this period of deformation that the emplacement of the Dublin Gulch Stock occurred.

Several generations of faults may be present in the Dublin Gulch area but these are not well recognized and their development is poorly understood. Tempelman-Kluit (1964) conducted the most thorough structural investigation and located several faults and proposed several others. In addition to these, a major zone of structural weakness trends northeasterly across the property. The Dublin Gulch Stock and the gold-quartz vein-fissure system occur within this zone of weakness. Numerous minor faults possibly related to the emplacement of the granitic rocks are present.

The most prominent faults occur in the creek valleys of the major drainage systems, such as Haggart Creek and Dublin Creek. Similar faults could occur in upper Haggart Creek, Fisher Gulch and in Gill Gulch. Several other important faults are present. The Tin Dome Fault which crosscuts the southeast slope of Tin Dome has been explored for cassiterite. A fault up Ray Gulch which passes between the Potato Hills and the subsidiary West Ray Gulch fault are apparent.

MINERALIZATION AND DRILL RESULTS

The gold-sulfide-quartz vein systems have been studied in the past by surface trenching, detailed geological mapping, shallow underground drifting, preliminary metallurgical testing and mineralography.

The veins are sub-parallel, en echelon gold and silver-bearing quartz-arsenopyrite-sphalerite-pyrite and siderite-pyrite-jamesonite-arsenopyrite fissure systems which occur along an overall north 60° east trend between

Secret Creek in the west and the Potato Hills to the east. Veins occur over more than 12 kilometers (7.5 miles) along trend and are exposed over a width of more than 3 kilometers (2.0 miles) west of Haggart Creek and over a width of 2 kilometers (1.25 miles) east of Haggart Creek. A number of quartz-arsenopyrite-pyrite veins have been observed in diamond drill core from the skarn-zone south of the Dublin Gulch Stock. By 1981, more than 50 individual "occurrences" had been discovered ranging in width from several millimeters (1/4 inch) to in excess of 9 meters (30 feet). The system is divided physically into two distinct areas by Haggart Creek. The area east of Haggart Creek has been prospected for gold in the course of the 1980 trenching and 1986 drilling programs. The area west of Haggart Creek has been explored by Peso Silver Mines Ltd. in search of silver but has not been evaluated for gold. The information presented pertaining to this west area is drawn from the work of D.J. Tempelman-Kluit (1964) and from the limited 1980 assessment program conducted by Bema Industries Ltd.

The geology and mineralogy of the system east of Haggart Creek has been described in detail by Bartlett (1980). Detailed trenching of portions of the zone during 1980 provided valuable information on the nature of the vein system and in some areas has revealed a more complex mineralogy than indicated by the 1979 work. From the 1980 fieldwork it is recognized that the veins occur in a zone more than 2 kilometers (1.25 miles) wide. Veins observed in 1979 were in or sub-parallel to the Dublin Gulch stock and occurred within a few hundred meters of the exposed contact. The 1980 program was initially planned to test the area along the length of the stock but was modified as the potential of areas farther away from the pluton was realized.

All surface and available shallow underground samples are highly oxidized. Payne (1982) describes a typical vein material as follows:

arsenopyrite	7-10%
scorodite	45-50
quartz (early)	10-12
pyrite	0.3
limonite-hematite	3-5
Mineral X	2-3
quartz (late)	15-20
cavities	5-7
Ti-oxide	trace

The original quartz vein consisted of patches of fine to medium grained arsenopyrite intergrown with medium to coarse grained quartz. The veins have been highly fractured by repeated movement along the vein fissure zone subsequent to deposition of the quartz. Payne (1982) noted one vein-like hairline up to 1 mm wide that has a very fine grained texture suggestive of recrystallization under shearing stress. On oxidation, Payne suggests that:

"Some patches of the rock contain angular fragments of quartz from 0.1-0.2 mm in size surrounded by extremely fine to very fine grained scorodite; the texture resembles a breccia with moderate replacement of quartz by the matrix. Elsewhere, quartz commonly is cut by veinlets of scorodite. These textures suggest a moderate replacement of quartz during weathering, with secondary enrichment of scorodite at the expense of quartz.

Both early and late quartz are cut by scorodite veinlets. The scorodite cutting later quartz veins commonly is coarser grained than normal (average 0.01-0.02 mm) and more granular in texture than earlier scorodite. This data suggests that remobilization and recrystallization of scorodite occurred after emplacement of the later quartz veins.

The rock contains abundant cavities where arsenopyrite has been weathered.

No chalcedonic quartz was seen."

The most significant vein occurrences have been listed by Bartlett (1980) as follows:

Table 2

Significant Gold-Quartz Vein Occurrences

Vein or Occurrence	Location
1. Creek Zone West Fissure	Dublin Creek at the mouth of Suttle Gulch.
2. Creek Zone East Fissure	Dublin Creek 150 meters (492 feet) upstream from Eagle Pup.

Table 2 (cont'd)

Significant Gold-Quartz Vein Occurrences

Vein or Occurrence	Location
3. Eagle Vein	Ridge west of Eagle Pup.
4. Scarp Vein	Ridge west of Eagle Pup, 100 meters (328 feet) north of the Eagle shafts.
5. Henderson Vein	Ridge west of Stewart Gulch, 100 meters (328 feet) south of access road (trenches GTR-48 to GTR-50).
6. Blue Lead Shaft Vein	Ridge west of Stewart Gulch, 80 meters (262 feet) south of granodiorite stock-metasediment contact.
7. Blue Vein	Fifty meters south of the Blue Lead shaft.
8. Stewart Vein	West side of Stewart Gulch at L36+800E and 11+075N.
9. No. 15 Vein	East side of Stewart Gulch in trench GTR-15 at L37+000E and 11+125N.
10. Cabin Vein	East side of Stewart Gulch in Beaver Adit and in trench GTR-4.
11. Klippert Vein	Ridge east of Stewart Gulch in trenches GTR-8 and GTR-9.
12. No. 45 Vein	Ridge east of Stewart Gulch in trench GTR-45 at L37+325E and 11+019N.
13. No. 5 Structure	Ridge east of Stewart Gulch in trenches GTR-5, GTR-5W, GTR-16 and GTR-17.
14. No. 17 West Vein	Trenches GET-17W, GET-43 and GET-44, 25 meters (82 feet) south of No. 5 Structure.

Table 2 (cont'd)

Significant Gold-Quartz Vein Occurrences

Vein or Occurrence	Location
15. No. 24 Vein	Ridge between Olive and Stewart Gulches in trench GTR-24, 50 meters (160 feet) west of Aurum Adit.
16. No. 23 Vein	75 meters (240 feet) south of Aurum Adit in trench GTR-23, ten meters (33 feet) from the south end.
17. Victoria Vein	Aurum Adit 27 meters from the portal and in trenches GTR-3, GTR-23 and GTR-25.
18. Aurum No. 2 Vein	Aurum Adit, 5 meters (16 feet) south of Victoria Vein.
19. Catto Vein	GTR-2, 100 meters (328 feet) south of Aurum Adit portal.
20. Green Vein	Olive Gulch, 20 meters west of the Creek at L37+600E and 10+880N.
21. Olive Vein	West side of Olive Gulch near L37+900E and 10+975N.
22. Shamrock Vein	On the old Carscallen Claim 15 meters (49 feet) north of Dublin Creek near L38+650E and 11+100N.
23. Carscallen Vein	On the old Carscallen claim at L38+650E and 11+100N.
24. C.B. No. 1 Vein	North side of West Potato Hill in trench PGT-1.
25. C.B. No. 2 Vein	North side of West Potato Hill in trench PGT-2.
26. Tin Dom Occurrence	North side of Tin Dome near the summit.

Table 2 (cont'd)

Significant Gold-Quartz Vein Occurrences

Vein or Occurrence	Location
27. Kuzmiski Occurrence	Dublin Creek, 100 meters (328 feet) upstream from the Holoway placer workings.
28. JM Occurrence	On the Potato Hills access road, south of Dublin Creek upstream from the mouth of Olive Gulch.
29. Road Occurrence	On the Potato Hills access road, 200 meters (656 feet) south of the Olive Vein showing.

Descriptions of the main vein showings are included below (from Bartlett, 1980) for completeness.

Creek Zone West Fissure

The Creek Zone West Fissure hosts a number of pyrite-arsenopyrite showings which occur sporadically over 175 meters (574 feet) in the south fork of Dublin Creek. The occurrences crop out in the creek bed exposed by 1979 placer mining and are centered at the confluence of Suttle Pup approximately 500 meters (1,640 feet) downstream from the old Upper Placer camp. There appears to be no record of the occurrences prior to their discovery in August of 1979.

Pyrite and arsenopyrite as well as minor amounts of sphalerite and chalcopyrite occur as masses and disseminations in a north 70° east-trending shear zone which ranges to 60 meters wide. Rocks within this zone consist of interbedded phyllite and quartzite with very minor limestone which strike northeasterly. Phyllite is grey to black in colour and is commonly highly contorted. Minor fold structures believed to be drag folds are common in the exposed bedrock. Quartzite is light grey to black and often contains up to 10% disseminated pyrite and euhedral arsenopyrite. Individual units to 1 meter thick are present and comprise about 15% of the section. It is usually fine grained and is sometimes bleached. One

horizon of black micritic limestone is present and occurs near the top of the section in the northwest portion of the area.

Crosscutting the stratigraphy at a low oblique angle is a pervasive shear foliation which forms clay gouge zones. These zones range up to 7 meters in width and consist of soft grey-blue clay with phyllite fragments. Some sections contain irregular pods of massive pyrite with arsenopyrite. Where the gouge is eroded blocks of massive sulphide are found in the creek bed. Large blocks found indicate that sulphide pods up to 60 centimeters wide occur in this shear zone. These sulphides plus the minor amount of disseminated sulphide present weather to create a widespread orange limonite stain. In addition, white crusts of sulphate occur on surface throughout the zone.

There are two major showings in the Creek Zone West, one discovered in 1979 at 35+490E and 12+056N and the other discovered during 1980 at 35+367E and 12+100N. The material at 35+490E and 12+056N consists of massive pyrite with arsenopyrite and minor sphalerite and chalcopyrite. The sulphide occurs for 15 meters in a gouge zone which has a strike length of at least 45 meters and is over 7 meters wide. Six grab samples of the material have been collected from an area in which the gouge zone crops out in the south bank of the creek. Assay values for gold range from 0.126 ounces per ton to 0.474 ounces per ton. Silver values from these same samples range from 1.00 ounce per ton to 5.88 ounces per ton.

The second significant occurrence lies 125 meters to the west at 35+367E and 12+100N and consists of a narrow gouge zone which contains coarse euhedral pyrite cubes cemented by fine grained arsenopyrite. The zone is 1 meter wide and cuts through sulphide rich, grey, foliated quartzite. Six grab samples collected from this zone gave gold values of 0.094 ounces per ton to 0.156 ounces per ton.

In addition to the 12 analyses mentioned above, another 101 grab and channel samples were collected. Most of the samples were 1 meter channel samples but samples across widths of up to 7 meters were also collected. The remaining samples were grab samples, of which three were submitted for a 20 element, semi-quantitative, spectrographic analysis. Of the samples submitted, 13 contained more than 0.100 ounces of gold per ton and all but one of these samples are intimately associated with sulphide material. The Creek Zone West is the largest structure discovered to date east of Haggart Creek.

Creek Zone East Fissure

Massive pyrite, disseminated pyrite and arsenopyrite occur in a shear zone in the south fork of Dublin Creek 150 meters upstream from the confluence of Eagle Pup. This position is at L36+100E and 12+000N on the cut-line grid, approximately 150 meters southeast of the old Upper Placer camp. Placer mining operations in 1980 exposed a strip of bedrock measuring 80 meters by 45 meters. The bedrock is strongly weathered and an orange limonitic stain covers the entire area.

The geology of the area consists of a northeast striking section of phyllite and quartzite which is cut obliquely by a mineralized shear zone up to 5 meters wide. The lowest unit is a silver phyllite which hosts a 5 meter wide, northeast trending feldspar-biotite porphyry dyke. The phyllite unit is overlain by a thin unit of black graphitic phyllite in which the mineralized portion of the shear zone is localized. The graphitic unit is in turn overlain by limonitic, buff to white bleached quartzite.

Mineralization in the shear zone occurs along a northeast trend for over 35 meters. Grey pyritic gouge 30 centimeters wide occurs on the southwest end of the structure and trends northeasterly for approximately 10 meters. On the east end of the zone pyrite and arsenopyrite occur as fracture fillings and as disseminations in quartzite. Mineralization occurs discontinuously over widths up to 3.5 meters. Bulldozer trenching to the northeast failed to locate a mineralized portion of the zone.

Eleven grab and chip samples were collected from this area and were assayed for silver and gold. Of these, two were assayed for antimony and one for copper. Gold values of 0.220 ounces per ton and 0.232 ounces per ton were obtained from pyritic gouge. All other samples contained little gold and gave values of less than 0.100 ounces of gold per ton. Silver values of 1.12 ounces per ton and 1.13 ounces per ton for the pyritic gouge were received but all other values were 0.30 ounces per ton or less.

The Creek Zone East Fissure is an extension of the large Creek Zone linear and is on trend with the Creek Zone West Fissure. The presence of massive sulphides is encouraging and further exploration is warranted.

Eagle Vein

The Eagle Vein is located on the flat-topped ridge above and to the west of Eagle Pup, 45 meters east of L35+800E and 10+800N. The vein trends down the west slope of Eagle Gulch and has been traced along strike for approximately 50 meters in a series of trenches, shafts and an adit. The area was mapped in detail in 1979 and was only briefly examined in 1980.

The showings consist of banded quartz-scorodite-arsenopyrite vein float which occurs in shaft and adit dumps and in hand and bulldozer trenches. Material collected near the westernmost shaft in 1979 assayed 1.010 ounces of gold per ton and indicated a vein width of at least 30 centimeters. Three grab samples were collected from the Eagle Vein shaft in 1980 and were assayed for gold and silver. The gold values were 1.142, 1.970 and 2.060 ounces per ton and silver values were 0.40, 0.90 and 0.52 ounces per ton.

Scarp Vein

The Scarp Vein occurs on the ridge of the west side of Eagle Gulch, 100 meters north of the Eagle Vein.

The vein strikes at an azimuth of 060° and dips 80° to the southeast. It consists of banded quartz-scorodite-arsenopyrite and is up to 10 centimeters wide. The area around the vein was mapped and sampled in detail in 1979 and was not resampled during 1980. One sample collected in 1979 assayed 0.196 ounces gold per ton and a trace of silver over 10 centimeters.

Henderson Vein

The Henderson Vein was discovered by bulldozer trenching in August of 1980. Banded quartz-scorodite with arsenopyrite vein material occurs in trenches GTR-48, GTR-49 and GTR-50 low on the crest of the ridge west of Stewart Pup. The vein is faulted and broken into several sections but generally trends in an east-west direction. Ten chip samples were collected along the vein which varies between 20 centimeters and 75 centimeters in width along strike. Gold assays range from 0.316 ounces per ton to 1.744 ounces per ton. Silver values of 0.52 ounces per ton to 5.51 ounces per ton were obtained.

Blue Lead Shaft Vein

The Blue Lead Shaft Vein occurs in the shaft on the ridge of the old Blue Lead claim. The shaft is located 80 meters south of the granodiorite-metasediment contact 25 meters east of L36+550E at 10+800N. McLean (1914) reported that the shaft was 25 feet (8.2 meters) deep and that the vein was 2 feet (66 centimeters) wide. A grab sample from the dump beside the shaft collected in 1979 assayed 0.472 ounces of gold per ton and 2.17 ounces of silver per ton. The same dump was grab sampled again in 1980 and the material collected assayed 0.402 ounces of gold per ton and 1.32 ounces of silver per ton. Southwest of the shaft the vein occurs in trench GTR-30. Here the vein is 15 centimeters wide and appears to strike 085° and dips 60° to the north. A sample of this vein assayed 0.336 ounces of gold per ton and 0.25 ounces of silver per ton.

Blue Vein

The Blue Vein crops out in trench GTR-31 approximately 70 meters northwest of the Blue Lead Shaft. A pale green scorodite and crushed quartz vein strikes 095° azimuth and dips 80° to the north. The vein is cut off to the west by a fault and appears to terminate against granodiorite. To the east the vein continues for approximately 10 meters before terminating against a fault. The vein is varied in width between 30 and 60 centimeters. In trench GTR-31 a chip sample across 50 centimeters assayed 0.662 ounces of gold per ton and 0.64 ounces of silver per ton.

Stewart Vein

Low on the west side of Stewart Gulch an adit dump 3 meters east of L36+800E at 11+075N contains blocks of banded limonitic quartz-scorodite vein rock. The adit is caved but appears to trend at a 222° azimuth into the hillside. Float material from the dump indicates that the vein is at least 40 centimeters wide, a sample of this material assayed 0.068 ounces of gold per ton and 0.06 ounces of silver per ton. Permafrost on the slope north of the portal prevented bulldozer access to this vein.

No. 15 Vein

The No. 15 Vein occurs on the west side of Stewart Gulch in trench GTR-15, 45 meters from the south end. The vein is the largest of sixteen small veins discovered in trench GTR-15 during 1980. The veins occur over a distance of 75 meters and range to 10 centimeters wide. A sample of banded quartz-scorodite with arsenopyrite weathered to hematitic limonite contained 0.064 ounces of gold per ton and 0.04 ounces of silver per ton. Several of the veins in this zone show potential for attaining greater widths along strike.

The Cabin Vein

The Cabin Vein occurs on the east side of Stewart Gulch at L37+325E and 11+200N. The vein is exposed in trenches GTR-4, GTR-20 and in the Beaver Adit. On surface, the vein has been traced over 80 meters. Widths of the banded quartz-scorodite-arsenopyrite vein range between 20 and 50 centimeters. Extensive excavator trenching has been conducted on the vein in 5 separate holes and a total volume of 1,622 cubic yards was removed. In the excavator trenches the vein ranges in width between 4 and 50 centimeters. In trench GET-4 the vein has been traced continuously for 41 meters and the hangingwall has been removed to expose the vein to a depth greater than 6 meters below surface. A total of 98 samples were collected from this trench and values range from 0.005 ounces of gold per ton with 1.89 ounces of silver per ton over 30 centimeters to 2.902 ounces of gold per ton and 5.72 ounces of silver per ton over 40 centimeters.

The Cabin Vein has been explored by underground drifting in the Beaver adit. The vein workings are described in detail in the 1979 report. No further underground work was performed during 1980.

Klippert Vein

The Klippert Vein was discovered by bulldozer trenching in trenches GTR-8 and GTR-9 and was later traced in excavator trenches GET-8N, GET-9E2, GET-9E, GET-9 and GET-9W. The vein occurs over a strike length of 32 meters and is up to 40 centimeters wide. It occurs in a limonitic gouge zone and consists of quartz-scorodite-arsenopyrite with a minor amount of siderite and galena. Twenty-three samples were collected and assayed for gold and silver and of these, 9 were assayed for lead and 4 for zinc. Gold values range from 0.010 ounces per ton to 0.182 ounces per ton and respective silver values from 0.03 ounces per ton to 0.76 ounces per ton. Representative samples gave lead and zinc values which ranged up to 0.78% Pb and 1.49% Zn. One sample of siderite and galena was assayed and contained 14.50 ounces of silver per ton, 0.020 ounces of gold per ton and 32.9% lead.

No. 45 Vein

The No. 45 Vein occurs in trench GTR-45 at L37+325E and 11+019N. The vein is 10 centimeters wide and consists of limonitic quartz and scorodite with minor arsenopyrite. A sample of this material assayed 1.318 ounces of gold per ton and 3.70 ounces of silver per ton.

No. 5 Structure

The No. 5 Structure is a structurally complex zone measuring up to 12 meters wide in which at least 3 veins occur. It is exposed discontinuously over 60 meters along a 075° azimuth trend and occurs in bulldozer and excavator trenches GTR-7W, E, 5W, 5, 16W, 16 and GTR-17 and GET-5W, 5, 16 and GET-17. The zone is dissected into several offset sections by north and northeast trending faults. In trench GTR-16, veins indicate fault offsets with right lateral and vertical displacement where the east side is down-dropped.

The largest vein structure in the zone occurs in trench GET-5. A deeply weathered quartz-scorodite vein with minor siderite, jamesonite and arsenopyrite; more than a meter wide is exposed. The vein has been trenched to more than 10 meters below surface but only strongly weathered sample material was recovered. Although strongly weathered gold values from this material were encouraging and ranged 0.302 ounces per ton to 0.524 ounces per ton. Silver values in this material were abnormally high for this structure and ranged from 2.03 ounces per ton to 10.18 ounces per ton.

A total of 38 samples were collected from the No. 5 Structure for assay. Gold assay values ranged from 0.054 ounces per ton to 0.970 ounces per ton and averaged 0.264 ounces per ton. Except for the occurrences of jamesonite in a few veins, and the material in GET-5, the silver content of the veins is generally low and averages less than half an ounce per ton. The average width of the samples collected is 27 centimeters.

The No. 5 Structure occurs in one of the areas of deep-weathering encountered on the property. Although the structure appears to be complexly developed at surface it is possible that it will be less deformed in competent host rocks.

No. 17 West Vein

The No. 17 West Vein was discovered while exploring for a right lateral offset extension of the No. 5 Structure and may well be an extension of the No. 5 Structure. The No. 17 West Vein occurs in excavator trenches GET-17W, 43 and 44 and may extend into trenches GTR-17E and 24. Quartz and scorodite with arsenopyrite occurs in irregular fractures in a zone up to a meter wide which generally trends 085° azimuth. Gold assays range from 0.086 ounces per ton to 0.252 ounces per ton and average 0.166 ounces of gold per ton over 9 centimeters. Silver values range from 0.05 ounces per ton to 0.63 ounces per ton and average 0.28 ounces per ton over 9 centimeters. The structure is unexplored to the west and appears to trend beneath the Aurum Adit access road.

No. 24 Vein

The No. 24 Vein occurs in trench GTR-24 approximately 50 meters west of the Aurum Portal. The structure consists of two parallel veins which strike 071° azimuth and are

exposed in the trench for over 28 meters. The northerly vein is the most prominent and ranges from 8 to 30 centimeters in width. The second vein is parallel to the first, one meter to the south, and is a 1 to 5 centimeter wide vein. Both veins consist of banded quartz-scorodite and arsenopyrite and some sections contain massive arsenopyrite. Gold assay values from the northly vein range from 0.076 to 1.042 ounces per ton and average 0.207 ounces per ton over an average width of 15 centimeters. Silver values are low and range from 0.02 to 0.30 ounces per ton. One sample from the southerly vein assayed 1.006 ounces of gold per ton and 0.05 ounces of silver per ton. The vein may be related to the No. 17 West Vein.

No. 23 Vein

The No. 23 Vein is located 10 meters north of the south end of trench GTR-23. The vein strikes approximately parallel to the Catto Vein and lies 20 meters to the north. The mineralization consists of banded quartz-scorodite-arsenopyrite and is 12 centimeters wide. A sample across this width assayed 0.406 ounces of gold per ton and 0.03 ounces of silver per ton. Trenching to the west in trench GTR-25 did not locate the vein but it has not been tested for an eastern extension.

Victoria Vein

The Victoria and Aurum No. 2 veins comprise the most significant structure east of Haggart Creek explored to date. The veins occur in the Aurum Adit and can be projected to surface trenches GET-3, GET-23E, GET-23 and GTR-23. The Victoria Vein, which is the most extensively developed vein, has been drifted on on the Aurum Adit for 74 meters. On surface the vein can be traced for 42 meters from trench GTR-23 to GET-3. Where exposed, the vein consists of banded green quartz-scorodite-arsenopyrite and ranges in width from 9 centimeters to 60 centimeters.

On surface, 14 samples have been collected from the vein in the various trenches. The vein ranges in width from 5 to 45 centimeters and averages 19 centimeters. Gold assays from the surface range from 0.209 ounces per ton to 3.560 ounces per ton and silver values ranged from 0.06 ounces per ton to 1.18 ounces per ton. The average grade of the material sampled was 0.981 ounces per ton of gold and 0.42 ounces per ton of silver.

A total of 86 samples were collected from the Victoria Vein in the Aurum Adit. Of the 35 vein samples collected, gold values range from 0.012 ounces per ton to 3.794 ounces per ton. Only samples collected during 1980 were assayed for silver and of these vein samples values range from 0.06 ounces per ton to 1.00 ounces per ton. In 1979 a 25 meter section of the vein from the end of the right drift was calculated to grade 0.335 ounces per ton gold over a width of one meter using 9 vein samples. For the same section a grade of 0.156 ounces per ton of gold, over one meter, was calculated using 13 composite samples. De-icing of the left drift and subsequent sampling in 1980 has led to a computed grade value of 0.743 ounces per ton gold (25.47 grams per ton) for an average width of 28 centimeters along 74 meters of drift. This calculation is based on 35 samples. A similar calculation was conducted for the 24 silver assays collected over 49 meters of de-iced drift. A grade value of 0.39 ounces per ton of silver (13.37 grams per ton) was obtained.

Aurum No. 2 Vein

The Aurum No. 2 Vein is the second major structure encountered in the Aurum crosscut and occurs for 8 meters in the Dog Leg Drift. It is also exposed in trenches GET-25, 23, 23E and 3. In the drift the structure consists of two veins each 10 centimeters wide. From the crosscut where they are separated by 1.1 meters, the veins converge to within 20 centimeters on the face. On surface the structure is much stronger and ranges to 60 centimeters in width in trench GET-3. In trench GET-3 a 60 centimeter wide portion of the vein consists of 20 centimeters of quartz-scorodite-arsenopyrite material adjacent to both the footwall and hangingwall and a 20 centimeter core of limonite-siderite-jamesonite vein material.

Twenty-two vein and composite samples were collected from the Dog Leg Drift in 1979 and assayed for gold. Vein samples ranged from 0.035 ounces of gold per ton to 3.540 ounces of gold per ton and an average grade of 0.291 ounces per ton was calculated.

Twenty-three samples were collected from surface exposures of the vein. Gold assay values range from 0.044 to 2.844 ounces per ton and averaged 0.421 ounces per ton over an average width of 27 centimeters. Silver values were generally low except where concentrations of jamesonite were encountered. Values ranged from 0.17 to 20.78 ounces of silver per ton.

The Aurum No. 2 Vein also projects toward the Green Vein Adit portal and it may in fact be the same vein. The Green Vein Adit portal is 56.8 meters lower than the Aurum Adit portal.

Catto Vein

The Catto Vein is exposed in trench GTR-2 (GET-2) which is on the ridge between Olive and Stewart Gulches above the Aurum Adit. Mineralization has been traced in this trench for over 35 meters along a strike of 090° azimuth. The northern vein section is 40 centimeters wide and consists of crushed quartz, scorodite and arsenopyrite, crosscut by a network of pale green chalcedony veinlets. The southern vein structure occurs as an offshoot of the northern structure and is up to 12 centimeters wide. It consists of quartz, siderite, jamesonite and limonite in a vein up to 12 centimeters wide. The zone containing these two structures occur primarily in schistose metasediments but cuts granodiorite in the easternmost 6 meters of the trench. To the west in trench GTR-6 the vein splays into a few scattered quartz-scorodite fracture fillings up to a centimeter wide. To the east the vein splays into 5 or more fracture fillings and trends into the granodiorite for an unknown distance.

Fourteen one meter channel samples were collected across the vein in 1979. The assay values obtained varied from 0.106 to 0.746 ounces of gold per ton across one meter. Follow up excavator trenching and sampling was conducted during 1980 along trench GTR-2. A total of 35 samples were collected and assayed for gold and silver. One of these samples was assayed for lead, antimony and zinc. Gold values from the vein samples ranged from 0.040 to 5.568 ounces per ton. An average grade of 0.885 ounces of gold per ton and 0.56 ounces of silver per ton was obtained from 27 samples from the main vein structure over an average width of 13 centimeters. A sample of siderite-jamesonite assayed 4.22 ounces of silver per ton, 0.080 ounces of gold per ton, 13.50% lead, 7.17% antimony and 1.08% zinc over 12 centimeters.

Green Vein

The Green Vein occurs in an adit on the west side of Olive Gulch about 550 meters upstream from the point at which the Olive Creek crosses the main access road to the Tungsten-Skarn Zone area. A grab sample for the mine dump material consisted of massive arsenopyrite and pyrite with minor

jamesonite in a quartz boxwork and assayed 0.178 ounces of gold per ton and 1.02 ounces of silver per ton. The vein has not been examined during this program but was explored extensively by underground drifting prior to 1914. McLean (1914) states that a 10 foot (3 meter) adit was driven to the vein and then a 180 foot (54.9 meter) drift was driven along it. At the end of the drift a 27 foot (8.2 meter) raise was driven. Two small crosscuts of 20 feet (6.1 meters) and 30 feet (9.1 meters) have been driven off the vein adit. The vein is of varied thickness and ranges from 3 inches (8 centimeters) to 3 feet (91 centimeters).

Olive Vein

The Olive Vein occurs on the east side of Olive Gulch about 600 meters upstream from the junction of Olive Creek and the main access road. Quartz-scorodite-arsenopyrite vein material which occurs in a dump near the top of the gulch is presumed to be from the Olive Vein. A grab sample of this material assayed 1.650 ounces of gold per ton and 2.45 ounces of silver per ton. An adit located about halfway down the side of the gulch is reported by McLean (1914) to include 8 feet (2.4 meters) of adit and 60 feet (18.3 meters) of drift. The vein at the end of the drift is reported to be 20 inches (51 centimeters) wide.

Shamrock Vein

Quartz-scorodite with massive arsenopyrite and pyrite occurs in a dump 15 meters north of Dublin Creek upstream from the confluence of Carscallen Pup. The dump is adjacent to the portal of a caved adit driven on the Shamrock Vein. A grab sample of the mine dump material indicated that the vein is at least 10 centimeters wide and assayed 0.926 ounces of gold per ton and 2.58 ounces of silver per ton. The vein occurs within a shear zone in granodiorite and is associated with a limonitic bleached alteration envelope.

Carscallen Vein

The Carscallen Vein occurs approximately 50 meters northwest of the Shamrock Adit along cutline L38+650E. The adit is now caved but dump material beside the portal indicates a strong vein structure. A grab sample of the material assayed 0.768 ounces of gold per ton and 1.24 ounces of silver per ton. Granodiorite is the host rock and the vein occurs in a strongly altered shear zone.

Tin Dome Occurrence

Vein float material consisting of quartz-scorodite with minor arsenopyrite occurs on the north side of Tin Dome, north of Dublin Gulch. A grab sample assayed 0.228 ounces of gold per ton, 2.40 ounces of silver per ton and contained less than 0.01% tin. The presence of this vein material demonstrates that gold-bearing quartz veins occur in a zone at least two kilometers wide north of the Dublin Gulch stock.

CB No. 1 Vein

In trench PGT-1 on the north side of the West Potato Hill a quartz-scorodite-arsenopyrite vein is exposed for 33 meters. The structure known as the CB No. 1 Vein was first discovered early this century and was explored by a series of hand trenches and by an adit.

The portal is now caved but the dump lying to the east of trench PGT-1 was examined. In trench PGT-1 quartz-scorodite-arsenopyrite vein material occurs in irregular zones of various lengths and widths. Individual pods of mineralization ranging to one meter wide occur in a 2.5 meter wide vein structure.

A total of 37 samples were collected from the CB No. 1 structure including vein, footwall and hangingwall samples. Ten samples of vein material indicate an average width of 58 centimeters. Gold assays ranged from 0.078 to 0.748 ounces per ton and averaged 0.122 ounces per ton. Silver values ranged from 0.12 to 6.05 ounces per ton and average 1.55 ounces per ton. The remaining 27 samples carry various amounts of gold and silver and indicate that less than 0.100 ounces of gold per ton is present in the altered wall rocks beside the vein.

CB No. 2 Vein

The CB No. 2 Vein occurs in trench PGT-2 approximately 325 meters west of the CB No. 1 Vein on the north side of the West Potato Hill. The showing consists of a 5 centimeter quartz-scorodite vein which crosscuts a section of biotite-quartzite schist and subskarn. An adit northeast of the occurrence may have been driven on the vein or on a related structure. A grab sample of vein material assayed 0.294 ounces of gold per ton and 0.61 ounces of silver per ton.

Kuzmiski Occurrence

The Kuzmiski Occurrence consists of a series of large mineralized float boulders which occur in Dublin Creek 100 meters upstream from the Holoway placer workings. Boulders greater than one meter across host quartz-scorodite-arsenopyrite veins up to 50 centimeters wide. The material appears to be locally derived and indicates the presence of a large, significant vein in the area.

JM Occurrences

Three quartz-scorodite-arsenopyrite showings are located on the main Potato Hills' access road south of Dublin Creek, 100 meters upstream from the confluence of Olive and Dublin Creeks. Bulldozer work on the road uncovered the veins late in the 1980 field season and no follow-up work was conducted. The veins are of varied width and range up to 10 centimeters wide.

Road Occurrences

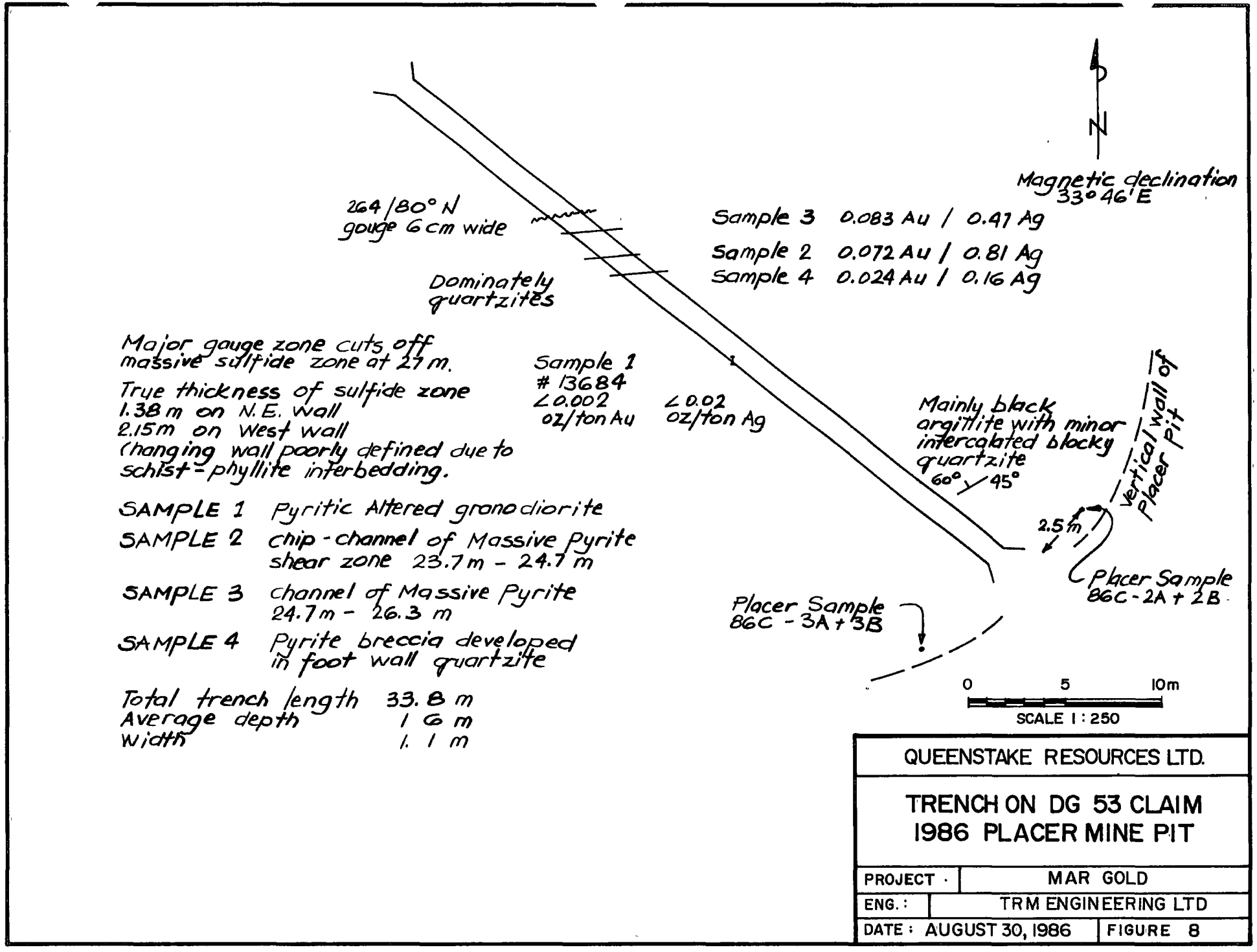
Several quartz-scorodite-arsenopyrite occurrences are located on the Potato Hills' access road, 200 meters south of the Olive Vein showing. The veins were discovered during routine bulldozer road maintenance and no follow-up trenching has been conducted.

1986 Placer Mining Pit

Placer mining in 1986 removed approximately 80,000 cubic yards of overburden and auriferous gravels at the mouth of Suttle Creek on DG53 claim over a vertical distance of about 70 meters. Bedrock stripping revealed a significant massive pyrite zone (Figure 8), occupying a major shear zone. Channel samples through the zone averaged 0.078 oz/ton gold.

1986 Diamond Drilling

The results of the 1986 diamond drill program are shown on Figures 6 and 7 (in pocket). Drill logs are contained in Appendix VII.


N
Magnetic declination
33° 46' E
264/80° N
gouge 6 cm wide
Dominately
quartzites
Sample 3 0.083 Au / 0.47 Ag
Sample 2 0.072 Au / 0.81 Ag
Sample 4 0.024 Au / 0.16 Ag
Major gauge zone cuts off
massive sulfide zone at 27 m.
True thickness of sulfide zone
1.38 m on N.E. wall
2.15m on West wall
(hanging wall poorly defined due to
schist-phyllite interbedding.
Sample 1
13684
∠0.002
oz/ton Au
∠0.02
oz/ton Ag
Mainly black
argillite with minor
intercalated blocky
quartzite
60° / 45°
Vertical wall of
Placer Pit
2.5 m
Placer Sample
86C-2A + 2B
Placer Sample
86C-3A + 3B
SAMPLE 1 Pyritic Altered granodiorite
SAMPLE 2 chip-channel of Massive Pyrite
shear zone 23.7 m - 24.7 m
SAMPLE 3 channel of Massive Pyrite
24.7 m - 26.3 m
SAMPLE 4 Pyrite breccia developed
in foot wall quartzite
Total trench length 33.8 m
Average depth 1.6 m
Width 1.1 m
0 5 10m
SCALE 1 : 250
QUEENSTAKE RESOURCES LTD.
TRENCH ON DG 53 CLAIM
1986 PLACER MINE PIT
PROJECT · MAR GOLD
ENG.: TRM ENGINEERING LTD
DATE: AUGUST 30, 1986
FIGURE 8

Gold values in the Victoria Vein system are uniformly low in all drill holes. This suggests surface enrichment of gold for the Victoria Vein. A new vein, perhaps correlative with the surface No. 24 vein, was found to contain abundant sulphides over relatively large widths and has gold values of 0.2 oz/ton Au or less of < 1 meter.

The down dip extension of the Catto Vein "offshoot" in hole 86-4 assayed 1.300 oz/ton gold, although 12 meters up dip in hole 86-3 the vein assayed 0.081 oz/ton Au. Similarly, the probable down dip extension of the No. 23 vein assayed 2.177 oz/ton gold in hole 86-4 over 0.5 meters but 22 meters up dip it assayed 0.301 oz/ton gold over 0.5 meters.

METALLURGY

Only the most preliminary metallurgical tests have been completed to date. A 200 pound representative sample consisting of material from several veins was submitted to Bacon, Donaldson and Associates Ltd. in 1980. Three tests were conducted to measure gold recovery by simple gravity separation (jig concentration), sulphide flotation and standard cyanidation (Vrengde 1981 in Bartlett 1981).

The head sample taken of the composite used for testing gave the following assays:

0.654	oz/ton Au
2.92	oz/ton Ag
0.024	% Cu
2.71	% Pb
0.039	% Zn
1.12	% Sb
8.83	% As

Calculated head assays from individual test results indicate a somewhat higher gold content (1.31 and 1.55 oz/ton Au). The results are shown in Table 3.

Table 3

Metallurgical Results
Dublin Gulch Gold-Quartz Veins

Test #	Type	% Recovery	Concentrate Grade oz/ton Au	Remarks
Test 1	gravity concentration	22.96	61.62	46.1% -200 mesh
Test 3	bulk flotation	63.3	11.78% As 17.90% Sb 18.06 oz/ton Au	coarse grind 53.4% -200 mesh
Test 2	standard	82.3	72 hour leach	68% -200 mesh

Only the most preliminary conclusions can be drawn from these tests as would be expected from an ore with several diverse sulfide phases. Cyanidation will require pre-conditioning (add lime to lower pH) to reduce cyanide consumption and enhance dissolution kinetics. The bulk flotation test used a very coarse grind and probably the liberated coarse gold was passed directly into the rougher tailings.

Recommendations by Reid (1985) are:

A) size of sample required 60-80 kg;

B) grinding test - to determine mesh of grind for liberation of Au;

C) gravity jig work - recovery of coarse gold; use flotation to scavenge tailing from jig;

D) flotation testwork;

E) cyanidation of flotation concentrates;

F) cyanidation of ground ore - base recovery information;

G) preliminary test for feasibility of arseno-process;

H) mineralogical investigation of metallurgical products to assist in improving recoveries.

