REPORT ON PHASE II AND III EXPLORATION PROGRAMS (GEOPHYSICAL AND DRILLING)

on the

JEWEL PROPERTY

KAMLOOPS MINING DIVISION
BRITISH COLUMBIA
N.T.S. 82L/5E

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KAMLOOPS MINING DIVISION
BRITISH COLUMBIA
N.T.S 82-L/5E

Lat 50^{o} 28'N, Long 119^{o} 39'W

for

CORONA CORPORATION
1440 - 800 West Pender Street
Vancouver, B.C.

COVERING:	OPAL 1, TOPAZ 1, RUBY 1, RUBY 2, EUREKA, GROUSE 13, GROUSE 16, CROWN, CROWN 1, 2, 3 AND 9
PROPERTY OWNERS:	CORONA CORPORATION, VANCOUVER, B.C. ELISABETH MARZOFF, VERNON, B.C.
OPERATOR:	CORONA CORPORATION
PROGRAM SUPERVISOR:	R. C. WELLS REGIONAL GEOLOGIST KAMLOOPS OFFICE 101 - 2985 AIRPORT RD. KAMLOOPS, B.C.

MAY 28, 1990 R.C. WELLS B.Sc., F.G.A.C

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SUMMARY AND CONCLUSIONS

This is a report on an exploration program conducted on the **Jewel Property** near Falkland, B.C., by Corona Corporation in 1989 and 1990.

Corona Corporation owns, or has under option 104 units in 14 claims and began work on the property in May 1988. The target for exploration was copper and precious metal mineralized dioritic intrusive rocks. Significant precious metal (Au, Ag) values occur locally within the intrusives and in adjacent structures.

On the property, the Salmon River has eroded through flat lying olivine basalt flows belonging to the Kamloops Group, exposing the underlying folded Upper Paleozoic (Harper Ranch) sedimentary rocks (erosional window). A swarm of northwesterly trending dykes of diorite to quartz diorite composition (probable Mesozoic age) follow structural zones cutting the sediments. The dykes are high level, strongly altered and brecciated. Copper-precious metal mineralization occurs in two better exposed parts of the dyke system some 300 metres apart on the steep hillside (Main and East Showings).

One of these areas, the "Main Showing", received a significant amount of work by the original property owners and Canex Aerial Exploration (Placer Development). These programs included drilling two poorly placed drill holes (Canex 1967) which did not adequately test the mineralization.

In 1988 Corona conducted a program consisting of geological mapping, trenching, sampling and geophysical surveys over the showings and adjacent areas. The results indicated that the dioritic dyke swarm was over 300 metres wide and that a number of styles of copper-precious metal mineralization were intimately associated with the system.

Significant zones (some over 10 metres wide) of copper mineralization (0.2 to 0.7% Cu) were exposed in the Main Showing

area. The zones are cut by later, northeast dipping, hematitic, fracture zones like the Red and Blue veins which are enriched in Au (to 11 g/t), Ag (to 50 g/t) and Cu (to 2%).

In the East showing area, (300 metres northeast of the Main Showing) at the eastern edge of the dyke system, prospecting by Corona discovered intrusive related copper mineralization and narrow quartz veins with gold values up to 11 g/t.

The drill program in April 1989 concentrated on testing the two known areas of surface mineralization.

In the Main Showing area, five short holes indicated a supergene copper zone with native copper overlying hypogene-chalcopyrite mineralization (in the upper part of the dyke system). A series of stacked, northeast dipping hematitic structures cut the supergene zone and yielded gold values of 1 to 4 g/t over 1 to 3 metre widths.

A single hole drilled in the East Showing area encountered a wide zone of low grade copper mineralization (18 metres at 0.19% Cu) in the hangingwall of a diorite dyke. A 30 cm wide zone of semi-massive sulfides within this intersection (in the dyke) contained visible gold, arsenopyrite, chalcopyrite and sphalerite. Another similar sulfide lens occurred at the footwall to the same dyke.

Later in 1989 a Phase II exploration program consisted of a test IP/resistivity survey (MPH Consulting) followed by a diamond drilling program (3 holes).

IP was found to be an effective tool in locating sulfide mineralized areas within the dyke system. Two chargeability anomalies A and B were found in the vicinity of the East and Main Trench zones. The initial drill program in April had not adequately tested the stronger parts of either anomaly.

The Phase II drill program tested both IP anomalies. Strongly deformed graphitic sediments in the hangingwall to the dyke system were encountered while drilling the eastern anomaly. A narrow, high grade, polymetallic sulfide zone in the hangingwall to the East Zone (MJ-89-06) was found by drilling hole MJ-89-08 to continue for over 50 metres to the south. This hole intersected a 1 metre wide zone of semi-massive chalcopyrite and sphalerite with gold and silver values.

Drilling the western anomaly encountered a wide intersection (30 metres at .16% Cu) of low grade copper mineralization at depth, beneath the Main Trench Zone.

The 1990 drill program tested the northward projection of the East Zone as well as the deeper levels of the intrusive system. Narrow sulfide bearing zones 1 to 2 metres wide were associated with altered dykes and yielded generally low copper and zinc values.

The extent and grade of polymetallic mineralization (Cu, Zn, Au, Ag) did not appear to improve with depth or to the north in the East zone Area. The depth of the overburden in this area is another negative factor.

Drilling in 1989 on the West Zone Area (300 metres to the west) indicated that the better grade copper and precious metal mineralizaion was close to surface and associated with a fairly small zone of supergene enrichment. Hypogene copper mineralization below this supergene zone was generally of lower grade with spotty gold and silver values. It has little economic potential.

The 1989 and 1990 exploration programs on the Jewel Property have adequately tested the copper-precious metal potential of the dioritic intrusive (porphyry) system.

INTRODUCTION

This is a report on the Phase II and III exploration programs conducted on the Jewel Property between September 1989 and May 1990 by Corona Corporation.

During this period an IP/Resistivity Survey and two Diamond Drilling Programs took place on the property. All the work occurred on the eight two-post claims in the central part of the property. The IP/Resistivity Survey was conducted by MPH Consulting Ltd of Vancouver and is described in detail in a separate appended report titled "Report of Results of Induced Polarization and Resistivity Survey on Marzoff (Jewel) Property" by Kevin D. Lund B.Sc.

The target was porphyry and vein hosted base (Cu, Zn) and precious metal (Au, Ag) mineralization associated with the strongly altered roof zone of a dioritic dyke swarm.

Corona Corporation funded all the exploration on the property. The work was supervised by R.C. Wells B.Sc., F.G.A.C., Regional Geologist for Corona Corporation based in Kamloops, B.C. The total cost of the Phase II and III exploration programs was $86,065.00 of which $81,800 is being applied to the claim group for assessment credit. Copies of the Statement of Work are available in Appendix A.

CORONA CORPORATION

GENERAL LOCATION MAP
JEWEL PROPERTY
VERNON MINING DIVISION

Project No.	V 312	By:	K.D.L.
Scale:	1 : 8 000 000	Drawn:	K.S.
Drawing No:	1	Date:	SEPT. 1989

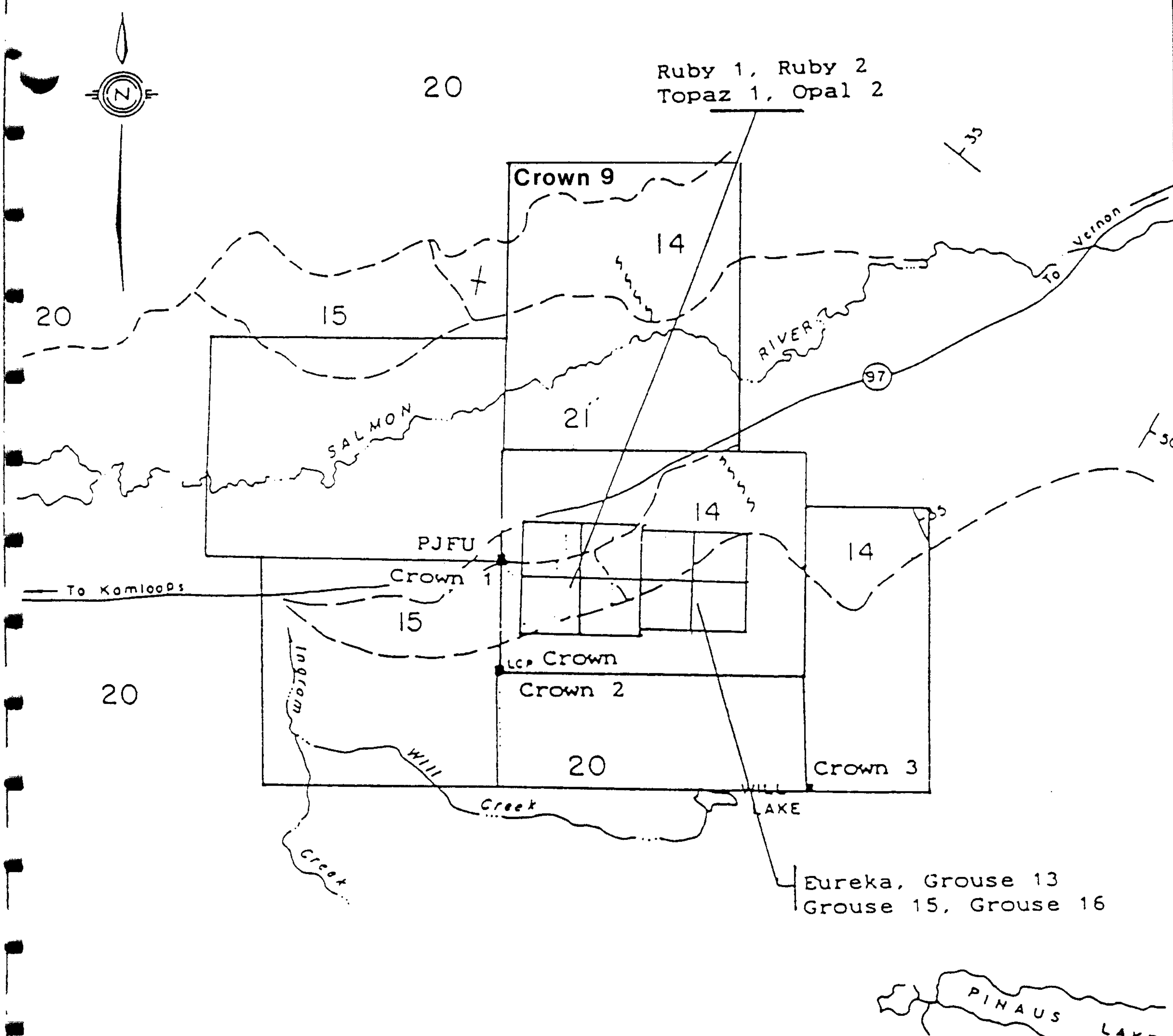
PROPERTY AND OWNERSHIP

The property is in the Kamloops Mining Division. Four claims, **Eureka, Grouse 13, Grouse 15, and Grouse 16** are owned by Elisabeth Marzoff. The **Crown, Crown 1, Crown 2, Crown 3, Crown 9** and **PJFU** were staked in June 1988 for Lacana Mining Corporation (which was later amalgamated into Corona Corporation). Collectively, all these claims are known as the **Jewel Property** and were grouped for assessment purposes in May 1990 (No. 171) into Jewel 1, Jewel 2. All the claims have become part of an option agreement with Elisabeth Marzoff dated May 26, 1988.

A list of the claim information on the **Jewel Property** follows in Table 1. The claims are shown in Figure 2.

TABLE 1 - THE JEWEL PROPERTY

Claim Name	Record No.	No. of Units	Current Expiry Date	Owner
EUREKA	7046	1 (2-post)	97/05/26	E. Marzoff
GROUSE 13	7047	1 "	97/05/26	"
GROUSE 15	7048	1 "	97/05/26	"
GROUSE 16	7049	1 "	97/05/26	"
CROWN	7731	20	94/06/08	Corona Corp.
CROWN 1	7754	16	91/06/21	"
CROWN 2	7755	10	91/06/21	"
CROWN 3	7756	20	92/06/21	"
PJFU	7755	20	94/06/24	"
OPAL 1	8257	1 (2-post)	99/01/04	"
TOPAZ 1	8258	1 "	99/01/04	"
RUBY 1	8259	1 "	99/01/04	"
RUBY 2	8260	1	99/01/04	"
CROWN 9	7799	20	90/07/07	"
	TOTAL	104 Units		



21	QUATERNARY - ALLUVIUM, GLACIAL DEPOSITS.
20	TERTIARY - KAMLOOPS GROUP BASALTS.
15	CARBONIFEROUS - MAINLY LST, ARGILLITE, QUARTZITES, BRECCIA, TUFF.
14	CARBONIFEROUS - ANDESITIC LAVA, TUFF, ARGILLITE, QUARTZITES AND LST.

0 2500 m

SCALE : 1:50000

Geological data after Jones - 1958
Geological Society of Canada memoir 259

CORONA CORPORATION

Property Location & Geology
Marzoff Option (Jewel) and Crown Claim

Drawn by : DBM	NTS 82L S
Scale : 1:50000	FIG. 2

PROPERTY LOCATION AND ACCESS

The **Jewel Property** is located 9 kilometres west of the town of Falkland, B.C., in the Kamloops Mining Division and straddles a short section of Highway 97 (Figure 1). The city of Kamloops lies approximately 60 kilometres to the northwest by highways 97 and 1. Property Latitude is 50°28' North and Longitude 119°39' West.

A number of old 4 X 4 roads lead from Highway 97 and Pinaus Lake Road into the central two-post claims and an old trenched area (original showings).

TOPOGRAPHY AND VEGETATION

The property covers the southern slope of the west trending, Salmon River Valley. Highway 97 follows the valley floor south of the Salmon River at 650 m elevation. Much of the valley floor (PJFU claim) is fenced pasture.

South of the highway, elevations rise rapidly to over 1200m locally with cliffs. Topography in the vicinity of the old showings is steep with numerous deep gullies and sandy ridges. Much of the lower part of the hillside has been logged, burned, and locally replanted by the Forestry Department. Large open patches with scrub vegetation remain on the hillside.

HISTORY

Copper staining and malachite boulders were exposed and recognized by the Marzoffs during logging operations on the hillside in the 1950's. They promptly staked a number of two post claims (**Jewel Group**) and carried out trenching and road construction intermittantly up to 1975. Most of this work concentrated on exposing copper showings with gold values in a steep gully on the original **Opal** claim (presently **Opal 1**). An attempt was made by Pat Marzoff to drill two holes on these showings in 1974. Core recovery was poor due to highly fractured ground.

The property was optioned by Canex Aerial Exploration Ltd. (Placer Development) in 1967. Canex's target was disseminated and replacement type copper-gold mineralization. Besides the optioned property they also staked a large part of the valley (**Deadwood Claims**). During 1967 Canex completed geological mapping, and geochemical and geophysical surveys (magnetic, VLF, frequency domain I.P.) on the claim group. Two vertical core holes were drilled in 1967 to test the main showing (**Opal Claim**). These were poorly placed and did not intersect any significant Cu, Au mineralization. Largely based on the drilling results Canex dropped the property.

The main showing area was mapped and resampled by Utah Mines in 1986 (Deighton) reproducing significant Cu, Au and Ag values from the Red and Blue Veins in the Main Showing area (**Opal**). Utah for some reason did not option or do further work on the property.