These tests should only be undertaken if a future work program indicates substantial tonnage and higher grade gold values than the 1986 drill results.

GEOCHEMISTRY

Soil sampling was conducted over the entire area from Haggart Creek to Potato Hills in 1978 and 1979. Samples were taken at 25 and 50 meter spacings on lines 150 meters apart and analyzed for gold and silver. The known veins give strongly anomalous response, especially Stewart-Catto Area and east to the Shamrock vein.

Apparently little follow-up was undertaken on these soil results during the 1980 trenching. Several anomalous areas should be checked. These are:

1. northwest side of Tin Dome, samples up to 320 ppb Au;
2. very large complex anomaly south (uphill) of Eagle vein (this area apparently is largley unexplored);
3. northwest of Eagle vein near Suttle Pup;
4. central 1979 Ray Gulch grid extension.

The area south of Eagle vein should be trenched in detail.

CONCLUSIONS

Numerous arsenopyrite-quartz veins have been found in the Dublin Gulch Area within a fissure system 12 km long and 3 km wide. They are the source of rich placer deposits in Dublin Gulch and Haggart Creek. The veins occur mainly near the northern, steeply dipping contact of a Cretaceous granodiorite stock. Host rocks commonly are highly deformed micaceous quartzites with minor biotite schist. The quartz veins, in some cases, continue into the granodiorite without apparent change or have developed solely within the intrusive. Over fifty veins and fissure

systems have been found by extensive surface trenching and shallow underground workings. Individual veins vary from a few centimeters to 1.5 meters but sulfide-rich veins greater than 0.6 meters are rare.

At surface, the veins are composed of arsenopyrite, massive scorodite, quartz and minor pyrite and jamesonite. Deep weathering has occurred throughout the area. Scorodite alteration was noted 25 meters below surface in drillhole QRMG-83-003. Assays of surface vein material and specimens collected from the underground workings gave highly variable results but generally range around 0.8-1.0 oz/ton gold for the higher-grade veins. Unfortunately, not enough attention was given to the problem of surface enrichment and general erratic gold values inherent in gold-sulfide systems. This problem is discussed by Bartlett but the only specific action taken was to collect trench samples from greater depth in so-called "fresh rock". Additional polished section work should have been completed on a systematic basis at that time. Results from the 1986 drilling program indicates that the primary gold grades at depth (below the zone of weathering) are in the range of 0.2 to 0.3 oz/ton gold or less except in the Catto and No. 23 veins near the granodiorite contact. The Catto Vein in Hole 86-4 assayed 1.300 oz/ton Au over 0.44 m and the No. 23 vein assayed 0.2177 oz/ton gold over 0.5 m.

The drilling has also shown that the continuity of structure and mineralization is very strong both along strike and down-dip. The distribution of gold is very irregular. There is wider vein development within the "Mylonitic units" than in the micaceous quartzite or biotite-quartz schist.

Vein mineralogy is variable with depth. Arsenopyrite-dominate assemblages with minor jamesonite grade into pyrite-dominate zones with associated sphalerite and jamesonite.

RECOMMENDATIONS

The degree of surface enrichment of gold values in the Stewart-Catto area suggests that many of the surface samplings on other vein systems along the belt may also be enriched. The role of increased gold content in the veins nearer the granodiorite pluton should be tested. Careful attention should be given to collecting large samples to minimze the effect of erratic gold distributions. The narrow width of the veins requires a relatively high gold content. The surface assays were in the required range of gold values to anticipate commercial production in the event of sufficient tonnage being outlined. The 1986 drill program suggests that the potential for defining considerable tonnage of mineralized material is good. However, the gold content is generally too low to consider mining at the presently known vein widths in the Victoria Vein. The degree of surface enrichment should be investigated in detail in the Cabin vein and other vein systems. This can be done by carefully collecting specimens from each vein system and systematically assess the amount of weathering and scorodite content in polished section. The samples from the 1980 trenching program have been saved, both in Vancouver and at Dublin Gulch. A polished section prepared from the reject portion of the assay sample would suffice for this study.

The large soil anomaly above (south) of Eagle vein should be investigated in detail by trenching.

A preliminary 1987 exploration program is outlined on the next page

Proposed 1987 Exploration Budget
Mar Gold Project

Program: Investigate South Vein, Trench Eagle Area, Petrography

1,200 feet NQ diamond drilling at $45 per foot (all inclusive)	$ 54,000
Trenching: South of Eagle Vein	
Bulldozer with 100 hours @ $150 per hour	15,000
Ripper	
Road building, 30 hours @ $150 per hour	4,500
Geological Mapping	5,000
Petrography	
Sample acquisition from reject portion of 1980 trenching program (either Vancouver warehouse or Bema Camp trailer)	500
Polish section preparation, 75 samples @ $15	1,125
Section Examination and Report	3,000
Contingencies - 15%	12,469
TOTAL	$ 95,594

(Mining surface veins on a small scale - extra)

Respectfully submitted,

J.T. Shearer, M.Sc., FGAC.

REFERENCES

Bartlett, S.C. 1980
Geology of the Dublin Gulch Gold-Quartz Vein-Fissure System, Private Report for Canada Tungsten Mining Corp. by Bema Industries Ltd.

Bartlett, S.C. 1981
Summary of the 1980 Exploration Program, Dublin Gulch Gold-Quartz Vein-Fissure System, Private Report for Canada Tungsten Mining Corp. by Bema Industries Ltd.

Bostock, H.S. 1933
The Mining Industry of Yukon, 1932; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284, p. 632.

Bostock, H.S. 1943
The Mining Industry of Yukon, 1933; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284, p. 644.

Bostock, H.S. 1957
Yukon Territory, Selected Field Reports of the Geol. Surv. Can., 1898 to 1933; Geol. Surv. Can. Mem. 284.

Boyle, R.W. 1965
Keno Hill - Galena Hill Lead-Zinc-Silver Deposits, Yukon Territory; Geol. Surv. Can., Bull. III.

Butler, S. 1981
Mineralographic Study of the Sulphide Minerals of the Gold Veins, Dublin Gulch, U.B.C. Geology 428 report, December 21, 1981.

Cairnes, D.D. 1916
Mayo Area, Geol. Surv. Can., Sum. Report, 1915; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284.

Cairnes, D.D. 1917
Investigations and Mapping in Yukon Territory, 1916; Geol. Surv. Can., Sum. Report, 1916; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284.

Cockfield, W.E. 1919
Mayo Area; Geol. Surv. Can., Sum. Report, 1918; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284.

Findlay, D.C. 1967
The Mineral Industry of Yukon Territory and Southwestern District of Mackenzie, 1966; Geol. Surv. Can., Paper 67-40.

Findlay, D.C. 1967
The Mineral Industry of Yukon Territory and Southwestern District of Mackenzie, 1968; Geol. Surv. Can., Paper 69-55.

Green, L.H. 1971
Geology of Mayo Lake, Scougale Creek and McQueston Lake Map Areas, Yukon Territory; Geol. Surv. Can., Mem. 357.

Green, L.H. 1972
Geology of Nash Creek, Larsen Creek and Dawson Map Areas, Yukon Territory - Operation Ogilvie; Geol. Surv. Can., Mem. 364.

Green, L.H. and Godwin, C.I. 1963
Mineral Industry of Yukon Territory and Southwestern District of Mackenzie, 1962; Geol. Surv. Can., Paper 63-38.

Green, L.H. and Roddick, J.A. 1962
Dawson, Larsen Creek and Nash Creek Map Areas, Yukon Territory; Geol. Surv. Can., Paper 62-7.

Keele, J. 1905
The Duncan Creek Mining District; Geol. Surv. Can., Sum. Report, 1904; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284.

Keele, J. 1906
The Upper Stewart River Region, Yukon; Geol. Surv. Can., Ann. Report, Vol. XVI, 1904; in Yukon Territory (compiled by Bostock, 1957); Geol. Surv. Can., Mem. 284.

McConnell, R.G. 1905
Report on the Klondike Gold Fields; Geol. Surv. Can., Ann. Report, Vol. XIV, 1901; Geol. Surv. Can., Mem. 284.

McTaggart, K.C. 1960
The Geology of Keno and Galena Hills, Yukon Territory; Geol. Surv. Can., Bull. 58.

Orssich, C.N. 1981
Geology of the Dublin Gulch Tungsten Skarn Deposits, Yukon Territory, Unpublished B.Sc. Thesis.

Payne, J. 1982
Vancouver Petrographics 2 page report on one sample for Bema Industries Ltd., May 1982.

Reid, J.B. 1985
Recommended Metallurgical Testwork for Dublin Gulch Ore, Amax of Canada Ltd. Inter-Office Memorandum, May 8, 1985.

Steffler, J.M. 1980
Geology, K-Ar and Rb-Sr Geochronology and Chemistry of the Scheelite Dome Tungsten-Bearing Skarn Property, Unpublished M.Sc. Thesis.

Tempelman-Kluit, D.J. 1964
Geology of the Haggart Creek-Dublin Gulch Area, Mayo District, Yukon Territory, Unpublished BMA.Sc. Thesis, University of British Columbia, March 1964.

Tempelman-Kluit, D.J. 1970
Stratigraphy and Structure of the "Keno Hill Quartzite" in Tombstone River-Upper Klondike River Map Areas, Yukon Territory; Geol. Surv. Can., Bull. 180.

Wheeler, J.O. 1954
A Geological Reconnaissance of the Northern Selwyn Mountains Region, Yukon and Northwest Territories; Geol. Surv. Can., Paper 53-7.

72margld

APPENDIX I

STATEMENT OF QUALIFICATIONS

J.T. Shearer, M.Sc., FGAC
Mar Gold Project, 1986

STATEMENT OF QUALIFICATIONS

I, Johan T. Shearer, of the City of Port Coquitlam, in the Province of British Columbia, do hereby certify:

1. I graduated in Honours Geology (B.Sc. 1973) from the University of British Columbia and the University of London, Imperial College (M.Sc. 1977).

2. I have practiced my profession as an Exploration Geologist continuously since graduation and have been employed by such mining companies as McIntyre Mines Ltd., J.C. Stephen Explorations Ltd. and Carolin Mines Ltd. I am presently employed by TRM Engineering Ltd.

3. I am a fellow of the Geological Association of Canada. I am also a member of the Canadian Institute of Mining and Metallurgy, the Geological Society of London and the Mineralogical Association of Canada.

4. I do not have any interest in the Queenstake controlled claims in the Dublin Gulch area or in the securities of Queenstake Resources Ltd. nor do I expect to receive any such interest in the future.

5. I have personally conducted detail geological mapping and logged all diamond core on the Mar Gold Project at Dublin Gulch, Yukon, between August 9 and August 29, 1986. This report is an interpretation of the data obtained.

J. Shearer

J.T. Shearer, M.Sc., FGAC.

Vancouver, B.C.
September 18, 1986

APPENDIX II

STATEMENT OF FIELD COSTS

MAR GOLD PROJECT, 1986

Fieldwork completed between
August 9 and August 29, 1986

QUEENSTAKE RESOURCES LTD.
INTERIM DIAMOND DRILLING COSTS
DUBLIN GULCH MAR GOLD PROJECT
Cumulative Totals up to August 1986

* To be charged later by Canada Tungsten Corp.

1.	Consulting (TRM) Wages (Daily Fee)		
	August 8-13 JS & LS	$	1,860.00
	August 14-29 JS & LS		4,960.00
	Sept., 3 days report preparation @ $230		690.00
2.	Truck, 4 x 4 with canopy		
	August 8-29 - 22 days @ $40		880.00
3.*	Bulldozer		
	Initial 19 hrs @ $150 per hr		(2,850.00)
	First hole 7 hrs @ $150 per hr		(1,050.00)
	Demob & moves 13 hrs @ $150 per hr		(1,950.00)
	NOU Can Tung, 5.5 hrs @ $120 per hr		660.00
4.	Drill Mobilization, August 14 field cost		
	34 man-hours @ $29		986.00
5.	Contract Diamond Drilling,		
	2,270 ft. @ $19.20		43,584.00
6.*	Food and Camp, August 9-25,		
	14 days x 4 = 48, 21 x 2 = 42		
	97 man-days @ $50		4,850.00
7.	Assays - 436 x $15.25 approx.		6,649.00
	bags for samples - 500 @ $0.06		130.00
8.	Standby - None anticipated		0.00
9.	Field Costs, moves > 10 man-hours,		
	reaming broken ground, etc.		551.00
10.	Casing @ $22 per foot, 4 holes, 34 feet		680.00
11.	Acid Tests, 1 free & 1 paid per hole		
	@ field cost (1 hour each)		232.00
12.*	Gasoline, 293.7 litres @ $0.532/litre		156.41
13.*	Diesel (for drill), 2864 litres @ $0.5020/l		1,437.73
14.	Drill Demobilization, 30 man-hours @ $29		870.00
15.*	Core Boxes, 130 x $8.50		1,130.50
16.	Daily travelling time, no charge anticipated		0.00
17.	Materials Consumed,		
	4 casing shoes, casing 400		2,532.88
	GS 550 8.5 pails @ $120		1,020.00
	Propane		276.00
18.	Freight, 1.65 per kg Trans North		1,000.00
19.	JS Travel (in lieu of mob/demob)		450.00
20.	Reproduction, 6 copies of report		120.00
21.	Gasoline, Whitehorse-Dublin return		
	(with receipts)		150.00
22.	Miscellaneous, Telephone, etc. (approx.)		97.00
23.	All-Terrain vehicle, 325 + 65 day		715.00
24.	Can Tung hours, 55 hrs @ $25/hour		1,375.00
25.	Underhill surveying, 2 hrs @ $100/hour		200.00
	Interim Sub-Total	$	78,242.44

26. Trenching (on bedrock in Placer Pit) - Extra approximately $400 plus bedrock stripping.

APPENDIX III

LIST OF PERSONNEL

MAR GOLD PROJECT, 1986
Dublin Gulch, Mayo Area, Yukon

Fieldwork completed between
August 9 and August 29, 1986

APPENDIX III

LIST OF PERSONNEL, MAR GOLD PROJECT

Name	Occupation	Address	Dates Worked on Project
TRM ENGINEERING LTD.			
J.T. Shearer	Geologist	3832 St. Thomas St. Port Coquitlam, B.C. V3B 2Z1	August 8-29, 1986 Sept. 5, 12, 15, 1986
L. Shearer	Core Splitter/ Assistant	3832 St. Thomas St. Port Coquitlam, B.C. V3B 2Z1	August 8-29, 1986
CANADA TUNGSTEN MINING CORP.		P.O. Box 130 Mayo, Yukon YOB 1MO	
John Clarke	Loader/ Cat Operator		August 21, 28, 1986
Bruce Goulx	Loader Operator		August 13
Ted Takacs	Bulldozer		August 10, 11, 14, 1986
Cindy Bunbury	Cook		August 9-29, 1986
E CARON DIAMOND DRILLING LTD.		7 Roundel Road Whitehorse, Yukon Y13 3H3	
Mitch McLelland	Driller/ foreman		August 13-28, 1986
Kelly Mac	Driller		August 13-28, 1986
Brian Scheffield	Helper		August 13-28, 1986
Vic Johnson	Helper		August 13-28, 1986

APPENDIX IV

DIAMOND DRILL CONTRACT

MAR GOLD PROJECT, 1986

with E. Caron Diamond Drilling Ltd.
7 Roundel Road
Whitehorse, Yukon
Y1A 3H3

MEMORANDUM OF AGREEMENT MADE THIS 21ST DAY OF July, 1986

BETWEEN: QUEENSTAKE RESOURCES LTD.
900-850 WEST HASTINGS ST.
VANCOUVER, B.C.
V6C 1E1

Hereinafter called "Company"

AND: E. CARON DIAMOND DRILLING LIMITED,
7 Roundel Road,
Whitehorse, Y.T.
Y1A 3H3

Hereinafter called "Contractor"

WITNESSETH: THAT;

WHEREAS, Company is the owner of or is otherwise well entitled to enter upon and explore claims located in the DUBLIN GULCH area of YUKON and,

WHEREAS, Contractor is able to provide the necessary drilling equipment and personnel required by the company.

NOW,THEREFORE, the parties hereto, each in consideration of the promises and agreements of the other, mutually agree as follows:

(1) WORK TO BE DONE: Contractor will diamond drill or cause to be diamond drilled not less than TWO THOUSAND (2,000) feet upon the claims at drill sites to be selected by the company, all subject to the companys right to terminate for non-compliance by the Contractor of the terms and conditions of this agreement.

(2) EQUIPMENT: Contractor agrees to drill all holes with a diesel-driven, skid-mounted drill complete with hydraulic mast, wireline hoist, diesel-driven pumps and all the necessary supplies and spare parts for the wireline drilling operation. The drill will be completely unitized to minimize moving time.

(3) LABOUR: The work under this agreement shall be continued by the Contractor on a twenty-four hour per day, seven days per week basis until completed.

(4) HOLE DIRECTION AND DEPTH: Contractor does not guarantee the direction of the hole beyond the collar nor guarantee to drill any hole to any specified depth. The Contractor will, however, expend every reasonable effort to complete all holes to

the satisfaction of the Company.

(5) HOLE DEPTH AND ANGLE: No drill hole shall be greater than a length of eight hundred (800) feet and dip of all holes shall be ~~fifty (50)~~ forty-five (45) degrees or steeper unless otherwise agreed by both parties. Measurements of all holes shall be made from top of the casing.

(6) SCHEDULE OF RATES: The Company agrees to pay the Contractor for footage drilled and other services performed as follows:

(i) CASING RATES: the price per foot for casing in overburden and/or bedrock shall be $22.00 /H.W. and $20.00 /N.W. from 0 to 50 feet in depth. If the cost to the Contractor of penetrating overburden and/or bedrock below such depth is greater than the above prices, then the Company shall pay the Contractor at Field Cost for casing in overburden and/or bedrock below such depth.

(ii) FOOTAGE RATES:

From bedrock to 800 feet $19.20 per ft. NQ
From bedrock to 800 feet $17.70 per ft. BQ

(7) FIELD COST: Any reference to Field Cost in this agreement shall be interpreted as follows:

Labour	$29.00 per man hour
Drill Rental	$20.00 per machine hour
Material Consumed	Cost plus 15%

(8) SPECIFIC OPERATIONS: Company agrees to pay for the following operations on a Field Cost basis:

(i) Cementing and wedging.

(ii) Drilling of permafrost, cave, broken ground and /or drilling and washing of sand.

(iii) Mud and/or calcium chloride if abnormal ground conditions require treatment with product. Products will be charged at cost plus 15%.

(iv) Removal of casing and associated materials upon completion of drilling on said set-up or left in hole at companys request.

(v) Reducing to smaller size hole if ground conditions necessitate such action.

(9) CAVITIES: In the event that permafrost, cavities, loose or caving materials or excessive water flows are encountered of a nature so as to prevent the successful completion of any hole, the Contractor does not, under such conditions, guarantee to drill any hole to any pre-determined depth and, in the event that it becomes necessary to abandon any hole, the Company agrees to pay the Contractor for such uncompleted holes at the rates herein specified for all footage completed. However, should the Company request that further work be carried out in the hole beyond this point, then the Contractor shall continue the work in the hole

Dublin Gulch placer camp

but such continuing work shall be at Field Cost rates.

(10) MOBILIZATION AND DEMOBILIZATION: Mobilization and demobilization of Contractor's drill, and equipment between Whitehorse and ~~property access road~~ will be at the Contractor's expense. Mobilization and demobilization of Contractor's crew between Whitehorse and the property will be at the Contractor's expense.

(11) MOVING IN AND OUT: Once at access road to property, the Company will be charged $29.00 per man hour for all standby, loading, unloading, and moving in to the property and setting up on the first hole. Once the job is completed, the Company will be charged $29.00 per man hour for all standby, loading, unloading, tearing down and moving out to the same point at the completion of the job. Truck usage during loading and unloading will be charged to the Company at forty-five (45) dollars per hour.

(12) MOVES: Moving time between drill holes in excess of ten (10) man hours will be charged to the Company at Field Cost. Drill rental will not be charged during moves.

(13) HELICOPTER AND/OR FIXED WING: If required, the Company will supply helicopter and/or fixed wing support for movement of drill and supplies, equipment and drill crew at no cost to the Contractor. Any delays waiting for helicopter and/or fixed wing will be charged to the Company at $29.00 per man hour.

(14) TRACTOR: The Company will supply a tractor for trenching, site preparation and for movement of drill and supplies at no cost to the Contractor.

(15) CAMP: The Company will provide room and board for the Contractor's crew at no cost to the Contractor.

(16) WATER SUPPLY: When water supply exceeds 2,000 feet in length and/or 300 feet in elevation, the Company agrees to pay for all installation of pumping equipment at $29.00 per man hour. The Contractor agrees to supply additional pipe, hose and pumps at no cost to the Company, with the exception of freight as outlined in Clause 21 of this agreement. Delays caused by lack of water and/or freezing conditions will be charged to the Company at Field Cost. Freezing water delays, if caused by the negligence of drill crew, will be at the Contractor's expense.

(17) TESTING: The Company will pay for all angle acid testing of holes at Field Cost after one free acid test per hole.

(18) CORE BOXES: Core boxes will be supplied by the Company at no cost to the Contractor.

(19) FUEL: The Company will provide diesel fuel and propane for drill, pumps, camp and tractor at no cost to the Contractor.

forty-five minutes

22½ minutes one way

(20) TRAVELLING TIME: When travelling time between drill and camp site exceeds ~~one half hour~~ per man per day, all time will be chargeable to the Company at $29.00 per man hour.

(21) FREIGHT AND TRANSPORTATION: Once drilling has commenced, any extra equipment such as rods, casing, fuel, mud, propane, cement and calcium chloride etc. will be at cost to the Company from Whitehorse to the property. Any additional trips needed for drill and pump repair will be at the Contractor's expense.

(22) STANDBY: Standby time caused by the Company will be chargeable at $29.00 per man hour. Standby time caused by machine breakdown or lack of drill supplies and equipment will be at Contractor's expense.

(23) MOBILE RADIO: If required, the Contractor will provide radio communication from the property at no cost to the Company.

(24) PERMITS: If a Land Use Permit, Timber Permit and/or Water Permit is required, then the Company shall be responsible for this.

(25) REPORTS: It is agreed that the foreman's daily reports will be signed by the Contractor's foreman and the Company's representative. It is further agreed that the cost items on the signed foreman's reports will be invoiced to and paid for by the Company.

(26) ACTS AND REGULATIONS: The Contractor agrees, at its own expense, to comply with all requirements of the Workman's Compensation Act, Unemployment Insurance Act, Hours of Work and Vacations With Pay Act and generally all federal and provincial/territorial acts and regulations applicable to the Contractor's operations.

(27) RIGHT TO VACATE: Upon completion of the work herein contracted to be performed, the Contractor shall have the right to remove, within a reasonable length of time, all temporary buildings and other fixtures including trade fixtures, machinery, equipment and appliances placed by the Contractor upon such lands.

(28) SECRECY: The Contractor will not give out any information regarding drill results nor permit any access to drill core to any individual other than the Company's representative, except upon specific permission of responsible officials of the Company.

(29) DISCIPLINE: The Contractor shall at all times enforce discipline and maintain good order among its employees, and shall not retain on the job any person not skilled in the work assigned him. Any employee of the Contractor who is objectionable or unsatisfactory to the Company shall be removed from the job and

replaced by an employee satisfactory to the Company.

(30) ECOLOGY AND SANITATION: During the course of the work the Contractor shall keep the site of any drilling and camp site area free from accumulation of waste materials, rubbish, or garbage. Upon completion of the work the Contractor shall remove all tools, scaffolding, surplus materials, rubbish and garbage and leave the area in a clean condition. The Contractor shall observe and comply with all federal and provincial/territorial laws, regulations and orders relating to sanitation in the bush and the prevention of forest fires.

(31) MUTUAL AGREEMENT: In complying with the obligations of this agreement the Contractor agrees to carry insurance of the types and in the minimum amounts as follows:

(i) Workman's Compensation insurance in accordance with the Workman's Compensation Ordinance of British Columbia/Yukon.

(ii) Comprehensive general liability insurance with limit of liability of $1,000,000 inclusive any one bodily injury occurrenceor property damage accident, and in aggreate where applicable.

(iii) Automotive liability insurance including owned, nonowned and hired automotive equipment, with limit of liability of $1,000,000 (owned automotive equipment) and $500,000 (nonowned and hired automotive equipment) inclusive any one bodily injury occurrence or property damage accident.

All such insurance shall be carried in a company or companies acceptable to the Company and shall be maintained in full force and effect during the term of this agreement, and shall not be cancelled, altered or amended without ten days prior notice in writing having first been furnished the Company. Contractor agrees to have its insurance carrier furnish the Company a certificate or certificates evidencing insurance coverage in accordance with the above requirements, and when requested to do so, furnish the Company certified copies of all said insurance policies.

The Contractor will indemnify and hold the Company harmless from and against all damages and claims for damages by reason of death or injury of persons or damage to property caused by the negligence of the Contractor, its employees or agents, or by non-compliance by the Contractor with any rules and regulations, orders or charges issued by a federal authority having jurisdiction in the performance of this agreement.

(33) PAYMENT: The Company will pay the Contractor for all work contemplated by this agreement as the work progresses as follows:

For all work done on and before the last day of the calender month, payment not later than the 30th day of the calendar month next following. Interest will be charged on

overdue accounts at 2% per month.

The Contractor will, along with its final invoice, forward to the Company certification from the Workman's Compensation Board that the Contractor is in good standing with the Board.

(34) SPECIAL AGREEMENT: It is agreed that the prices quoted are subject to change due to increased cost of diamond products and/or drilling equipment, provided however, that the Company be given proof of the requirement for and prior notice in writing of any such price change.

(35) TIME: The commencement day of drilling shall be approximately August 15, 1986 or as soon thereafter as weather conditions permit or as agreed by both parties.

IN WITNESS WHEREOF the parties hereto have caused these presents to be executed by their respective officers in that behalf.

SIGNED BY: IN THE PRESENCE OF:

QUEENSTAKE RESOURCES LTD.

DD SHARP WITNESS Michael Phelps

E. CARON DIAMOND DRILLING LIMITED

UNDERHILL ENGINEERING LTD.
UNDERHILL & UNDERHILL

Date Sept 25/86 Sheet 2 of 2

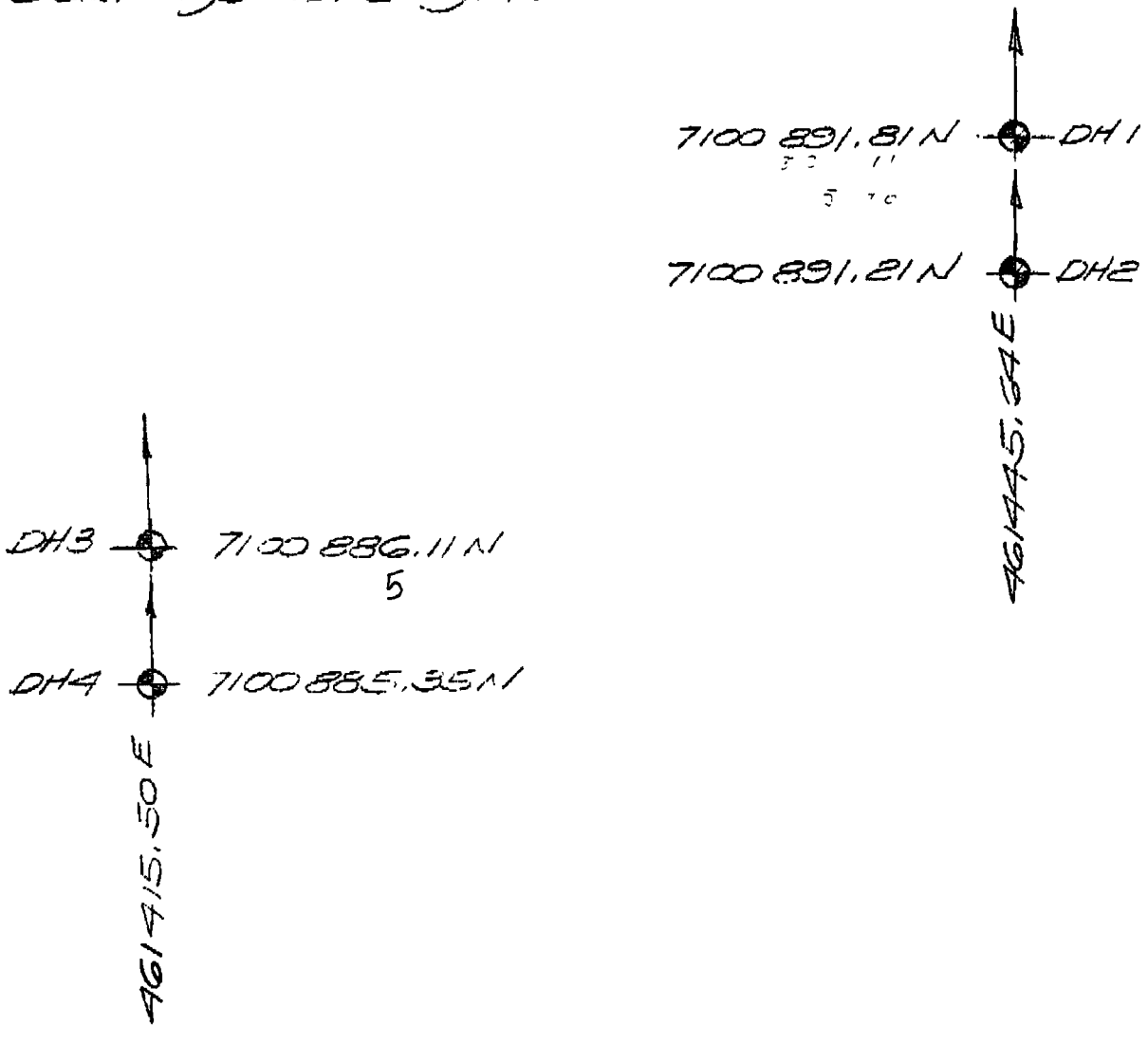
JOB No. 43548 Client CANADA TUNGSTEN

Project DRILL HOLE COORDINATION (Zone 8)

Field Book 84 Page 45, 46 Computed By TDC Checked By

DRILL HOLE NUMBER	COLLAR ELEVATION	HOLE BEARING	DIP
1	1215.12	359° 37'	-46° 35'
2	1214.54	357° 43'	-59° 10'
3	1214.60	354° 00'	-42° 30'
4	1214.59	359° 40'	-59° 10'

— Elevations are in metres to Geodetic Datum.
— UTM grid coordinates in metres as shown.
— Bearings are grid.



UNDERHILL & UNDERHILL

FILE 43548

TITLE DDH COORDINATION FOR CANADA TUNGSTEN

Page 1 OF 2

Calc. by T. Connolly

Chkd. by

Field Book 84 page 45, 46

STATION	BEARING	DISTANCE	LAT.	DEP.	ADJ. LAT.	ADJ. DEP.
combined scale factor = 0.999428						
	9ХY X	7100 000 N				
		460 000 E				
800			927.07	1457.36	el =	1213.06
DH 1	198° 23' 34	37.157	891.81	1445.64	el =	1215.42
800						
DH 2	198° 05' 34	37.728	891.81	1445.64	el =	1214.54
800						
DH 3	225° 37' 54	58.572	886.11	1415.49	el =	1214.60
800						
DH 4	225° 05' 34	59.093	885.35	1415.51	el =	1214.59

APPENDIX V

Analytical Procedures and Certificates of Analysis

Bondar Clegg

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone: (604) 985-0681
Telex: 04-352667

BONDAR-CLEGG

Mr. Joe Shearer

Sept. 29, 1986

701-74 West Hastings St.
Vancouver. B.C.

RE: Assay Procedures for Reports 426-3730 / 3814 / 4040 / 4044

Dear Mr. Shearer:

This letter describes the assay procedures used on the above reports in full, from receipt of the samples to reporting the results.

Sample Preparation:

(a) When the samples are received they are given a report number.
(b) The method of shipping is noted.
(c) The samples are then sorted numerically or according to client shipment form if provided.
(d) The whole sample is then put through a 6" jaw crusher.
(e) The whole sample is then put through a 10" cone crusher, which crushes down to 10 mesh.
(f) Sample is then split down to approximately 250 grams and the excess material is placed back into original bag and the "250" gram split is placed into a paper bag.
(g) The 250 gram split is pulverized to 90% -150 mesh.

The above procedures were carried out at Bondar Clegg in Whitehorse Y.T. The 250 gram splits were then shipped to Vancouver. Upon arrival at Bondar-Clegg Vancouver, the pulverized samples were screened as follows:

Metallics Screening Procedure

1. The whole 250 g sample was passed through a 150 mesh screen.
2. The whole of the + 150 mesh material was fire assayed and a 1AT of the -150 mesh material was fire assayed. The Au in the +150 portion is always finished gravimetrically.
3. The total Au in the sample was then calculated.

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex. 04-352667

BONDAR-CLEGG

Analyses: Fire Assay

The fire assay procedure was as follows:

(a) The sample is weighed into a crucible with prepared flux. The flux was comprised of appropriate quantities of litharge, soda, silica, borax glass, and flour. A solution containing silver was added to all of the samples analyzed for gold. In that case, a separate fusion was required for silver.
(b) Three samples out of every 24 are run again on another fusion at the end of a report. All samples over 0.20 OPT are run again as a checks and weighed on the gold balance, as well as any sample whose results look suspect. (ie a high one amongst a series of low ones and vice-versa)
(c) The samples are fused at 1950 degrees F for about 40 minutes.
(d) The slag is removed from the resulting lead button, which contains the precious metals and weighs between 30 and 40 grams.
(e) The lead button is then cupelled to get rid of the lead and the resulting bead is digested in a test tube and run on the A.A.

I hope the description of the procedures is adequate for your needs.

Sincerely yours

for - R. K. Rogers
Chief Assayer

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-3730

PROJECT: NONE GIVEN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 85251		<0.002	0.25
D2 85252		<0.002	0.49
D2 85253		<0.002	0.07
D2 85254		0.002	<0.02
D2 85255		<0.002	0.04
D2 85256		<0.002	<0.02
D2 85257		<0.002	0.02
D2 85258		<0.002	<0.02
D2 85259		<0.002	0.02
D2 85260		<0.002	0.09
D2 85261		<0.002	<0.02
D2 85262		<0.002	0.67
D2 85263		0.005	<0.02
D2 85264		0.002	<0.02
D2 85265		<0.002	<0.02
D2 85266		<0.002	6.53
D2 85267		0.002	1.09
D2 85268		<0.002	0.02
D2 85269		0.002	<0.02
D2 85270		0.003	0.43
D2 85271		0.002	0.15
D2 85272		0.002	0.06
D2 85273		0.003	0.89
D2 85274		<0.002	0.05
D2 85275		0.002	0.04
D2 85276		0.002	0.65
D2 85277		<0.002	0.02
D2 85278		0.004	0.28
D2 85279		0.002	0.74
D2 85280		0.002	0.02
D2 85281		<0.002	<0.02
D2 85282		0.041	0.02
D2 85283		0.008	0.03
D2 85284		0.002	0.02
D2 85285		0.289	0.11
D2 85286		0.002	<0.02
D2 85324		0.003	<0.02
D2 85325		0.002	<0.02
D2 85326		0.049	0.03
D2 85327		0.002	0.02
D2 85328		<0.002	<0.02
D2 85329		0.006	<0.02
D2 85330		0.206	0.51
D2 85331		0.012	0.28
D2 85332		0.002	0.28
D2 85333		0.008	0.18
D2 85339		0.004	<0.02

Province of British Columbia

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex 04-352667

BONDAR CLEGG

Certificate of Analysis

REPORT: 426-3814 | PROJECT: NONE GIVEN | PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT	SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
R2 85287		0.007	0.11	R2 85337		0.002	<0.02
R2 85288		<0.002	0.05	R2 85338		0.003	<0.02
R2 85289		<0.002	0.02	R2 85340		0.003	<0.02
R2 85290		0.002	0.02	R2 85341		0.003	<0.02
R2 85291		0.010	0.12	R2 85342		0.003	0.03
R2 85292		0.006	<0.02	R2 85343		0.002	<0.02
R2 85293		0.003	0.14	R2 85344		0.002	<0.02
R2 85294		0.002	0.16	R2 85345		0.003	<0.02
R2 85295		<0.002	<0.02	R2 85346		<0.002	<0.02
R2 85296		<0.002	<0.02				
R2 85297		<0.002	<0.02				
R2 85298		<0.002	<0.02				
R2 85299		<0.002	<0.02				
R2 85300		0.002	<0.02				
R2 85301		0.002	<0.02				
R2 85302		<0.002	<0.02				
R2 85303		<0.002	<0.02				
R2 85304		0.002	0.03				
R2 85305		0.027	<0.02				
R2 85306		0.011	<0.02				
R2 85307		0.007	<0.02				
R2 85308		0.029	<0.02				
R2 85309		0.009	0.02				
R2 85310		0.002	<0.02				
R2 85311		0.002	<0.02				
R2 85312		0.003	<0.02				
R2 85313		0.002	0.02				
R2 85314		0.002	<0.02				
R2 85315		0.005	0.02				
R2 85316		0.003	0.03				
R2 85317		0.029	0.21				
R2 85318		0.007	0.05				
R2 85319		0.003	0.06				
R2 85320		0.002	<0.02				
R2 85321		0.002	<0.02				
R2 85322		0.002	<0.02				
R2 85323		0.002	<0.02				
R2 85334		0.002	<0.02				
R2 85335		0.003	<0.02				
R2 85336		0.003	0.03				

Registered Assayer, Province of British Columbia

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver B C
Canada V7P 2R5
Phone (604) 985-0681
Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-3730 (COMPLETE)

REFERENCE INFO: WHSE 46-252

CLIENT: QUEENSTAKE RESOURCES LTD
PROJECT: NONE GIVEN

SUBMITTED BY: J SHEARER
DATE PRINTED: 2-SEP-86

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold - FIRE ASSAY	47	0.001 OPT		
2	Ag	Silver	47	0.01 OPT		

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
D DRILL CORE	47	2 -150	47	ASSAY PREP	47

REMARKS: ALL SAMPLES WERE SCREENED FOR METALLICS AND
VERY LITTLE WAS FOUND.

REPORT COPIES TO: MR. G. GUTHRATH
MR. J. T. SHEARER
MR. J. T. SHEARER

INVOICE TO: MR. G. GUTHRATH

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Tex. 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4044 COMPLETE

REFERENCE INFO:

CLIENT: GLEENSTAKE RESOURCES LTD
PROJECT: NONE GIVEN

SUBMITTED BY: J SHEARER
DATE PRINTED: 22-SEP-86

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold - FIRE ASSAY	177	0.001 OPT		
2	Ag	Silver	177	0.01 OPT		

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
D DRILL CORE	177	3 -150	177	ASSAY PREP	177

NOTES: = indicates SEE OBS REMARKS

REMARKS: = ALL SAMPLES WERE SCREENED BUT METALLICS FOUND ONLY IN THE SAMPLES INDICATED.