In 1988 Corona Corporation personnel visited the property. Significant Au, Ag and Cu values were obtained from the showings. Potential was seen for intrusive (porphyry) related copper mineralization with later structurally controlled precious metal zones. An option agreement was made on the property with Elisabeth Marzoff in May 1988. Staking by Corona in June 1988 significantly enlarged the property to its present size (104 units).

REGIONAL GEOLOGY

The most recent geological map for the area can be found in G.S.C. Memoir 296, Vernon Map Area, B.C. by A.G. Jones 1959. This map (Figure 3) shows a narrow strip of Cache Creek (Permian?) volcanics and limestones on either side of the Salmon River Valley. Tertiary Kamloops Group volcanics form the hill tops and surrounding plateau areas. A number of northwesterly trending faults are indicated east and west of the property.

Acidic coast intrusives occur in the region (Figure 3) but were not mapped on the property by the GSC. Porphyritic intrusives, mainly dykes do occur on the **Jewel Property** and cut the folded (Paleozoic?) sediments.

The nearest mineral showings, to those on the **Jewel**, occur within Cache Creek? lapilli tuffs on the Top claim a few kilometres to the northeast. One drill hole by Canamax in 1984 intersected significant copper (greater than 2%) and silver (20 g/t) values over 20 metres. The mineralization was found to be discontinuous after follow up drilling and surface work (trenching).

The Salmon River Valley is a broad flat-bottomed valley with old lake terraces along the sides. On the property, thick waterlain sequences of sand and gravel overlie bedrock. Stripping to bedrock is possible only in steep areas or along gully sides.

LEGEND

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT

21 — *Glacial, lacustrine, and fluviatile gravel, sand, silt, and clay*

TERTIARY

OLIGOCENE OR MIOCENE

KAMLOOPS GROUP

20 — *Basaltic lava and flow breccia; minor rhyolitic lava and breccia; local sandstone, shale, conglomerate; coal*

CRETACEOUS OR TERTIARY

19 — *Pink to red syenite and quartz syenite; pink and white mottled granite*

MESOZOIC

JURASSIC AND/OR CRETACEOUS

COAST INTRUSIONS

18 — *Granite, granodiorite and allied rocks*

TRIASSIC

UPPER TRIASSIC

NICOLA GROUP

17 — *Andesite, minor basalt, some limestone and conglomerate*

(?) LOWER AND/OR UPPER TRIASSIC

SLOCAN GROUP

16 — *Slate, quartzite, limestone; phyllite, mica schist; may be in part equivalent to 17*

PALÆOZOIC

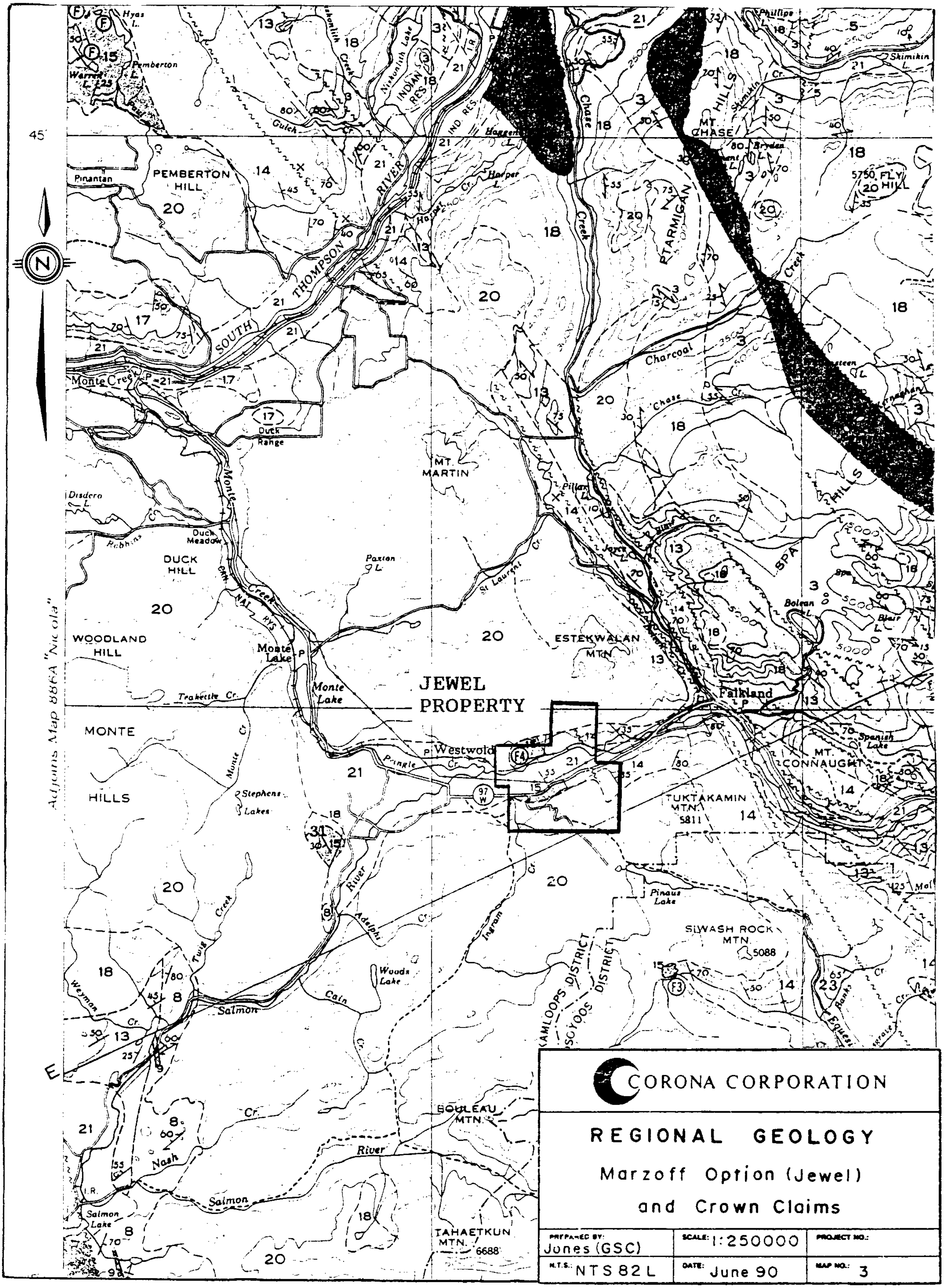
CARBONIFEROUS (?) AND PERMIAN

CACHE CREEK GROUP (13-15)

15 — *DIVISION C: mainly limestone; minor argillite, quartzite, and andesite lava, breccia, and tuff*

14 — *DIVISION B: mainly andesite lava and tuff; minor argillite, quartzite and limestone*

13 — *DIVISION A: mainly argillite*



CORONA CORPORATION

REGIONAL GEOLOGY

Marzoff Option (Jewel) and Crown Claims

PREPARED BY: Jones (GSC)	SCALE: 1:250000	PROJECT NO.:
N.T.S. NTS 82 L	DATE: June 90	MAP NO.: 3

1988 EXPLORATION PROGRAM

The **Jewel Property** was optioned late in May 1988. Between June and December 1988 the folowing surveys were conducted on the property by Corona under the direction of R.C. Wells.

1. Grid preparation - approximately 13 kilometres of cut grid to cover the old showing and extensions to the northeast (Figure 4).
2. Geological mapping - 1:2500 scale on grid.
3. Sampling silts and soils in all major gullies.
4. Reopening and detailed chip sampling of old trenches.
5. VLF electromagnetic and magnetic surveys on grid.
6. Prospecting and hand trenching.

This program produced significant copper and precious metal values (Au, Ag) in trenches and outcrops from two small (better exposed) areas 300 metres apart on the **Opal 1** and **Grouse 13** claims (2-post). These zones occur within a dioritic dyke swarm intruding Late Paleozoic sediments and minor volcanics.

PROPERTY GEOLOGY

Figure 4 is a geological map for the central part of the property at 1:2500 scale. This map also shows the 1988 grid and the location of the 1989 to 1990 Corona diamond drill holes. Figure 5 shows the geology in the central part of the grid, as well as drill hole and trench locations.

The Jewel property covers a window of folded, upper Paleozoic sedimentary rocks (Harper Ranch Group?), along the Salmon River, within overlying tertiary (Kamloops Group) volcanic rocks. Results from the geological mapping have defined several distinct rock units within the grid area.

TERTIARY

6. Kamloops Group Volcanics

These consist of a thick sequence (greater than 300m) of gently west dipping, olivine basalt flows. An irregular, angular unconformity occurs at the base of the sequence and overlies folded Paleozoic sediments.

A vesicular to amygdaloidal, basalt dyke (5a) outcrops along the East Zone gully. It strikes northwesterly and dips steeply east. Widths vary from 1 to 4 metres. Compositionally the dyke is similar to the basalt flows above. This would suggest that this is a feeder dyke (Tertiary).

TRIASSIC OR LATER

4. Felsic Intrusive Rocks.

A small swarm of Pre-Tertiary (Mesozoic), feldspar porphyry dykes intrudes the Paleozoic sedimentary sequence in the central and western parts of the grid. At least five northwest trending dykes have been recognized between the Main Showing gully and the

East Showing gulley (300 metres). All the dykes dip easterly at 60 to 70 degrees and are clearly structurally controlled.

Where less altered, the dykes consist of mottled green and white, medium grained-equigranular diorite to quartz diorite. Some are porphyritic with albite and or hornblende (smaller) phenocrysts (4c). Small, angular, sedimentary xenoliths are fairly common.

Higher up in the roof zone to the system, the dykes are narrower and more strongly altered. Silicification, hematization, chloritization and argillic alteration are widespread. Commonly the mafic minerals in the dykes are destroyed leaving pseudo-porphyritic (feldspar) textures (4b).

In the hangingwall of the dyke swarm (East Zone) is a darker coloured, feldspar porphyry sill (5d) and a number of so called dacitic flows (5b). The sill and flows are compositionally very similar to the dykes, suggesting they are coeval and comagmatic.

UPPER PALEOZOIC

1, 2. Sedimentary Rocks, Minor Volcanics

This predominantly sedimentary sequence could belong to the Harper Ranch Group and is folded into a series of fairly open anticlines and synclines with northwesterly trending axial traces.

Grey to green siltstones **(2)** predominate and are interbedded with bedded fine grained siltstones, immature grits, conglomerates and breccias.

A distinct bed of fossiliferous, calcareous sandstone was mapped in the central part of the grid and is a good geological marker.

A narrow andesitic flow unit (3) was mapped in the Main Trench area in 1988. This unit is medium to dark green and chloritic.

Later work indicates that this unit could be an altered sediment rather than a volcanic flow.

In the hangingwall to the dyke swarm is a sequence of grey to black finely bedded argillites and carbonaceous siltstones (1). These are not exposed at surface (drillholes) and are strongly deformed and locally graphitic.

The geological environment in the central part of the property appears to be a roof zone to an intrusive system (diorite-quartz diorite). In this area, the sedimentary country rocks (1, 2) are strongly altered and locally almost indistinguishable from the altered dykes (mixed, intrusive-sediment breccias).

MINERALIZATION AND ALTERATION

Two main mineralized areas, approximately 300 metres apart on surface, have been outlined at the eastern (East Showings) and western (Main Trench Area) edges of the dyke swarm.

a) Main Trench Area

The main trench is a basin shaped area 25 metres wide by over 75 metres long (Figure 4), where bedrock has been exposed by bulldozer and excavator stripping on sides of a steep gully. Locally, the capping of stratified sands and gravels are over 10 metres thick. Much of this work dates back to the Marzoffs in the 1950's. A limited amount of clean up excavator work was done by Corona in 1988.

In the Main Trench area the bedrock exposures consisting mainly of hematitic and cherty siltstones are badly weathered and broken. These are intruded by highly silicified, carbonated and brecciated (chloritic fractures) easterly dipping quartz diorite dykes, 1 to 3 metres wide. The dykes, along the gully, appear to be within a strong northwesterly trending fracture zone.

Secondary copper mineralization, mainly malachite with minor azurite is widespread, and occurs largely within the altered siltstones and locally within the dyke. Some fine native copper was noted along fractures within the dykes.

Chip sampling throughout the area produced wide zones with low copper values; generally in the 0.2% to 0.4% range over 4 to 9 metres, with local highs of over 1% Cu. Much of this mineralization is supergene. Gypsum vein systems were noted locally. Later structures, such as the Red Vein (dip 40^{o}NE) and Blue Vein (dip 70^{o}NE) are hematitic and post date dyke emplacement. These structures at surface are from 30 cm to 1 metre wide and enriched in Cu (1 to 2%), Au (1 to 11 g/t) and Ag (20 to 50 g/t). Higher Au (to 35 g/t) and Ag to 150 g/t were obtained from grab samples on these structures.

b) East Showing

These were discovered largely by Corona prospecting in 1988 and occur at the eastern margin of the dyke swarm. Three types of mineralization can be distinguished in this gully area.

1. Pods of fracture controlled azurite and malachite mineralization are hosted by silicified sections within a quartz diorite dyke located west of the gully. The pods are well inside the dyke and are 1 to 2 metres wide with values up to 0.5% Cu.

2. Copper mineralization similar to that in the Main Showing area occurs along the margins of dykes. This mineralization is exposed along the gully floor and yields copper values to 0.56% and Au to 1.32 g/t.

3. Quartz veins and veinlet zones occur within silicified siltstones east of the dyke (hangingwall). These veins strike parallel to the contact and are usually less than 20 cm wide. Chip

sampling yielded Au values up to 2.25 g/t (over 1 metre) while grabs were up to 8.74 g/t Au, 33.1 g/t Ag and 0.2% Cu.

1989 PHASE I DRILL PROGRAM

A diamond drilling program was conducted on the **Jewel Property** during April 1989. This program was designed to test and better define mineralization (Cu, Ag, Au) in the Main and East showing areas.

The 1989 hole locations are shown in Figure 4.

1. Main Showing Area

Five holes were drilled in this area (MJ-89-01 to 05 inc.) on three subparallel sections to test beneath surface copper-precious metal values.

Holes 01, 02 and 05 at the south end of the area intersected near surface supergene copper mineralization comprised of widespread native copper, copper carbonate (malachite, azurite) mineralization within fractured dyke and silicified, siltstone country rocks. The dykes are strongly altered (silicified and carbonated with patchy clay alteration and feldspathization) and brecciated, often with chloritic partings. Two narrow, north easterly dipping, felsic dykes are mapped in this area. The better grade supergene copper mineralization in the 0.2% to 0.35% range occurs in the hangingwall of the lower dyke (Figure 5) and correlates well with surface values.

Within the zone of better grade copper mineralization intersected in Holes 01 and 02, there are three hematitic fault zones dipping at shallow angles to the northeast. These are subparallel to hematitic fractures at surface like the Red Vein and likewise are enriched in gold with values in the 1 to 4 g/t range over 1 to 2 metre widths.

Drill holes 03 and 04 intersected at depth much wider sections of brecciated and altered dyke. Secondary copper mineralization close to surface yielded copper values in the .20% to .33% range over 2 to 4 metre widths. At depth the dykes contained fracture controlled (hypogene) chalcopyrite mineralization. Copper values averaged .52% (Hole 03) and .72% (Hole 04) over 7.45 and 1.35 metre widths respectively.

Due to difficult topography, the Blue Vein could not be properly tested by Hole 04.