REPORT COPIES TO: MR. J. I. SHEARER

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex. 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4044

PROJECT: NONE GIVEN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT	SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 13086		0.003	0.07	D2 13126		<0.002	<0.02
D2 13087		0.081	0.06	D2 13127		0.040	0.07
D2 13088		0.006	0.02	D2 13128		<0.002	0.03
D2 13089		0.005	0.02	D2 13129		<0.002	0.03
D2 13090		0.006	0.04	D2 13130		<0.002	0.03
D2 13091		0.007	0.08	D2 13131		<0.002	0.05
D2 13092		0.018	0.35	D2 13132		<0.002	0.04
D2 13093		<0.002	<0.02	D2 13133		<0.002	0.03
D2 13094		<0.002	<0.02	D2 13134		<0.002	0.05
D2 13095		0.002	<0.02	D2 13135		0.002	0.04
D2 13096		<0.002	<0.02	D2 13136		0.002	0.04
D2 13097		0.007	<0.02	D2 13137		<0.002	0.03
D2 13098		<0.002	<0.02	D2 13138		0.158=	0.05
D2 13099		0.002	<0.02	D2 13139		0.004	0.02
D2 13100		<0.002	<0.02	D2 13140		<0.002	0.05
D2 13101		<0.002	<0.02	D2 13141		0.064	0.14
D2 13102		0.003	0.62	D2 13142		<0.002	0.03
D2 13103		0.201	0.09	D2 13143		0.003	0.04
D2 13104		0.002	<0.02	D2 13144		0.007	0.09
D2 13105		0.002	<0.02	D2 13145		0.009	0.09
D2 13106		0.005	<0.02	D2 13146		0.026	0.09
D2 13107		0.002	<0.02	D2 13147		<0.002	<0.02
D2 13108		0.006	<0.02	D2 13148		0.002	0.04
D2 13109		0.004	<0.02	D2 13149		<0.002	0.02
D2 13110		<0.002	<0.02	D2 13150		0.002	<0.02
D2 13111		<0.002	<0.02	D2 13151		<0.002	0.02
D2 13112		<0.002	<0.02	D2 13152		<0.002	<0.02
D2 13113		0.007	<0.02	D2 13153		<0.002	0.03
D2 13114		<0.002	<0.02	D2 13154		<0.002	<0.02
D2 13115		0.035	0.08	D2 13155		<0.002	<0.02
D2 13116		<0.002	<0.02	D2 13156		<0.002	<0.02
D2 13117		0.004	0.63	D2 13157		0.029	0.03
D2 13118		0.002	0.21	D2 13158		0.003	<0.02
D2 13119		0.002	0.09	D2 13159		0.002	<0.02
D2 13120		<0.002	0.07	D2 13160		0.004	<0.02
D2 13121		<0.002	0.05	D2 13161		0.002	<0.02
D2 13122		<0.002	0.04	D2 13162		<0.002	<0.02
D2 13123		<0.002	0.04	D2 13163		0.002	<0.02
D2 13124		<0.002	0.02	D2 13164		<0.002	<0.02
D2 13125		<0.002	0.03	D2 13165		0.010	<0.02

004

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone: (604) 985-0681
Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4044 | PROJECT: NONE GIVEN | PAGE 7

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT	SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 13166		0.024	0.05	D2 13631		<0.002	<0.02
D2 13167	0.AE w	1.300=	0.35	D2 13632		0.002	0.02
D2 13168		0.006	<0.02	D2 13633		<0.002	0.02
D2 13169		0.005	<0.02	D2 13634		<0.002	0.02
D2 13170		0.003	<0.02	D2 13635		<0.002	<0.02
D2 13171		<0.002	<0.02	D2 13636		<0.002	0.02
D2 13172		<0.002	0.02	D2 13637		<0.002	<0.02
D2 13173		<0.002	0.03	D2 13638		<0.002	<0.02
D2 13174		0.014	0.04	D2 13639		0.012	0.02
D2 13175		<0.002	0.02	D2 13640		0.006	0.10
D2 13176		0.007	0.08	D2 13641		<0.002	0.10
D2 13177		<0.002	<0.02	D2 13642		0.007	0.06
D2 13178		<0.002	<0.02	D2 13643		<0.002	0.06
D2 13179		<0.002	0.04	D2 13644		<0.002	0.03
D2 13180		<0.002	0.02	D2 13645		<0.002	0.05
D2 13181		0.005	0.30	D2 13646		<0.002	0.02
D2 13182		<0.002	<0.02	D2 13647		0.005	0.02
D2 13183		0.002	<0.02	D2 13648		0.006	0.02
D2 13184		<0.002	<0.02	D2 13649		0.013	0.02
D2 13185		<0.002	<0.02	D2 13650		0.006	<0.02
D2 13186		<0.126	0.05	D2 13651		0.002	<0.02
D2 13187	0.50	2.177=	0.43	D2 13652		0.164	0.02
D2 13188		0.009	0.05	D2 13653		0.008	0.19
D2 13189		0.010	<0.02	D2 13654		0.002	0.06
D2 13190		0.004	<0.02	D2 13655		<0.002	0.02
D2 13191		0.005	<0.02	D2 13656		<0.002	0.02
D2 13192		0.002	<0.02	D2 13657		<0.002	0.02
D2 13193		<0.002	<0.02	D2 13658		0.005	0.10
D2 13194		<0.002	<0.02	D2 13659		<0.002	0.02
D2 13195		<0.002	<0.02	D2 13660		<0.002	<0.02
D2 13196		<0.002	<0.02	D2 13661		<0.002	<0.02
D2 13197		0.146	0.02	D2 13662		<0.002	0.11
D2 13198		0.002	<0.02	D2 13663		<0.002	0.06
D2 13199		0.002	<0.02	D2 13664		<0.002	0.09
D2 13200		<0.002	<0.02	D2 13665		<0.002	0.08
D2 13626		<0.002	<0.02	D2 13666		<0.002	0.03
D2 13627		<0.002	<0.02	D2 13667		<0.002	0.02
D2 13628		<0.002	<0.02	D2 13668		<0.002	0.12
D2 13629		<0.002	0.02	D2 13669		<0.002	0.03
D2 13630		0.014	0.07	D2 13670		<0.002	0.05

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4944 | PROJECT: NONE GIVEN | PAGE 3

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 13671		<0.002	0.02
D2 13672		<0.002	0.04
D2 13673		<0.002	0.03
D2 13674		<0.002	0.03
D2 13675		<0.002	0.02
D2 13676		0.011	0.04
D2 13677		<0.002	0.02
D2 13678		<0.002	0.03
D2 13679		<0.002	0.02
D2 13680		0.002	<0.02
D2 13681		<0.002	0.02
D2 13682		<0.002	0.02
D2 13683		<0.002	<0.02
D2 13684 1		<0.002	<0.02
D2 13685 2		0.072	0.82
D2 136863		0.033	0.47
D2 136874		0.024	0.16

Bondar-Clegg & Company Ltd
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4040

PROJECT: NONE GIVEN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT	SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 13076		<0.002	<0.02	D2 85376		<0.002	<0.02
D2 13077		<0.002	0.31	D2 85377		1.764	0.31
D2 13078		<0.002	0.03	D2 85380		0.007	<0.02
D2 13079		<0.002	0.02	D2 85381		0.004	<0.02
D2 13080		<0.002	0.03	D2 85382		<0.002	<0.02
D2 13081		<0.002	0.03	D2 85383		0.003	<0.02
D2 13082		0.011	0.02	D2 85384		0.006	<0.02
D2 13083		<0.002	<0.02	D2 85385		0.008	<0.02
D2 13084		0.002	0.02	D2 85386		0.027	0.03
D2 13085		0.011	0.02	D2 85387		0.002	<0.02
D2 85347		<0.002	<0.02	D2 85388		<0.002	<0.02
D2 85348		<0.002	<0.02	D2 85389		0.005	<0.02
D2 85349		0.003	0.03	D2 85390		<0.002	<0.02
D2 85350		<0.002	<0.02	D2 85391		0.003	<0.02
D2 85351		<0.002	0.02	D2 85392		<0.002	<0.02
D2 85352		0.037	0.06	D2 85393		0.006	<0.02
missing D2 85353		<0.002	0.02	D2 85394		0.003	<0.02
D2 85355		<0.002	<0.02	D2 85395		0.005	<0.02
D2 85356		<0.002	<0.02	D2 85396		0.002	0.05
D2 85357		<0.002	<0.02	D2 85397		<0.002	<0.02
D2 85358		<0.002	<0.02	D2 85398		0.002	<0.02
D2 85359		<0.002	<0.02	D2 85399		<0.002	<0.02
D2 85360		<0.002	<0.02	D2 85400		0.017	0.02
D2 85361		<0.002	<0.02	D2 85401		<0.002	0.15
D2 85362		<0.002	<0.02	D2 85402		<0.002	<0.02
D2 85363		<0.002	<0.02	D2 85403		<0.002	<0.02
D2 85364		<0.002	<0.02	D2 85404		<0.002	<0.02
D2 85365		<0.002	<0.02	D2 85405		0.002	<0.02
D2 85366		<0.002	0.03	D2 85406		<0.002	<0.02
D2 85367		<0.002	<0.02	D2 85407		0.002	<0.02
D2 85368		<0.002	<0.02	D2 85408		<0.002	<0.02
D2 85369		0.003	0.13	D2 85409		<0.002	0.05
D2 85370		0.059	0.64	D2 85410		<0.002	<0.02
D2 85371		0.002	0.11	D2 85411		0.018	0.02
D2 85372		0.002	0.03	D2 85412		0.008	<0.02
D2 85373		<0.002	<0.02	D2 85413		<0.002	<0.02
D2 85374		<0.002	<0.02	D2 85414		0.003	<0.02
D2 85375		<0.002	<0.02	D2 85415		0.011	<0.02
D2 85376		<0.002	<0.02	D2 85416		0.002	<0.02
D2 85377		0.002	<0.02	D2 85417		<0.002	<0.02

Bondar-Clegg & Company Ltd.
130 Pemberton Ave
North Vancouver, B C
Canada V7P 2R5
Phone (604) 985-0681
Tx 04-352667

BONDAR-CLEGG

Certificate of Analysis

REPORT: 426-4040 | PROJECT: NONE GIVEN | PAGE 2

SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT	SAMPLE NUMBER	ELEMENT UNITS	Au OPT	Ag OPT
D2 85418		0.004	<0.02	D2 85458		<0.002	<0.02
D2 85419		0.002	<0.02	D2 85459		<0.002	<0.02
D2 85420		<0.002	<0.02	D2 85460		<0.002	0.02
D2 85421		<0.002	<0.02	D2 85461		0.002	<0.02
D2 85422		<0.002	<0.02	D2 85462		<0.002	<0.02
				missing →			
D2 85423		0.019	<0.02	D2 85464		0.003	0.02
D2 85424		0.004	<0.02	D2 85465		<0.002	0.03
D2 85425		0.002	<0.02	D2 85466		<0.002	0.03
D2 85426		<0.002	<0.02	D2 85467		0.002	0.02
D2 85427		<0.002	<0.02	D2 85468		0.003	<0.02
D2 85428		<0.002	<0.02	D2 85469		0.002	<0.02
D2 85429		<0.002	<0.02	D2 85470		0.003	0.02
D2 85430		0.003	<0.02	D2 85471		<0.002	<0.02
D2 85431		0.047	<0.02	D2 85472		<0.002	<0.02
D2 85432		<0.002	<0.02	D2 85473		<0.002	0.02
D2 85433		0.020	<0.02	D2 85474		<0.002	<0.02
D2 85434		<0.002	<0.02	D2 85475		<0.002	<0.02
D2 85435		0.012	<0.02	D2 85476		0.002	<0.02
D2 85436		0.012	0.02	D2 85477		<0.002	<0.02
D2 85437		0.008	0.64	D2 85478		<0.002	<0.02
D2 85438		0.005	<0.02	D2 85479		<0.002	<0.02
D2 85439		<0.002	<0.02	D2 85480		0.003	0.02
D2 85440		<0.002	<0.02	D2 85481		<0.002	<0.02
D2 85441		0.003	<0.02	D2 85482		0.002	0.04
D2 85442		<0.002	<0.02	D2 85483		<0.002	0.04
D2 85443		<0.002	<0.02	D2 85484		0.002	0.02
D2 85444		<0.002	<0.02	D2 85485		<0.002	<0.02
D2 85445		0.002	<0.02	D2 85486		0.003	0.02
D2 85446		<0.002	<0.02	missing → D2 85488		0.002	0.05
D2 85447		<0.002	<0.02	D2 85489		<0.002	<0.02
D2 85448		<0.002	<0.02	D2 85490		0.002	<0.02
D2 85449		<0.002	<0.02	D2 85491		<0.002	0.05
D2 85450		<0.002	<0.02	D2 85492		0.002	<0.02
D2 85451		0.005	<0.02	D2 85493		0.002	<0.02
D2 85452		0.004	<0.02	D2 85494		<0.002	<0.02
D2 85453		<0.002	<0.02	D2 85495		<0.002	<0.02
D2 85454		<0.002	<0.02	D2 85496		<0.002	<0.02
D2 85455		<0.002	<0.02	D2 85497		<0.002	<0.02
D2 85456		<0.002	<0.02	missing → D2 85500		0.007	<0.02
D2 85457		0.015	<0.02				

APPENDIX VI

List of Useful Names and Addresses

MAR GOLD PROJECT, 1986
Dublin Gulch, Yukon

APPENDIX VI

MAR GOLD PROJECT, 1986

Queenstake Resources Ltd.
9th Floor, 850 W. Hastings Street
Vancouver, B.C. V6C 1E1

Gordon Gutrath, Don Sharpe, Mike Philpott 684-1218
Telex 04-508875

Queenstake Resources Ltd.
115 Juniper Road
Whitehorse, Yukon Y1A 4W8 667-4620

Wayne Leonard, Manager (home) 633-3616
Glen Rodgers

Caron Diamond Drilling Ltd. (office) 668-2424
7 Roundel Road E. Caron (home) 668-4675
Whitehorse, Yukon Y1A 3H3

Drill foreman, Mitch McClellan
Kenworth Truck (radio) YJ2-5853
Mack Truck (radio) VL 25993

Dublin Gulch Placer Mine
(Canada Tungsten Mining Corp.) (radio) 2M 5004
John Clarke, Project Superintendent Elsa channel, or
Brian Lennan, Geologist (truck) 2M 8342
P.O. Box 130
Mayo, Yukon Y0B 1M0
John Clarke (home) 596-9583

George Manson, Placer Operator
Dublin Gulch-Haggart Creek

Canada Tungsten Mining Corp. (Vancouver) 689-0046

Bondar Clegg (Vancouver), Keith Rodgers 985-0681
John Reeves, Whitehorse 403-667-6523
136 Industrial Road

Blumenschein Enterprises Ltd. 403-633-2627
34 MacDonald Road
Whitehorse, Yukon
Suppliers of Polaris all-terrain vehicle

APPENDIX VII

DIAMOND DRILL RECORDS
MAR GOLD PROJECT, 1986
Logged by J.T. Shearer, M.Sc., FGAC

AND CORE PHOTOGRAPHS

USEFUL PHONE NUMBERS, MAR GOLD PROJECT - 1986

Mining Recorder in Mayo, Roland Ronnagan	403-996-2256
Director of Mineral Resources 200 Range Road Whitehorse, Yukon Chief Geologist - J. Morin Contract Geologist, Ph.D. Thesis, Mayo Area - Greg Lynch	403-667-3136
Northstar Motel Mayo, Yukon	996-2231
Mayo Caselot and Expediting Services Box 155 Mayo, Yukon YOB 1MO	996-2328

TRM ENGINEERING LTD.

QUEENSTAKE RESOURCES LTD — DUBLIN GULCH —

LOCATION (LEVEL): VICTORIA VEIN — PROJECT: MAR GOLD — HOLE NUMBER: QRMG-86-001

DIP: -47° AT COLLAR, DIRECTION: 359° 37' — DIAMOND DRILL RECORD

LATITUDE: 7,100,891 N (METRIC UTM coord) Underhill — LENGTH: 164.59 meters (540 ft) — ELEVATION: 1215.42 meters — CLAIM NUMBER: BOB 1

DEPARTURE: 46 1445.4 E (Grid 1978) Underhill — CORE SIZE: NQ — DATE LOGGED: AUGUST 14-18/86 — LOCATION: DUBLIN GULCH PLACER CAMP

STARTED: AUGUST 14 (NIGHT SHIFT) 1986 — FINISHED: AUGUST 17 (D.S.) 1986 — LOGGED BY: J. T. SHEARER — SAMPLED BY: VS, LS

O.B. THICKNESS: 2.44 meters — STARTED: AUGUST 14 (N.S.) 1986 — FINISHED: AUGUST 14 (N.S.) 1986 — CASING: HW 3.05 meters LEFT IN HOLE

B.R. THICKNESS: 162.15 meters — STARTED: AUGUST 14 (N.S.) 1986 — FINISHED: AUGUST 17 (D.S.) 1986 — TOTAL RECOVERY: 96%

CONTRACTOR: E. CARON DIAMOND DRILLING LTD. — CORE STORED: DUBLIN GULCH PLACER CAMP (UPPER CAMP IN COVERED RACKS)

LY-38 — RUNNERS: M. McLELLAN (D.S.), K. MAC (N.S.) — METRIC CONVERSION BY: L.S. — CORE RECOVERY BY: L.S.

SURVEY: ACID TEST		ANGLE	
DEPTH	BEARING	Reading	Correc
COLLAR	359°37	-47°	-47
91.44	~	-56°6'	-47°
164.59 (EOH)	~	-54°30'	-46°

PURPOSE: FIRST DIAMOND DRILL HOLE TEST OF DOWN DIP EXTENTION OF CATTO AND VICTORIA VEINS. UNDER SURFACE TRENCHING AND SHORT UNDERGROUND DRIFT.

COMMENT:

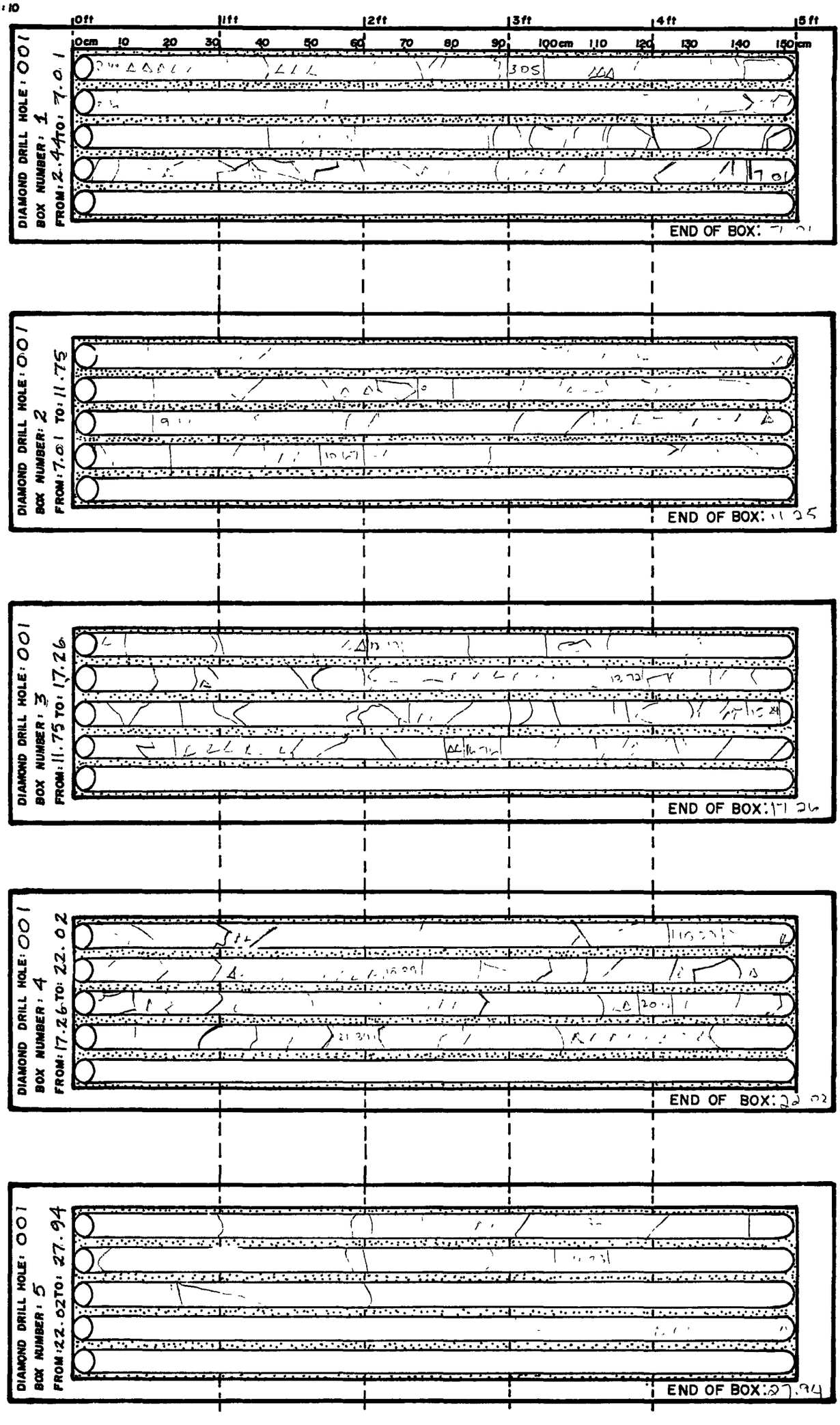
DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from	to	DESCRIPTION	SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton	Ag oz/ton
			1							NO CORE	0	2.44	NO CORE: OVERBURDEN, broken rock, soil	NO CORE					
2.44	89	2.44	2																
3.05	53		3								2.44	12.13	MICACEOUS QUARTZITE: Light grey-green, pervasive limonite staining throughout interval, very rusty fractures @ 25° to core axis, some 40° strongly foliated at 45° to core axis; MnO staining common. Folded foliation at 4.60, Foliation at 10° to C.A at 6.00, 40° appears most common. Phyllitic appearance due to segregation of muscovite layers. Hairline rusty fractures very common throughout, mainly 23° to core axis. Quartz vein 1.5cm wide at 11.01 @ 20° to core axis	85251	2.44	3.00	0.56	<0.002	0.25
3.96	149		4											85252	3.00	4.00	1.00	<0.002	0.49
4.88	68		5											85253	4.00	5.00	1.00	<0.002	0.07
6.10	104	7.01	6											85254	5.00	6.00	1.00	0.002	<0.02
7.81	154		7											85255	6.00	7.00	1.00	<0.002	0.04
7.62	94		8											85256	7.00	8.00	1.00	<0.002	<0.02
8.53	115		9											85257	8.00	9.00	1.00	<0.002	0.02
9.14	96		10											85258	9.00	10.00	1.00	<0.002	<0.02
10.67	86	11.75	11				XXXX							85259	10.00	11.00	1.00	<0.002	0.02
12.19	105		12			XXXX					12.13	13.08	VERY ALTERED GRANODIORITE: FAULT GOUGE; Light green; Extreme decolonment of soft gouge throughout entire interval; friable slickensides @ 30° to C.A.	85260	11.00	11.50	0.50	<0.002	0.09
			13			XXXX								85261	11.50	12.00	0.50	<0.002	<0.02
13.72	102		14						Aspy					85262	12.00	13.00	1.00	<0.002	0.67
15.24	38		15											85263	13.00	13.50	0.50	<0.002	<0.02
16.76	99	17.26	16											85264	13.50	14.00	0.50	0.002	<0.02
18.29	106		17								13.08	20.78	MICACEOUS QUARTZITE: Rusty brown, light grey-green. Arsenopyrite jeinlet 15cm wide 13.41 - 13.475, minor disseminated Aspy in wallrocks sericitic and very rusty., 68° to C.A. Crenulated foliation common, perhaps drag folding along faults. Foliation at 16.70 is 35° to core axis. 17.38 - 18.12 Fresh GRANODIORITE: not sheared, coarse biotite and hornblende. Upper contact at 20° to C.A., lower contact also 20° to core axis.	85265	14.00	15.00	1.00	<0.002	<0.02
18.09	55		18											85266	15.00	16.00	1.00	<0.002	6.53
20.42	89		19											85267	16.00	17.00	1.00	0.002	1.09
21.34	106	22.02	20											85268	17.00	18.00	1.00	0.002	0.02
22.86	91		21											85269	18.00	19.00	1.00	<0.002	<0.02
24.38	79		22											85270	19.00	20.00	1.00	0.003	0.43
25.91	104	27.94	23											85271	20.00	21.00	1.00	0.002	0.15
27.94	108		24											85272	21.00	21.50	0.50	0.002	0.06
29.26	99		25											85273	21.50	22.00	0.50	0.003	0.89
			26											85274	22.00	23.00	1.00	<0.002	0.05
			27											85275	23.00	24.00	1.00	0.002	0.04
			28																
			29																
			30								20.78	29.47	BIOTITE-HORNBLENDE GRANODIORITE: INTENSE sericite-chlorite alteration 20.78 - 22.02, equigranular mosaic, light green-yellow. Quartz-Arsenopyrite vein 2cm wide 21.34 - 21.86 @ 80° to core axis. Gouge 21.68 - 21.90, granulated core., chalky white, sub porphyritic plagioclase excessive. Bleached zones common, minor sericite-chlorite alteration - usually surrounding quartz veinlets; Relatively fresh hypidiomorphic granular rock 22.86 - 29.08. Minor shearing 20° to C.A at 27.02 also 25.00 and 26.70, chlorite replacing hornblende. Rounded mafic-rich inclusions at 28.90. Lower contact brownish gouge 5-10° to core axis starting at 29.08.						
											29.47	31.80	VERY FRACTURED MICACEOUS QUARTZITE: Rusty highly fractured, yellow-brown gouge, pervasive limonite staining.	85276	29.00	30.00	1.00	0.002	0.65

ON NEXT PAGE

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN

DIAMOND DRILL RECORD

PROJECT: MAR - GOLD (DUBLIN GULCH)

HOLE NUMBER: QRMG 86- 001

PURPOSE:
COMMENT:

DRILLING INTERVAL	% CORE RECOVERED	BOX Number
30.48 – 31 39	88	6
31 39 – 32 92	94	6 / 7 (32 09)
32 92 – 34.44	102	7
34.44 – 35 97	92	7
35 97 – 37.49	100	7 / 8 (37 39)
37.49 – 39 01	97	8
39 01 – 40 54	100	8
40 54 – 42.06	96	8
42.06 – 43.59	98	8 / 9 (42 98)
43.59 – 45 11	99	9
45 11 – 45 72	80	9
45 72 – 47 24	103	9
47 24 – 48.77	97	9 / 10 (48 52)
48.77 – 50.29	102	10
50.29 – 51 51	74	10
51 51 – 53.04	98	10
53.04 – 54 56	96	10 / 11 (53.70)
54 56 – 56 08	94	11
56 08 – 57.61	104	11
57.61 – 59.13	98	11 / 12 (59.13)
59.13 – 60.66	100	12
60.66 – 62 18	100	12
62 18 – 63 70	99	12
63 70 – 65.23	101	12 / 13 (64.08)
65.23 – 65.84	78	13
65.84 – 67.06	99	13
67.06 – 68.58	99	13
68.58 – 70.10	102	13 / 14 (69.40)

Mineral column: Aspy, py (40–41 m); Aspy (48 m); diss py (50–51 m); ZnS? (68 m). Fracturing: FeO (50, 55, 61 m).

2947-3180 VERY FRACTURED MICACEOUS QUARTZITE Lower contact gouge yellowish colour, laminated.

3180-3456 BIOTITE-HORNBLENDE GRANODIORITE sheared upper contact 3180-3292, gouge at 5° to C.A., bleaching around quartz veinlets common at 70° to c.A. schist fragment at 34 29, angular, lower contact at 24° to core axis

3456-4021 BIOTITE-QUARTZ SCHIST: Mainly dark grey, banded and laminated with lighter grey "quartzite" layers, strong foliation, foliation mainly at 25° to c.A., Distortion of arenaceous layers, crenulation, minor green calc-silicates developed, compositional contacts parallel to schistosity.

4021-4077 CATTO VEIN (QUARTZ-ARSENOPYRITE-PYRITE): Bands of massive arsenopyrite in greyish white quartz, banding at 59° to core axis. Massive Quartz 40 39-40 62. Purplish gouge, 6mm wide at end of quartz stringers and Aspy @ 30° to c.A.

40.77-53.00 BIOTITE-QUARTZ SCHIST
- Gradational lower + upper contact with vein over about 15 cm, Green gouge at 41.05
- Zone of granodiorite dyklets 41 16-41 82, sill-like with fragments, shearing @ 70° to C A
- GOLD VALUE 0.289 oz/ton 42.00-43.00
- trace of arsenopyrite at 42 46, 3cm wide quartz vein, 80° to core axis
- silicified appearance surrounding vein, Quartz vein at 44 77, 2cm wide, gouge at 44 85 @ 50° to c.A, Granodiorite dyklet 45.91-45 96, rusty fractures.
- Arsenopyrite veinlet 47 78, 1cm wide 75° to c.A. Bedding at 47.60 is 23° to c.A.
- Minor calc-silicate development in "quartzite" layers -
- narrow granodiorite dyklet 48.52-48.87 altered.
- Rusty, intense fracturing 50.42-50 90, @ 25° to core axis, disseminated py
- Gradational Lower contact over several meters

53.00-89.20 ARGILLACEOUS QUARTZITE (± biotite and Andalusite)
- Mainly dark grey, poor foliation, abundant andalusite, minor biotite
- more siliceous appearance, bedding compositional variation at 20-30° to C.A. variable -wavy, 45° to c.A at 56.50
- Granodiorite 54,41-54 52.
- Calc-silicates more developed in this unit especially as clots of chlorite (diopside)
- Dismemberment of pure silty beds - more competent and subject to brittle deformation.
- Rusty fractures still common at 20° to C.A, hackly not smooth.
- Skarnified section - 59 78-60.01 Quartz and diopside, Fragmental quartz appearance
- crenulated bedding at 61 50, 5° to c.A.
- Shattered, very fractured interval 61.60-62.18, @ 30° to c.A., Probable minor fault
- White veinlets common, 1-2 mm wide with alteration envelopes, 57° to c.A. regularly spaced 5-7cm apart.
- Very rusty, sheared interval 65 23-66 13, shearing 10° to core axis, soft, friable
- Mottled, bleaching in irregular pattern 67.60-68.00, skarn around white veinlet 68.30
- trace of brown sphalerite (needles) possibly cassiderite
- Layering relatively consistant at 25° to core axis, but Local variation upto 38° to C.A.

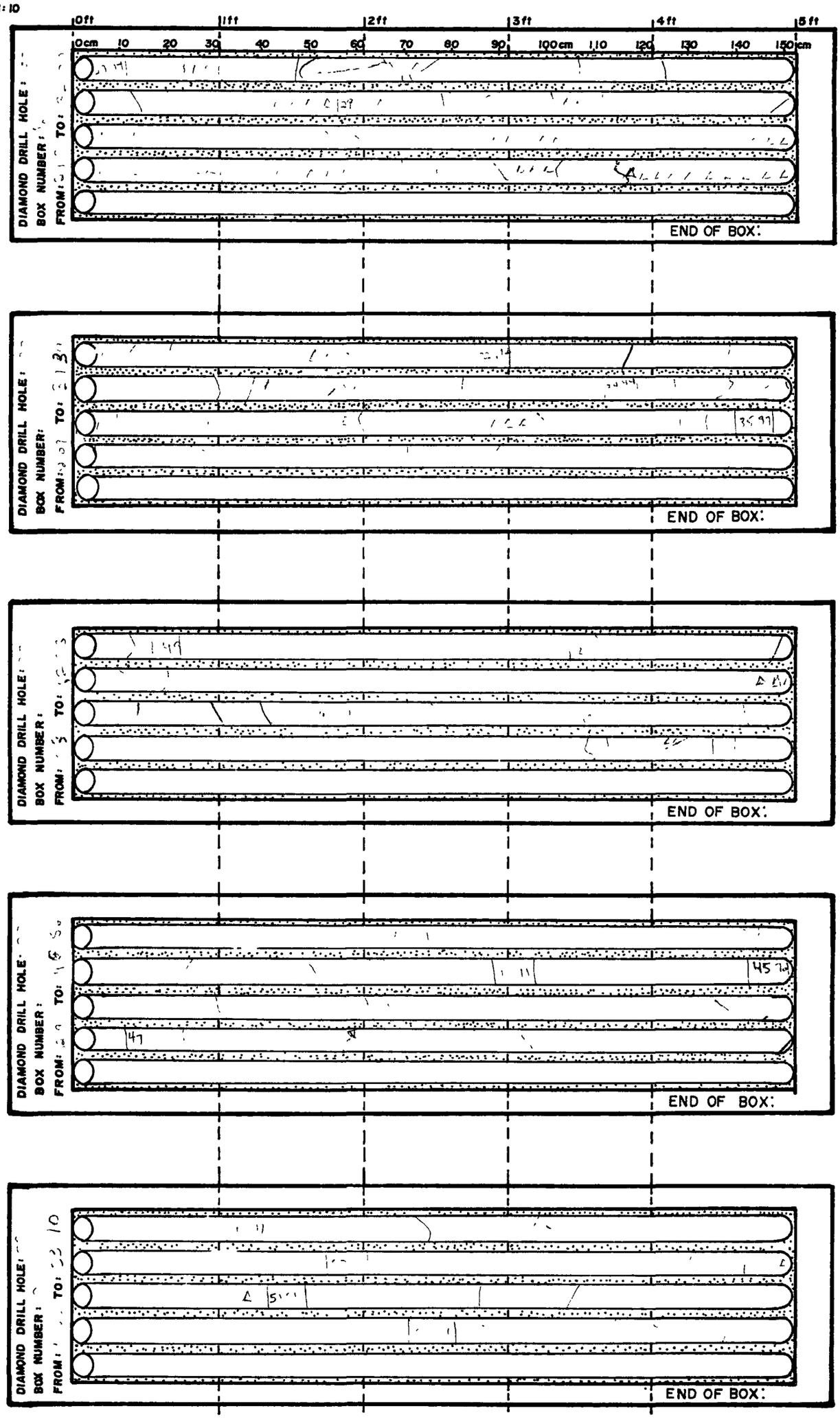
SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton
85277	30.00	31 00	1 00	<0.002	0.02
85278	31 00	32 00	1 00	0 004	0 28
85279	32 00	33 00	1 00	0 002	0 74
85280	39.00	39 60	0 60	0 002	0 02
85281	39 60	40 21	0 61	<0 002	<0.02
85282	40 21	40.77	0 56	0.041	0.02
85283	40 77	41 40	0 63	0.008	0 03
85284	41.40	42.00	0 60	0 002	0 02
85285	42.00	43.00	1.00	0 289	0 11
85286	43 00	44 00	1.00	0 002	<0 02
85287	44 00	45 00	1.00	0.007	0.11
85288	45 00	46 00	1.00	<0 002	0 05
85289	46 00	47 00	1.00	<0 002	0 02
85290	47 00	47 50	0 50	0 002	0 02
85291	47.50	48.00	0 50	0 010	0.12
85292	48 00	48 50	0 50	0 006	<0 02
85293	48 50	49.00	0 50	0 003	0.14
85294	49 00	50.00	1 00	0 002	0 16
85295	50 00	51 00	1 00	<0 002	<0.02
85296	51.00	52.00	1 00	<0 002	<0.02
85297	65.23	66.13	0 90	<0 002	<0.02
85298	66.13	67.00	0.87	<0.002	<0 02
85299	67.00	68 00	1.00	<0.002	<0.02
85300	68 00	69.00	1.00	0.002	<0 02
85301	69.00	70.00	1.00	0.002	<0.02

ON NEXT PAGE

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN

DIAMOND DRILL RECORD

PROJECT: MAR GOLD (DUBLIN GULCH)

HOLE NUMBER: QRMG - 86 - 001

PURPOSE:

COMMENT:

INTERVAL from to

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
71.63	101		71							
			72							
73.15	95		73							
	55	74.91	74							
74.68			75							
	89		76							
76.20			77							
	72		78							
77.72	125		79							
78.94			80							
	112	80.21	81							
80.47			82						Aspg	
	99		83							
81.99	100		84							
83.52			85							
	98	85.65	86						Aspy	
85.04	100		87							
86.56			88							
	98		89							
88.09	99		90							
89.61			91							
	97	91.16	92							
91.14	100		93							
91.44			94							
	102		95							
92.96			96							
	93		97							
94.49			98							
	100	96.57	99							
96.01			100							
	100		101							
97.54			102							
	95		103							
99.06			104							
	99		105							
100.58			106							
	103	101.86	107						Aspy	
102.11			108							
	96		109							
103.63			110							
	103									
105.16										
	63									
106.68										
TDL	96	107.63								
108.24										
	102									
109.73	98									

Tube

5300-8920 ARGILLACEOUS QUARTZITE: (± biotite and Andalusite)
mainly dark grey, minor inter beds of light grey purer quartzite recrystallized.
short interval of granodiorite and hornfels 72.68-72.81, minor shearing at 72.81 @ 32° to c.A
Arsenopyrite lense-vein at 73.51, 1cm wide., silty layers boudins, schistose overall
Andalusite porphyroblasts 0.5 to 1mm long. Fracturing common 73.00 - 74.00
White plagioclase-quartz veinlets, 76.50, 76.64, 78.19, white-grey bleached envelopes
Short fractured core interval 78.56 - 78.90
Slightly rusty fractures 80.62 - 80.95, coated fractures to 82.00, 15cm massive arsenopyrite veinlet at 81.45!
Arsenopyrite veinlet at 81.45 is @ 65° to core axis
Granodiorite dyklet 81.94 - 82.08 @ 35° to core axis
White hair lines common at 10-15 cm intervals, light grey alteration envelopes.
Compositional layering at 25° to core axis
Narrow quartz-arsenopyrite veinlet at 85.39, fresh, @ 45° to core axis
veinlet appears to be similar to nearby barren white (plagioclase-quartz) veinlets
Layering (bedding) at 25° to c.A generally.

8920-9078 GRANODIORITE STRINGER BRECCIA: Light grey-white, stringers sub parallel to 30° to core axis, 2-3 cm wide, porphyritic cores.
Lower contact at 45° to c.A, Angular in-situ fragments.

9078-9656 ARGILLACEOUS QUARTZITE (± biotite and Andalusite)
Abundant andalusite at upper contact; bedding at 93.10 is 30° to core axis.
Minor kink cleavage along planes parallel to core axis
segregation of biotite along thin horizons common, mainly thinly laminated.
Extremely coarse and densely packed andalusite rods, crystals up to 5 mm long.

9656-10508 SKARNIFIED QUARTZITE: Light grey-green,
diopside-actinolite development common along foliation planes (bedding)
Minor gouge at 97.90, Rusty fractures and fractured core 97.90 to 98.60, 5° to c.A
Very siliceous appearance: competent, not strongly foliated:
biotite (relict?) common 100.40 - 101.47.
Minor arsenopyrite at 101.47 @ 61° to core axis, 5mm wide.
compositional layering accentuated by segregation of biotite envelopes around sugary
Lower contact very fractured, parallel to bedding ~ 25° to c.A. quartz layers

10508-11355 BIOTITE-QUARTZ SCHIST: Relatively well developed schistosity, mainly biotite, very little andalusite present.
Compositional layering @ 21° to core axis, alternating biotite dominate and quartz dominate layers. Minor diopside @ 108.02
Minor folds common throughout. Calcite on fractures at 109.61, 5° to C.A.