2. East Zone

A single hole (MJ-89-06), 139 metres long, was drilled in the East Zone to test the lateral and vertical projections of surface copper and gold mineralization (Figure 8). This hole intersected two dioritic dykes dipping 70^o to the northeast. A gold value of 0.82 g/t over 1.26 m was encountered at the upper contact of the upper porphyry dyke. This correlates with higher gold values obtained from the same contact 40 metres above and 30 metres laterally (to the NW).

The hanging wall of the lower dyke had disseminated to fracture controlled pyrite, chalcopyrite and arsenopyrite mineralization in silicified and chloritic hangingwall sediments. An 18 metre section returned 0.19% Cu. At the base of this section, but within the dyke, a 30 cm zone of semi-massive sulfides contained visible gold and yielded significant Au, Ag, Cu, Zn values. A similar sulfide zone in the footwall sediments to the same dyke also yielded Au (3.3 g/t), Ag (22.8 g/t) and Zn values.

Drilling in the East Showing area was successful in defining two new precious metal (Au, Ag) Cu zones within the dyke system, as well as confirming gold mineralization in the hangingwall to the eastern most (upper) dyke.

PHASE II EXPLORATION PROGRAM: 1989

Following the April Phase I drill program, a break in exploration was taken.

The Phase II exploration program began in September and continued to December 1989. This program consisted of an Induced Polarization and Resistivity Survey followed by drilling three diamond drill holes to test newly defined targets.

1. Induced Polarization and Resistivity Survey.

This survey was conducted by MPH Consulting Ltd and is detailed in a separate appended report by Kevin D. Lund B.Sc. The purpose of the survey was to:

a. determine if a geophysical signature/response occurs over known mineralized areas and,

b. extend the known mineralization along strike and at depth using the geophysical response, if any, recorded over the showing areas.

The survey took the form of three test lines that covered the mineralized areas and their projections north and south (Lines 0+00N, 1+00N and 2+00N). It is clear from the pseudo sections that the IP, resistivity survey was effective in outlining known mineralized zones on the property. Two main chargeability anomalies occur at the eastern and western margins to the dioritic dyke swarm. The western anomaly B was located approximately 100 metres below surface under the Main Trench Area. Previous drilling had not tested to this depth.

The eastern anomaly A was in the hangingwall area of the dyke swarm (MJ-89-06). Careful plotting indicated that the strongest part of the chargeability anomaly was just to the east of the drill collar, dipped east, and was hence untested.

2. Diamond Drilling

During November, 3 NQ diamond drill holes, totalling 401.41 metres, were completed on the property. This drilling was again contracted to Core Enterprises from Clinton B.C. Core recovery throughout the program was good, generally better than 90%.

The drill core was logged by R.C. Wells. Mineralized sections of core were split and bagged on site and sent for analysis to Eco Tech Laboratories in Kamloops. This core, along with that previously drilled, is stored on site.

3. Results

The collar locations for the 1989 Phase II drill holes are shown on the geological map (Figure 4) and drill plan (Figure 5). A drilling summary is given in Table 2. Drill assay sections are appended in Appendix B and drill logs in Appendix C.

Diamond drill holes MJ-89-07 and 08 further tested the Eastern Zone and IP anomaly B. MJ-89-09 tested IP anomaly A and the Main Trench Zone at depth.

Hole MJ-89-07 was collared 50 metres to the south of MJ-89-06 (Phase I) which had yielded significant copper and precious metal values. In hole MJ-89-07 a 1.00 metre wide zone of semi-massive chalcopyrite, sphalerite and pyrite was intersected in a structure cutting strongly silicified siltstones in the hangingwall of the intrusives. This semi-massive mineralization yielded significant Au, Ag, Cu and Zn values (Table 2) as well as 1.5 metre halo of low copper values. It is highly probable that the sulfide zones in the two holes correlate.

TABLE 2. NOVEMBER 1989 PHASE II DRILLING PROGRAM - SUMMARY

HOLE NO.	GRID COORD.	ELEV. m.	AZ.	DIP	START	FINISH	LENGTH m.
MJ-89-07	0+42N 2+43E	750	215	-47	06/11	10/11/89	141.12
MJ-90-08	0+47N 2+40E	750	080	-50	10/11	12/11/89	108.5
MJ-89-09	0+60N 0+07W	800	240	-50	13/11	17/11/89	151.79

SIGNIFICANT INTERSECTIONS

HOLE NO.	INTERVAL (m) FROM	TO	WIDTH (m)	Au g/t	Ag g/t	Cu %	Zn %
MJ-89-07	49.00	51.50	2.50		5.5	0.34	0.11
	76.81	77.81	1.0	1.68	125.2	7.58	2.03
	74.98	79.00	4.02			2.00	
MJ-89-08	NO SIGNIFICANT ASSAYS						
MJ-89-09	71.90	73.08	1.18	0.083			
	71.90	78.48	6.58	0.041			
	112.30	143.00	30.70			0.16	

Hole MJ-89-08 was collared close to MJ-89-07 but tested the area to the east where the IP survey had outlined chargeability anomaly B. The hole intersected a thick sequence of carbonaceous siltstones containing two graphitic fault zones. This sequence is in the hangingwall of the dyke swarm and is not exposed at surface. The graphitic zones correlate well with chargeability highs. No base or precious metal values of any significance were returned from this hole.

Hole MJ-89-09 was drilled beneath the Main Trench Area which was tested by 5 shallow holes in Phase I. The hole intersected a wide section of chloritized, weakly clay altered and locally silicified diorite and sedimentary wallrocks downdip from the previous drilling. Within this alteration, a thirty metre wide zone with fracture controlled copper mineralization (native copper, chalcopyrite) averaged 0.16% Cu with local gold values up to 1 g/t. This mineralization corresponds well with that predicted by the IP survey (chargeability anomaly B).

PHASE III DRILL PROGRAM 1990

In April, 1990 a small drill program was conducted on the East Zone of the Jewel Property. The main objective was to test the northward projection of polymetallic zones (Au, Ag, Cu and Zn) encountered in the 1989 holes MJ-89-06 and 07. A second objective was to test the dioritic intrusive system at deeper levels.

Between April 18 and 24 Connors Drilling of Kamloops completed two holes for a total of 258.16 metres using a Boyles track mounted rig. As in previous drill programs the core was logged by R.C. Wells, split core was sent for analysis to Eco Tech Laboratories in Kamloops and the remaining core stored on site.

1. Results

The two holes MJ-90-10 and 11 were drilled from the same set up approximately 100 metres north of MJ-89-06 (Figure 5). Table 3 gives a drilling summary with significant intersections. Drill assay sections are contained in Appendix B and drill logs in Appendix C.

Hole MJ-90-10 encountered more overburden than was expected and overshot the main target by a few metres. It intersected a number of variably altered feldspar porphyry dykes intruding silicified sediments and, at the bottom of the hole, a fresh dyke over 40 metres wide. Narrow, low grade, copper-zinc intersections (very little Au) were encountered in the silicified and chloritized wallrocks of the dykes.

The steeper second hole, MJ-90-11, showed stronger copper mineralization associated with silicified feldspar porphyry dykes and their wallrocks. A 2 meter wide copper-zinc intersection near the top of the hole is thought to be the main target. The copper and zinc values are far weaker than those in the holes to the south.

TABLE 3. APRIL 1990 PHASE III DRILLING PROGRAM - SUMMARY

HOLE NO.	GRID COORD.	ELEV. m.	AZ.	DIP	START	FINISH	LENGTH m.
MJ-90-10	1+75N 1+55E	700	221	-50	18/4	21/4/90	153.00
MJ-90-11	1+75N 1+56.5E	700	221	-85	21/4	22/4/90	105.16

Note: Overburden depth in both holes was close to 30m.