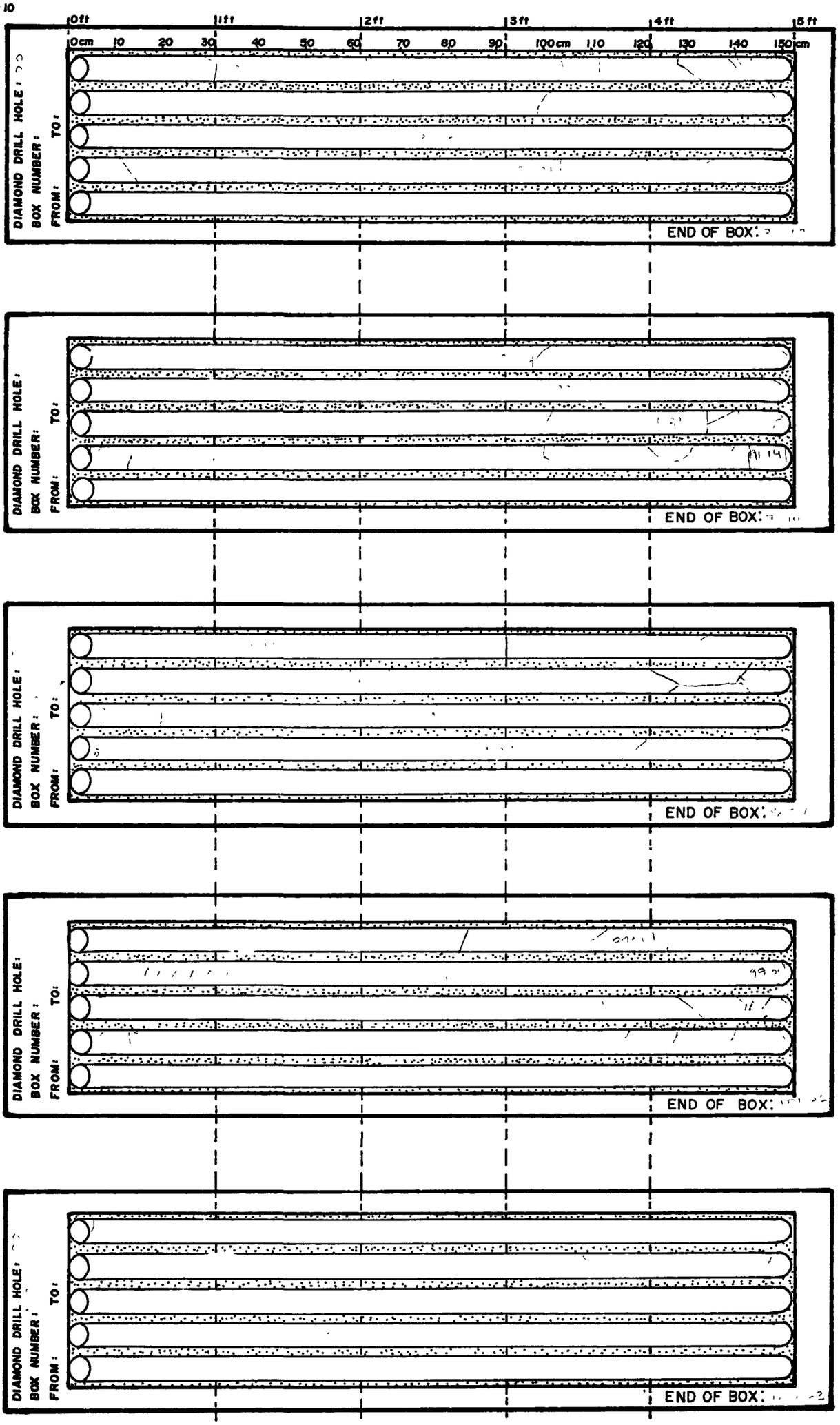
SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton
85302	70.00	71.00	1.00	<0.002	<0.02
85303	71.00	72.00	1.00	<0.002	<0.02
85304	72.00	73.00	1.00	0.002	0.03
85305	73.00	73.52	0.52	0.027	<0.08
85306	73.52	74.00	0.48	0.011	<0.02
85307	74.00	75.00	1.00	0.007	<0.02
85308	80.50	81.50	1.00	0.029	<0.02
85309	85.00	86.00	1.00	0.009	0.02
85310	97.00	98.00	1.00	0.002	<0.02
85311	98.00	99.00	1.00	0.002	<0.02

ON NEXT PAGE

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN

DIAMOND DRILL RECORD

PROJECT: MAR GOLD (DUBLIN GULCH)

HOLE NUMBER: QRMG 86- 001

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
111.25	98	21	111						Aspy	
112.78	99	112.78	112							
			113							
	100		114				XXX		py Aspy	
114.30										
	103		115							
116.82			116							
	105		117							
117.35		117.54								
	100		118							
118.87			119							
	100		120							
120.39										
	96		121							
121.92			122						trpy	
	100	122.96	123							
123.44			124							
	93		125							
125.97										
	99		126							
126.49			127							
	95		128							
128.02		128.63								
	100		129							
129.54			130							
	102		131							
131.06										
	102		132							
132.59			133							
	97	134.09	134							
134.11										
	96		135						Aspy	Green MYLONITIC Lamination
135.64			136							
	98		137							
137.16										
	103		138							
138.68		139.28	139				XXX		Aspy sphal	
	97		140							
140.21										
	102		141							
141.73			142							
	100		143							
143.26										
	102	144.78	144							
144.78			145							
	95		146							
146.30										
	95		147							
147.83			148							
	97		149							
149.35										
	100	150.11	150							

PURPOSE:

COMMENT:

INTERVAL from to

105.08 - 113.55 BIOTITE - QUARTZ SCHIST:

Quartz - pyrite - arsenopyrite 111.08 - 111.35 4cm wide, euhedral quartz present Aspy on margins
Arsenopyrite @ 50° in 5mm veinlet 111.47 - 111.52 ..... @ 52° to core axis
Green MYlonitic shearing starting at 112.41
113.55 - 114.30 VICTORIA VEIN - FAULT ZONE Quartz breccia
Massive pyrite layer @ 113.80 is 60° to core axis, bounding fault @ 65° 113.55 - 113.82
Fault Gouge 113.82 - 114.30 ... Angular fragments in Qtz. bx, Aspy in quartz matrix .....
114.30 - 138.12 ARGILLACEOUS QUARTZITE: dark grey, ± biotite and Andalusite
Light green laminated mylonitic shearing (parallel to bedding). @ 24° to core axis from 114.30 - 116.72
* Difference between Biotite - Quartz schist and Argillaceous Quartzite is the greater abundance of "quartzite" component in the HQ, less biotite, less well foliated, and presence of abundant andalusite in the HQ. The two units appear to grade into one another and could be difficult to separate on the outcrop scale.
Fractured silica-rich interval 121.38 - 121.98, traces of pyrite on fracture surfaces
Compositional layering at 122.20 is 29° to core axis,
Quartz "sweats" 123.55 - 123.99, 124.41 - 124.82, recrystalization of purer quartzite layers Minor pyrite, parallel to bedding
Calc-silicate development - light green, laminated 124.11 - 124.32, chloritic
Abundant Andalusite
Green interval, skarnified 127.48 - 127.89 Actinolite, Quartz 127.89 - 128.02
Compositional layering at 128.40 is 19° to core axis,
Altered silicified section 130.31 - 130.84, contorted appearance
Greenish "MYlonitic" lamination 130.84 - 138.12 * Indication of approaching VEIN - FISSURE
Lamination varies from 25° to 35° to core axis, streaky
Aspy in 5mm quartz veinlet 132.37, very fine laminations, quartz boudins common
trace of Arsenopyrite 134.95, 5mm wide, has yellowish tinge and streaks.
Light grey where quartz dominates ....
Quartz - arsenopyrite veinlet 136.29 - 136.34, trace pyrite, buff calcite
138.12 - 139.16 "NEW VEIN" ... Quartz, Arsenopyrite, pyrite and Sphalerite
Possibly N. Z4 STRUCTURE Massive brown sphalerite @ 138.49 - 138.54 @ 52° to C.A
Arsenopyrite - Quartz banding at 138.20 is 53° to c.A. Aspy + sphalerite 50° to C.A at 138.60
Quartz breccia plus pyrite 138.68 - 139.16, sulfides in matrix, vugs around fragments
Angular quartz fragments: **LOWER SHEAR:: 139.66 - 140.21** sphalerite - pyrite - Aspy - Jamisonite, brecciated
139.16 - 144.48 ARGILLACEOUS QUARTZITE: ± biotite
Light green MYlonitic lamination to 141.73, below dark grey abundant Andalusite
Dark grey-black 141.73 - 144.48, very abundant biotite and Chlorite crs flakes
some actinolite. Minor gouge on lower contact.
144.48 - 147.77 BLEACHED, MYLONITIC GREEN QUARTZITE: silicified
same alteration rock-type that surrounds the New Vein 138.12 - 138.16., light green colour, streaky appearance, Abundant quartz seams. Overall dull-sugary texture
* brittle, No relict foliation, relatively uniform
147.77 - 149.46 ARGILLACEOUS QUARTZITE: Dark grey, Abundant biotite, but altered with quartz patches and green shear laminations
149.46 - 154.64 BLEACHED "MYLONITIC" GREEN QUARTZITE: silicified

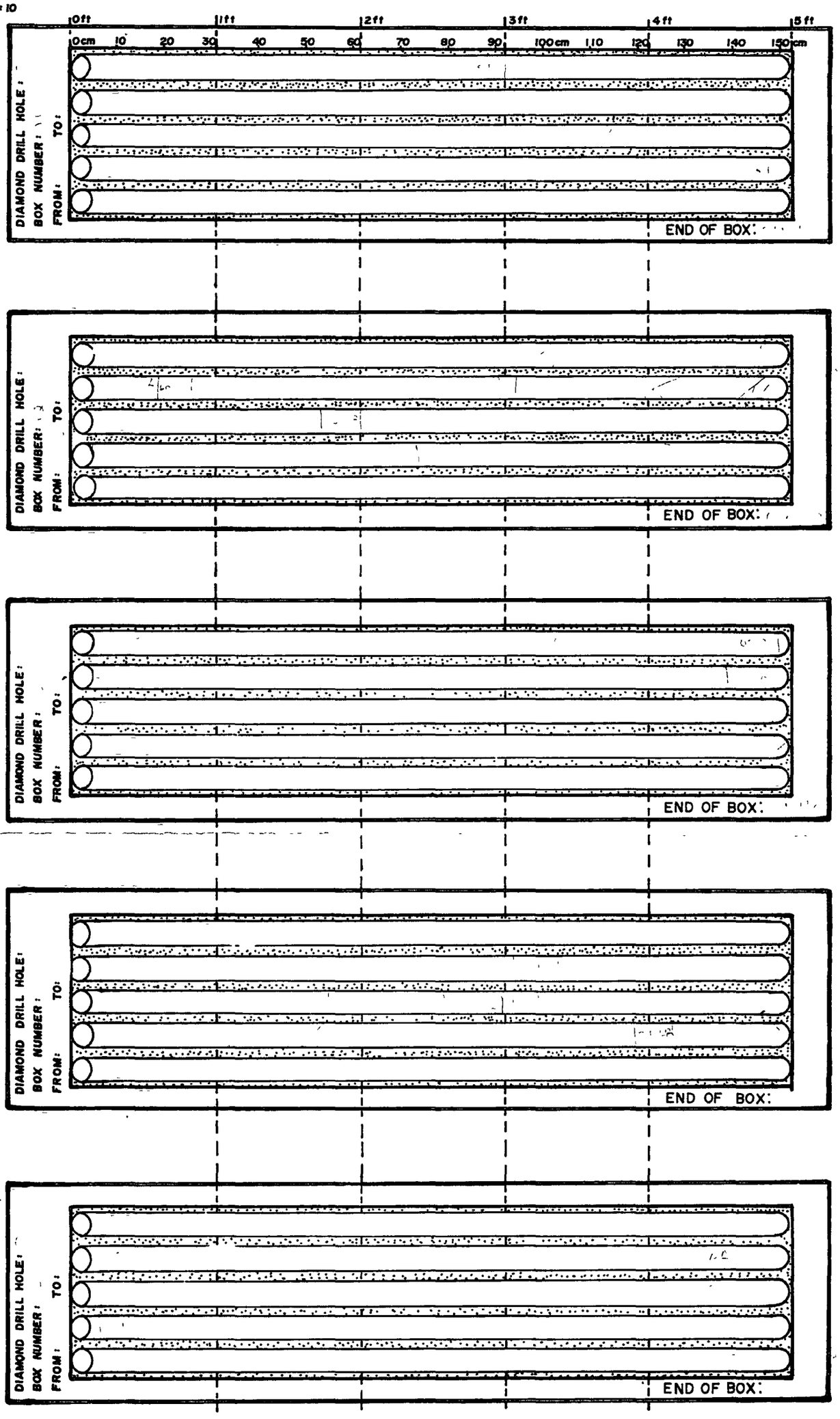
SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton
85312	110.00	111.00	1.00	0.003	<0.02
85313	111.00	112.00	1.00	0.002	0.02
85314	112.00	112.50	0.50	0.002	<0.02
85315	112.50	113.00	0.50	0.005	0.02
85316	113.00	113.55	0.55	0.003	0.03
85317	113.55	113.82	0.27	0.229	0.21
85318	113.82	114.30	0.48	0.007	0.05
85319	114.30	115.00	0.70	0.003	0.06
85320	115.00	116.00	1.00	0.002	<0.02
85321	116.00	117.00	1.00	0.002	<0.02
85322	117.00	118.00	1.00	0.002	<0.02
85323	124.00	125.00	1.00	0.002	<0.02
85324	134.90	135.50	0.60	0.003	<0.02
85325	135.50	136.00	0.50	0.002	<0.02
85326	136.00	136.50	0.50	0.044	0.05
85327	136.50	137.00	0.50	0.002	0.02
85328	137.00	137.50	0.50	<0.002	<0.02
85329	137.50	138.12	0.62	0.006	<0.02
85330	138.12	138.68	0.56	0.206	0.51
85331	138.68	139.16	0.48	0.012	0.28
85332	139.16	139.66	0.50	0.002	0.18
85333	139.66	140.21	0.55	0.008	0.18
85339	140.21	140.74	0.53	0.004	<0.02
85335	140.74	141.30	0.56	0.003	<0.02
85336	141.30	141.80	0.50	0.003	0.03
85337	141.80	142.50	0.70	0.002	<0.02
85338	142.50	143.26	0.76	0.003	<0.02
85334	143.26	144.00	0.74	0.002	<0.02
85340	144.00	145.00	1.00	0.003	<0.02
85341	145.00	146.00	1.00	0.003	<0.02
85342	146.00	147.00	1.00	0.003	0.03
85343	147.00	148.00	1.00	0.002	<0.02
85344	148.00	149.00	1.00	0.002	<0.02
85345	149.00	150.00	1.00	0.003	<0.02

OR NEXT PAGE

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN

DIAMOND DRILL RECORD

PROJECT: MAR GOLD (DUBLIN GULCH)

HOLE NUMBER: QRMG-86-001

SCALE 1: 250 METERS

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
150.88	100								
152.41	98								
	100								
153.92									
	97					XXX			
155.45		155.87							
	97								
156.67									
157.43	100								
	96								
158.98									
	105								
160.02									
	93	161.26							
161.54									
	94								
163.07									
164.59	102	164.59							
		EOH							

PURPOSE:

COMMENT:

INTERVAL from to

149.46 - 154.64 BLEACHED "MYLONITIC" GREEN QUARTZITE: siliceous
Light green, laminated, streaky-sheared appearance.
reflect. biotite from 150.96 - 151.90 ... Calcite - py. at 153.12
Pyrite band 153.19 - 153.21, gangue is flesh coloured calcite. @ 64° to core axis

154.64 - 155.12 QUARTZ - PYRITE BRECCIA 48cm wide core length
Massive pyrite and elongate quartz fragments @ 53° to core axis
Lower contact 53° Main sulfide concentration 154.79 - 155.12

155.12 - 157.67 BLEACHED MYLONITIC GREEN QUARTZITE siliceous
Minor gouge 155.90, light green, finely laminated
a radational. Lower contact over 1 meter of coarse quartz sweats

157.67 - 164.59 ARGILLACEOUS QUARTZITE + biotite and Andalusite
EOH dark grey with numerous lighter green layers
abundant. felted. andalusite.
compositional layering at 161.10 is 25° to core axis, irregular bleaching throughout
Irregular minor folding between 161.50 - 161.90
Minor shearing at 163.42 @ 41° to core axis., Brownish fringe apparent near EOH.
compositional layering at end of hole is 18° to core axis

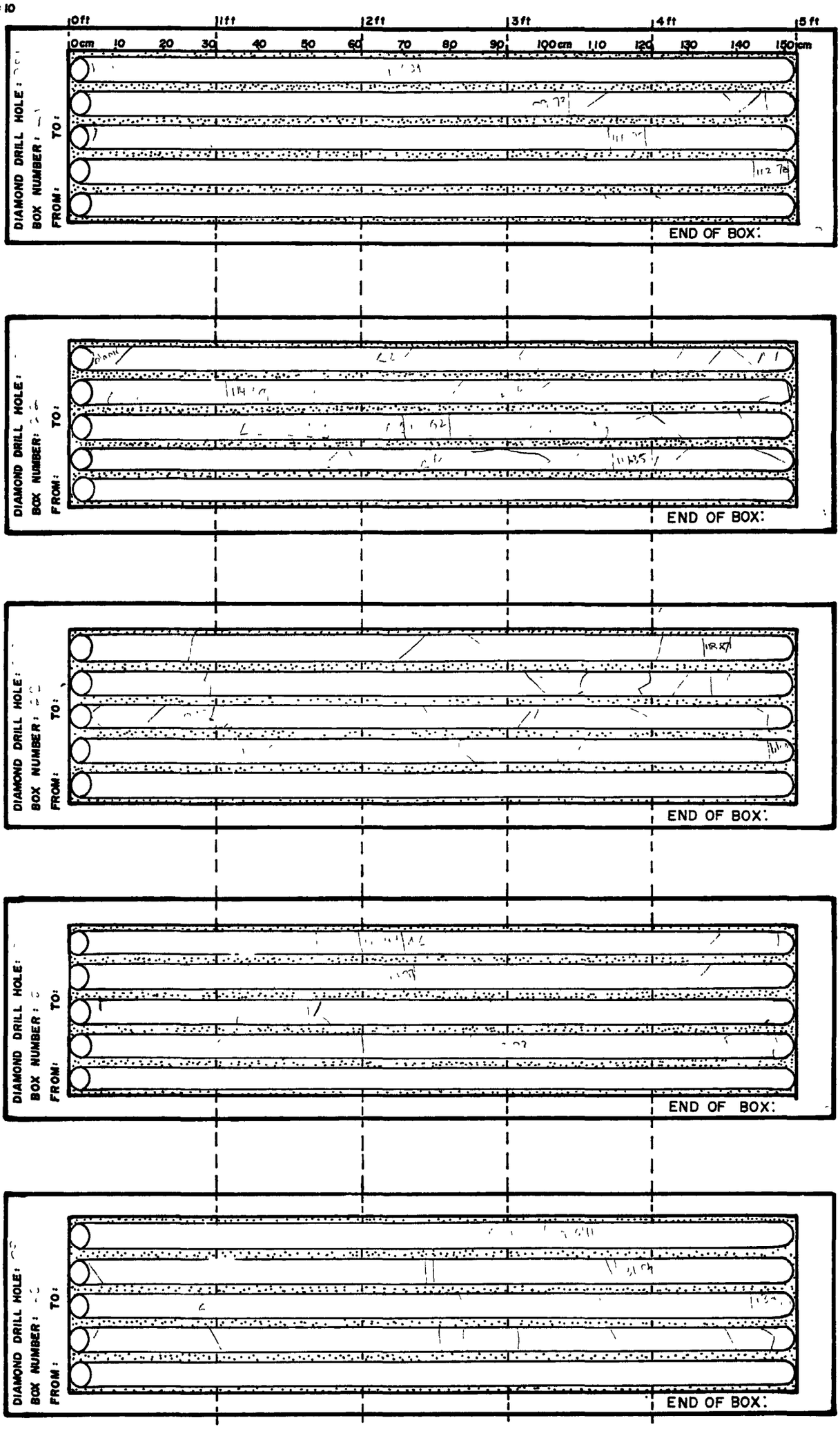
END OF HOLE 164.59 METERS
(540 feet)

SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton			
85346	150.00	151.00	1.00	<0.002	<0.02		
85347	151.00	152.00	1.00	<0.002	<0.02		
85348	152.00	153.00	1.00	<0.002	<0.02		
85349	153.00	153.50	0.50	0.02	0.03		
85350	153.50	154.00	0.50	<0.002	<0.02		
85351	154.00	154.64	0.64	<0.002	<0.02		
85352	154.64	155.12	0.48	0.037	0.06		
85353	155.12	155.70	0.58	<0.002	0.02		
85354	155.70	156.50	0.70	<0.002	<0.02	MISSING	
85355	156.50	157.50	1.00	<0.002	<0.02		
85356	157.50	158.50	1.00	<0.002	<0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

QUEENSTAKE RESOURCES LTD. — DUBLIN GULCH —

LOCATION: (LEVEL): VICTORIA VEIN — PROJECT: MAR GOLD

DIP: -60° AT COLLAR, DIRECTION: 35.° — DIAMOND DRILL RECORD — HOLE NUMBER: QRMG 86- 002

LATITUDE: 7,100,891.21 N (UTM METRIC Coord Underhill) — LENGTH: 194.16 meters (637 ft) — ELEVATION: 1214.54 meters — CLAIM NUMBER: BOB 1

DEPARTURE: 461,445.44 E (Grid 1978 Underhill) — CORE SIZE: NQ — DATE LOGGED: AUGUST 18-21/86 — LOCATION: DUBLIN GULCH PLACER CAMP

STARTED: AUGUST 17 (NIGHT SHIFT) 1986 — FINISHED: AUGUST 20 N.S. 1986 — LOGGED BY: J. A. FRASER — SAMPLED BY: J.S., L.S.

O.B. THICKNESS: 1.22 meters — STARTED: AUGUST 17 N.S. 1986 — FINISHED: AUGUST 17 N.S. 1986 — CASING: 1.83 H.W. meters LEFT IN HOLE

B.R. THICKNESS: 192.94 meters — STARTED: AUGUST 17 N.S. 1986 — FINISHED: AUGUST 20 N.S. 1986 — TOTAL RECOVERY: 98%

CONTRACTOR: E. CARON DIAMOND DRILLING LTD — CORE STORED: DUBLIN GULCH PLACER CAMP

LY-38 — RUNNERS: M. McLELLAN (B.S.), K. MAC. (N.S.) — METRIC CONVERSION BY: L.S.

CORE RECOVERY BY: L.S.

SURVEY: ACID TEST

DEPTH	BEARING	ANGLE Reading	ANGLE Correc
COLLAR	35°	-60	-60
91.44	—	-67	-60
189.59	—	-66½	-59½

PURPOSE:

COMMENT:

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from	to	SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton	Ag oz/ton		
											0	1.22								
1.22	54										1.22	10.81								
2.44	133																			
2.74	104																			
3.96	89																			
4.88	89	5.19																		
5.79	89																			
6.71	103																			
7.32	88																			
8.23	83																			
9.45	92	9.79																		
10.97	88								gouge											
11.89	106										10.81	22.48								
13.41	103								ttp											
14.44	91	14.78											85357	14.00	15.00	1.00	<0.002	<0.02		
16.46	95								Aspy				85358	15.00	16.00	1.00	<0.002	<0.02		
17.98	103												85359	16.00	17.00	1.00	<0.002	<0.02		
19.51	105												85360	17.00	18.00	1.00	<0.002	<0.02		
21.03	105	20.10											85361	18.00	19.00	1.00	<0.002	<0.02		
22.56	98												85362	19.00	20.00	1.00	<0.002	<0.02		
24.08	101												85363	20.00	21.00	1.00	<0.002	<0.02		
25.60	92	25.52											85364	21.00	22.00	1.00	<0.002	<0.02		
27.13	102								py		22.48	26.04	85365	22.00	23.00	1.00	<0.002	<0.02		
28.65	98								py				85366	23.00	24.00	1.00	<0.002	0.03		
29.57	94								py				85367	24.00	25.00	1.00	<0.002	<0.02		
	94												85368	25.00	26.04	1.04	<0.002	<0.02		
													85369	26.04	26.54	0.50	0.002	0.12		
													85370	26.54	27.19	0.65	0.059	0.64	=	
													85371	27.19	27.90	0.69	0.002	0.01		
													85372	27.90	29.00	1.10	0.002	0.03		
													85373	29.00	30.00	1.00	<0.002	<0.02		

0-1.22 RUBBLE: Broken Core.

1.22-10.81 MICACEOUS QUARTZITE: Light grey-green, pervasively stained by Limonite, Fractures coated with Limonite core near top of Hole very fractured. Many fractures also coated with MnO, Dominate fracture direction are 95° ± 20° to c.a. Compositional layering at 4:30 is 41° to core axis, Network of fractures...

Very broken core 7.10-7.55

minor Limonite gouge at 9.00, 25° to c.a

MAJOR FAULT-GOUGE ZONE 9.45-9.89, rough slickensides @ subparallel to c.a.

10.81-22.48 BIOTITE-HORNBLENDE GRANODIORITE: Hypidiomorphic granular medium crystalline, Relatively fresh, Minor sericitic alteration around veinlets...

Inclusions of biotite-andalusite schist 11.94-12.30, Trace of pyrite in quartz veinlet very fractured core 1.5cm wide @ 60° to c.a at 12.53

partly assimilated schist fragment 14.32-14.60

Minor quartz veinlets 14.70 to end of interval @ 60° to core axis 1-3mm wide. traces of pyrite and arsenopyrite associated with veinlets.

White, chalky plagioclase phenocrysts common throughout.

Minor gouge-friable rock 20.81-20.92

Intense sericite-chlorite alteration 21.80-21.99, enveloping quartz stringer sharp lower contact @ 25° to core axis

22.48-26.04 BIOTITE-QUARTZ SCHIST: Biotite dominate, dark grey pervasive limonite staining over short intervals, purer quartzite layers common highly recrystallized. compositional layering at 51° to core axis

26.04-27.19 QUARTZ-PYRITE ZONE: Disseminated pyrite + quartz 26.04-26.54 Massive PYRITE 26.54-27.19

banding in massive pyrite @ 46° to core axis, Lower contact sub parallel to c.a

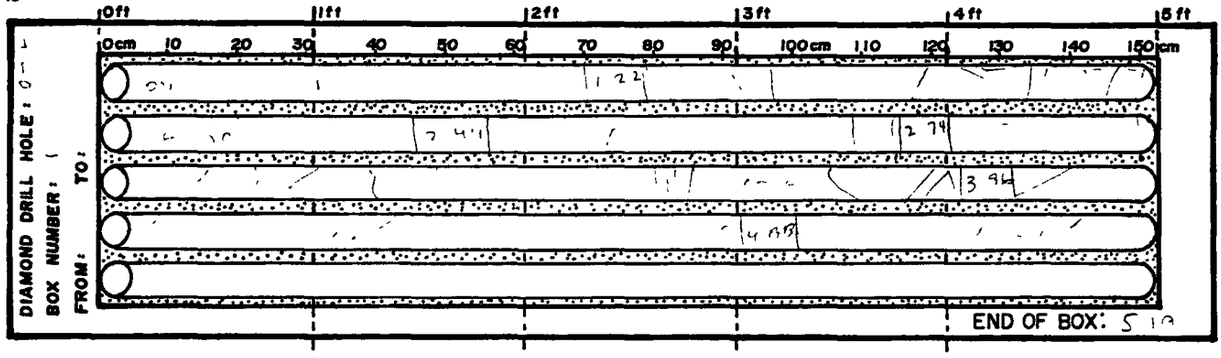
27.19-27.90 VERY ALTERED GRANODIORITE: Light grey, equigranular throughout

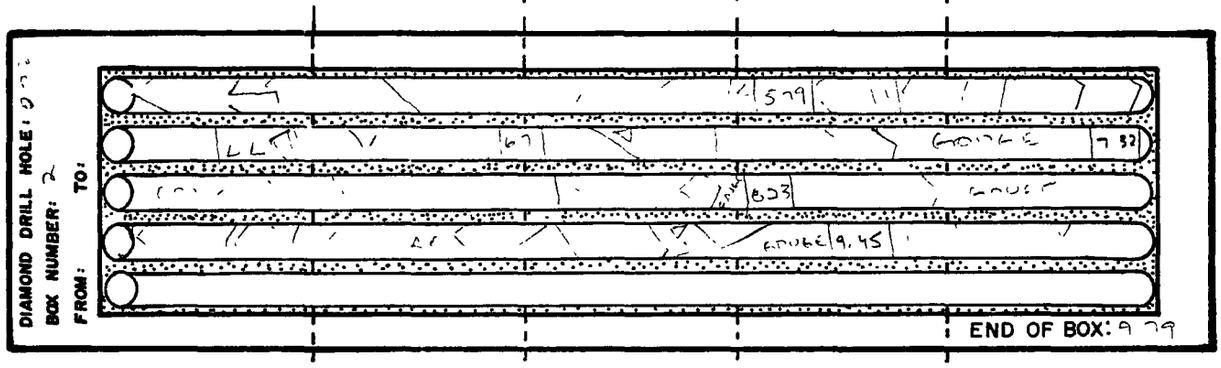
27.90-35.17 MICACEOUS QUARTZITE: Disseminated pyrite throughout Minor granodiorite @ 29.88-30.18 light greenish grey... Minor gouge at 30.86, dark hair lines common...

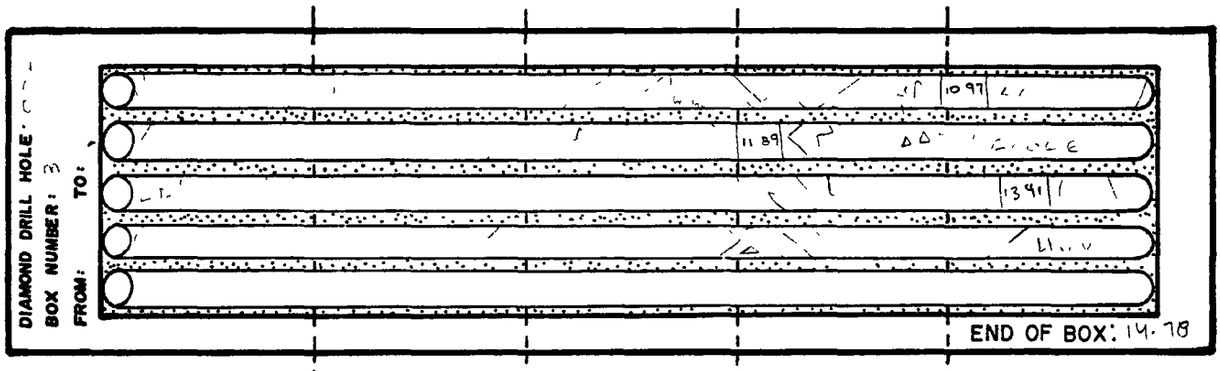
TRM ENGINEERING LTD.

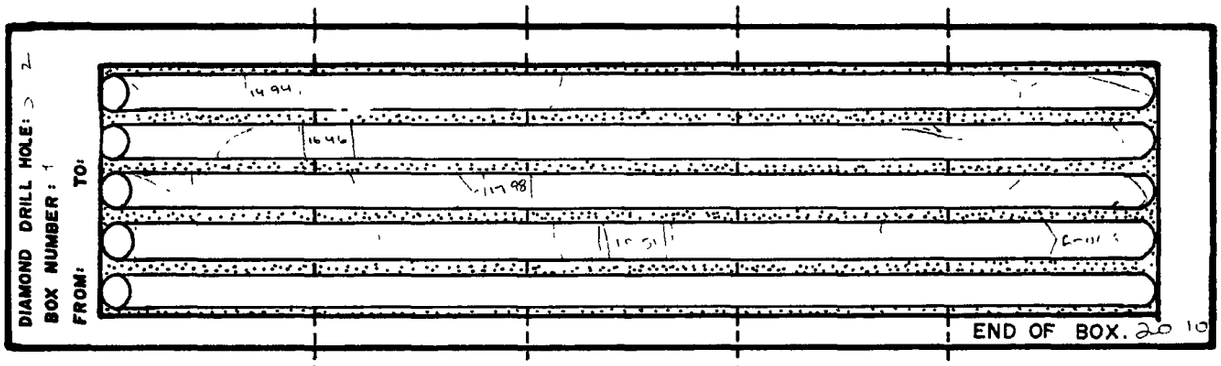
ROCK MECHANICS MEASUREMENTS

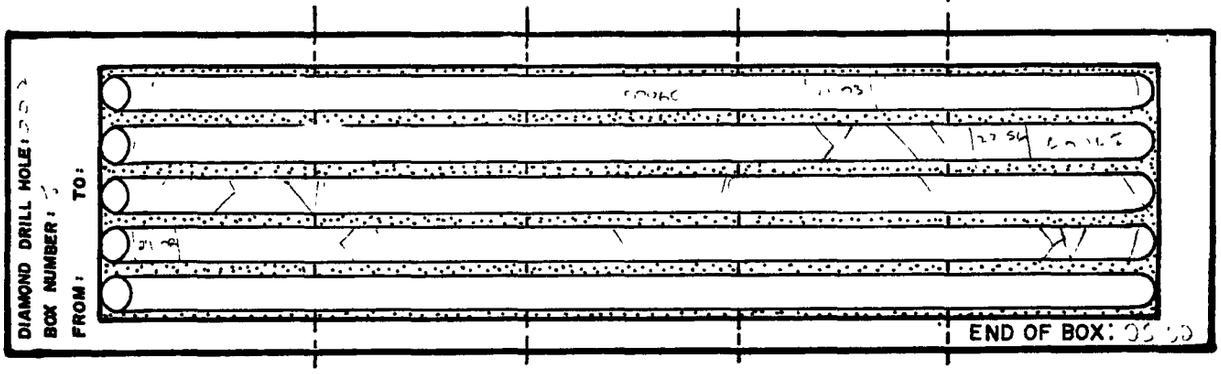
SCALE = 1:10











TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART - CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-002

PURPOSE:

COMMENT:

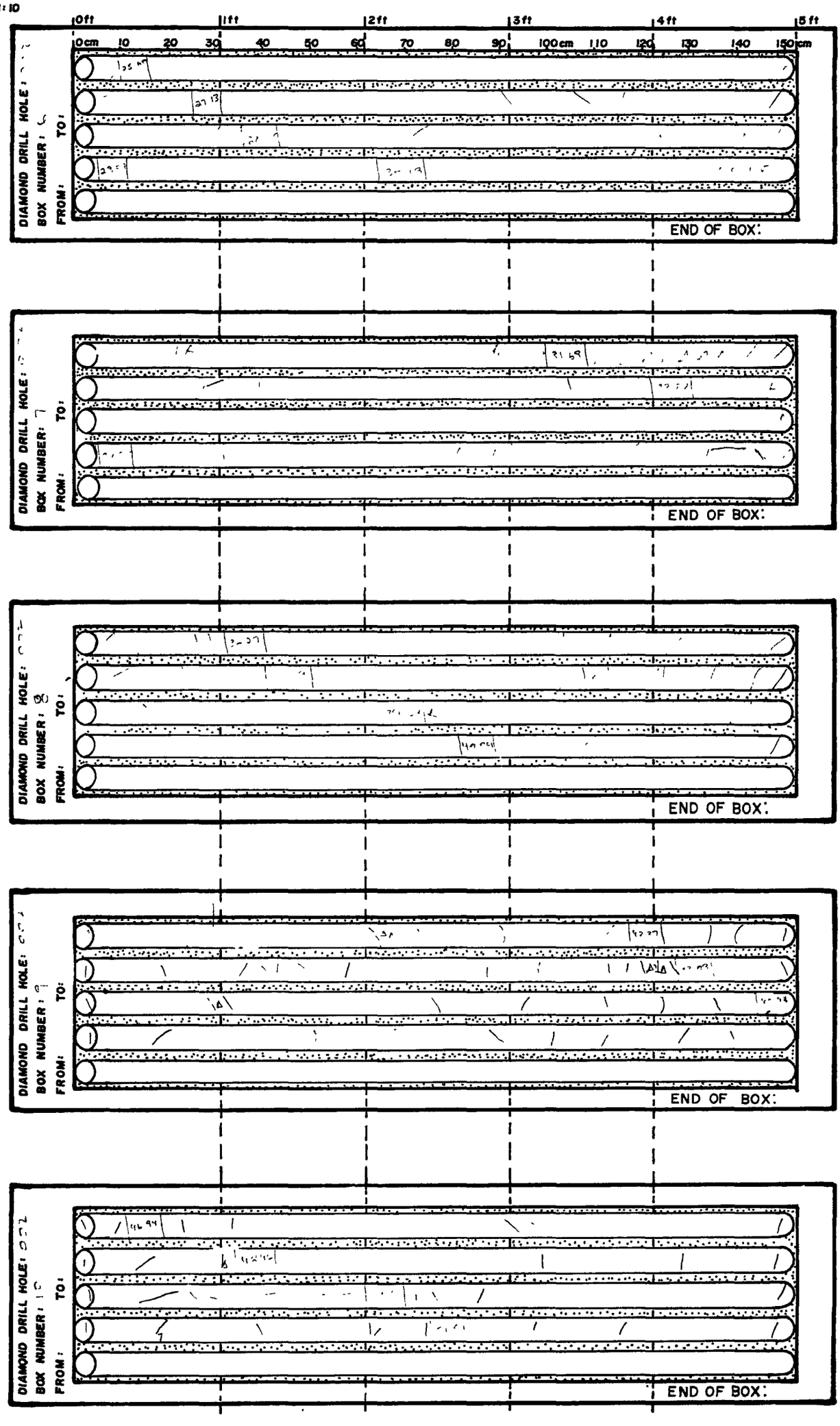
DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from to	GEOLOGY
30.18		30.05	31								27.90 - 35.17	MICACEOUS QUARTZITE · Light grey-green, limonite stained well fractured, relatively less foliated, compositional layering at 32.60 is 40° to C.A.
31.69	103		32									
33.22	103		33									
34.75	100		34									
36.27	97	36.05	35					~~	py aspy		35.17 - 35.60	PYRITE - ARSENOPYRITE - QUARTZ · White quartz with massive pyrite and arsenopyrite 35.17 to 35.40, Broken core of quartzite to 35.60 with disseminated pyrite. Pyrite layering at 53° to core axis.
37.79	100		36								35.60 - 37.88	MICACEOUS QUARTZITE · Light grey-green, yellow-brown limonite stain
39.32	95		37									Layered Luminations @ 44° to core axis, Abundant micro fractures
40.84	95	41.31	38									
42.37	100		39									
43.89	95		40									
45.42	95		41								37.88 - 52.81	ARGILLACEOUS QUARTZITE ± biotite and Andalusite
46.94	102	46.80	42									dark grey, green calc-silicate streaks and knots common, Andalusite locally abundant, Minor gouge + slickensides at 40.79 @ 45° to C.A
48.46	105		43									Rusty, leached fractures common down to 46.00 mainly at 40° and 65° to C.A
49.99	98		44									Compositional layering at 43.50 is 48° to core axis, chlorite throughout
51.51	98		45									Narrow quartz - calcite veining 46.35 and 46.80 @ 49° to C.A, minor pyrite associated with veining
53.03	102	52.09	46									Compositional layering at 46.30 is 48° to core axis.
54.56	102		47									
56.08	100		48									Minor gouge at 48.26 @ 40° to C.A, Light grey
57.61	98	57.46	49									Breccia texture 48.26 - 50.70, very chloritic granodiorite forming matrix position from 50.15 - 50.70, Minor arsenopyrite 50.08 in 2cm quartz vein with white feldspar selvages
59.13	95		50						aspy			
60.66	99		51									Compositional layering at 52.00 is 43° to core axis
62.18	103		52									
63.70	97	62.67	53								53.81 - 55.12	CATTO VEIN SYSTEM · Three main quartz - arsenopyrite
65.23	97		54						aspy			vein + compose system, VEINS 53.81 - 53.89 54.18 - 54.49 54.65 - 54.82 white quartz
	100		55						aspy			Arsenopyrite disseminated in adjacent fractures, Veins are at 47° to core axis
68.28		68.35	56						aspy			veins cutting compositional layering at about 95° to core axis.
	99	14	57								55.12 - 64.25	ARGILLACEOUS QUARTZITE · ± biotite and andalusite
			58									Dark grey, abundant andalusite, broken fractured core 56.72 - 57.61, rusty stained
			59									Minor gouge at 56.85 and 57.00, Arsenopyrite veinlet at 57.14, 1cm wide @ 45°
			60									Compositional banding at 57.40 is 43° to core axis, Minor shearing at 58.12 + 58.30
			61									White feldspar veinlets common 59.50 - 60.80, minor light grey bleached envelopes around veinlets.
			62									chlorite lenses at 60.80.
			63									Compositional layering at 62.30 is 48° to core axis, wispy in places and lenticular.
			64									very abundant andalusite.
			65								64.25 - 67.45	SLIGHTLY SKARNIFIED QUARTZITE · Light green,
			66									fine grained calc-silicate development, uniform siliceous appearance
			67									compositional layering is 37° to core axis, black hairlines common, ⊥ to layering
			68								67.45 - 72.04	ARGILLACEOUS QUARTZITE : dark to light grey ± biotite and
			69									Less calc-silicate development but still short sections of skarnified quartzite, Andalusite
			70									short white granodiorite interval 68.79 - 69.30, fractured core, bleached.

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton
B5374	30.00	31.00	1.00	<0.002	<0.02
B5375	31.00	32.00	1.00	<0.002	<0.02
B5376	32.00	33.00	1.00	<0.002	<0.02
B5377	33.00	34.00	1.00	0.002	<0.02
B5378	34.00	35.17	1.17	<0.002	<0.02
B5379	35.17	35.60	0.43	1.764	0.51
B5380	35.60	36.27	0.67	0.007	<0.02
B5381	36.27	37.00	0.73	0.004	<0.02
B5382	52.00	53.00	1.00	<0.002	<0.02
B5383	53.00	53.50	0.50	0.03	<0.02
B5384	53.50	54.00	0.50	0.006	<0.02
B5385	54.00	54.50	0.50	0.008	<0.02
B5386	54.50	55.00	0.50	0.027	0.03
B5387	55.00	55.50	0.50	0.002	<0.02
B5388	55.50	56.00	0.50	<0.002	<0.02
B5389	56.00	56.50	0.50	0.005	<0.02
B5390	56.50	57.00	0.50	<0.002	<0.02
B5391	57.00	58.00	1.00	0.003	<0.02

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION:

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-002

SCALE 1:250 METERS

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
71.32	99	4							
	98	73.51							
74.37									
	95	5							
77.42									
	100	79.22						Aspy	
80.47								Aspy	
	97	6						Aspy	
83.52		84.69							
	101	7							
86.56									
	97	8							
89.61		90.06						Aspy	
	100	8						Aspy	
92.66									
	100	8							
95.71		95.84							
	100	9							
98.76									
	95	9							
100.74									
101.80	104	101.40							
	99	11						Aspy	
104.85								Aspy	
	97	11							
107.89		106.86							
	97	11							
110.95									

PURPOSE:

COMMENT:

INTERVAL from to

67.45 - 127.04 ARGILLACEOUS QUARTZITE ± biotite and Andalusite.
Light to dark grey, less dark component than above, Fractured core 71.65 - 72.40 minor limonite @ 28°
Compositional layering at 73.00 is 36° to core axis
Isoclinal fold structure at 73.72 - uniform green "bed" closure. @ 40° to c.A.

Granodiorite 76.68 - 76.77 and 76.95 - 77.14 white bleached.
sill-like, very contorted layering between the two sills

Traces of arsenopyrite along fractures at 78.38 and 78.40, 2mm wide @ 45° to c.A
white quartz veins near 45° veining but perpendicular orientation.
Minor arsenopyrite 79.42 and 79.47, 1-3 mm wide, Granodiorite 79.28 - 79.77.
Arsenopyrite 80.90 and 80.98. @ 40° to c.A.
Abundant andalusite crystals up to 2mm long

Compositional layering at 84.10 is 41° to core axis,

Quartz - Arsenopyrite veinlet 85.12 @ 43° to core axis, 7mm wide traces of pyrite

Layering at 87.05 is 44° to core axis, Adalusite abundant

traces of euhedral arsenopyrite @ 89.92, many fractures are also coated with white calcite

Arsenopyrite on fractures 92.55, traces of arsenopyrite throughout sampled interval
also minor disseminated pyrite
Compositional layering at 93.60 is 50° to core axis, thinly laminated.
Triangular wedges of purer quartzite (fold slices) common 95.00 - 96.00.

White feldspar veinlets 97.59, bleached envelopes

Dark, relatively uniform argillaceous quartzite, constant compositional layering @ 43°

short 1cm layer of debrecitely banded material 100.80
Intersecting white veins - dykes, partly granodiorite in composition at 100.92
short granodiorite intervals 101.92 - 102.12. Also 1-2cm sill-dykes 101.90 - 101.80
Arsenopyrite coated fractures @ 103.11 and 103.37, Mylonitic lamination common
and 104.49 48° to CA' Light green, yellow.
Abundant quartz in larger scale breccia texture 104.84 - 106.20
Chlorite lenses marking boundary between quartz (silica) dominate areas and schist (biotite) dominate
wispy layering, purer quartzite component dominates

Compositional layering at 109.50 is 43° to core axis, brecciated appearance below 108.50

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
85392	77.00	78.00	1.00	<0.002	<0.02		
85393	78.00	79.00	1.00	0.006	<0.02		
85394	79.00	80.00	1.00	0.003	<0.02		
85395	80.00	81.00	1.00	0.005	<0.02		
85396	81.00	82.00	1.00	0.002	0.05		
85397	82.00	83.00	1.00	<0.002	<0.02		
85398	83.00	84.00	1.00	0.002	<0.02		
85399	84.00	85.00	1.00	<0.002	<0.02		
85400	85.00	86.00	1.00	0.017	<0.02		
85401	86.00	87.00	1.00	<0.002	0.15		
85402	87.00	88.00	1.00	<0.002	<0.02		
85403	88.00	89.00	1.00	<0.002	<0.02		
85404	89.00	90.00	1.00	<0.002	<0.02		
85405	90.00	91.00	1.00	0.002	<0.02		
85406	91.00	92.00	1.00	<0.002	<0.02		
85407	92.00	93.00	1.00	0.002	<0.02		
85408	93.00	94.00	1.00	<0.002	<0.02		
85409	94.00	95.00	1.00	<0.002	0.05		
85410	95.00	96.00	1.00	<0.002	<0.02		
85411	103.00	104.00	1.00	0.018	0.02		
85412	104.00	105.00	1.00	0.008	<0.02		
85413	105.00	106.00	1.00	<0.002	<0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10

0 ft | 1 ft | 2 ft | 3 ft | 4 ft | 5 ft

0 cm | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 cm | 110 | 120 | 130 | 140 | 150 cm

DIAMOND DRILL HOLE:
BOX NUMBER:
FROM: TO:

END OF BOX:

DIAMOND DRILL HOLE:
BOX NUMBER:
FROM: TO:

END OF BOX:

DIAMOND DRILL HOLE:
BOX NUMBER:
FROM: TO:

END OF BOX:

DIAMOND DRILL HOLE:
BOX NUMBER:
FROM: TO:

END OF BOX:

DIAMOND DRILL HOLE:
BOX NUMBER:
FROM: TO:

END OF BOX:

TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART-CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-002

PURPOSE:

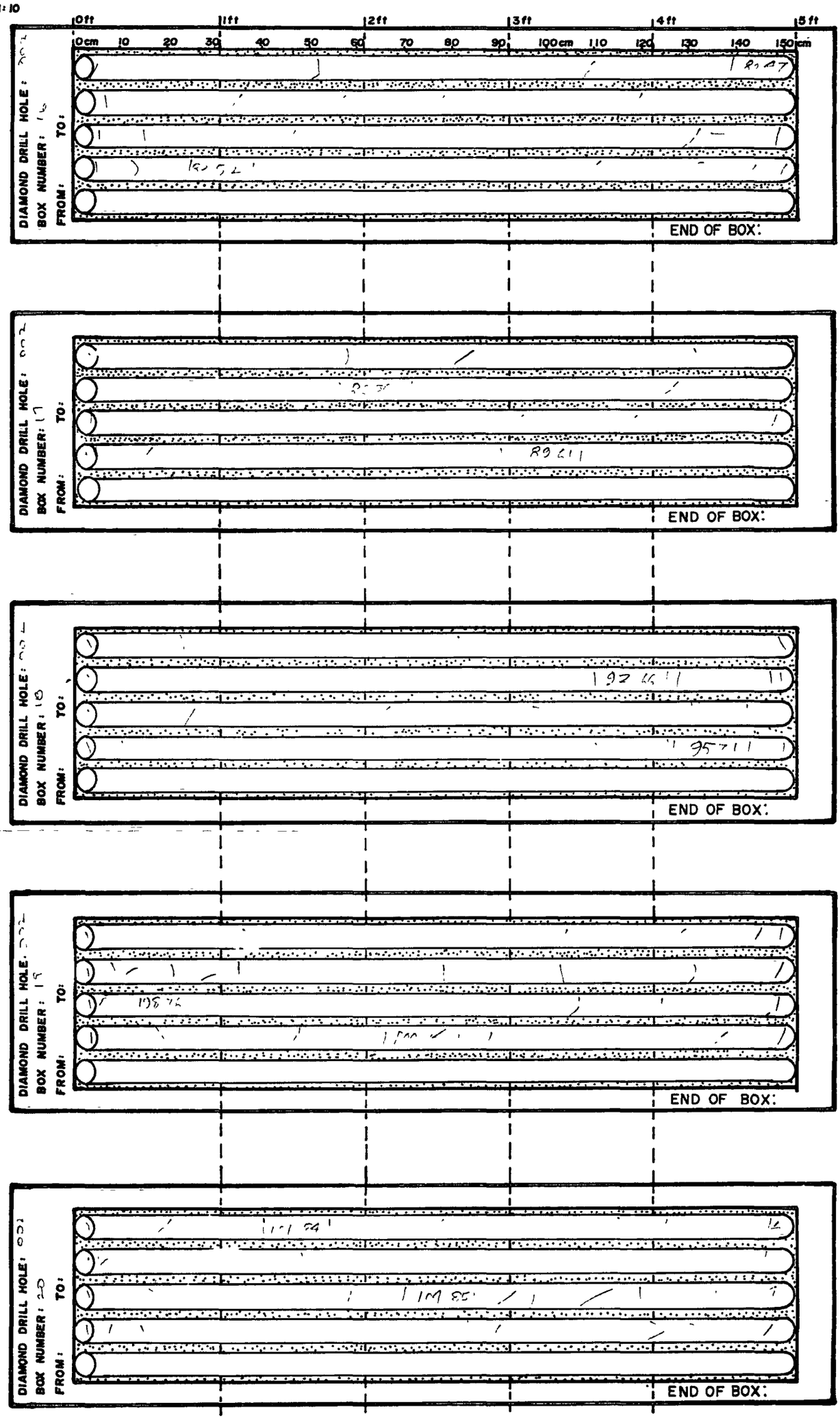
COMMENT:

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from to	SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
110.95			111								67.45 - 127.04 AGILLACEOUS QUARTZITE : ± BIOTITE AND ANDALUSITE:								
	98	TR64	112								mainly light grey, purer quartzite dominate, cremulation cleavage common.	85500	112.00	112.50	0.50	0.007	<0.02		
			113						Aspy		Arsenopyrite veinlet at 112.48 @ 50° to core axis, 5mm wide.	85414	112.50	113.00	0.50	No 003	<0.02		
113.99			114								Andalusite very abundant	85415	113.00	114.00	1.00	0 011	<0.02		
	98		115								Compositional layering at 115.70 is 42° to core axis, thin wispy layering	85416	114.00	115.00	1.00	0 002	<0.02		
			116								short igneous appearing sections, silica-rich, patches of biotite	85417	115.00	116.00	1.00	<0.002	<0.02		
117.04			117									85418	116.00	117.00	1.00	0.004	<0.02		
	90	118.24	118								layering at 117.90 is 45° to core axis	85419	117.00	118.00	1.00	0 002	<0.02		
			119									85420	118.00	119.00	1.00	<0.002	<0.02		
119.79			120								short interval of fractured core 119.15 to 119.79 traces of Aspy on fractures	85421	119.00	120.00	1.00	<0.002	<0.02		
	98		121									85422	120.00	121.00	1.00	<0.002	<0.02		
			122						Aspy		Arsenopyrite veinlet at 121.22, 5mm wide @ 50° to core axis	85423	121.00	122.00	1.00	0.019	<0.02		
122.83			123									85424	122.00	123.00	1.00	0.004	<0.02		
	99	123.98	124								Andalusite very abundant 123.00 to 123.71 Mylonite 123.71 - to 123.92.	85425	123.00	124.00	1.00	0.002	<0.02		
			125								Compositional layering 41° to core axis 124.70	85426	124.00	125.00	1.00	<0.002	<0.02		
125.88			126								sharp lower contact over 5cm, silica-rich interval	85427	125.00	126.00	1.00	<0.002	<0.02		
	100		127								127.04 - 132.90 MYLONITIC QUARTZITE. Light grey-green, finely laminated	85428	126.00	127.00	1.00	<0.002	<0.02		
			128								laminations at 50° to core axis, folding of puter quartzite layers prominate	85429	127.00	128.00	1.00	<0.002	<0.02		
128.78			129								Minor arsenopyrite along fractures at 52° to core axis., Quartz and Aspy 129.79-129.43	85430	128.00	129.00	1.00	0.003	<0.02		
129.24	140	129.79	130								Less mylonitic effects 129.88 - 130.28 brecciated; abundant Quartz masses.	85431	129.00	129.50	0.50	0.047	<0.02		
	93		131								Abundant quartz near lower contact	85432	129.50	130.00	0.50	<0.002	<0.02		
			132									85433	130.00	131.00	1.00	0.020	<0.02		
132.28			133								132.90 - 134.80 VICTORIA VEIN AND FAULT GOUGE white to light grey gouge.	85434	131.00	132.00	1.00	<0.002	<0.02		
	104	134.80	134						Aspy Aspy		Gouge composed of granulated quartz, Mylonite and arsenopyrite 132.90 - 133.84	85435	132.00	132.90	0.90	0 012	<0.02		
			135								Last portion heavy pyrite - massive lense, Arsenopyrite veinlet at 133.04 - 137.55	85436	132.90	133.50	0.60	0 012	0.02		
135.33											Extremely fractured Mylonite 133.55 - 134.50 white gouge 134.50 - 134.80 52° to core axis	85437	133.50	134.00	0.40	0.028	0.64		
	97		136									85438	134.00	134.80	0.80	0.805	40.02		
			137								134.80 - 139.21 MYLONITIC (ARGILLACEOUS) QUARTZITE: Light grey-green	85439	134.80	135.50	0.70	<0.002	<0.02		
138.18			138								Yellowish tinge, thinly laminated mylonite, laminations @ 48° to core axis,	85440	135.50	136.00	0.50	<0.002	<0.02		
	100	140.46	139								White quartz veining common throughout, Argillaceous Quartzite 136.15 - 137.17	85441	136.00	137.00	1.00	0.003	<0.02		
			140								Trace of arsenopyrite at 135.36, Lower contact sheared at 50° to core axis,	85442	137.00	138.00	1.00	<0.002	<0.02		
141.43			141								139.21 - 155.76 BIOTITE - HORNBLENDE GRANODIORITE:	85443	138.00	139.00	1.00	<0.002	<0.02		
	93		142								Intense sericite-chlorite alteration from upper contact to friable gouge at 139.34	85444	139.00	140.00	1.00	<0.002	<0.02		
			143								Gouge - sand zone 139.34 - 139.41. Mainly biotite dominate granodiorite								
144.48			144								Relatively fresh except for narrow altered envelopes around quartz-plag veins								
			145								Calcite present in some veinlets associated with euhedral quartz								
	98	145.93	146						Aspy		Minor dale-silicates and chlorite.								
			147								Traces of coarse crystalline arsenopyrite in quartz vein at 145.62 @ 47° to c.a.	85445	145.00	146.00	1.00	0.002	<0.02		
147.52			148								Minor disseminated arsenopyrite within alteration halo of vein.	85446	146.00	147.00	1.00	<0.002	<0.02		
	100		149						Aspy		white, chalky plagioclase phenocrysts common throughout.	85447	147.00	148.00	1.00	<0.002	<0.02		
150.57			150						Aspy		Arsenopyrite 148.12 @ 58° to c.a, close space plagioclase veinlet, 3mm wide.	85448	148.00	149.00	1.00	<0.002	<0.02		
											Trace of Arsenopyrite in 25° to core axis veinlet in slightly altered section 150.15.	85449	149.00	150.00	1.00	<0.002	<0.02		
														ON	CONT	PAGE				

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION:

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG -86- 002

PURPOSE:
COMMENT:

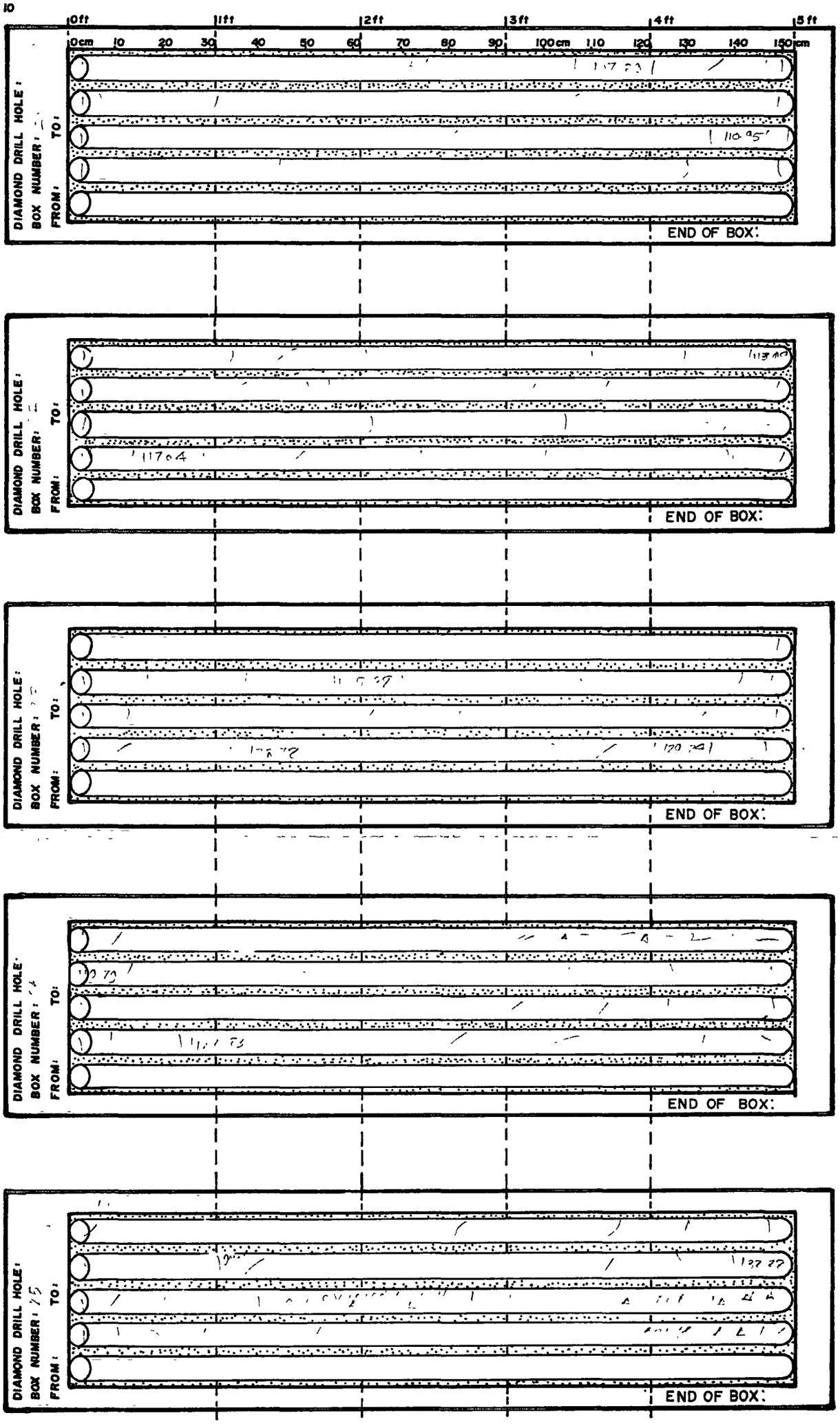
DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from to	
	98	28	151							+ + + +	139.21 - 155.76	BIOTITE-HORNBLENDE GRANODIORITE: Hypidiomorphic granular, medium crystalline, mainly relatively fresh but cut by many narrow quartz-plagioclase veinlets which have thin sericite-chlorite alteration halos. White alteration (bleaching) common without rein cores. Non foliated
153.62		153.11	152							+ + + +		
	97		153							+ + + +		
			154							+ + + +		
			155							+ + + +		
156.67			156								155.76 - 164.54	MYLONITIC GREEN QUARTZITE: Light green-yellow, finely laminated but poorly schistose, generally a competent rock type. Traces of brown sphalerite at 156.61, 3mm wide @ 46° to core axis. Minor biotite relicts 158.00 - 158.88, trace Arsenopyrite 159.02, 1cm wide. Stretched pebbles appearing at 159.10 @ 46° to core axis. Pebble conglomerate or coarse Lithic wacke. Possibly porphyroblastic but several different types present. Mylonitic lamination 50° to core axis, finely laminated.
	98		157.66									
159.72		157.66	158									
			159									
			160									
	98		161									
162.15		162.59	162									
			163									
	103		164								164.54 - 164.76	"NEW" VEIN: Quartz breccia zone with disseminated and lenses of pyrite, subrounded "ghost" fragments, shearing appears minimal, traces of brn. calcite.
165.20			165						PY			
			166						Sphal			Also minor sphalerite at 165.49, 2cm wide.
	98		167								164.76 - 175.41	MYLONITIC GREEN QUARTZITE Light green-yellow, pronounced pebbly appearance as above; lamination at 168.00 is 52° to core axis.
168.25		168.26	168									
			169									Calcite and sphalerite in veinlets 168.95 - 168.99, brown sphalerite @ 60° to core axis.
	98		170									
171.14			171									Gouge-like friable material at 170.02, 1cm wide @ 50° to C.A., subparallel to mylonite lamination.
	108		172									Vug at 171.91 in calcite-quartz zone, traces of secondary chlorite.
173.13		173.55	173									Dense light yellow, healed micro breccia, non laminated, Laminated 46° to C.A.
	99		174									Minor quartz "sweats" to lamination at 173.20 at 173.50. 173.90 - 173.45.
			175									Rock appears brecciated.
176.17			176							+ + + +	175.41 - 176.62	BIOTITE-HORNBLENDE GRANODIORITE Hypidiomorphic granular, medium crystalline, white feldspar veins common, minor calcite.
	90		177									crenulated lower contact.
178.00		179.26	178								176.62 - 184.28	MYLONITIC GREEN QUARTZITE: Light green-yellow,
	94		179									relict biotite - andalucite short intervals, compositional layering @ 58° to C.A.
180.15			180									Brecciated 177.98 - 178.55, several fragment types.
			181									
	103		182									Minor pyrite at 182.22, on calcite veinlet @ 61° to core axis, slickensides common,
			183						PY/Arp			Quartz-PYRITE ZONE 183.39 - 183.68 @ 44° to C.A.; veinlet largest at 3cm.
183.79			184								184.28 - 186.90	FAULT-FRACTURE ZONE IN MYLONITIC QUARTZITE
	87	184.45	185									Extremely fractured and broken core, calcite common, main fractures @ 65°.
185.17			186						PY			Quartz breccia throughout; Many fractures subparallel to core axis.
	105		187									pyrite at 185.50, small lenses.
187.15			188								186.90 - 189.16	MYLONITIC GREEN QUARTZITE: Light green-yellow
	93	188.59	189						PY			finely laminated, Abundant quartz, relict biotite common, Minor pyrite at 188.22
189.59											189.16 - 190.78	MINERALIZED, VERY ALTERED GRANODIORITE.
	104	36	190						Zns Sph Py			Abundant disseminated pyrite, sphalerite and jamborite 189.16 - 189.74 Intense sericite-chlorite alteration throughout, Biotite fragment at 190.00

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
85450	150.00	151.00	1.00	<0.002	<0.02		
85451	151.00	152.00	1.00	0.005	<0.02		
85452	152.00	153.00	1.00	0.004	<0.02		
85453	153.00	154.00	1.00	<0.002	<0.02		
85454	154.00	155.00	1.00	<0.002	<0.02		
85455	155.00	156.00	1.00	<0.002	<0.02		
85456	156.00	157.00	1.00	<0.002	<0.02		
85457	157.00	158.00	1.00	0.015	<0.02		
85458	158.00	159.00	1.00	<0.002	<0.02		
85459	159.00	160.00	1.00	<0.002	<0.02		
85460	160.00	161.00	1.00	<0.002	0.02		
85461	161.00	162.00	1.00	0.002	<0.02		
85462	162.00	163.00	1.00	<0.002	<0.02		
85463	163.00	164.00	1.00				MISSING
85464	164.00	164.90	0.50	0.002	0.08		
85465	164.90	165.00	0.50	<0.002	0.03		
85466	165.00	166.00	1.00	<0.002	0.02		
85467	166.00	167.00	1.00	0.002	<0.02		
85468	167.00	168.00	1.00	0.002	<0.02		
85469	168.00	169.00	1.00	0.002	<0.02		
85470	169.00	170.00	1.00	0.003	0.02		
85471	170.00	171.00	1.00	<0.002	<0.02		
85472	171.00	172.00	1.00	<0.002	<0.02		
85473	172.00	173.00	1.00	<0.002	0.02		
85474	173.00	174.00	1.00	<0.002	<0.02		
85475	174.00	175.00	1.00	<0.002	<0.02		
85476	175.00	176.00	1.00	0.002	<0.02		
85477	176.00	177.00	1.00	<0.002	<0.02		
85478	177.00	178.00	1.00	<0.002	<0.02		
85479	178.00	179.00	1.00	<0.002	<0.02		
85480	179.00	180.00	1.00	0.003	0.02		
85481	180.00	181.00	1.00	<0.002	<0.02		
85482	181.00	182.00	1.00	0.002	0.04		
85483	182.00	183.00	1.00	<0.002	0.04		
85484	183.00	184.00	1.00	0.002	0.02		
85485	184.00	185.00	1.00	<0.002	<0.02		
85486	185.00	186.00	1.00	0.003	0.02		
85487	186.00	187.00	1.00				MISSING
85488	187.00	188.00	1.00	0.002	0.05		
85489	188.00	188.60	0.60	<0.002	<0.02		
85490	188.60	189.16	0.56	<0.002	0.03		
85491	189.16	189.73	0.73	0.002	0.05		
85492	189.58	190.20	0.61	0.002	<0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

DIAMOND DRILL RECORD

LOCATION:

PROJECT: MAR GOLD

HOLE NUMBER: QRMG - 86 - 002

PURPOSE:

COMMENT:

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS
	104	36	191
			192
192.63			193
194.16	92	194.16	194
			195

INTERVAL from to

189.16 - 190.78 MINERALIZED, VERY ALTERED GRANODIORITE: white to light grey

190.78 - 194.16 ARGILLACEOUS QUARTZITE: biotite and Andalusite. dark grey Abundant. Andalusite., brecciated by white feldspar veinlets to stockwork. A short very altered intrusive interval 193.22 - 193.37 Minor mylonitic 192.60 - 193.22. compositional layering at 194.00 is 52° to core axis, wispy layering, brecciated

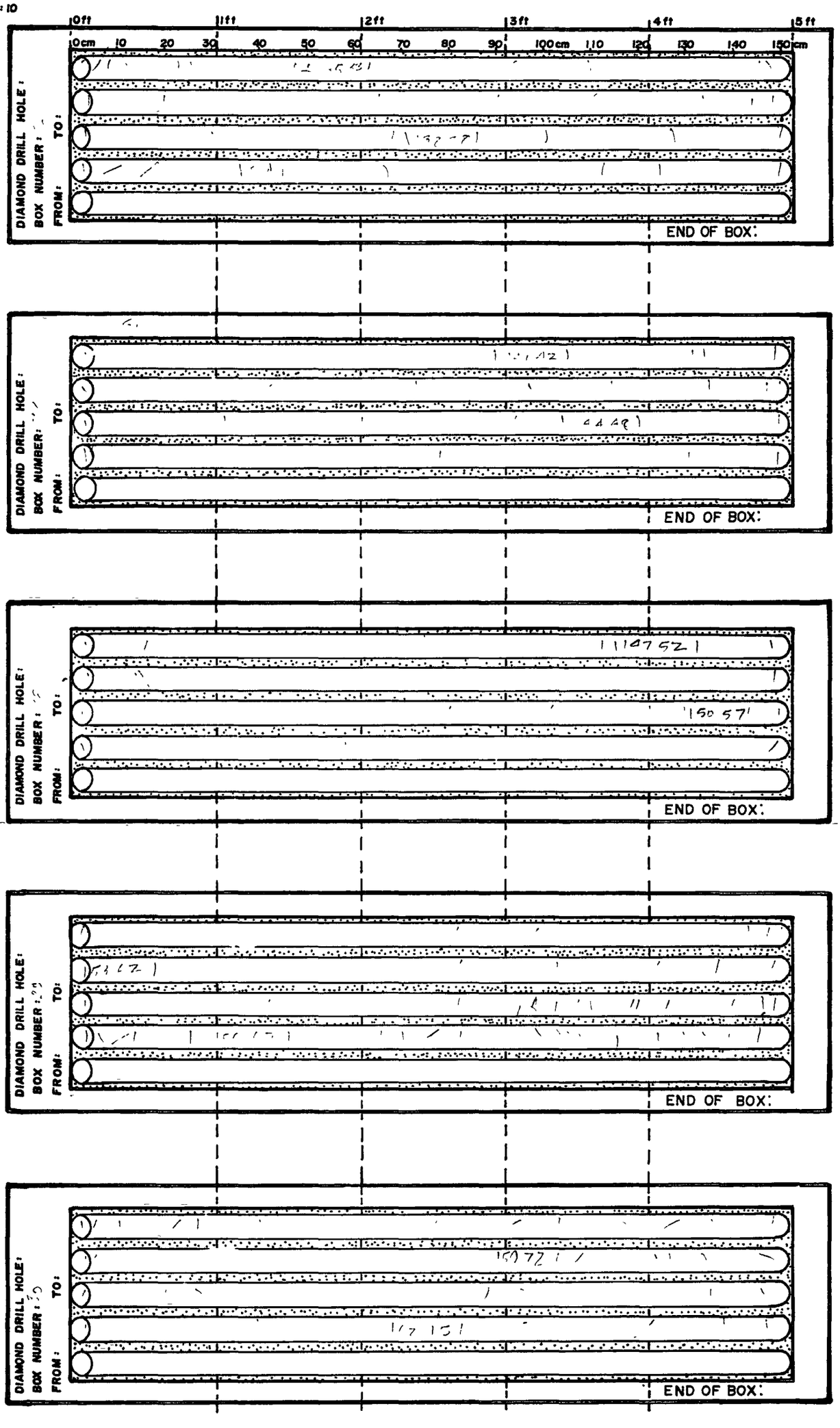
END OF HOLE 194.16 METERS (637 FEET)

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
85493	190.20	190.78	0.58	<0.002	<0.02		
85494	190.78	191.50	0.72	<0.002	<0.02		
85495	191.50	192.00	0.50	<0.002	<0.02		
85496	192.00	193.00	1.00	<0.002	<0.02		
85497	193.00	194.16	1.16	<0.002	<0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

QUEENSTAKE RESOURCES LTD

LOCATION: (LEVEL): VICTORIA VEIN (Stewart-Cat Ho Area)
DIP: -45° AT COLLAR, DIRECTION: 354°00' — DIAMOND DRILL RECORD — PROJECT: MAR GOLD — HOLE NUMBER: QRMG-86-003

LATITUDE: 7100,886N (UTM COOK METRIC Underhill) LENGTH: 156.06 meters (512 ft) ELEVATION: 1214.60 meters CLAIM NUMBER: BOB 1
DEPARTURE: 461,415E Grid 1978 Underhill CORE SIZE: NQ DATE LOGGED: AUGUST 18 - 23/86 LOCATION: DUBLIN GULCH PLACER CAMP
STARTED: AUGUST 17 (NIGHT SHIFT) 1986 FINISHED: AUGUST 23 p.s. 1986 LOGGED BY: V.J. SPEARER SAMPLED BY: J.S., L.S.
O.B. THICKNESS: 2.13 meters STARTED: AUGUST 17 1986 FINISHED: AUGUST 17 1986 CASING: 3.66 HW meters LEFT IN HOLE
B.R. THICKNESS: 153.93 meters STARTED: AUGUST 17 1986 FINISHED: AUGUST 23 1986 TOTAL RECOVERY: 95%
CONTRACTOR: E. CARON DIAMOND DRILLING LTD CORE STORED: DUBLIN GULCH PLACER CAMP
LY-38 RUNNERS: M. McLELLAN (D.S.), K. MAC (N.S.) METRIC CONVERSION BY: L.S.
CORE RECOVERY BY: L.S.

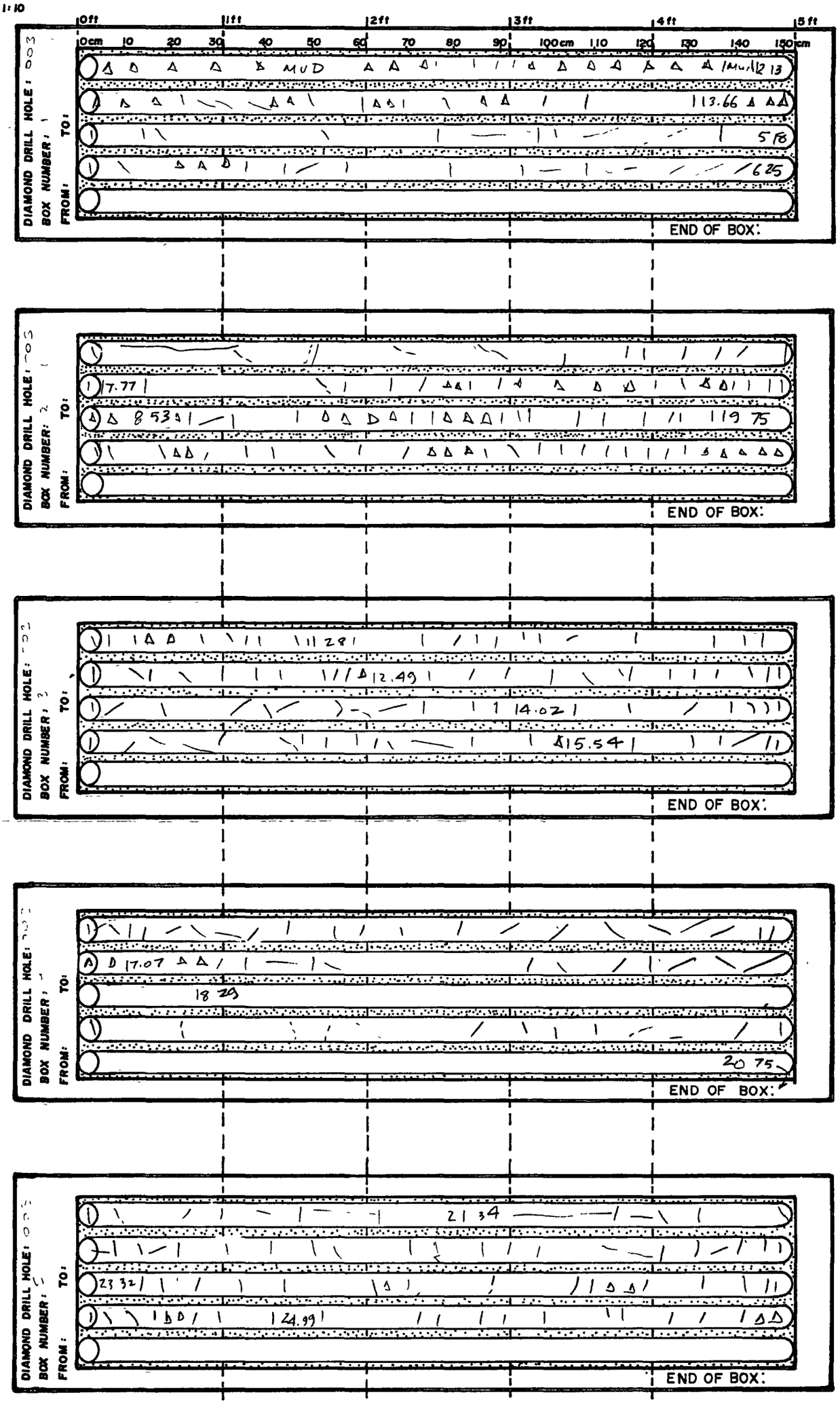
SURVEY ACID TEST		ANGLE	
DEPTH	BEARING	Reading	Correc
COLLAR	354°	-45°	-45°
91.44	—		
156.06	—		

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	PURPOSE. COMMENT: INTERVAL from to	SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton	Ag oz/ton
			1								0-2.13 NO CORE: Rubble, soil, broken rock fragments						
			2														
2.13		2.13									2.13 - MICACEOUS QUARTZITE: Light grey with dark streaks,						
3.66	65	1	3								Limonite on fractures but not as much pervasive FeO staining as previous holes.						
	87		4								Main direction of compositional layering is 30° to c.a., but near top of hole bedding						
5.18			5								is commonly contorted and folded.						
6.25	93	6.25	6								Compositional layering at 6.30 is 4° to core axis, subparallel until 6.90.						
	102		7								Minor andalusite at 6.85 along one layer; very fractured core.						
7.77																	
8.53	170		8								White recrystallized quartzite 8.75 - 9.75, highly fractured No sulfides						
	81		9								could possibly be a barren quartz vein.						
9.75																	
	100	11.05	10								Subparallel compositional layering at 10.00 down to 11.28.						
11.28			11								Limonite staining progressively becoming more intense and pervasive below 13.00.						
12.49	106		12								Highly fractured 11.50 - 14.00. Most fractures 70° to c.a. or subparallel.						
	102		13														
14.02			14						Aspy		Trace of Arsenopyrite at 13.76 along fracture @ 68° to c.a., MnO stain common.	13076	13.00	14.00	1.00	<0.002	<0.02
	87		15								Compositional layering at 13.58 is 34° to core axis.	13077	14.00	15.00	1.00	<0.002	0.21
15.54		15.97							Aspy		Traces of Arsenopyrite in lenses-patches and along fractures 15.71 - 15.76	13078	15.00	16.00	1.00	<0.002	0.03
	108		16									13079	16.00	17.00	1.00	<0.002	0.02
17.07											Pebbly core below 17.07 - core generally well fractured, most at 75° to core axis.						
18.29	110		17									13080	17.00	18.00	1.00	<0.002	0.02
			18								Layer of arsenopyrite at bottom contact of vein, sharp upper and lower contacts.	13081	18.00	19.00	1.00	<0.002	0.03
	103		19								Quartz - Arsenopyrite veinlet 19.16 - 19.20 @ 71° to core axis, brittle appearance.	13082	19.00	19.50	0.50	011	02
		20.75							Aspy		Compositional layering at 19.10 is 38° to core axis, giving rhythmic appearance.	13083	19.50	20.00	0.50	<0.002	<0.02
			20								Fractures parallel to c.a. Deep weathering over all.	13084	20.00	21.00	1.00	0.002	0.02
21.34			21														
	105		22														
23.32			23						Aspy		Arsenopyrite veinlet at 23.75, 5mm wide @ 60° to c.a., irregular thickness, minor scordite.						
	97		24								Orange-red friable material, perhaps fault gouge, 24.00 - 24.17 @ 20° to core axis	13085	23.50	24.00	0.50	0.011	0.02
24.99			25								MnO on fractures. Network of close spaced fractures.						
	78	26.12									Reddish orange gouge at 25.90 - 26.50, sheared, 5-10° to core axis.						
26.37			26														
27.28	92		27								Heavy limonite staining, compositional layering at 28.05 is 8° to core axis.						
	133		28														
28.35											Gouge at 29.63 - 29.67 @ 68° to core axis						
29.26	92		29								White, intense sericitic alteration of Quartzite, sheared appearance. Aspy @ 30.03 - 30.08 @ 58°, scordite						
	83	30.45	30									13086	29.50	30.00	0.50	0.003	0.07
													CORE	CASE			

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION:

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-003

PURPOSE:

COMMENT:

Drilling Interval	% Core Recovered
	83
31.09	94
32.31	114
34.14	87
35.66	94
37.03	115
38.56	97
40.23	85
42.06	102
43.74	96
45.72	103
48.54	95
49.38	97
52.43	102
54.86	63
56.59	192
57.91	90
59.44	105
60.96	95
63.86	94
66.90	107
67.67	100
69.95	100

Box Number: 7 (to 35.96), 8 (to 40.70), 9 (to 45.90), 10 (to 51.85), 11 (to 56.59), 12 (to 60.96), 13 (to 66.72), 14

Scale 1:250, Meters 31–70

Mineral: Aspy (32), Aspy (33), Aspy (34–35), Aspy (49), Aspy (50)

Geology: "CATTO" (32); + + + + (49.68–49.82)

INTERVAL from to

2.13-41.06 MICACEOUS QUARTZITE: Light grey, pervasive Limonite stain
"CATTO VEIN"
Quartz-PYRITE-ARSENOPYRITE ZONES: 32.08-32.15, 32.39-32.42 @ 57°.
traces of arsenopyrite @ 32.81, vein + scordite @ 33.11-33.13 and 33.94.
Vein with arsenopyrite, minor scordite at 34.06-34.12, also trace at 34.37 @ 56° to C.A.
Highly fractured core 35.20-35.66, FeO coating surfaces.
Pyrite oxidized in quartz "sweat" 35.14 compositional at 35.75 is 20° to core axis
Extremely fractured core 36.70-39.40, highly weathered appearance
Limonitic
Lusterous MnO on irregular shear fractures, subparallel to C.A @ 139.70
Compositional layering at 40.65 is 18° to core axis, somewhat wispy...

41.06-49.68 BIOTITE-QUARTZ SCHIST Dark grey and Light greenish-grey, well banded, Compositional layering at 43.10 is 34° to core axis.
slightly skarnified 43.74-44.22, Limonite very common on fractures, weathered appearance
Fault-Mylonitic shearing at 44.90-45.36, No gouge but fractured + yellow-green lamination
trace of arsenopyrite at 49.16-49.20 @ 60° to C.A. very altered granodiorite 49.02-49.16
Compositional layering at 48.10 is 21° to core axis, contortion of beds just before vein

49.68-49.82 QUARTZ VEIN: Light grey quartz and masses of arsenopyrite throughout vein at 52° to core axis, sharp contacts, trace of pyrite and brown calcite.

49.82-67.68 BIOTITE-QUARTZ SCHIST: dark grey, well layered
Extremely fractured + Limonitic core 51.00-51.35, compositional layering at 50.10 is 5° to C.A.
white hairline with traces of pyrite at 51.63, bleached halo 1cm wide @ 78° to C.A.
Minor andalusite at 54.18-54.26
Compositional banding at 55.60 is 27° to core axis.
friable fracture slices 56.59-56.90, biotite dominate layers highly weathered.
Layering contorted 57.85, silica rich 58.17-58.56, minor calcite veining.
Very weathered appearance throughout, Limonite common.
Andalusite composing dark layers, at expense of biotite.
small scale folding and associated crenulation between 62.50-62.90.
Compositional layering at 62.90 is 23° to C.A., in varigated Quartzite dominate section.
Calc-silicates developed in recrystallized quartzite 64.12-64.68
Abundant andalusite near lower contact; gouge at 67.20
Lower contact sheared, direction not well defined but roughly 35° to core axis.

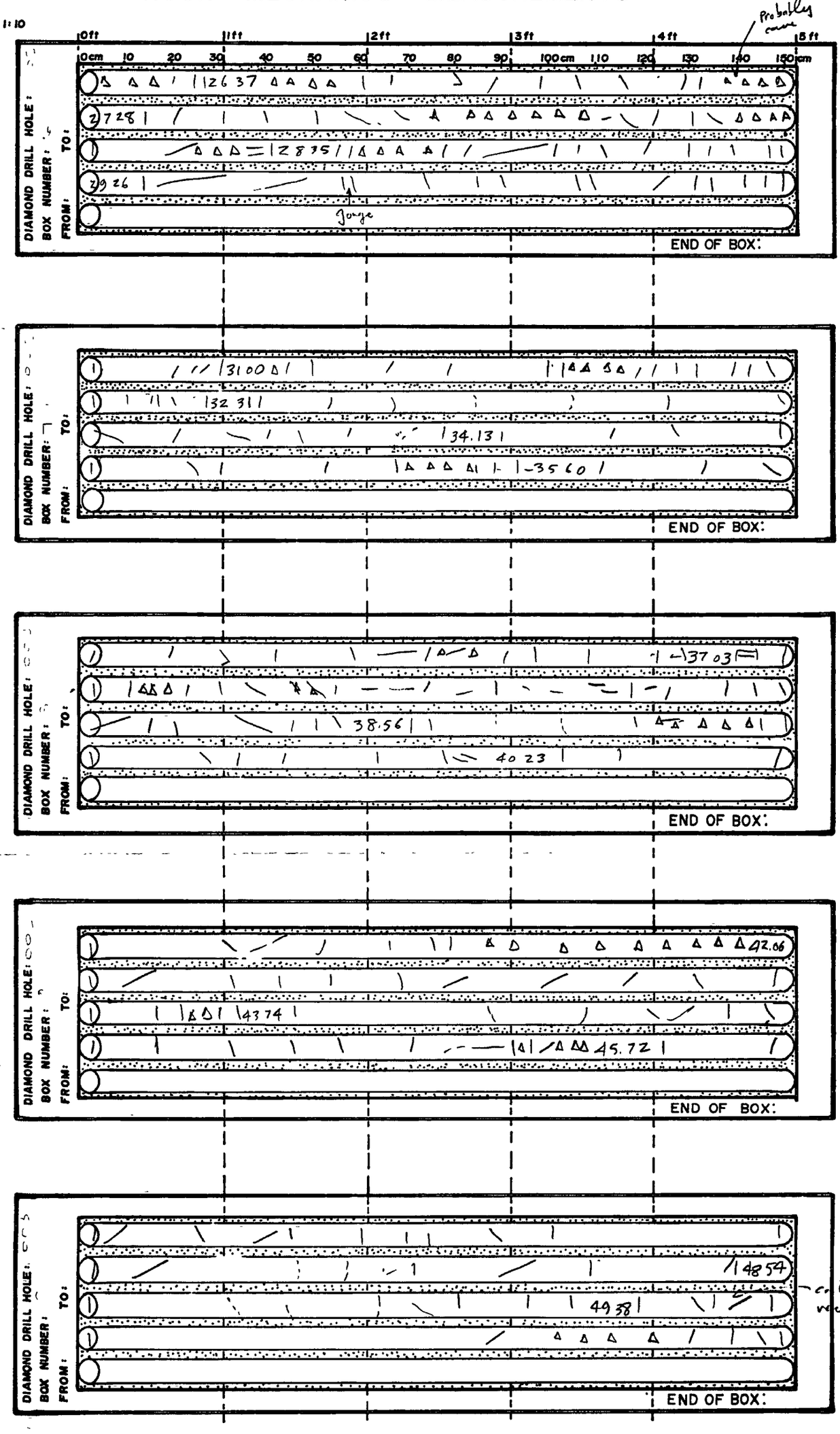
67.68-71.32 PEBBLY MICACEOUS QUARTZITE: Light grey, not well foliated
Quartz and feldspar? pebbles (or porphroblasts) throughout 3-4mm long, stretched
compositional layering at 69.50 is 30° to core axis, highly contorted.