SIGNIFICANT INTERSECTIONS

HOLE NO.	INTERVAL (m) FROM	TO	WIDTH (m)	Cu%	COMMENTS
MJ-90-10	42.63	44.00	1.37	0.02	0.1% Zn. Ep. & Sil. Zone F.W. to F.P. Dyke
MJ-90-10	102.50	106.75	4.25	0.06	0.04% Zn. Chl. Alt. HW to Diorite Dyke
MJ-90-11	37.80	39.83	2.03	0.47	Alt. FP Dyke. 0.04% Zn.
MJ-90-11	71.00	72.00	1.00	0.12	Sil. HW to FP Dyke. Anomalous As. V. minor Zn.

Note: The highest gold values in each hole were 110 ppb and correlated with higher Cu intersections (but over narrower widths).

The extent and grade of polymetallic mineralization (Cu, Zn, Au, Ag) does not appear to improve with depth or to the north in the East Zone Area. The depth of the overburden in this area is another negative factor.

Drilling in 1989 on the west Zone Area (300 metres to the west) indicated that the better grade copper and precious metal mineralization was close to surface and associated with a fairly small zone of supergene enrichment. Hypogene copper mineralization below this supergene zone was generally lower grade and of little interest.

REFERENCES

Jones, A.G. 1959	Vernon Map Area. GSC Memoir 296
Peto, P. 1987	Summary Report on Jewel Property
Rennie, C.C. 1967	Final Report on the Jewel Group (Placer Dome Library)
Wells. R.C. 1989	Diamond Drilling Report on the Jewel Property. Assesment Report.

STATEMENT OF QUALIFICATIONS

I, **Ronald C. Wells** of the City of Kamloops, British Columbia do hereby certify that:

1. I am a Fellow of the Geological Association of Canada.

2. I am a graduate of the University of Wales, U.K. B.Sc in Geology (1974), did post graduate (M.Sc) studies at Laurentian University, Sudbury, Ontario (1976-1977) in Geology.

3. That I am presently employed by Corona Corporation as a Regional Geologist based in Kamloops, B.C.

4. That I have practiced continuously throughout Canada as a geologist within the mining industry for more than eleven years and have past experience and employment as a geologist in Europe.

5. I am the writer of this report which is based on public and property reports plus on site investigation.

6. I was on site for the complete duration of the 1989-90 exploration program.

7. I have no interest, direct or indirect, in the property discussed in this report.

8. This report may be used for the development of the property, provided that no portion may be used out of context in such a manner as to convey meanings different from that set out in the whole.

9. Consent is hereby given to Elisabeth Marzoff to reproduce this report in part or in whole for corporate purposes or purposes relating to the raising of funds by way of a prospectus and/or statement of material facts.

Signed and dated in Kamloops, British Columbia this 18

day of July 1990.

R. C. Wells

STATEMENT OF EXPENDITURES

JEWEL PROPERTY - between November 1989 and May 1990

PHASE II DIAMOND DRILLING COSTS

1. Core Enterprises Ltd, Clinton, B.C. 3 NQ holes. Total 401.41 m		$33,761.00
2. Eco Tech Laboratories, Kamloops, B.C. Analyses		1,861.00
3. Corona Corporation, Kamloops B.C.		
Salaries		5,704.00
Field Transportation		448.00
Other Field Expenses		478.00
Meals		82.00
	Sub Total	$42,334.00

PHASE III DIAMOND DRILLING COSTS

1. Connors Drilling, Kamloops. B.C. 2 NQ holes. Total 258.16 m		$23,253.00
2. Eco Tech Laboratories, Kamloops, B.C. Analyses		1,930.00
3. Corona Corporation, Kamloops, B.C.		
Salaries		3,312.00
Other Field Expenses		125.00
Meals		83.00
Lodging		35.00
	Sub Total	$28,738.00

INDUCED POLARIZATION AND RESISTIVITY SURVEY COSTS

1. MPH Consulting Ltd, Vancouver, B.C. 5.5 km survey, report, maps	$14,993.00
TOTAL COST PHASE II AND PHASE III EXPLORATION	$86,065.00

APPENDIX A

STATEMENT OF WORK

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources
MINERAL RESOURCES DIVISION — TITLES BRANCH

DOCUMENT No. 515
OFFICE USE ONLY

2890
10
2900.00

Mineral Tenure Act
Sections 25, 26 & 27

STATEMENT OF WORK — CASH PAYMENT

SUB-RECORDER
RECEIVED
MAY 25 1990
M.R. # 22 $ 4110.00
VANCOUVER, B.C.
RECORDING STAMP

Indicate type of title: MINERAL (Mineral or Placer)

Mining Division: KAMLOOPS

I, Elaine M. Kerry (Name)
1440 - 800 W. Pender St. (Address)
Vancouver, B.C.
689-5453 (Telephone) V6C 2V6 (Postal Code)
Valid subsisting FMC No. 290684
FMC Code KERREM

Agent for CORONA CORPORATION E. MARZOFF (Name)(s)
1440 -800 W. Pender St. R.R.5, Site 14B (Address)
Vancouver, B.C. Vernon, B.C.
V6C 2V6 689-5453 (Telephone) V1T 6L8 (Postal Code)
Valid subsisting FMC No. 290675 267188
FMC Code CORCO MARZE

STATE THAT: **(NOTE: If only paying cash in lieu, turn to reverse and complete columns G to J and Q to T.)**

1. I have done, or caused to be done, work on the RUBY 1, RUBY 2, GROUSE 13 Claim(s)

Record No(s). 8259 8260 7047

Work was done from Nov. 1, 19 89, to April 30, 1990;

and was done in compliance with Section 50 of the Mineral Tenure Act and Section 19(3) of the Regulation YES [X] NO [ ]

I hereby request that the claims listed in Column G on this Statement of Work be Grouped and I confirm that all claims listed are contiguous YES [X] NO [ ]
FEE — $10.00

TYPE OF WORK

PHYSICAL: Work such as trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails. Details as required under section 13 of the Regulations, including the map and cost statement, must be given on this statement.

PROSPECTING: Details as required under section 9 of the Regulations must be submitted in a technical report. Prospecting work can only be claimed once by the same owner of the ground, and only during the first three years of ownership.

GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL, DRILLING: Details must be submitted in a technical report conforming to sections 5 through 8 (as appropriate) of the Regulations.

PORTABLE ASSESSMENT CREDIT (PAC) WITHDRAWAL: A maximum of 30% of the approved value of geological, geophysical, geochemical and/or drilling work on this statement may be withdrawn from the owner's or operator's PAC account and added to the work value on this statement.

TYPE OF WORK (Specify Physical (include details), Prospecting, Geological, etc.)	VALUE OF WORK: Physical	*Prospecting	*Geological etc.	
Drilling			45,529.00	
I.P. Survey			14,993.00	
WRITTEN REPORT TO FOLLOW				
TOTALS	A +	B +	C 60,522 =	D 60,522.00
PAC WITHDRAWAL — Maximum 30% of Value in Box C Only			E →	E
from account(s) of			TOTAL	F 60,522.00

* Who was the operator (provided the financing)?
Name: Corona Corporation
Address: 1440 - 800 W. Pender St., Vancouver, B.C.
Phone: 689-5453

Transfer amount in Box F to reverse side of form and complete as required.

F $60,522.00 I WISH TO APPLY $ 57,800.00 OF THE TOTAL VALUE FROM BOX F AS FOLLOWS:

Columns G through P inclusive MUST BE COMPLETED before work credits can be granted to claims. Columns G through J and Q through T inclusive MUST BE COMPLETED before a cash payment or rental payment can be credited. Columns not applicable need not be completed.