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	
13087	30.00	30.50	0.50	0.081	0.06
13088	30.50	31.50	1.00	0.006	0.02
13089	31.50	32.00	0.50	0.005	0.02
13090	32.00	33.00	1.00	0.006	0.04
13091	33.00	34.00	1.00	0.007	0.08
13092	34.00	35.00	1.00	0.018	0.35
13093	35.00	36.00	1.00	<0.002	<0.02
13094	36.00	37.00	1.00	<0.002	<0.02
13095	37.00	38.00	1.00	0.002	<0.02
13096	38.00	39.00	1.00	<0.002	<0.02
13097	39.00	40.00	1.00	0.007	<0.02
13098	40.00	41.00	1.00	<0.002	<0.02
13099	41.00	42.00	1.00	0.002	<0.02
13100	42.00	43.00	1.00	<0.002	<0.02
13101	48.00	49.00	1.00	<0.002	<0.02
13102	49.00	49.50	0.50	.002	0.02
13103	49.50	50.00	0.50	0.301	0.09
13104	50.00	51.00	1.00	0.002	<0.02
13105	51.00	52.00	1.00	0.002	<0.02

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION:

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-003

PURPOSE:

COMMENT:

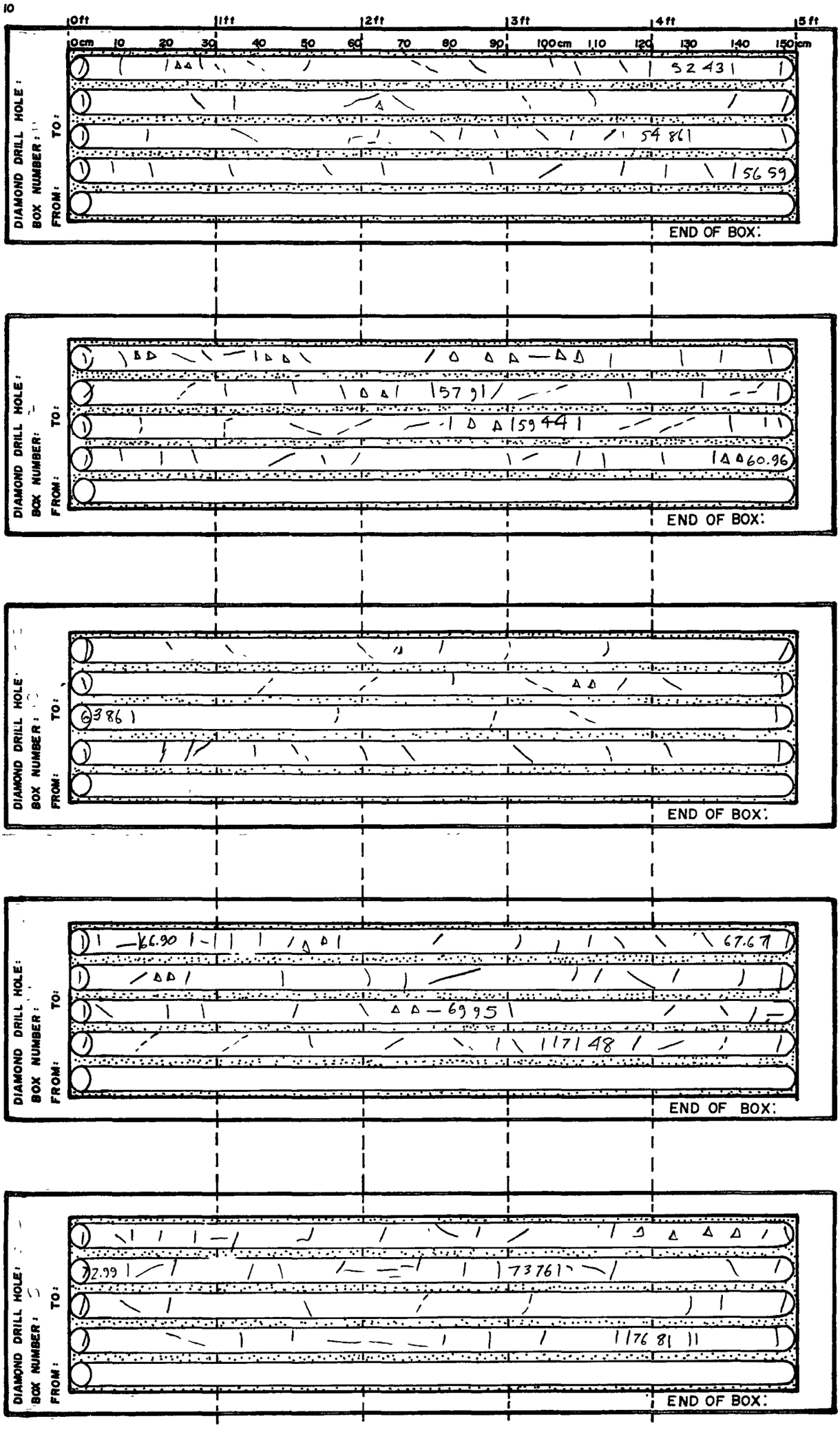
DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from to	
71.48	100	4 71.83	71								67.68-71.32	PEBBLY MICACEOUS QUARTZITE: Light grey, poorly foliated
72.99	109		72								71.32-72.75	ARGILLACEOUS QUARTZITE: dark grey, very abundant Andalusite, Layering at 72.50 is 29° to core axis
73.76	93		73								72.75-82.23	MICACEOUS QUARTZITE (IN PART PEBBLY): Light grey, relatively poorly foliated, pervasive Limonite staining throughout. Some intervals highly internally folded and deformed, Quartz zone 76.81-76.96. Compositional layering at 77.65 is 31° to core axis. Minor muscovite layers for example at 79.12 @ 33° to core axis Relatively a uniform rock unit, competent, reddish-orange carbonate veinlets at 82.78, 2mm wide progressively more sheared appearance
	97		74									
			75									
76.81		76.96	76									
			77									
78.64	104		78									
			79									
	100		80									
80.62			81									
	94	82.34	82									
82.91			83								82.23-83.82	DEFORMED ARGILLACEOUS QUARTZITE: dark grey, minor green sericitic lamination. Layering at 82.25 is 32° to core axis. wavy layering below Abundant silica-quartzite edgers with associated calcite.
	98		84								83.82-86.02	FAULT GOUGE-MYLONITE Greenish-yellow, finely laminated, abundant calcite, Mylonitic lamination at 85.25 is 31° to core axis. very friable gouge Like 83.82-85.34 Many sections weathered brown. MAJOR FAULT
84.12			85									
	94		86									
87.17		87.79	87								86.02-90.51	MYLONITIC GREEN QUARTZITE Highly altered, Greenish-bronze. Abundant calcite pervasive brown staining
	98		88									Shear Lamination at 86.82 is 26° to core axis
			89									Trace of Arsenopyrite along fracture at 89.22, 3mm wide @ 52° to core axis.
90.22			90						Aspy			
	89		91									Trace of arsenopyrite in quartz vein @ 90.29 @ 54° to core axis, 11cm wide
			92								90.51-93.42	ARGILLACEOUS QUARTZITE: dark grey, well banded, biotite and Andalusite brownish streaks common. compositional layering at 92.95 is 50° to core axis.
92.81		93.27	93								93.42-94.16	ALTERED GRANODIORITE grey-reddish brown, medium xline,
	105		94							+ + +		Intense sericite-chlorite alteration except between 93.54-93.73 quartz veinlets common @ 5.8° to C.A.
95.10			95								94.16-101.59	ARGILLACEOUS QUARTZITE ± biotite and Andalusite
	98		96									calc-silicate patches at 96.74 + 96.82 Approximately 50% quartzite and 50% Andalusite dominate layers.
			97									Granodiorite breccia dyke, subrounded quartzite fragments in relatively fresh granodio
98.15		98.62	98									Very abundant andalusite in all dark layers, layering at 98.60 is 18°, 98.11-98.32.
	99		99									Altered granodiorite, limonitic 100.24-100.67, quartz veinlets @ 75° to C.A.
			100									Intense sericite-chlorite alteration. Gradational lower contact over 30cm.
101.19			101								101.59-105.55	MYLONITIC GREEN QUARTZITE: Light green-yellow,
	99		102									Usually finely laminated by Mylonitic shearing @ 20° to C.A. at 103.20:
			103									coarse grained Andalusite laths common up to 15mm long.
104.19		104.19	104									shearing has taken place in the argillaceous quartzite unit.
	100		105								105.55-106.23	VICTORIA VEIN AND FAULT GOUGE: orange-red gouge
			106						Aspy Rpy			105.55-105.81, MASSIVE Arsenopyrite 105.81-105.92, Fracture controlled arsenopyrite
107.29			107									Arsenopyrite at 78° to C.A., Fault appears steep. Veinlets 105.92-106.23 @ 51° to C.A
	99		108								106.23-112.40	MYLONITIC GREEN QUARTZITE: Light green-grey
		109.80	109									Mostly finely laminated shearing @ 34° to core axis, white quartz common.
110.19		2.2	110									quartz rich layers boudinaged. Fault at 110.00-110.19 friable

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
13106	88.00	89.00	1.00	0.005	<0.02		
13107	89.00	90.00	1.00	0.002	<0.02		
13108	90.00	90.50	0.50	0.006	<0.02		
13109	90.50	91.00	0.50	0.004	<0.02		
13110	91.00	92.00	1.00	<0.002	<0.02		
13111	92.00	92.70	0.70	<0.002	<0.02		
13112	92.70	93.42	0.72	<0.002	<0.02		
13113	93.42	98.76	0.64	0.007	<0.02		
13114	105.00	105.55	0.55	<0.002	<0.02		
13115	105.55	106.23	0.68	0.035	0.08		
13116	106.23	106.70	0.47	<0.002	<0.02		
13117	106.70	107.50	0.80	0.004	@63		
13118	107.50	108.50	1.00	0.002	0.21		
13119	108.50	109.50	1.00	0.002	0.09		
13120	109.50	110.19	0.69	<0.002	0.07		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION:

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-003

PURPOSE:
COMMENT:

Drilling interval	% core recovered
113.23	104
114.60	100
116.43	82
119.48	116
121.92	110
124.97	100
128.02	101
131.06	99
134.11	99
137.16	100
140.21	98
142.04	107
143.26	85
145.39	97
148.44	98
-	102

Box numbers: 22–29 (box ends at 114.60, 119.74, 124.97, 130.60, 136.26, 141.81, 147.00)

Scale 1:250 — Meters 111–150

Mineral: Aspy, PY, Pyrr, Aspy (133–136 m); Aspy, Aspy, PY, Aspy, PY, Sphal, Aspy (142–148 m)

INTERVAL from to

106.23 – 112.40 MYLONITIC GREEN QUARTZITE: Light green-yellow
trace of disseminated arsenopyrite
Gradual decrease in amount of Mylonitic lamination, over 1.0 meter.

112.40 – 133.20 ARGILLACEOUS QUARTZITE: ± biotite and Andalusite
Dark grey, Mottled appearance, Compositional layering @ 113.20 is 29° to c A.
Andalusite very abundant.
White veinlets 1-2mm wide, trace of bleaching 117.59, 117.68, 117.96, trace of pyrite.
Fractured core, minor grey-brown gouge @ 15° to C.A between 119.18 - 120.21
Green-yellow mylonitic shear lamination 119.89 - 120.20.
fractured core 121.92, Minor white calcite on fracture surfaces
Compositional layering at 124.46 is 40° to core axis. varying over short distances to 31° to CA
White feldspar veinlets @ 58° to C.A at 127.02 3-4 mm wide.
These veinlets appear to be granodiorite parentage, finely divided pyrite present in veinlets
Compositional layering at 127.35 is 28° to core axis
mildly skarnified 127.98 - 128.68, light green pervasive calc-silicates
Andalusite very abundant, Layering at 130.55 is 31° to core axis
Green Mylonite starting 132.76 to 133.20, Lower contact has calc-silicate development

133.20 – 133.68 QUARTZ-ARSENOPYRITE-PYRITE "NEW VEIN"
Massive pyrite and arsenopyrite lenses + bands in light grey quartz + quartzite
cutting compositional layering at 90°, Arsenopyrite associated with light brown calcite.
Minor pyrrhotite in calcite stringers at 134.04. Fractures with Aspy at 133.68

133.68 – 143.91 MYLONITIC GREEN QUARTZITE: Light green-yellow
Minor disseminated Arsenopyrite, Arsenopyrite veinlet at 135.11 @ 54° to C.A
Close spaced Mylonitic laminations. Highly sheared friable 137.16 - 138.20.
Coarse crystalline Andalusite common in relict zones 138.42 - 140.05.
Network of fractures 141.10 - 142.04.
Irregular lense of Pyrite - arsenopyrite 141.38, Aspy at 141.75.
thinly laminated mylonitic shearing, healed to hard, nonfoliated rock.
Arsenopyrite veinlets at 143.02 - 143.08, minor pyrite.

143.91 – 147.94 QUARTZ-PYRITE-ARSENOPYRITE ZONES: occurring within
Mylonitic Green Quartzite. – stockwork - multiple veins and disseminations + fracture filling
Massive pyrite and arsenopyrite 144.15 - 144.51, @ 58° to core axis
Fracture filling arsenopyrite to 144.75 gouge at 144.51
Pyrite veinlets at 146.14 - 146.17 and 146.37, 146.95 - .97 and 147.00 associated with calcite and sphalerite.
Close spaced fracture filling pyrite and Aspy 147.30 - 147.56.
Minor arsenopyrite at 147.94

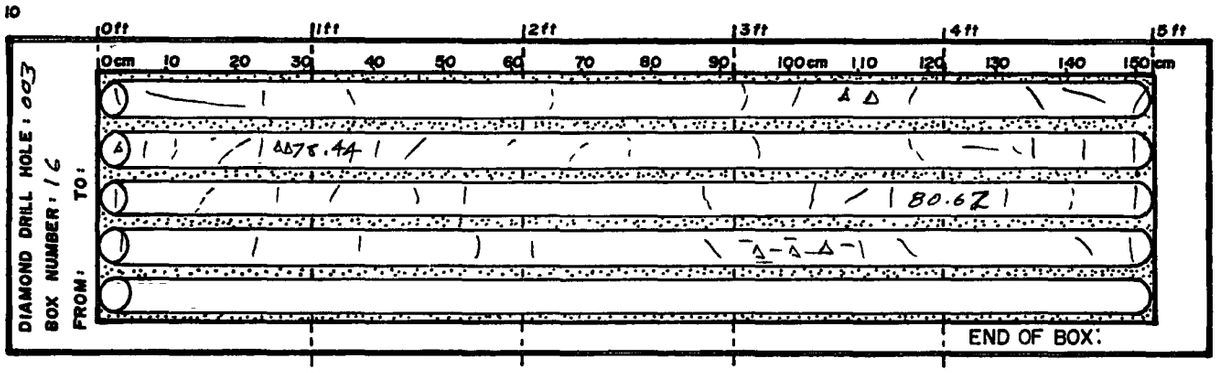
147.94 – 156.06 MYLONITIC GREEN QUARTZITE: Light green-yellow.
EPH. Abundant Andalusite; coarsely crystalline; traces of disseminated pyrite + Aspy

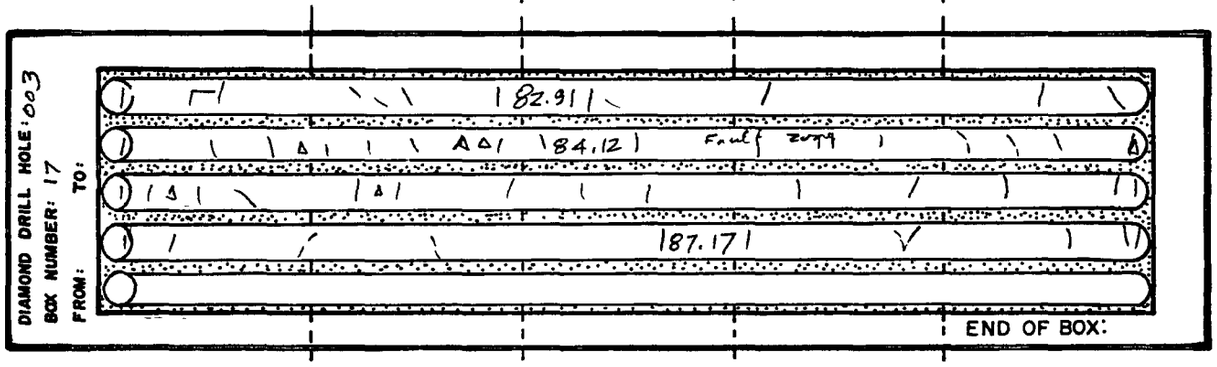
SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
13121	110.19	111.00	0.81	<0.002	0.05		
13122	111.00	112.00	1.00	<0.002	0.04		
13123	112.00	113.00	1.00	<0.002	0.04		
13124	131.00	132.00	1.00	<0.002	0.02		
13125	132.00	132.50	0.50	<0.002	0.03		
13126	132.50	133.20	0.70	<0.002	<0.02		
13127	133.20	133.68	0.48	0.40	0.07		
13128	133.68	134.30	0.62	<0.002	0.03		
13129	134.30	135.00	0.70	<0.002	0.03		
13130	135.00	136.00	1.00	<0.002	0.03		
13131	136.00	137.00	1.00	<0.002	0.06		
13132	137.00	138.00	1.00	<0.002	0.04		
13133	138.00	139.00	1.00	<0.002	0.03		
13134	139.00	140.00	1.00	<0.002	0.05		
13135	140.00	141.00	1.00	0.002	0.04		
13136	141.00	142.00	1.00	0.002	0.04		
13137	142.00	143.02	1.02	<0.002	0.02		
13138	143.02	143.50	0.48	0.158	0.05		
13139	143.50	144.15	0.65	0.004	0.02		
13140	144.15	144.75	0.60	<0.002	0.05		
13141	144.75	145.50	0.75	0.064	0.14		
13142	145.50	146.00	0.50	<0.002	0.03		
13143	146.00	146.50	0.50	0.003	0.04		
13144	146.50	147.00	0.50	0.007	0.09		
13145	147.00	147.50	0.50	0.009	0.09		
13146	147.50	147.94	0.44	0.026	0.09		
13147	147.94	149.00	1.06	<0.002	<0.02		
13148	149.00	150.00	1.00	0.002	0.04		
ON	NEXT	PAGE					

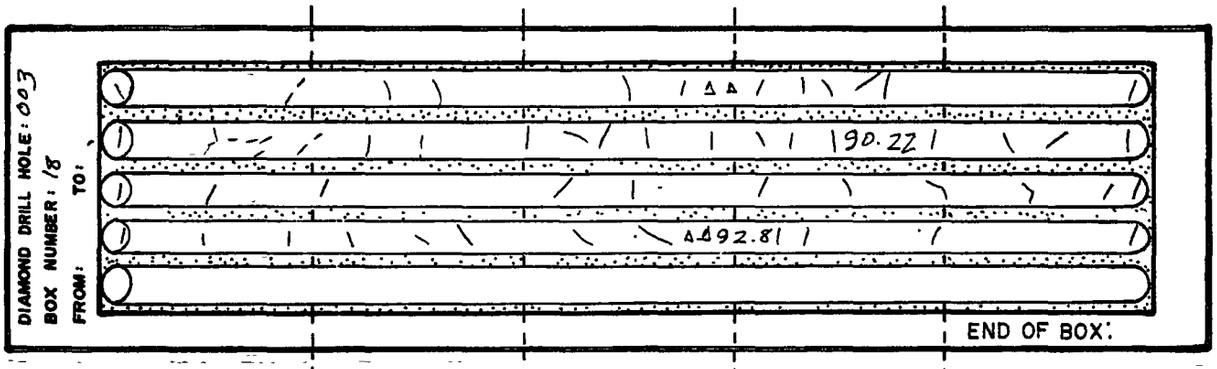
TRM ENGINEERING LTD.

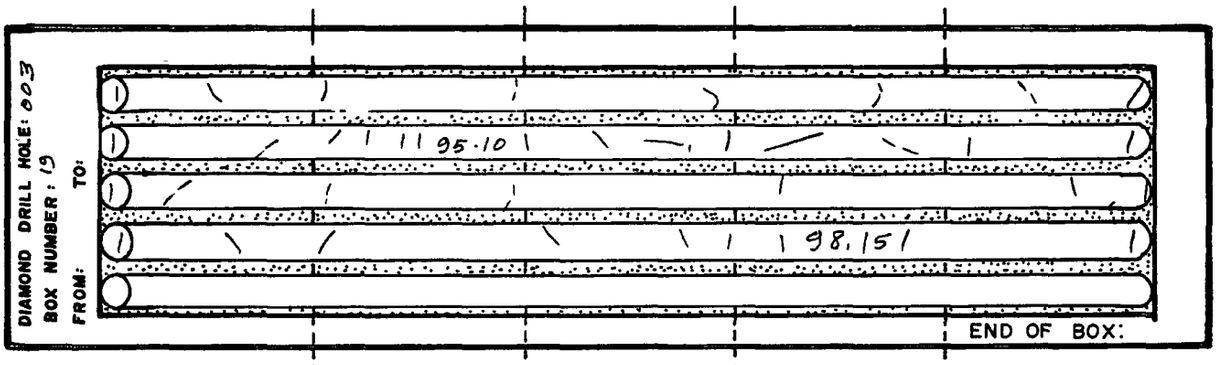
ROCK MECHANICS MEASUREMENTS

SCALE = 1:10









TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART-CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-003

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
151.49	102	29	151							
		152.53	152							
153.01	107	30	153						sphal py	
	95		154						Aspy	
			155							
156.03		156.03	156							

PURPOSE:
COMMENT:

INTERVAL from to

147.94 - 156.06 EOH MYLONITIC GREEN QUARTZITE: Light green - yellow. Abundant coarsely crystalline andalusite.
Compositional layering and mylonitic lamination at 152.45 is 21° to core axis
sphalerite - pyrite lense @ 152.95 associated with white quartz zone
trace of fracture filling arsenopyrite at 154.49 @ 43° to core axis just above open space breccia vugs and 153.96
layoring at 155.60 is 23° to core axis, Fractures limonite stained throughout.

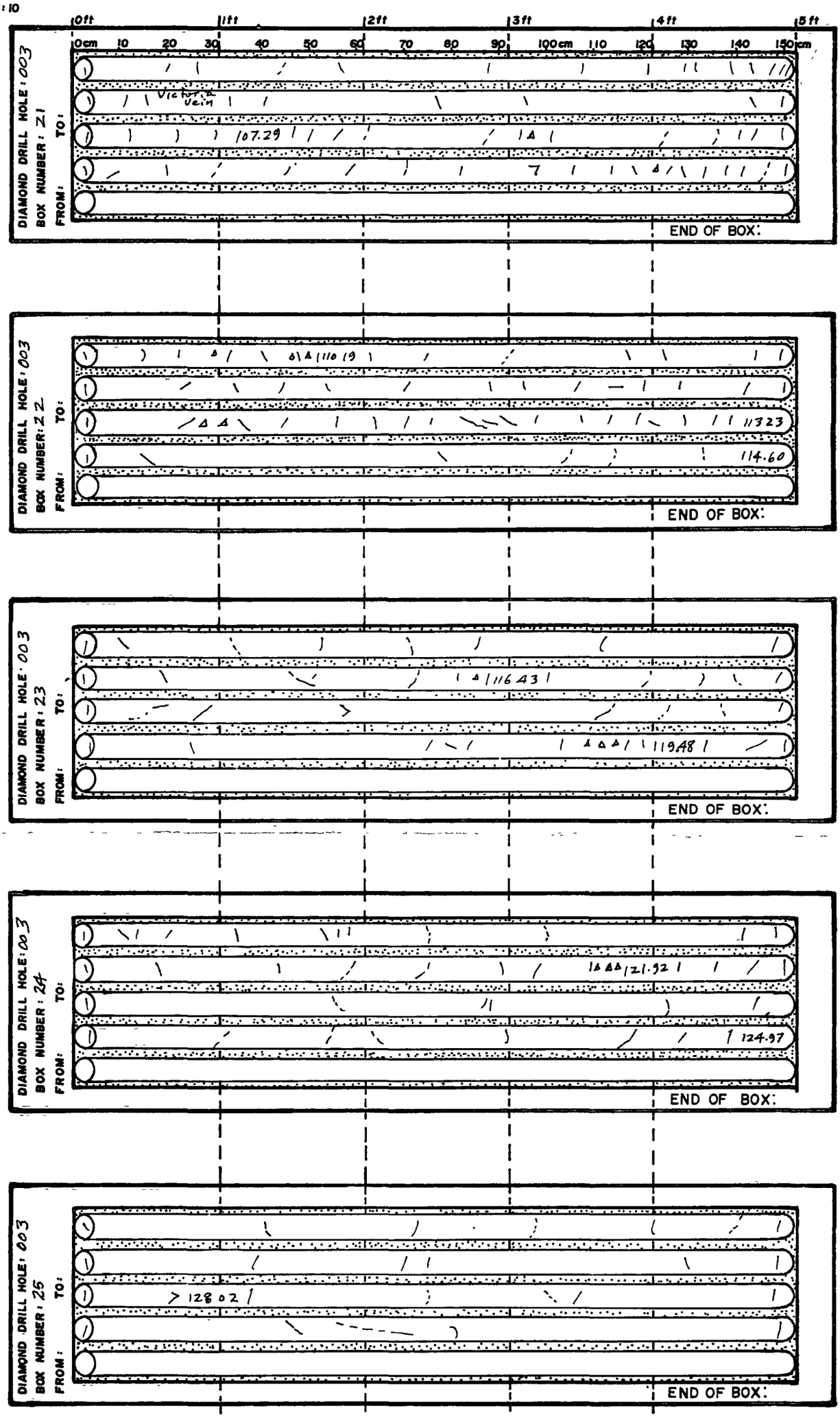
END OF HOLE 156.06 METERS
(512 feet).

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton			
13149	150.00	151.00	1.00	<0.002	0.02		
13150	151.00	152.00	1.00	0.002	<0.02		
13151	152.00	152.50	0.50	<0.002	0.02		
13152	152.50	153.00	0.50	<0.002	<0.02		
13153	153.00	153.50	0.50	<0.002	0.03		
13154	153.50	154.00	0.50	<0.002	<0.02		
13155	154.00	155.00	1.00	<0.002	<0.02		
13156	155.00	156.06	1.06	<0.002	<0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

QUEENSTAKE RESOURCES LTD — DUBLIN GULCH —

DIAMOND DRILL RECORD

LOCATION: (LEVEL): VICTORIA VEIN (STEWART-CATTO AREA) | PROJECT: MAR GOLD | HOLE NUMBER: QRMG-86-004

DIP: -60° AT COLLAR, DIRECTION: 359°40' | LATITUDE: 7100,885.33N (METRIC UTM COOR. Underhill) | DEPARTURE: 461,415.51E (Grid 1978 Underhill)

LENGTH: 190.50 meters (625 ft) | ELEVATION: 1214.59 meters | CLAIM NUMBER: BOB 1

CORE SIZE: NQ | DATE LOGGED: AUGUST 20th 1986 | LOCATION: DUBLIN GULCH PLACER CAMP

STARTED: AUGUST 23 (NIGHT SHIFT) 1986 | FINISHED: AUGUST 1986 | LOGGED BY: J.T. SHEARER | SAMPLED BY: J.S., L.S.

O.B. THICKNESS: 1.22 meters | STARTED: AUGUST 23 N.S. 1986 | FINISHED: AUGUST 23 N.S. 1986 | CASING: H.W. meters LEFT IN HOLE

B.R. THICKNESS: 189.28 meters | STARTED: AUGUST 1986 | FINISHED: AUGUST 1986 | TOTAL RECOVERY: 97 %

CONTRACTOR: E. CARON DIAMOND DRILLING LTD | CORE STORED: DUBLIN GULCH PLACER CAMP (UPPER CAMP IN COVERED RACKS)

LY 38 | RUNNERS: M. McLELLAN (D.S.), K. MAC (N.S.) | METRIC CONVERSION BY: L.S. | CORE RECOVERY BY: L.S.

SURVEY ACID TEST		ANGLE	
DEPTH	BEARING	Reading	Correc
COLLAR	359°40'	-60	-60

DRILLING INTERVAL | % CORE RECOVERED | BOX Number | SCALE 1:250 | ALTERATION: CALCITE, CHLORITE, SERICITE, SILICA | FRACTURING | MINERAL | GEOLOGY

PURPOSE. COMMENT:

INTERVAL from to

0 - 1.22 NO CORE: OVERBURDEN, soil, loose rock.

1.22 - 34.21 MICACEOUS QUARTZITE: Light grey mainly with dark layers, relatively poorly foliated, compositional layering at 2.09 is 43° to core axis. Surprisingly little limonite staining, rock not exceptionally fractured. Minor calcite coating fractures. Gouge? at 2.55. Darker layers dominated by biotite.

Calc-silicate development 7.33-7.45, compact, fine grained actinolite. Compositional layering at 8.04 is 42° to core axis. Minor folds and local calc-silicates, skarnification 9.06-9.14, trace Pyrite at 9.85.

Skarnified quartzite 12.57-12.95, coarser grained actinolite + zoisite? Intense limonite starting at 13.37 and continues to 22.00, Pervasive limonite white hairlines at 13.78 (1mm wide), trace Jamesonite, @ 58°, staining orange gouge 15.58-15.45, @ 20° to core axis.

Compositional layering at 17.30 is 34° to core axis. Many fractures are subparallel to core axis, stained envelope 1-2cm wide.

Narrow quartz vein at 20.91, 1.2cm wide, trace of arsenopyrite @ 53° to C.A.

Friable core 22.61, sheared, limonitic to 26.21, less minor folds and crenulation.

Arsenopyrite-quartz veinlet 2.1cm wide 23.81-23.84 @ 66° to core axis. massive arsenopyrite on lower contact. FAULT-GAULGE 24.81-25.23 @ 60° to C.A. poorly defined.

Compositional layering at 25.45 is 44° to core axis

Gouge - Fault zone 26.80 - 27.10, very fractured core.

Highly contorted layering 28.41-28.73, folds with 3cm wavelengths. fold axis parallel to general layering

Narrow granodiorite dyke 29.14-29.28, slightly altered.

Fault at 29.40, very limonitic @ 20° to C.A., sheared down to 31.42.

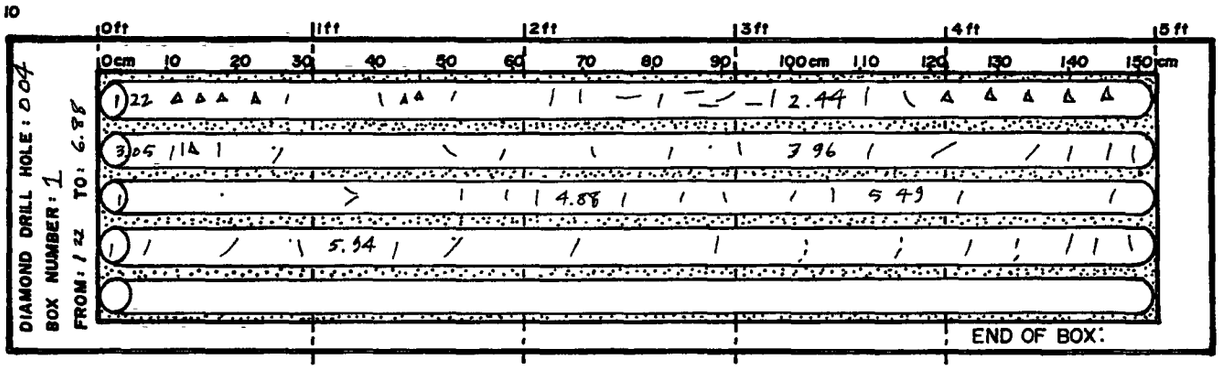
SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton	Ag oz/ton
13157	23.00	24.00	1.00	0.029	0.03
13158	24.00	25.00	1.00	0.003	<0.02
13159	25.00	26.00	1.00	0.002	<0.02
13160	29.00	30.00	1.00	0.004	<0.02

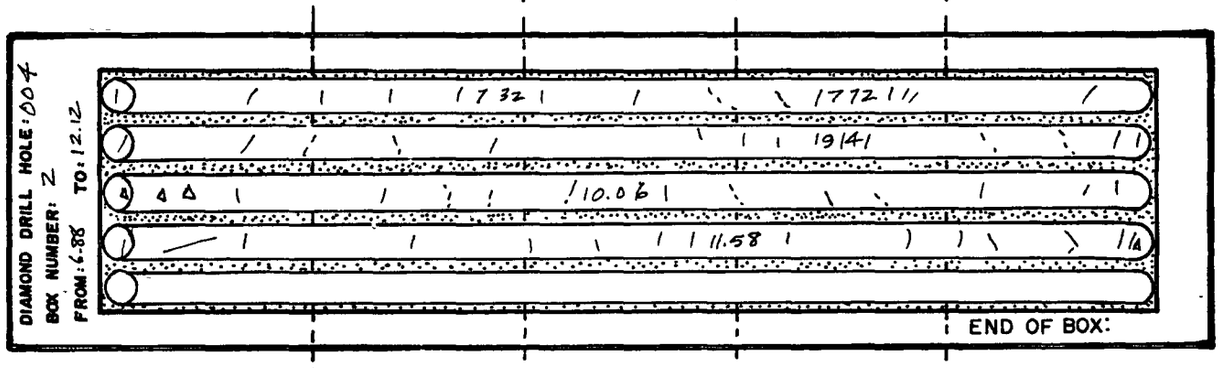
CONTINUED ON NEXT PAGE

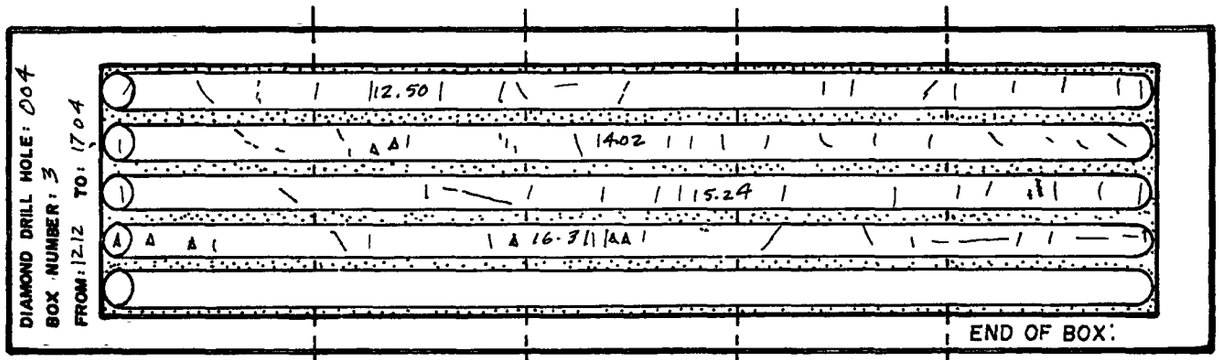
TRM ENGINEERING LTD.

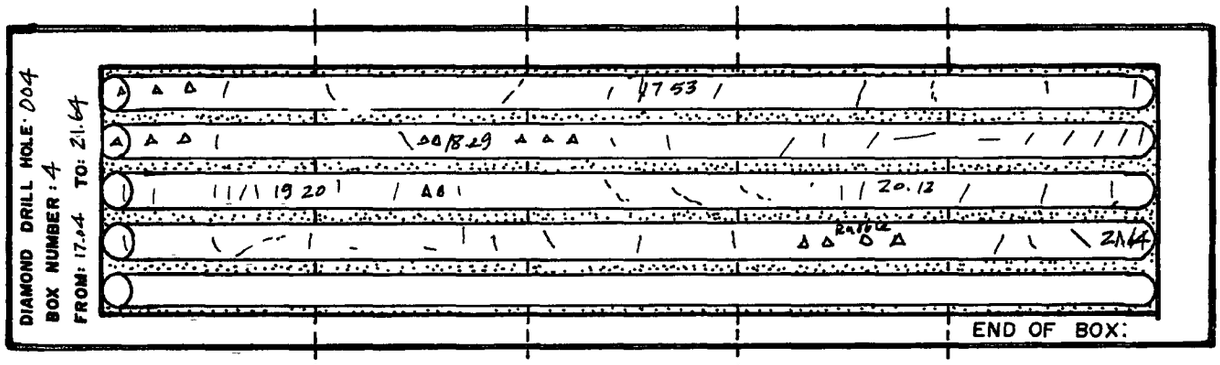
ROCK MECHANICS MEASUREMENTS

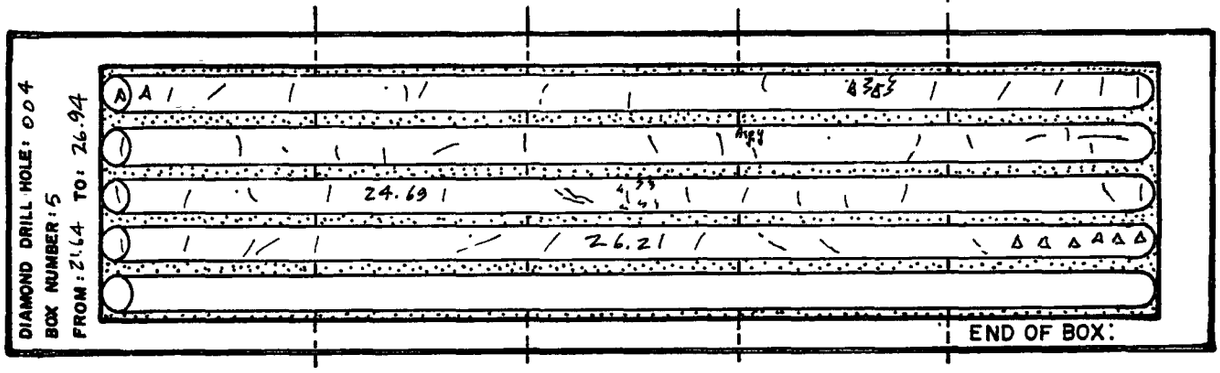
SCALE = 1:10











TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART - CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-004

PURPOSE:

COMMENT:

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from	to	SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton	Ag oz/ton		
31.55	95	6	31								1.22	34.21	13161	30.00	31.00	1.00	0.002	<0.02		
	85	22.29	32										13162	31.00	32.00	1.00	<0.002	<0.02		
33.53			33										13163	32.00	33.00	1.00	0.002	<0.02		
		7	34										13164	33.00	33.50	0.50	<0.002	<0.02		
	98		35						VG Aspy Py				13165	33.50	34.21	0.71	0.010	<0.02		
			36										13166	34.21	34.69	0.48	0.024	0.05		
36.58									Aspy				13167	34.69	35.13	0.44	1.300	0.35	V.G.	***
	89	38.24	37										13168	35.13	36.00	1.00	0.006	<0.02		
			38						Aspy				13169	36.00	37.00	1.00	0.005	<0.02		
39.32			39										13170	37.00	38.00	1.00	0.003	<0.02		
40.23	115	8	40										13171	38.00	39.00	1.00	<0.002	<0.02		
	94		41																	
42.06		42.87	42																	
	99		43																	
43.59	107		44																	
44.81		9	45																	
	95		46																	
47.24		47.54	47																	
	94		48										13172	48.00	49.00	1.00	<0.002	0.03		
			49										13173	49.00	50.00	1.00	<0.002	0.03		
50.29			50										13174	50.00	51.00	1.00	0.014	0.04		
	88		51										13175	51.00	51.50	0.50	<0.002	0.02		
			52						Py				13176	52.50	52.00	0.80	0.007	0.08		
		52.96	53										13177	52.00	53.00	1.00	<0.002	<0.02		
53.34			54										13178	53.00	54.00	1.00	<0.002	<0.02		
	102		55										13179	54.00	55.00	1.00	<0.002	0.04		
			56										13180	55.60	56.00	1.00	<0.002	0.02		
56.39			57										13181	56.00	57.00	1.00	0.005	0.30		
	99	57.58	58										13182	57.00	58.00	1.00	<0.002	<0.02		
			59																	
59.44			60																	
	100		61																	
61.72		62.41	62																	
	96		63																	
			64																	
64.62	93		65																	
65.53		3	66										13183	66.00	67.00	1.00	0.002	<0.02		
	100		67										13184	67.00	67.50	0.50	<0.002	<0.02		
		67.81	68										13185	67.50	68.24	0.74	<0.002	<0.02		
68.58	99		69						Aspy Aspy Aspy				13186	68.24	69.00	0.76	0.126	0.05		
		4	70										13187	69.00	69.50	0.50	2.117	0.43	ASPY Abundant	
													13188	69.50	70.00	0.50	0.009	0.05		

1.22 - 34.21 MICACEOUS QUARTZITE. Light gray, well layered with subordinate darker biotite rich bands. Compositional Layering at 32.95 is 34° to core axis, Minor Mylonitic lamination...