Cash Payment

CLAIM IDENTIFICATION / APPLICATION OF WORK CREDIT / CASH IN LIEU OF WORK OR LEASE RENTAL

	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
	CLAIM NAME (one claim/lease per line)	RECORD No.	No. OF UNITS*	CURRENT EXPIRY DATE	WORK TO BE APPLIED VALUE	WORK TO BE APPLIED YEARS	Recording Fees	PRIOR EXCESS CREDIT BEING USED	NEW EXPIRY DATE	EXCESS CREDIT REMAINING	C/L	RECORDING FEE	LEASE RENTAL	NEW EXPIRY DATE
1	OPAL 1	8257	1	99/01/04	200.00	1	10.00		00/01/04	✓				
2	TOPAZ 1	8258	1	99/01/04	200.00	1	10.00		00/01/04	✓				
3	RUBY 1	8259	1	99/01/04	200.00	1	10.00		00/01/04	✓				
4	RUBY 2	8260	1	99/01/04	200.00	1	10.00		00/01/04	✓				
5	EUREKA	7046	1	97/05/26	400.00	2	20.00		99/05/26	✓				
6	GROUSE 13	7047	1	97/05/26	400.00	2	20.00		99/05/26	✓				
7	GROUSE 15	7048	1	97/05/26	400.00	2	20.00		99/05/26	✓				
8	GROUSE 16	7049	1	97/05/26	400.00	2	20.00		99/05/26	✓				
9	CROWN	7731	20	94/06/08	20,000.00	5	1,000.00		99/06/08	✓				
10	CROWN 1	7754	16	91/06/21	14,400.00	5	720.00		96/06/21	✓				
11	CROWN 2	7755	10	91/06/21	11,000.00	6	550.00		97/06/21	✓				
12	CROWN 3	7756	10	92/06/21	10,000.00	5	500.00		97/06/21	✓				
13														
14														
15														
16														
17														
18														
					57,800.00 TOTAL OF K		2,890.00 TOTAL OF M				TOTAL OF Q	TOTAL OF R	TOTAL OF S	

NOTICE TO GROUP No. 171 RECORDED May 25 90

*2 POST, FRACTION, REV. CROWN GRANT AND PLACER CLAIM ARE 1 UNIT EACH

Value of work to be credited to portable assessment credit (PAC) account(s).
(May only be credited from the approved value of Box C not applied to claims.)

Name of owner/operator	Name	Amount
1.	E. Marzoff	$2,722.00
2.		
3.		

I, the undersigned Free Miner, hereby acknowledge and understand that it is an offence to knowingly make a false statement or provide false information under the Mineral Tenure Act. I further acknowledge and understand that if the statements made, or information given, in this Statement of Work — Cash Payment are found to be false and the exploration and development has not been performed, as alleged in this Statement of Work — Cash Payment, then the work reported on this statement will be cancelled and the subject mineral claim(s) may as a result, forfeit to and vest back to the Province.

[signature]

Province of B'''sh Columbia
Ministry of Energy, Mines ..nd Petroleum Resources
MINERAL RESOURCES DIVISION — TITLES BRANCH

DOCUMENT No. 516
OFFICE USE ONLY

SUB-RECORDER
RECEIVED
MAY 25 1990
M.R. # 22 $ 4110.00
VANCOUVER, B.C.
RECORDING STAMP

Mineral Tenure Act
Sections 25, 26 & 27

STATEMENT OF WORK — CASH PAYMENT

ndicate type of title: MINERAL (Mineral or Placer)

Aining Division: KAMLOOPS

I, Elaine M. Kerry (Name)
1440 - 800 W. Pender St. (Address)
Vancouver, B.C.
689-5453 (Telephone) V6C 2V6 (Postal Code)
Valid subsisting FMC No. 290684
FMC Code KERREM

Agent for CORONA CORPORATION / E. MARZOFF (Name)(s)
1440 -800 W. Pender St. / R.R.5, Site 14B (Address)
Vancouver, B.C. / Vernon, B.C.
V6C 2V6 689-5453 / V1T 6L8 (Telephone) (Postal Code)
Valid subsisting FMC No. 290675 / 267188
FMC Code CORCO / MARZE

TATE THAT: **(NOTE: If only paying cash in lieu, turn to reverse and complete columns G to J and Q to T.)**

I have done, or caused to be done, work on the RUBY 1, RUBY 2, GROUSE 13 Claim(s)

Record No(s). 8259 8260 7047

Work was done from Nov. 1, 19 89, to April 30, 1990

and was done in compliance with Section 50 of the Mineral Tenure Act and

Section 19(3) of the Regulation YES [X] NO [ ]

hereby request that the claims listed in Column G on this Statement of Work be Grouped and I confirm that all claims listed are contiguous YES [X] NO [ ]

FEE — $10.00

TYPE OF WORK

HYSICAL: Work such as trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails. Details as required under section 13 of the Regulations, including the map and cost statement, must be given on this statement.

ROSPECTING: Details as required under section 9 of the Regulations must be submitted in a technical report. Prospecting work can only be claimed once by the same owner of the ground, and only during the first three years of ownership.

EOLOGICAL, GEOPHYSICAL, GEOCHEMICAL, DRILLING: Details must be submitted in a technical report conforming to sections 5 through 8 (as appropriate) of the Regulations.

ORTABLE ASSESSMENT CREDIT (PAC) WITHDRAWAL: A maximum of 30% of the approved value of geological, geophysical, geochemical and/or drilling work on this statement may be withdrawn from the owner's or operator's PAC account and added to the work value on this statement.

TYPE OF WORK (Specify Physical (include details), Prospecting, Geological, etc.)	Physical	*Prospecting	*Geological etc.	
Drilling			24,000.00	
WRITTEN REPORT TO FOLLOW				
TOTALS	A +	B +	C 24,000 =	D 24,000.00
C WITHDRAWAL — Maximum 30% of Value in Box C Only			E →	E
from account(s) of			TOTAL	F 24,000.00

ho was the itor (provided nancing)? Name Corona Corporation
Address 1440 - 800 W. Pender St.
Vancouver, B.C. Phone: 689-5453

Transfer amount in Box F to reverse side of form and complete as required.

F $24,000.00 I WISH TO APPLY $ 24,000.00 OF THE TOTAL VALUE FROM BOX F AS FOLLOWS:

Columns G through P inclusive MUST BE COMPLETED before work credits can be granted to claims. Columns G through J and Q through T inclusive MUST BE COMPLETED before a cash payment or rental payment can be credited. Columns not applicable need not be completed.

Cash Payment

	CLAIM IDENTIFICATION				APPLICATION OF WORK CREDIT						CASH IN LIEU OF WORK OR LEASE RENTAL			
	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
	CLAIM NAME (one claim/lease per line)	RECORD No.	No. OF UNITS*	CURRENT EXPIRY DATE	WORK TO BE APPLIED: VALUE	WORK TO BE APPLIED: YEARS	Recording Fees	PRIOR EXCESS CREDIT BEING USED	NEW EXPIRY DATE	EXCESS CREDIT REMAINING	C/L	RECORDING FEE	LEASE RENTAL	NEW EXPIRY DATE
1	CROWN 9	7799	20	90/07/07	24,000.00	7	1,200.00		97/07/07					
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
				TOTAL OF K	24,000.00		TOTAL OF M: 1,200.00				TOTAL OF Q	TOTAL OF R	TOTAL OF S	

NOTICE TO GROUP No. ______ RECORDED MAY 25 90

*2 POST, FRACTION, REV. CROWN GRANT AND PLACER CLAIM ARE 1 UNIT EACH

Value of work to be credited to portable assessment credit (PAC) account(s).
[May only be credited from the approved value of Box C not applied to claims.]