34.21 - 35.13 ARSENOPYRITE - PYRITE - QUARTZ: Massive Centres of Aspy in white Quartz, Banding of sulfides is 51° to core axis, Minor Aspy at 34.21. VISIBLE GOLD - 3 particles @ 34.91 in quartz associated with Arsenopyrite, trace calcite. Main sulfide interval 34.69 - 35.13, Massive Pyrite 34.69 - 34.76, Lower 10 cm 100% Aspy. PROBABLY CATTO VEIN

35.13 - 50.37 MICACEOUS QUARTZITE Light grey, very well banded with thin dark grey bands. Layering at 36.25 is 0° to core axis. Minor Arsenopyrite at 37.52 along fractures @ 50° to c.a. well fractured with limonite coatings. 39.32 - 45.50, Minor pervasive limonite. Porphyroblastic dyke at 39.01 - 39.03, Large crystals of calc-silicates + carbonate staining. Appearance of local shearing at 39.95 @ 41° to core axis. Overall weathered aspect, friable in places, orange gouge at 41.77. Compositional layering at 44.50 is 41° to core axis. Red limonite coatings. well developed small scal kink cleavage at 45.81, very fractured 45° + 5° to c.a. Quartz-rich area 46.71 - 46.79 white, minor chlorite patches + calcite veining. Major Fault, limonite gouge at 50.20 ~ 25° to core axis.

50.37 - 52.05. V.ERY. ALTERED. GRANODIORITE.; Light green. Intense sericite-chlorite alteration throughout. Minor talc, biotite - 2%. Narrow quartz stringers common at 52° to core axis, 1-3 cm wide, Upper + Lower contacts. Massive PYRITE blebs 51.57 - 51.63 @ 58° to c.a. at 45° to core axis.

52.05 - 57.76 MICACEOUS QUARTZITE: Light grey well layered. Light brown pervasive staining throughout sections perhaps carbonate. Abundant MnO staining on Low angle fractures 53.10 - 55.40. associated with mild Mylonite laminations. No locus of faulting. Compositional Layering 35° 20° is 46° to core axis. trace pyrite at 56.02 in fractures. Arsenopyrite - sphalerite veinlet 56.53, 2 cm wide @ 24° to core axis, associated with calcite.

57.76 - 65.62 ARGILLACEOUS QUARTZITE: ± biotite and Andalusite. dark grey dominates intercalated with lighter grey more quartzitic layers. Andalusite relatively coarse crystalline, laths up to 15 mm long. Compositional layering at 60.20 75° 34° to core axis, streaky brown layers. Minor fold structures common 62.10 - 62.40. Gouge and shattered rock 62.49 - 63.05; FAULT shearing angle 36° to c.a. Minor mylonitic laminations gradually increasing toward lower contact. Also increase in calc-silicate development. brown gouge, 4-10 mm wide

65.62 - 68.24 MYLONITIC GREEN QUARTZITE: greenish-yellow. Altered granodiorite 67.23 - 67.45, Quartz rich, layering at 68.00 is 39° to c.a.

68.24 - 69.48. ARSENOPYRITE - QUARTZ: Upper contact 30°, Main sulfides 69.00 - 69.48. Main arsenopyrite Layers at 54° to core axis, Vuggy, some euhedral quartz. coarse crystalline Aspy, 90° to Mylonitic laminations, No Pyrite.

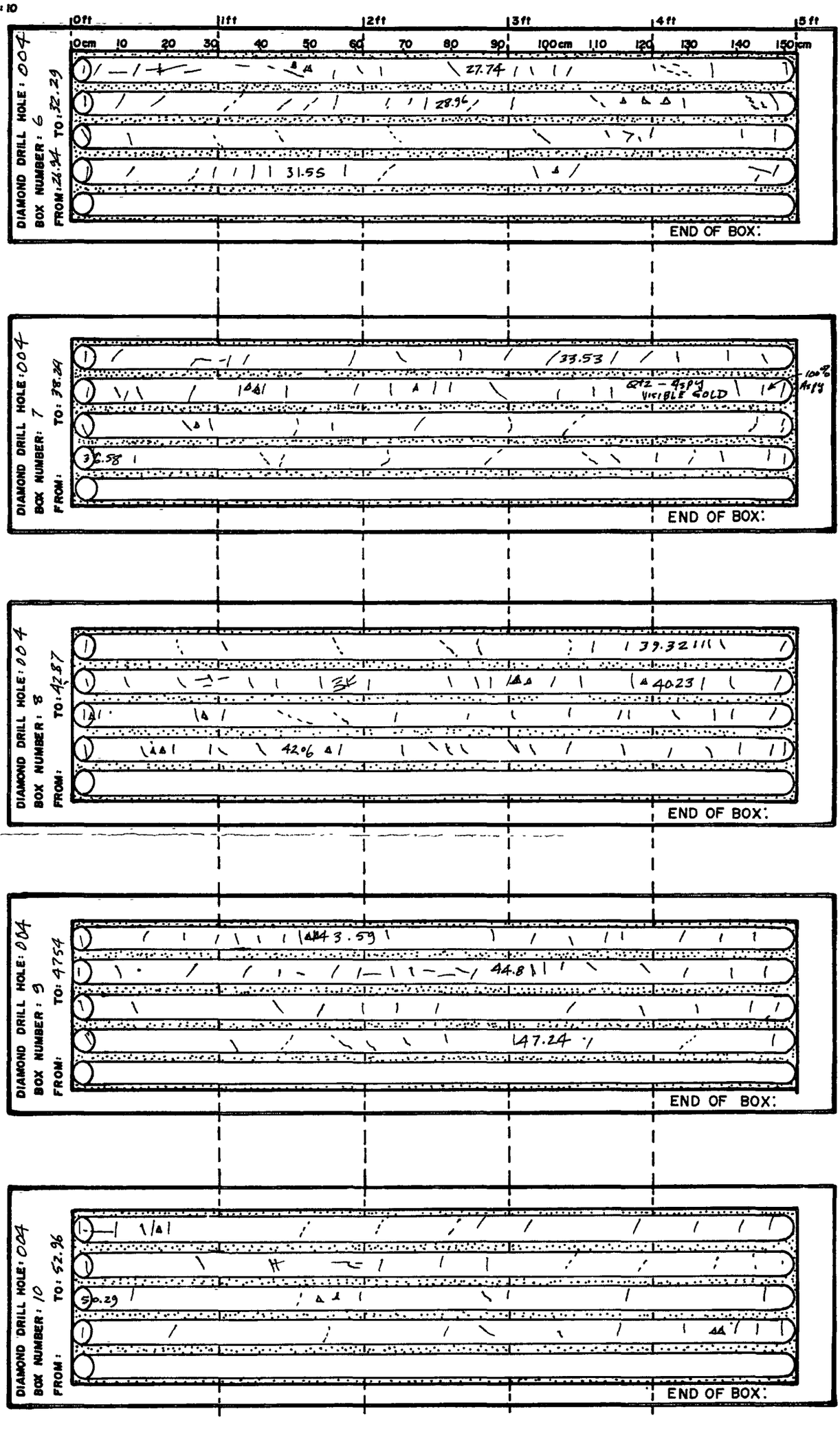
69.48 - 74.56. MYLONITIC GREEN QUARTZITE: Light yellow-green competent.

NEXT PAGE

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART - CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-004

DRILLING INTERVAL blocks	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
71.63	99	4	71							
			72							
	100	73.32	73						Aspy	
			74							
74.68			75							
	100	5	76							
			77							
77.72			78							
		78.73	79							
	103		80							
80.77			81							
	100	6	82							
			83							
83.72			84							
		84.28								
	92		85							
		7	86							
86.87			87							
	100		88							
			89							
89.92		89.92	90							
	102		91							
		8	92							
92.96			93							
	102		94							
		95.50	95							
96.01			96							
	97	9	97							
			98							
99.06			99							
	93		100							
		101.08	101							
102.11			102							
	109		103							
			104							
105.16			105							
		106.39	106							
	96		107							
			108							
108.20			109							
	100		110							

PURPOSE:

COMMENT:

INTERVAL from to

6.48 - 74.56 MYLONITIC GREEN QUARTZITE. Light green-yellow, finely laminated, layering at 71.28 is 42° to core axis, traces of disseminated hpy
Trace of arsenopyrite in quartz veinlet at 72.77 @ 44° to c.a, cross cutting Mylonite.
Gradational lower contact over 50cm, and 72.03 in quartzose zone

74.56 - ARGILLACEOUS QUARTZITE: ± Biotite and Andalusite:
dark grey with lighter grey interbeds, Andalusite at upper contact but abundant biotite throughout

Narrow, very altered granodiorite interval (sill) 79.08 - 80.85, Intense sericite more white than light green, trace of remnant biotite. Chlorite alteration
Sheared lower contact @ 46° to core axis

Compositional layering at 82.10 is 31° to core axis.
Calc-silicate development increasing between 82.26 - 83.63 Actinolite breaks.

Garnet and other calc-silicates in silica band at 85.43, red brown garnet

Rusty orange gouge - Fault at 86.17 @ 48° to core axis.
Dark brown, pervasive stain around hairline at 87.39 associated with bleaching @ 40° to core axis

Compositional layering at 89.30 is 31° to core axis, skarnified slightly some Andalusite; only relict biotite; mainly actinolite? and quartz.

Garnet and Actinolite - diopside in quartz rich zone at 92.43 - 92.51

Crenulation cleavage well developed at 93.54 and minor folding.
White feldspar patch 93.96 - 94.02, irregular contacts,

Silica-rich interval 96.21 - 96.53, minor calcite, Probably recrystallized pure quartzite, but possibly igneous.
Compositional layering at 98.10 is 46° to core axis.
Slightly skarnified throughout Alternating between biotite dominate and Andalusite dominate, Purer quartzite layers less common than above.

Lighter grey 103.20 - 105.46, fewer dark bands, still abundant andalusite in some of the sparse mafic layers, mainly wispy banding.

Compositional layering at 104.31 is 38° to core axis.
Minor pyrite in silica rich zone 106.15 - 106.31, calcite coating 5° fractures

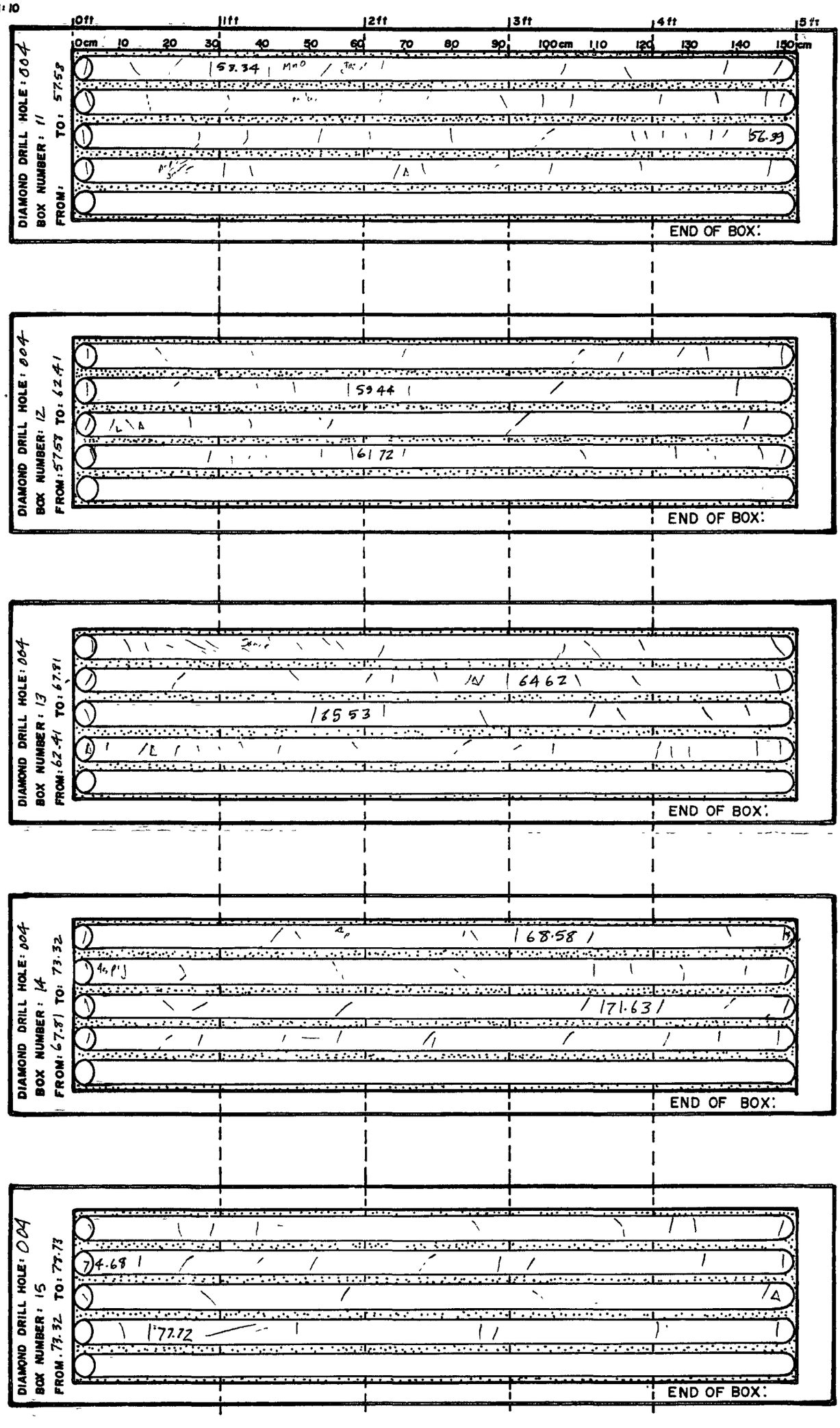
Uniform argillaceous quartzite, low angle fractures common especially between 108.60 - 109.00

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton
13189	70.00	71.00	1.00	0.010	<0.02
13190	71.00	72.00	1.00	0.004	<0.02
13191	72.00	73.00	1.00	0.005	<0.02
13192	73.00	74.00	1.00	0.002	<0.02
13193	74.00	75.00	1.00	<0.002	<0.02
13194	87.00	88.00	1.00	<0.002	<0.02
13195	96.00	97.00	1.00	<0.002	<0.02
13196	106.00	107.00	1.00	<0.002	<0.02

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-004

PURPOSE:

COMMENT:

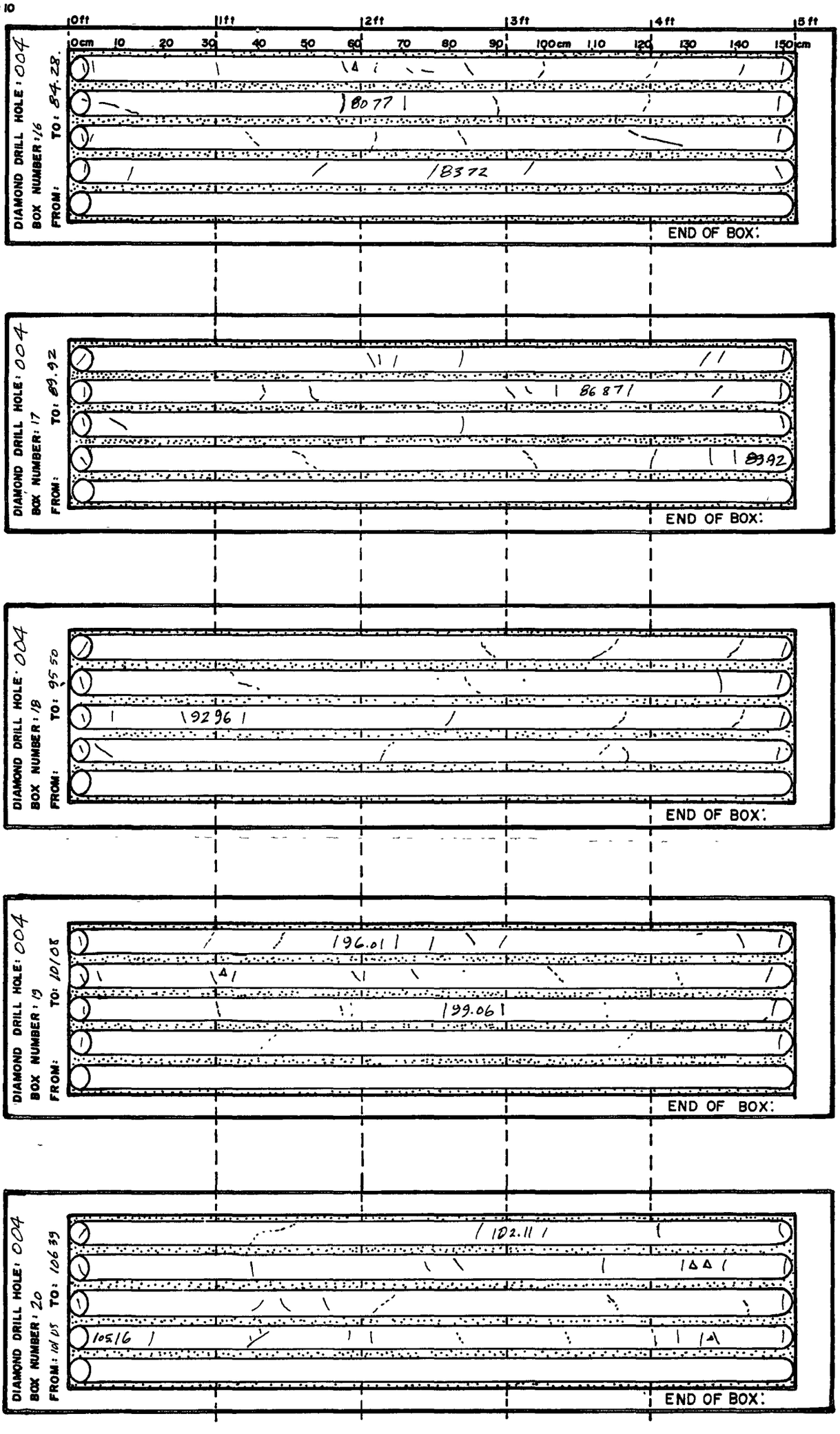
DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY	INTERVAL from	INTERVAL to	DESCRIPTION
111.25	100	21 111.90	111								7.56	128.61	ARGILLACEOUS QUARTZITE: ± biotite and Andalusite. Dark grey, well layered, compositional layering at 111.20 is 34° to core axis
	98		112										
			113										
114.30			114										green calc-silicate veinlet at 112.98 @ 26° to core axis, bleaching outward
	99		115										Abundant Andalusite at 114.00 - 116.00, coarsely crystalline
			116										
117.35		117.46	117										slight brecciation of white feldspar material at 116.30
			118										Minor shearing @ 55° to c.A, trace of gouge and fractured core common.
	107		119						Aspy				Arsenopyrite veinlet at 118.41, 1cm wide, associated with quartz veining also bleached
120.10			120										
			121										
	90	123.12	122										Compositional layering at 120.70 to 123.28° to core axis
123.44			123										Minor shearing at 121.80 - 122.20, 20° to c.A, calcite coating fractures
			124										Occasional white plagioclase veinlet perpendicular to compositional layering.
	98		125										
			126										
126.49			127										Minor folds abundant. Mostly biotite but some fine grained andalusite
			128						Pyr				Mylonitic lamination starting at 127.32.
	98	128.92	129						Pyrr		128.61	130.87	MYLONITIC GREEN QUARTZITE: Light green-yellow, thinly laminated, layering at 129.40 is 39° to core axis, many quartz lenses
129.54			130										Minor pyrrhotite in quartz-calcite veinlet at 127.62
			131						JAMS PY PY		130.87	131.98	VICTORIA VEIN: Hanging wall 1cm wide band of black Jamesonite
	100		132										MASSIVE JAMESONITE AND PYRITE 131.36 - 131.85, fracture filling after 191.75, sheared in lower part.
131.98			133										Minor flesh coloured calcite interbanded with massive sulfides. Minor sphalerite at 130.87.
			134								131.98	134.65	VICTORIA FAULT - GOUGE ZONE: very broken and fractured core, large sections of gouge and friable rock. Mylonitic lamination throughout.
133.81	86	134.12							gouge				Gouge filled fractures 22° to c.A., some coarse Andalusite
	99		135										Granulated gouge and rock fragments at 134.65 @ 54° to core axis
135.64			136								134.65	148.98	ARGILLACEOUS QUARTZITE: MYLONITIC:
	102		137										Dark grey overall with many short intervals of green-yellow mylonitic lamination and bleaching throughout, Abundant Andalusite, Minor shearing common.
136.38		139.57	138										Quartzitic layers are whiter (more recrystallized) than usual
			139										
	97		140										Major fault, white gouge with minor euhedral pyrite 140.95 - 141.57 @ 15° to c.A
			141										entire interval 139.85 - 145.00 is highly sheared and fractured
141.43			142										Green mylonitic zone 142.77 - 143.30, Shearing also at 144.00 to 144.25.
	100		143										
		144.83	144										
144.48			145										
	100		146										
			147										Narrow, relatively fresh granodiorite 146.09 - 146.19, sill, and also at 148.18 - 148.26
147.52			148										Intire section sheared but lower contact relatively sharp defined by brecciation.
	102		149								148.98	150.57	BRECCIATED MYLONITIC GREEN QUARTZITE:
		150.16	150										gouge at 148.98 - 149.26 subrounded, rotated fragments, shearing 30° common. Minor Pyrite
													Compositional layering at 149.90 is 60°... to core axis, drag folded

SAMPLE NUMBER	METERS from	METERS to	LENGTH METERS	Au oz/ton	Ag oz/ton		
13198	118.00	119.00	1.00	0.002	<0.02		
13199	127.00	128.00	1.00	0.002	<0.02		
13200	128.00	129.00	1.00	<0.002	<0.02		
13626	129.00	129.50	0.50	<0.002	<0.02		
13627	129.50	130.00	0.50	<0.002	<0.02		
13628	130.00	130.50	0.50	<0.002	<0.02		
13629	130.50	131.36	0.86	<0.002	0.02		
13630	131.36	131.85	0.49	0.014	0.07		
13631	131.85	132.50	0.65	<0.002	<0.02		
13632	132.50	133.00	0.50	0.002	0.02		
13633	133.00	133.50	0.50	<0.002	0.02		
13634	133.50	134.00	0.50	<0.002	0.02		
13635	134.00	134.50	0.50	<0.002	<0.02		
13636	134.50	135.00	0.50	<0.002	0.02		
13637	135.00	136.00	1.00	<0.002	<0.02		
13638	136.00	137.00	1.00	<0.002	<0.02		
13639	137.00	138.00	1.00	0.012	0.02		
13640	138.00	139.00	1.00	0.006	0.10		
13641	139.00	140.00	1.00	<0.002	0.10		
13642	140.00	141.00	1.00	0.007	0.06		
13643	141.00	142.00	1.00	<0.002	0.06		
13644	142.00	143.00	1.00	<0.002	0.03		
13645	143.00	144.00	1.00	<0.002	0.03		
13646	144.00	145.00	1.00	<0.002	0.02		
13647	145.00	146.00	1.00	0.005	0.02		

TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

SCALE = 1:10



TRM ENGINEERING LTD.

LOCATION: VICTORIA VEIN (STEWART - CATTO AREA)

DIAMOND DRILL RECORD

PROJECT: MAR GOLD

HOLE NUMBER: QRMG-86-004

DRILLING INTERVAL	% CORE RECOVERED	BOX Number	SCALE 1:250 METERS	ALTERATION: CALCITE	CHLORITE	SERICITE	SILICA	FRACTURING	MINERAL	GEOLOGY
150.57		150.48	151							
	101		152							
153.62			153							
	100		154							
		155.63	155							
156.67			156							
	92		157							
			158						Asp	
159.41			159						Asp	
160.02	133		160							
		161.42	161							
	88		162						Py	
			163						Py	
163.07			164							
	114		165							
165.81		166.71	166							
	97		167							
168.10			168							
	98		169							
			170							
171.30			171							
		172.52	172							
	79		173							
			174							
174.35			175							
	126		176							
176.78			177							
		177.68	178							
	104		179							
179.83			180							
180.75	110		181							
	88	182.85	182							
			183							
183.79			184							
183.40	172		185							
	96		186							
187.45			187							
		187.78	188							
	97		189							
190.50		190.56	190							

PURPOSE:

COMMENT:

INTERVAL from to

150.57 - 156.94 SKARNIFIED ARGILLACEOUS QUARTZITE: Dark grey, finer grained than usual, calc-silicate mineral development. Light green, compact compositional layering at 152.10 is 37° to core. ex.z: feathery andalusite common. Light green bleaching around quartz-feldspar veinlets

Lower contact gradational with increase in green-yellow lamination + bleaching @ 40°

156.94 - 161.54 BRECCIATED MYLONITIC GREEN QUARTZITE: Silica rich, highly irregular appearance, in situ brecciation, wispy fragments. Arsenopyrite veinlets 157.61 - 157.79 @ 44° to C.A., 2-4mm wide, associated with calcite. Traces fracture filling arsenopyrite throughout, for example 159.48, 61, 81, 86

161.54 - 162.14 PYRITE - QUARTZ ZONE: close spaced fractures filled with pyrite, largest is 4cm wide, but most are about 2mm wide @ 65° to core axis. Most of the pyrite is euhedral or flatten slightly. Minor disseminated pyrite. Traces of arsenopyrite disseminated below main concentration of fractures pyrite

162.14 - 171.08 BRECCIATED MYLONITIC GREEN QUARTZITE: Mylonite, friable sections common. Light green-yellow fragments in a matrix of white quartz. Irregular patches of calcite common. Minor pyrite and arsenopyrite lenses in more sheared sections. Compositional laminations at 166.40 is 42° to core axis.

Altered granodiorite veining and matrix filling 170.30 - 170.37. Minor shearing at 170.31. Lower contact gradational, contact defined by absence of brecciation

171.08 - MYLONITIC GREEN QUARTZITE: Light green-yellow, some darker grey, sooty. Pronounced breccia texture absent. brown calcite associated with quartz veining 172.85 and 172.96. Compositional laminations, finely layered @ 174.05 is 43° to core axis. Coarse andalusite at 172.10.

Altered granodiorite sill 178.31 - 178.58. Intense sericite-chlorite alteration. Granulation cleavage well developed @ 178.10, laminations at 178.05 are 40° to C.A. Pyrite lense and black gouge at 179.83, 3cm wide @ 52° to core axis. at 50° to C.A. - rotated

Mylonitic lamination at 182.80 is 52° to core axis

Disseminated arsenopyrite at 183.67, partly fracture filling

Minor pyrite in quartz lined vug at 184.08.

Quartz zone at 185.91 - 186.22 containing sparry white calcite.

Minor gouge at 187.77 - 187.79 fracturing at 70° to C.A.

Less well developed green-yellow mylonitic lamination, more dark grey intervals relict biotite. Lamination at 189.10 is 51° to core axis, cleavage parallel.

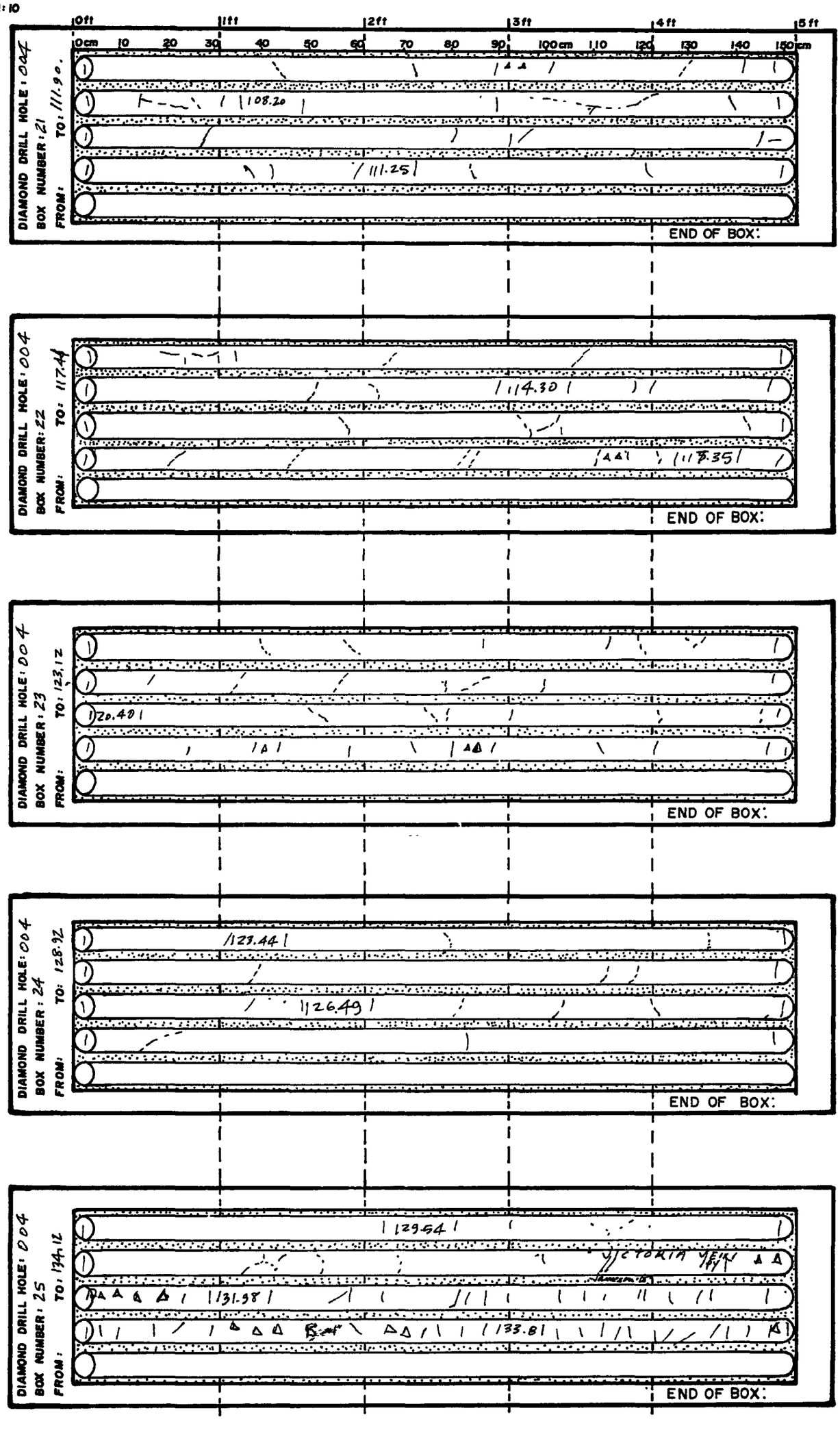
END OF HOLE 190.50 METERS (625 feet)

SAMPLE NUMBER	METERS from	to	LENGTH METERS	Au oz/ton			
13648	157.00	158.00	1.00	0.006	0.02		
13649	158.00	159.00	1.00	0.013	0.02		
13650	159.00	160.00	1.00	0.006	<0.02		
13651	160.00	161.00	1.00	0.002	<0.02		
13652	161.00	161.50	0.50	0.164	0.02		
13653	161.50	162.00	0.50	0.008	0.19		
13654	162.00	162.50	0.50	0.002	0.06		
13655	162.50	163.00	0.50	<0.002	0.02		
13656	163.00	164.00	1.00	<0.002	0.02		
13657	164.00	165.00	1.00	<0.002	0.02		
13658	165.00	166.00	1.00	0.005	0.10		
13659	166.00	167.00	1.00	<0.002	0.02		
13660	167.00	168.00	1.00	<0.002	<0.02		
13661	168.00	169.00	1.00	<0.002	<0.02		
13662	169.00	170.00	1.00	<0.002	0.11		
13663	170.00	171.00	1.00	<0.002	0.06		
13664	171.00	172.00	1.00	<0.002	0.09		
13665	172.00	173.00	1.00	<0.002	0.08		
13666	173.00	174.00	1.00	<0.002	0.03		
13667	174.00	175.00	1.00	<0.002	0.02		
13668	175.00	176.00	1.00	<0.002	0.12		
13669	176.00	177.00	1.00	<0.002	0.03		
13670	177.00	178.00	1.00	<0.002	0.05		
13671	178.00	179.00	1.00	<0.002	0.02		
13672	179.00	180.00	1.00	<0.002	0.04		
13673	180.00	181.00	1.00	<0.002	0.03		
13674	181.00	182.00	1.00	<0.002	0.03		
13675	182.00	183.00	1.00	<0.002	0.02		
13676	183.00	184.00	1.00	0.011	0.04		
13677	184.00	185.00	1.00	<0.002	0.02		
13678	185.00	186.00	1.00	<0.002	0.03		
13679	186.00	187.00	1.00	<0.002	0.02		
13680	187.00	188.00	1.00	0.002	<0.02		
13681	188.00	189.00	1.00	<0.002	0.02		
13682	189.00	190.00	1.00	<0.002	0.02		
13683	190.00	190.50	0.50	<0.002	<0.02		

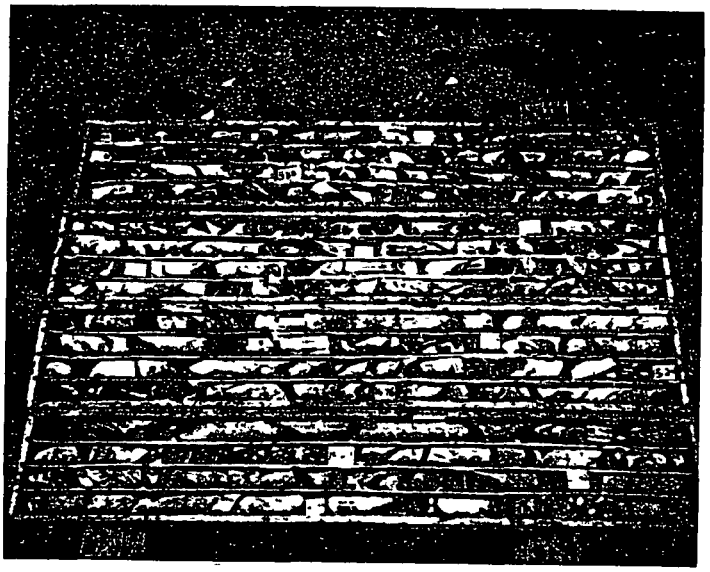
TRM ENGINEERING LTD.

ROCK MECHANICS MEASUREMENTS

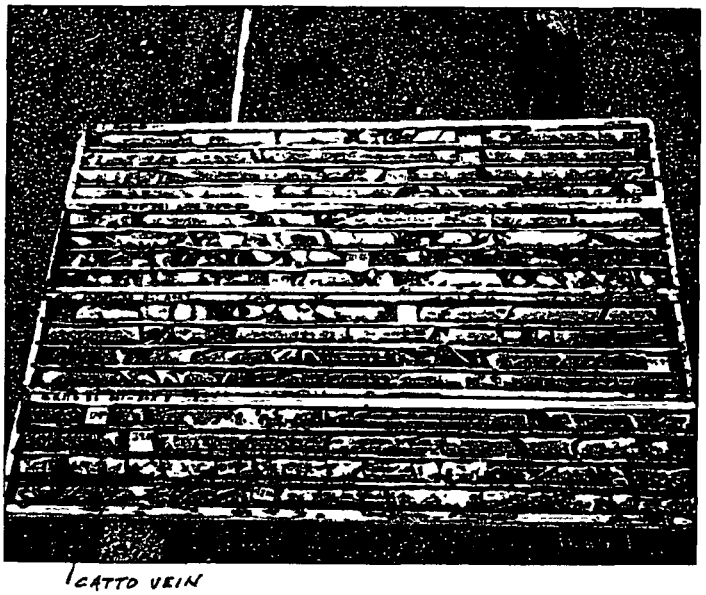
SCALE = 1:10



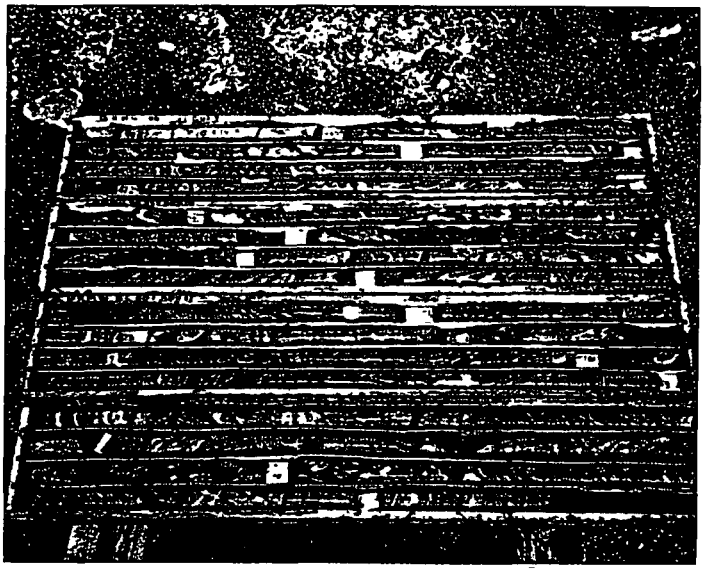
MAR GOLD PROJECT
DIAMOND DRILL HOLE QRMG-86-001 -47°
August 15 1986



MAR GOLD PROJECT
DIAMOND DRILL HOLE QRMG-86-001
DATE. August 16 1986 Boxes 1 to 4
2.44m to 22.02m.

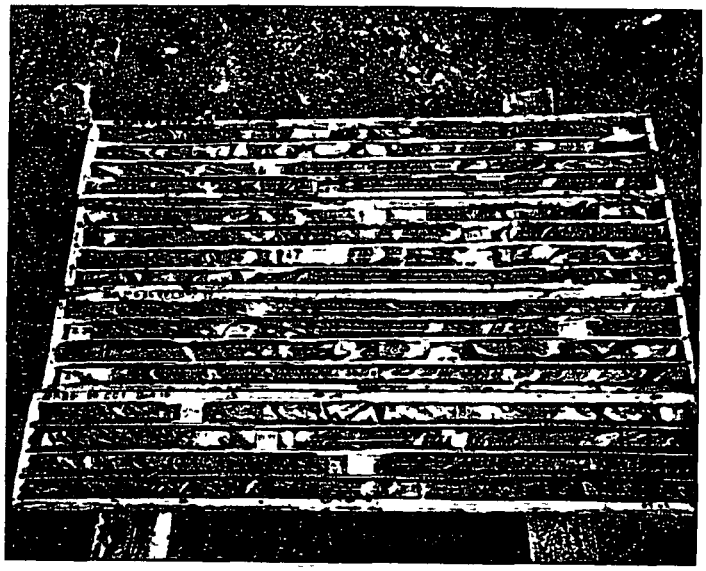


CATTO VEIN
MAR GOLD PROJECT
DIAMOND DRILL HOLE QRMG-86-001
DATE: August 16 1986 BOXES 5, 6, 7, 8
22.02m to 42.98



MAR GOLD PROJECT
HOLE QRMG-86-001
BOXES 9, 10, 11, 12

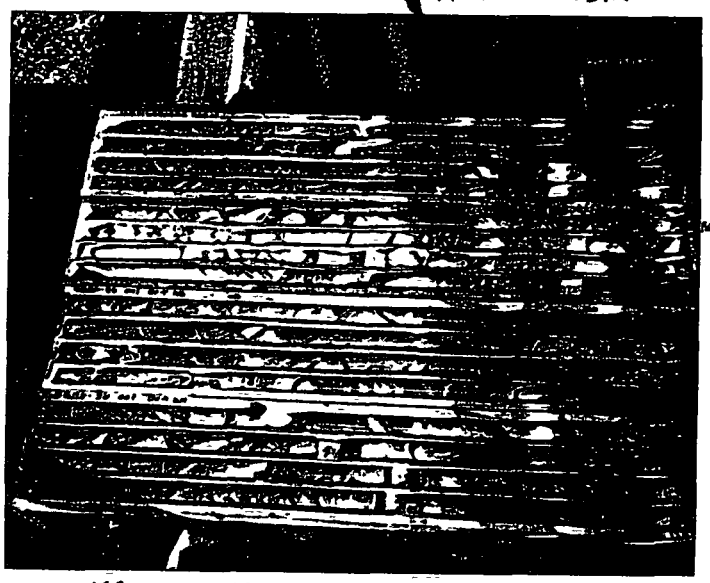
REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.



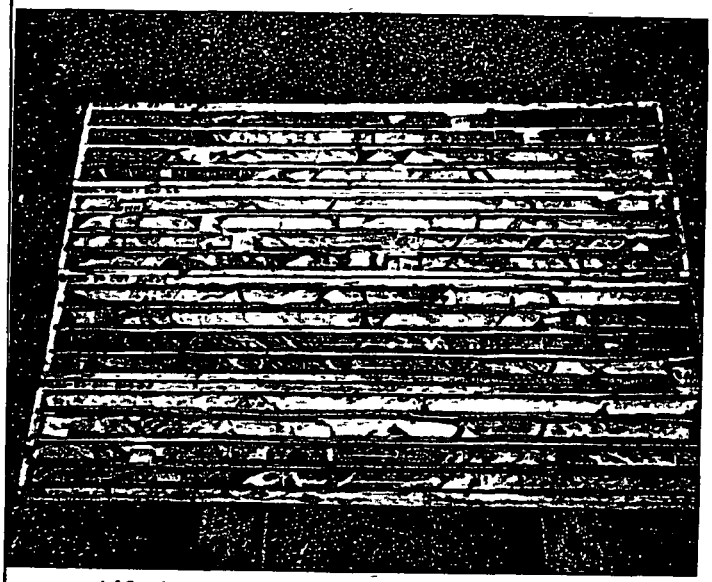
MAR GOLD PROJECT
HOLE QRMG-86-001
Boxes 13, 14, 15, 16

MAR GOLD PROJECT
HOLE - QRMG-86-001
Boxes 17, 18, 19, 20

VICTORIA VEIN

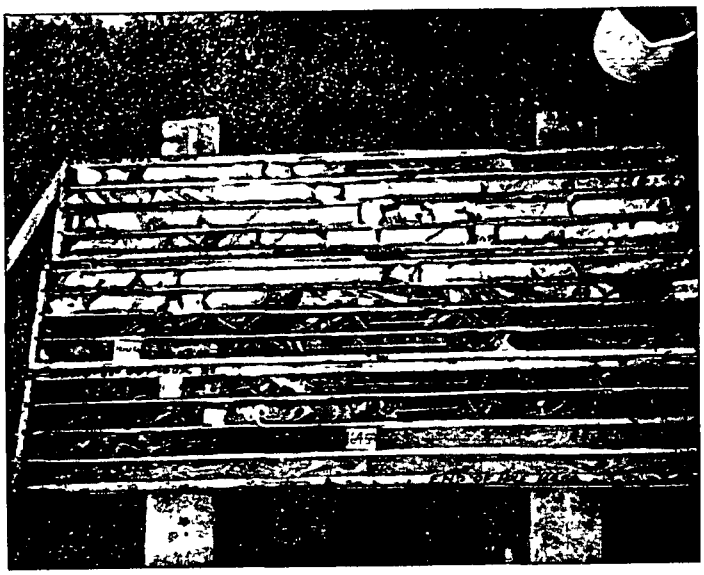


MAR GOLD PROJECT
HOLE QRMG-86-001
Boxes 21, 22, 23, 24



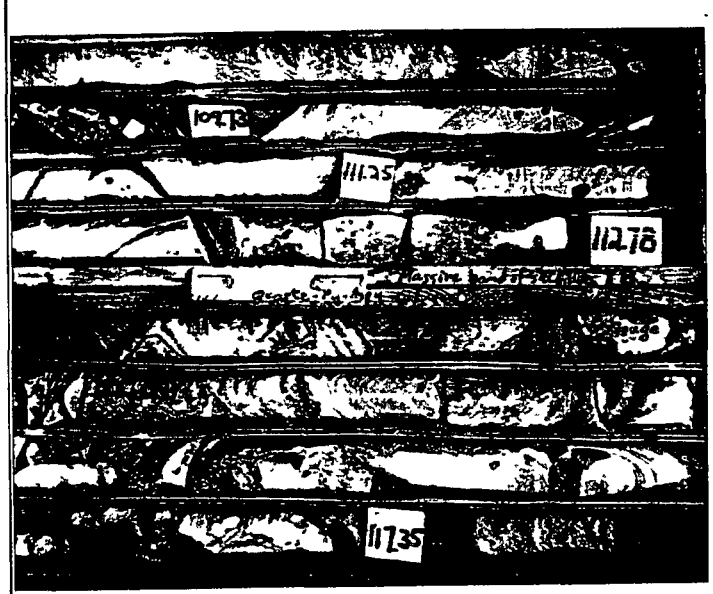
MAR GOLD PROJECT
HOLE QRMG-86-001
Boxes 25, 26, 27, 28

REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR

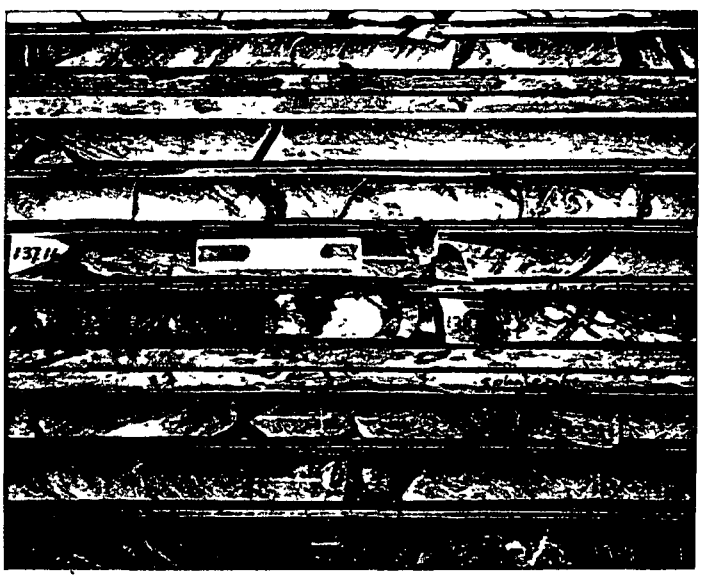


MAR GOLD PROJECT
HOLE QRMG-86-001

BOXES 29, 30, 31 EOH.

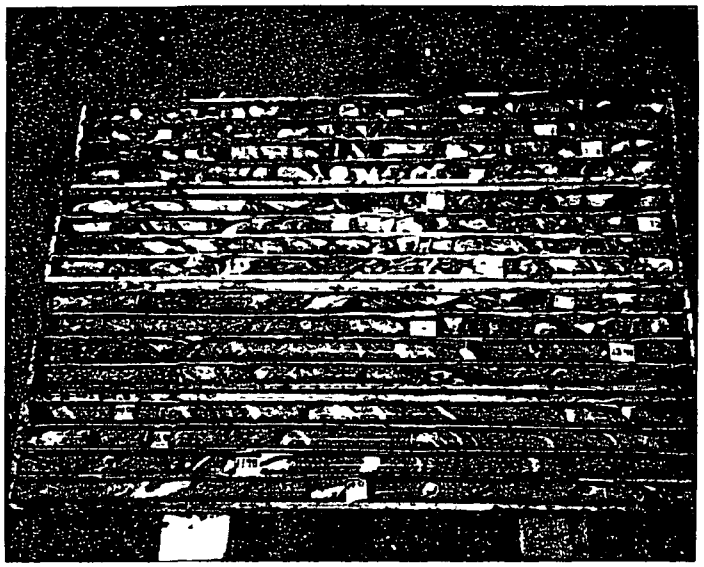


MAR GOLD PROJECT
HOLE QRMG-86-001
VICTORIA VEIN

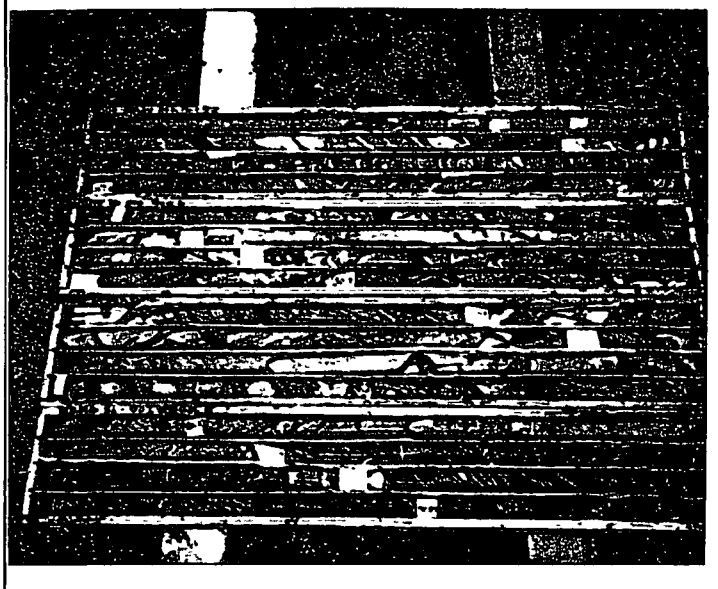


MAR GOLD PROJECT
HOLE QRMG-86-001
"NEW VEIN"

REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.

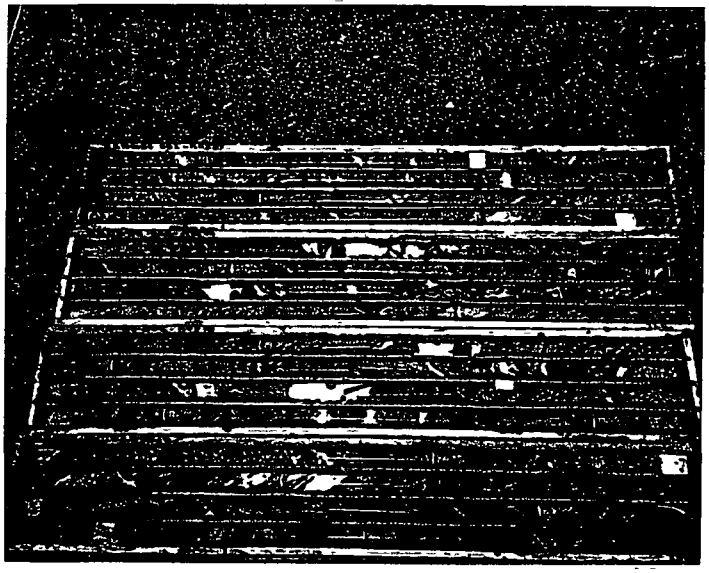


MARGOLD PROJECT
HOLE QRMG-86-002
Boxes 1-4



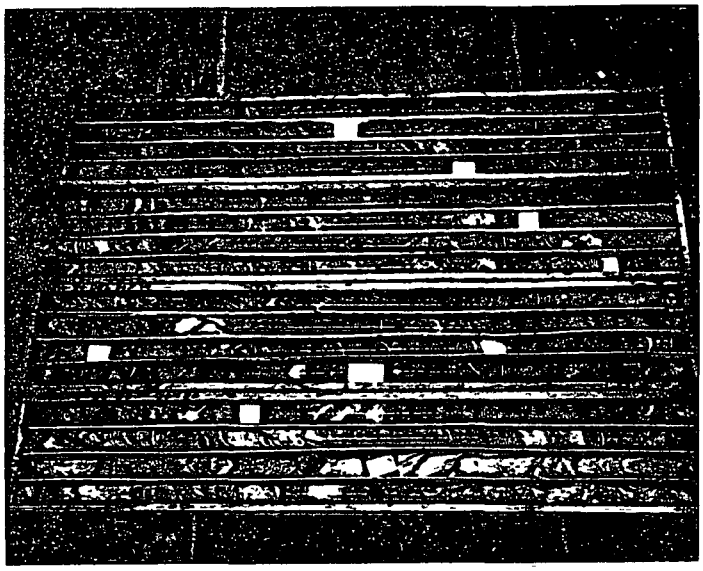
MARGOLD PROJECT
HOLE QRMG-86-002
Boxes 5, 6, 7, 8

MARGOLD PROJECT
HOLE QRMG-86-002
Boxes 9-12.

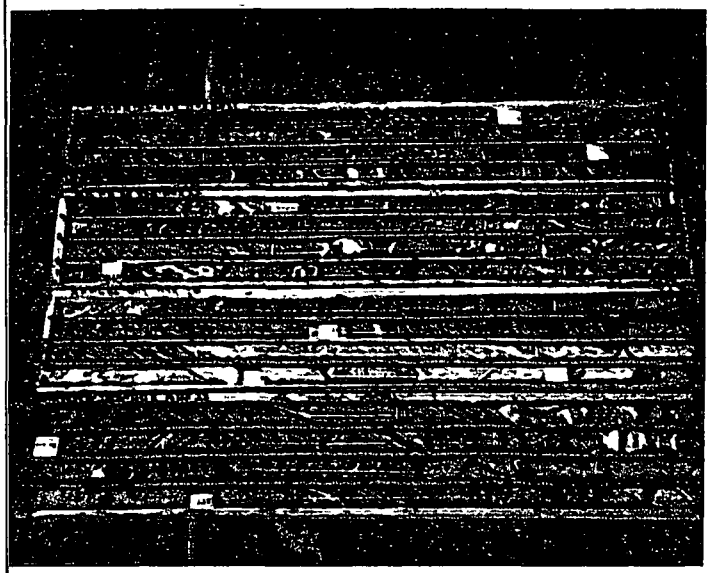


MARGOLD PROJECT
HOLE QRMG-86-002
Boxes 13, 14, 15, 16

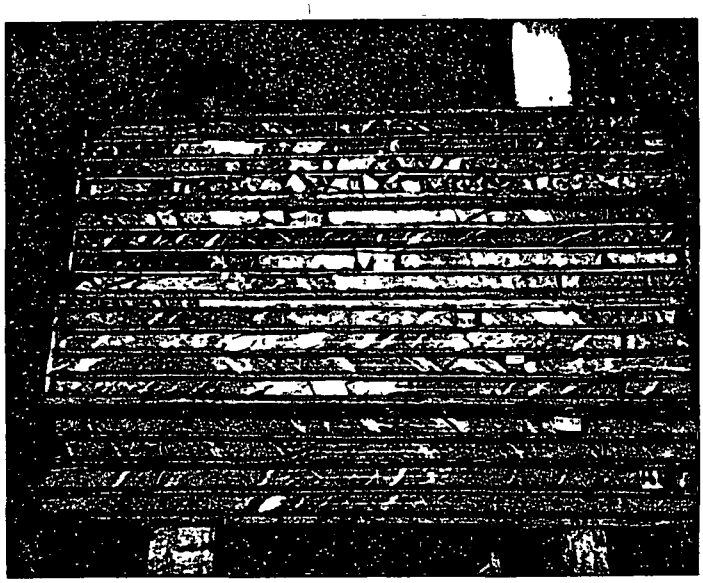
REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.



MAR GOLD PROJECT
HOLE QRMG-86-002
Boxes 17, 18, 19, 20



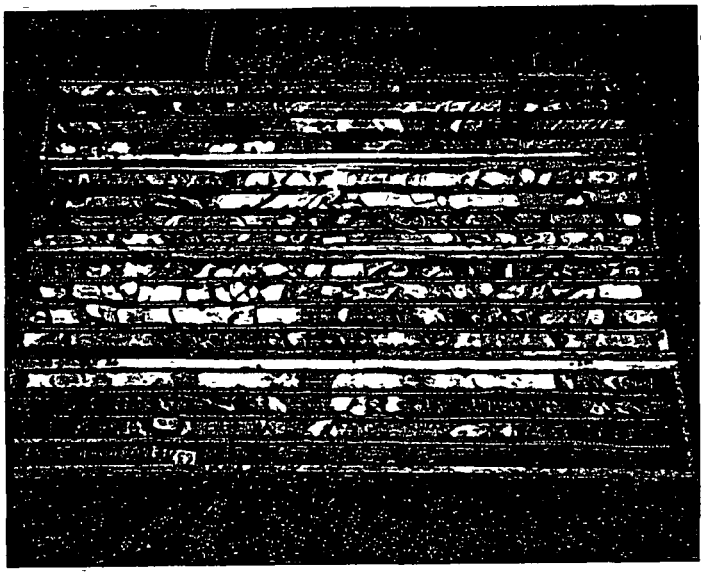
MAR GOLD PROJECT
HOLE QRMG-86-002
Boxes 21, 22, 23, 24



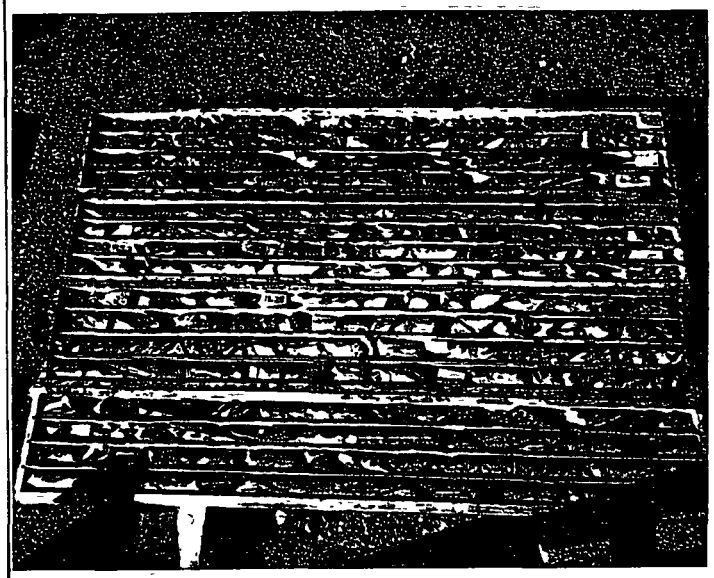
MAR GOLD PROJECT
HOLE QRMG-86-002
Boxes 25, 26, 27, 28

MAR GOLD PROJECT
HOLE QRMG-86-002
Boxes 29, 30, 31, 32

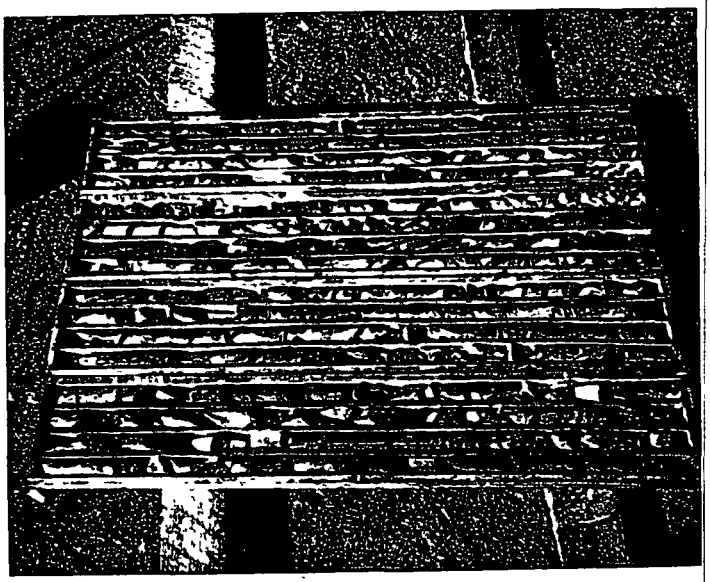
REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.



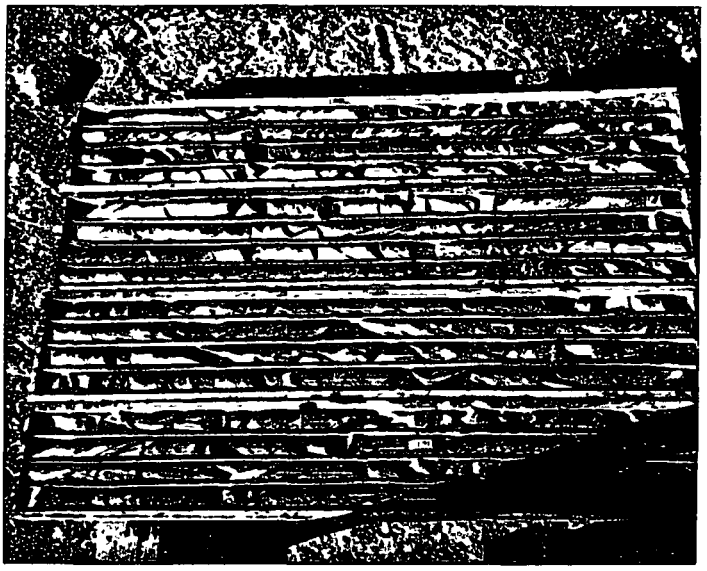
MAR GOLD PROJECT
HOLE QRMG-86-002
Boxes 33, 34, 35, 36
END OF HOLE



MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 1, 2, 3 + 4

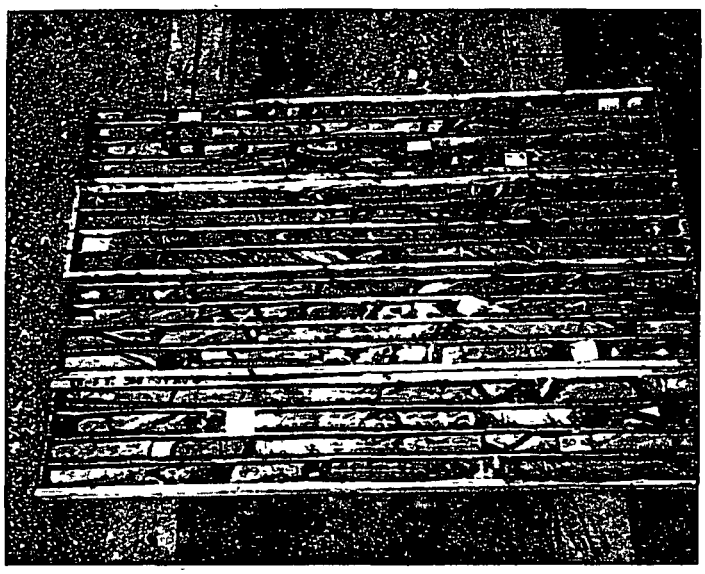


MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 5, 6, 7 + 8

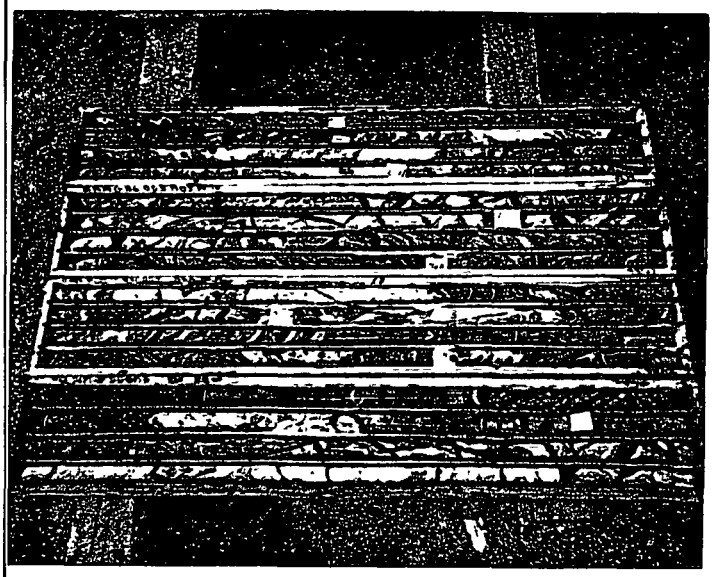


MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 9, 10, 11 + 12

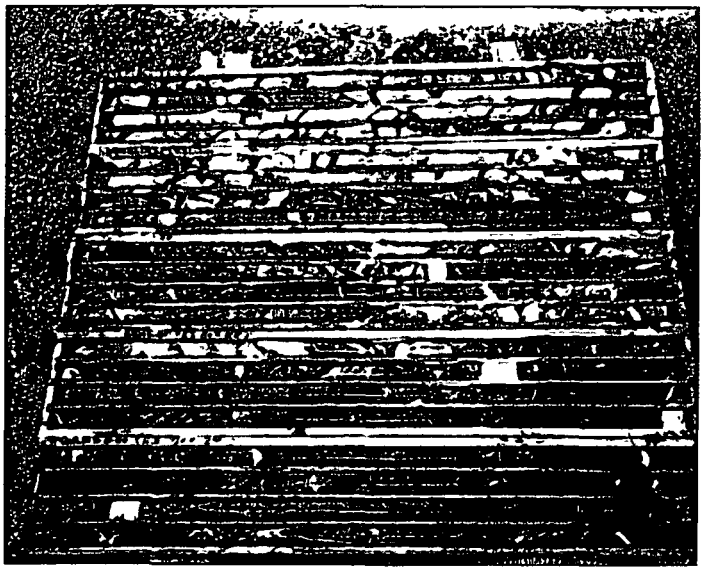
REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.



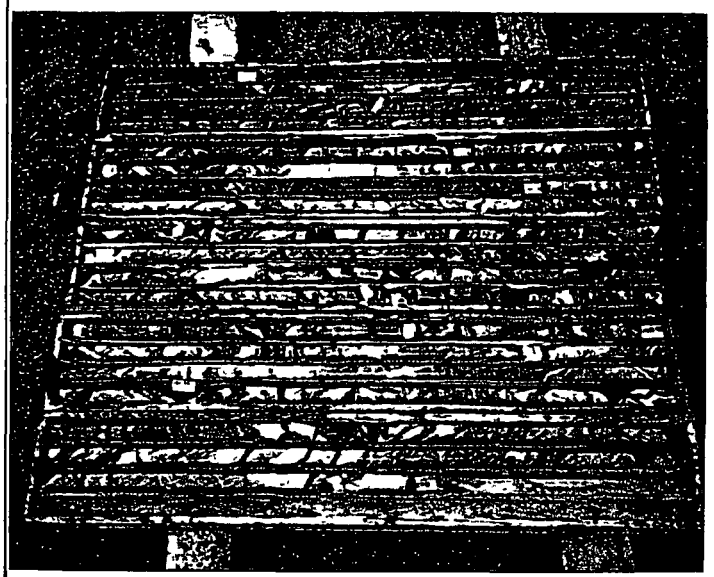
MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 13, 14 15 16



MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 17, 18, 19 + 20

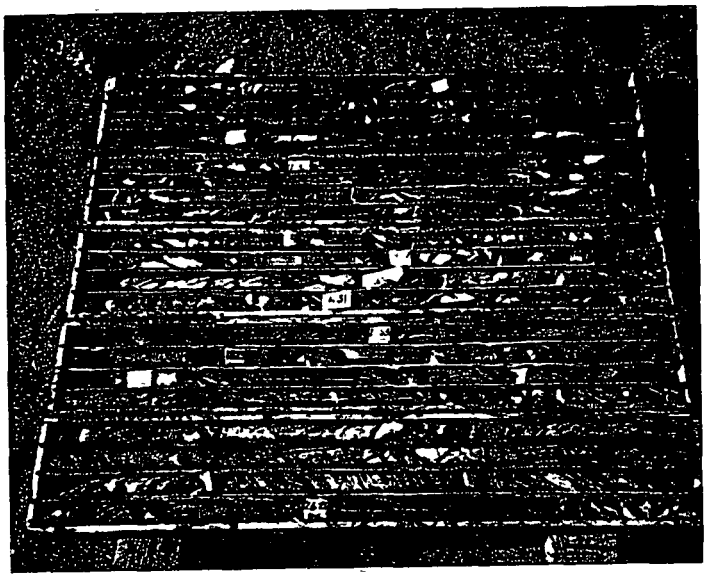


MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 21, 22, 23, 24, 25



MAR GOLD PROJECT
HOLE # QRMG-86-003
Boxes 26, 27, 28, 29, 30 EOH.

REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.

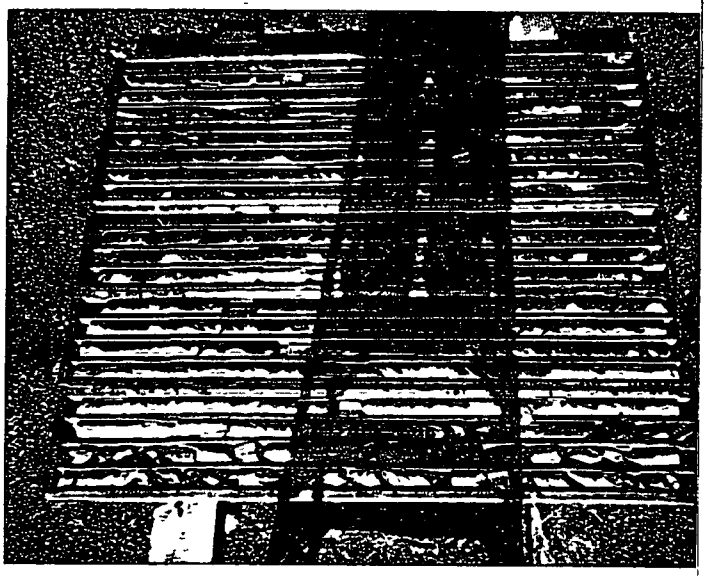


MAR GOLD PROJECT
HOLE No QRMG-86-004
Boxes 1-5

MAR GOLD PROJECT
HOLE # QRMG-86-004
BOXES 11-15

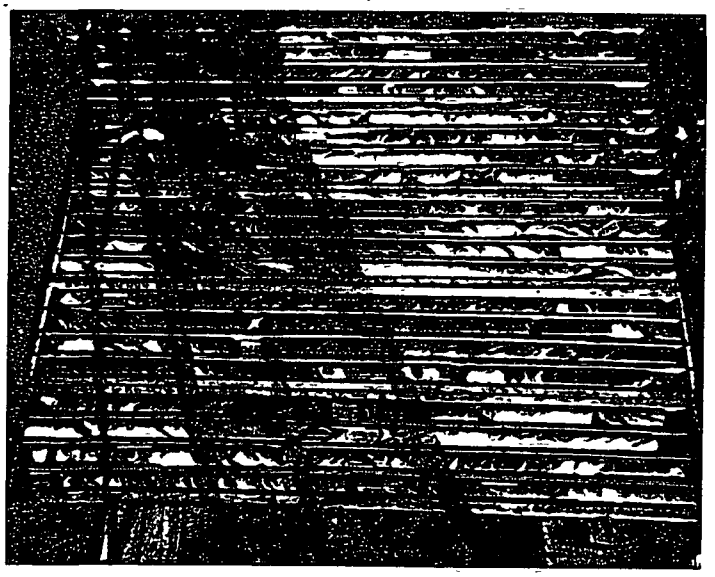
MAR GOLD PROJECT
HOLE # QRMG-86-004
BOXES 16-20

REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR



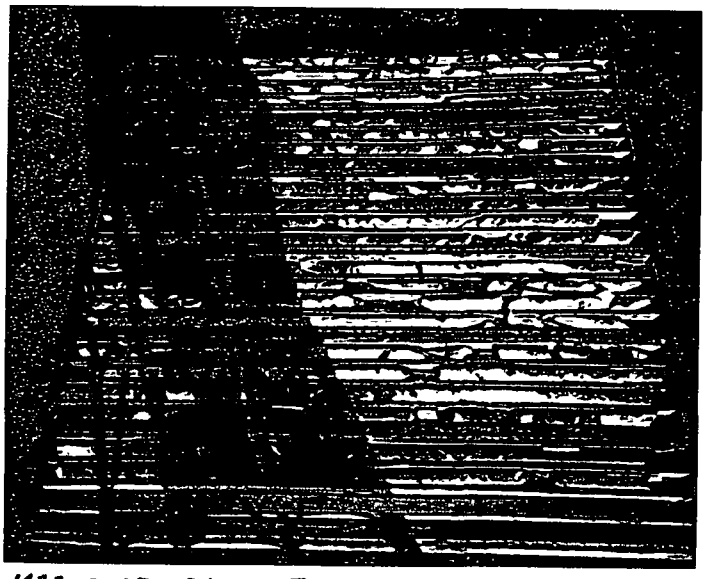
MAR GOLD PROJECT
HOLE # QRMG-86-004

BOXES 21-25



MAR GOLD PROJECT
HOLE # QRMG-86-004

BOXES 26-30



MAR GOLD PROJECT
HOLE # QRMG-86-004

BOXES 31-36
END OF HOLE

REFER TO ORIGINAL PHOTOGRAPHS FOR DETAILS AND COLOUR.

GTR-48
HENDERSON VEIN
GTR-49
GTR-50
GTR-47
GTR-42
GTR-41
GTR-40
GTR-39
GTR-38
GTR-3
GTR-36
GTR-35
GTR-34
GTR-33
GTR-32
GTR-31
BLUE VEIN
GTR-30
BLUE LEAD SHAFT VEIN
GTR-29
STEWART VEIN
STEWART ADIT

SMOKY
No. 75
Claim

GTR-46
GTR-28
GTR-22
SEE FIGURE 10 FOR DETAILS
GTR-21
GTR-15
NO 15 VEIN
GTR-43
GTR-26
GTR-27

SMOKY
84
FR
Claim

85 FR
Claim

GTR-14
GTR-13
GTR-12
GTR-19
GTR-18
SEE FIGURE 8 FOR DETAILS
GTR-11
SEE FIGURE 25 FOR DETAILS
GTR-10
SEE FIGURE 24
BEAVER ADIT
GTR-20
GTR-1
CABIN VEIN
GTR-9
KLIPPERT VEIN
GTR-5
GTR-8
GTR-7
NO 9 STRUCTURE
GTR-16
GTR-17
NO 45 VEIN
NO 17 WEST VEIN
GTR-24
NO 24 VEIN
VICTORIA VEIN
AURUM ADIT
GTR-45
GTR-6
GTR-25
AURUM NO 2 VEIN
GTR-23
NO 23 VEIN
GTR-3
AURUM NO 7 VEIN
CATTO VEIN
GTR-2

BOB No. 2 Claim

BOB No. 3

BOB No. 1 Claim

HOLES 3+4

HOLES 1+2

1986 DIAMOND DRILLING

- MODIFIED FROM BARTLETT 1981 (Figure 11)
- OUTLINE OF CLAIMS APPROXIMATE

Scale 0 50 100 150 Metres
SCALE 1 : 2,500

TO SKAMPA ZINC AREA

CAMP

LEGEND

SYMBOLS

GEOLOGICAL BOUNDARY
Defined
Approximate
Assumed

FAULTS
Inferred
Observed

FOLIATION
Inclined

FRACTURE
Inclined

Rock outcrop
Quartz vein >50cm
Quartz Veins 10cm-50cm
Bull Quartz
Underground Shaft
Dump

ABBREVIATIONS
Hw Hanging wall
C Centre
Fw Footwall

TRENCHES
Bulldozer
Excavation

VEIN STRUCTURE
Dip
Defined

SAMPLE LOCATIONS
Chip
Vein

ADIT

SHAFT

SURVEY MARKER

LITHOLOGY

TERTIARY
6 Mafic dykes and segregations

MESOZOIC (Jurassic and Cretaceous)
5 Quartz orthoporphyritic hornblende vein rock
4 Plutonic rocks
4a Aplite and leucocratic granite
4b Granodiorite
4c Quartz feldspar porphyry
4d Quartz diorite
3 Greenstone

PALEOZOIC or MESOZOIC
2 Central Quartzite Formation
2a Massive quartzite and minor phyllite

PRECAMBRIAN or PALEOZOIC
1 Upper Schist Formation
1a Biotite quartzite schist
1b Massive and gritty quartzite, minor thin bedded quartzite
1c Micaceous and graphitic phyllite
1d Mixed rock - semi to quartzite schist
1e Calc silicate skarn
1f Calc silicate hornfels
1g Marble

QUEENSTAKE RESOURCES LTD.

LOCAL GEOLOGY AND DRILL HOLE LOCATION

PROJECT: MAR GOLD
ENG: TRM ENGINEERING LTD.
DATE: AUGUST 1986 FIGURE 5


NORTH
SOUTH
VICTORIA ADIT
CATTO TRENCH
CATTO VEIN
VICTORIA VEIN
NEW VEIN
"SOUTH VEIN"
GRANODIORITE OUTCROPS TO NORTHEAST
PROBABLE STEEP NORTHERN CONTACT TO MAJOR GRANODIORITE PLUTON
ARGILLACEOUS QUARTZITE
MYLONITIC QUARTZITE
MICACEOUS QUARTZITE
BIOTITE QUARTZ SCHIST
SLIGHTLY SKARNIFIED QUARTZITE
FRACTURE FAULT ZONE
MINERALIZED GRANODIORITE
SPHALERITE PYRITE JAMESONITE, CASSITERITE
END OF HOLE 164.59 m
END OF HOLE 194.16 m
LEGEND
MICACEOUS QUARTZITE
BIOTITE QUARTZ SCHIST
SKARNIFIED QUARTZITE
ARGILLACEOUS QUARTZITE
MYLONITIC QUARTZITE
ASSAY RESULTS
Gold Fire assay in ounces per short ton
Less than 0.002 ounces per ton gold (below detection limit)
Fault
Transit Survey Point
0 5 10 15 20 METRES
0 10 20 30 40 50 60 FEET
SCALE 1 : 250

To accompany report entitled "Diamond Drilling Report on the MAR GOLD PROJECT" by J.T. Shearer, M. Sc., Dated September 18, 1986

NTS : 106 D/4
WORK BY: J. SHEARER
DRAWN BY: J. SHEARER

QUEENSTAKE RESOURCES LTD.

DUBLIN GULCH AREA
MAYO M.D., YUKON

1986 DIAMOND DRILLING PROGRAM

VERTICAL CROSS SECTION
ALONG 461, 445 E
LOOKING DUE EAST

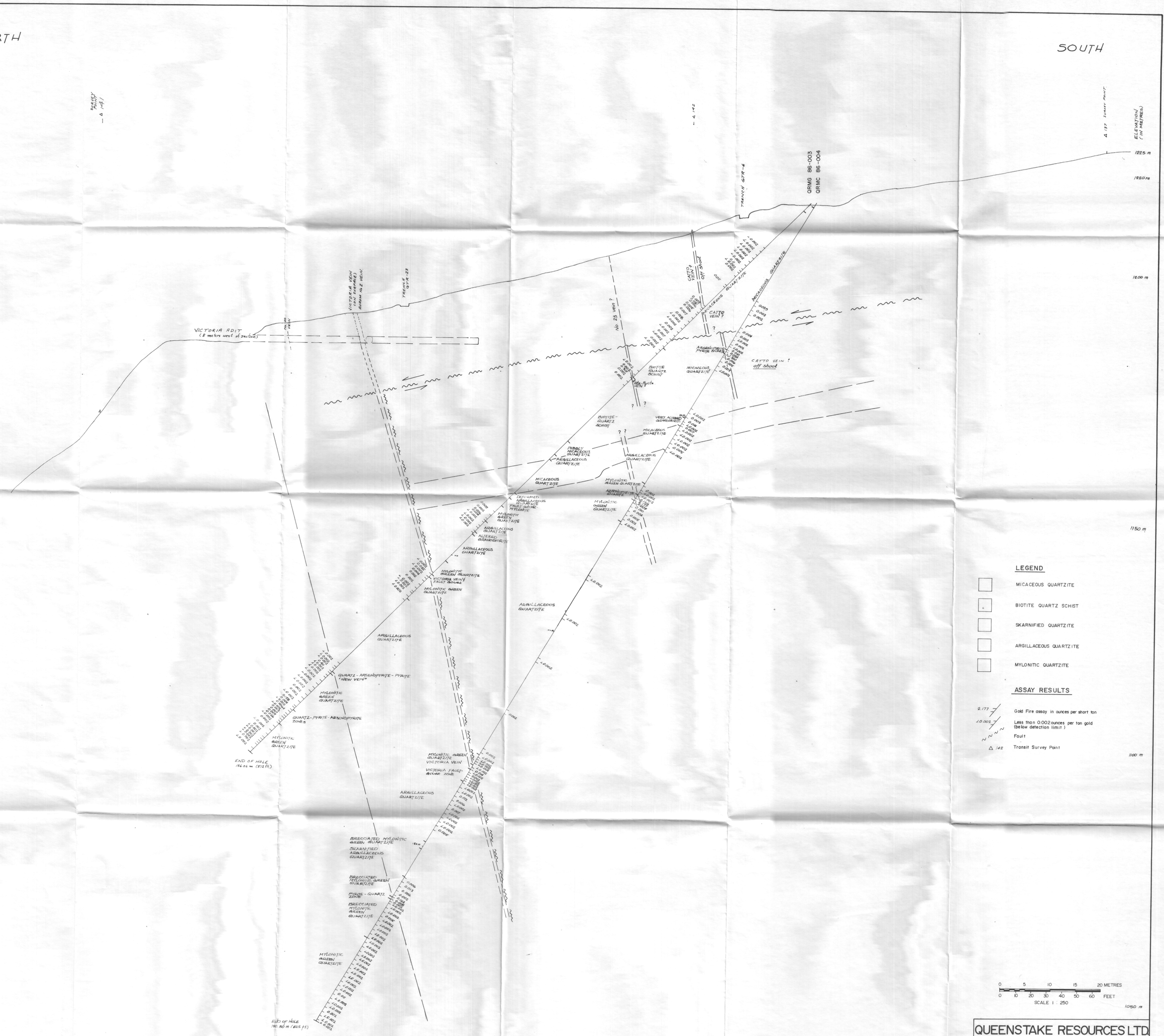
PROJECT : MAR GOLD

ENG. : TRM ENGINEERING LTD.

DATE: AUGUST 30, 1986 | FIGURE 6

NORTH

SOUTH



LEGEND

- MICACEOUS QUARTZITE
- BIOTITE QUARTZ SCHIST
- SKARNIFIED QUARTZITE
- ARGILLACEOUS QUARTZITE
- MYLONITIC QUARTZITE

ASSAY RESULTS

- 2.177 — Gold Fire assay in ounces per short ton
- <0.002 — Less than 0.002 ounces per ton gold (below detection limit)
- Fault
- Δ 142 — Transit Survey Point

0 5 10 15 20 METRES
0 10 20 30 40 50 60 FEET
SCALE 1 : 250

To accompany report entitled "Diamond Drilling Report on the MAR GOLD PROJECT" by J.T Shearer, M.Sc., Dated September 18, 1986

NTS : 106 D / 4
WORK BY : J. SHEARER
DRAWN BY J. SHEARER

QUEENSTAKE RESOURCES LTD.

DUBLIN GULCH AREA
MAYO M.D., YUKON

1986 DIAMOND DRILLING PROGRAM

VERTICAL CROSS SECTION
ALONG 461,415 E
LOOKING DUE EAST

PROJECT :	MAR GOLD
ENG. :	TRM ENGINEERING LTD.
DATE : AUGUST 30, 1986	FIGURE 7