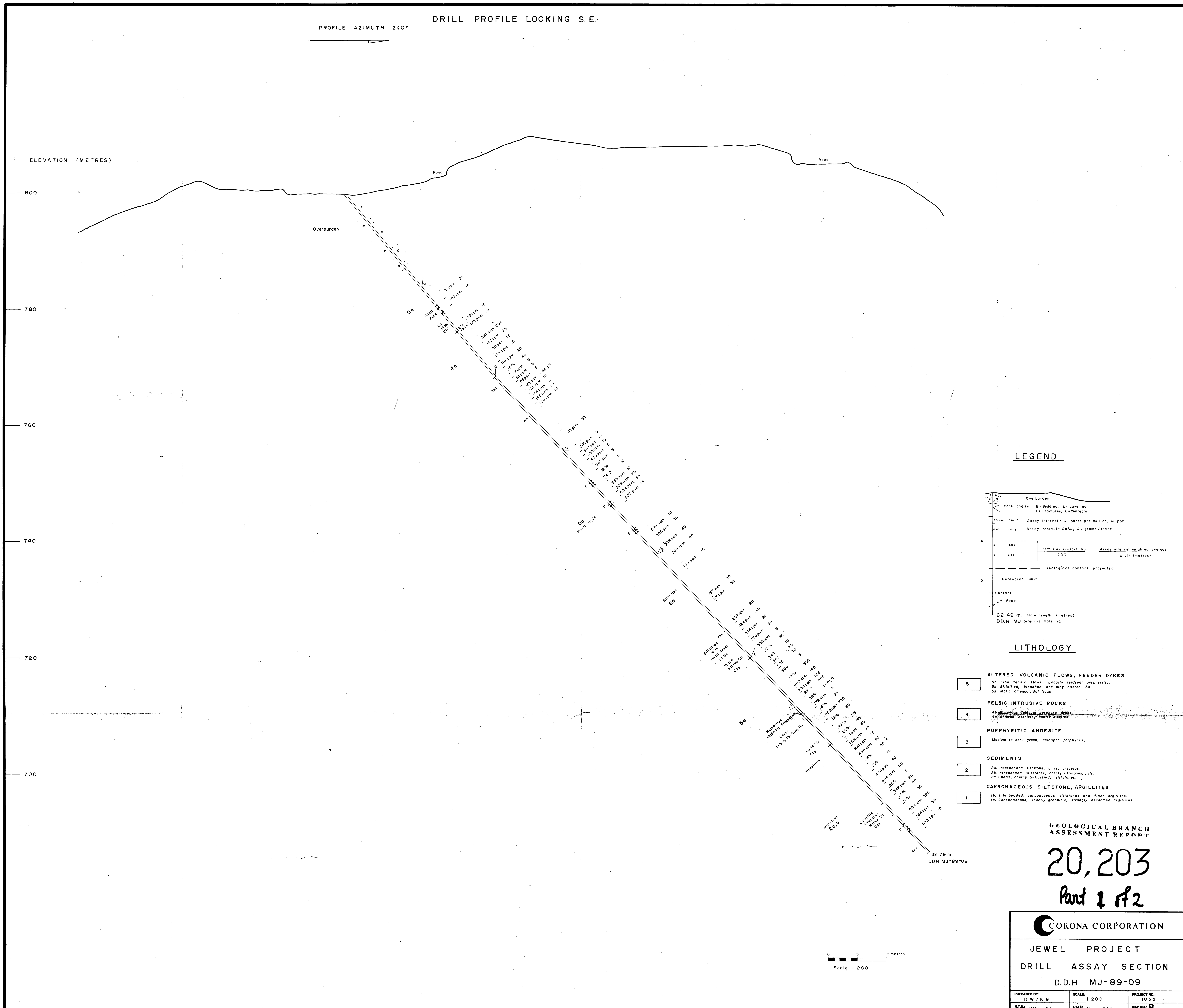
	Name	Amount
...me of ...ner/operator	1.	
	2.	
	3.	

I, the undersigned Free Miner, hereby acknowledge and understand that it is an offence to knowingly make a false statement or provide false information under the Mineral Tenure Act. I further acknowledge and understand that if the statements made, or information given, in this Statement of Work — Cash Payment are found to be false and the exploration and development has not been performed, as alleged in this Statement of Work — Cash Payment, then the work reported on this statement will be cancelled and the subject mineral claim(s) may as a result, forfeit to and vest back to the Province.

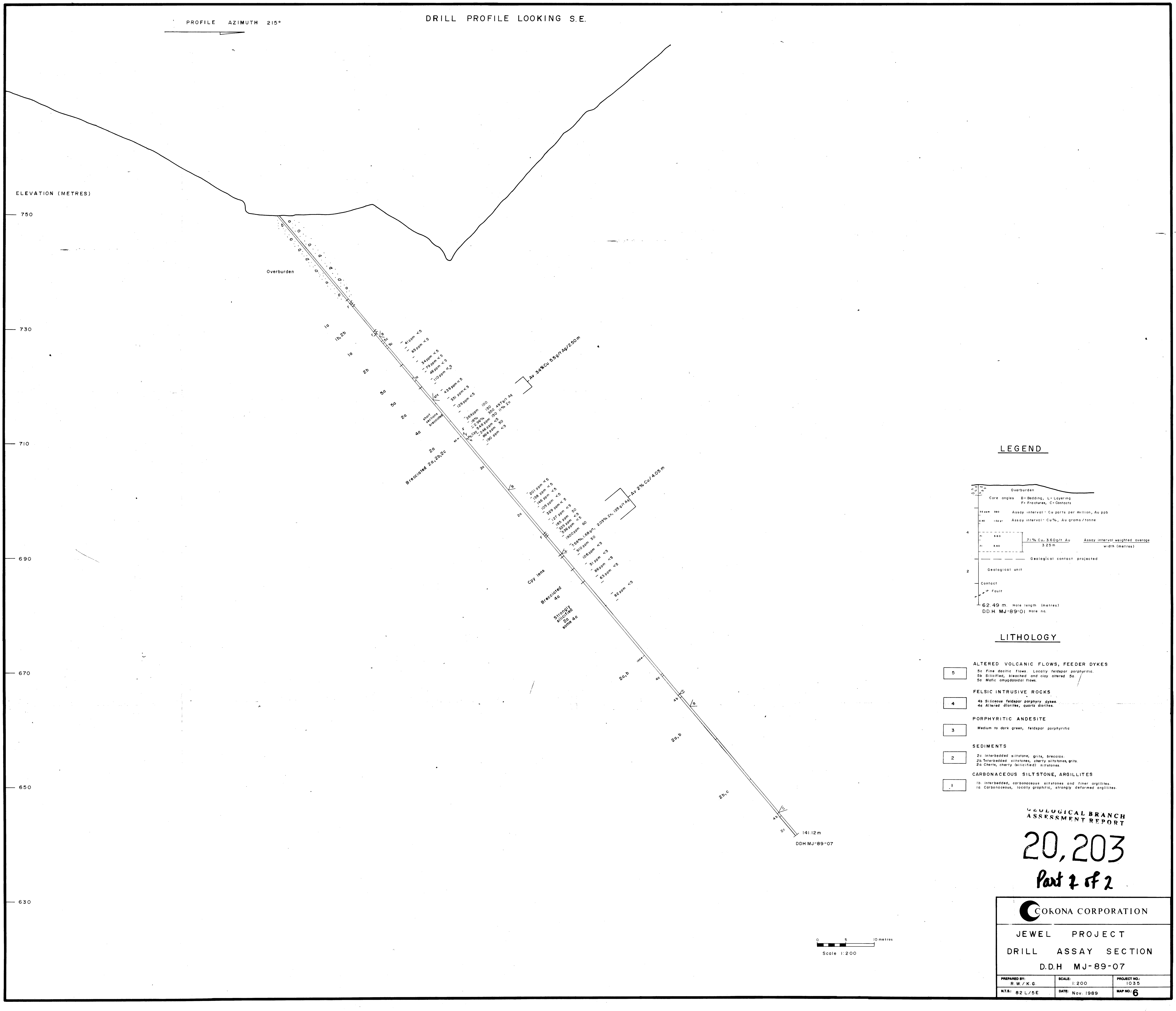
APPENDIX B

LARGE FIGURES AND PLANS

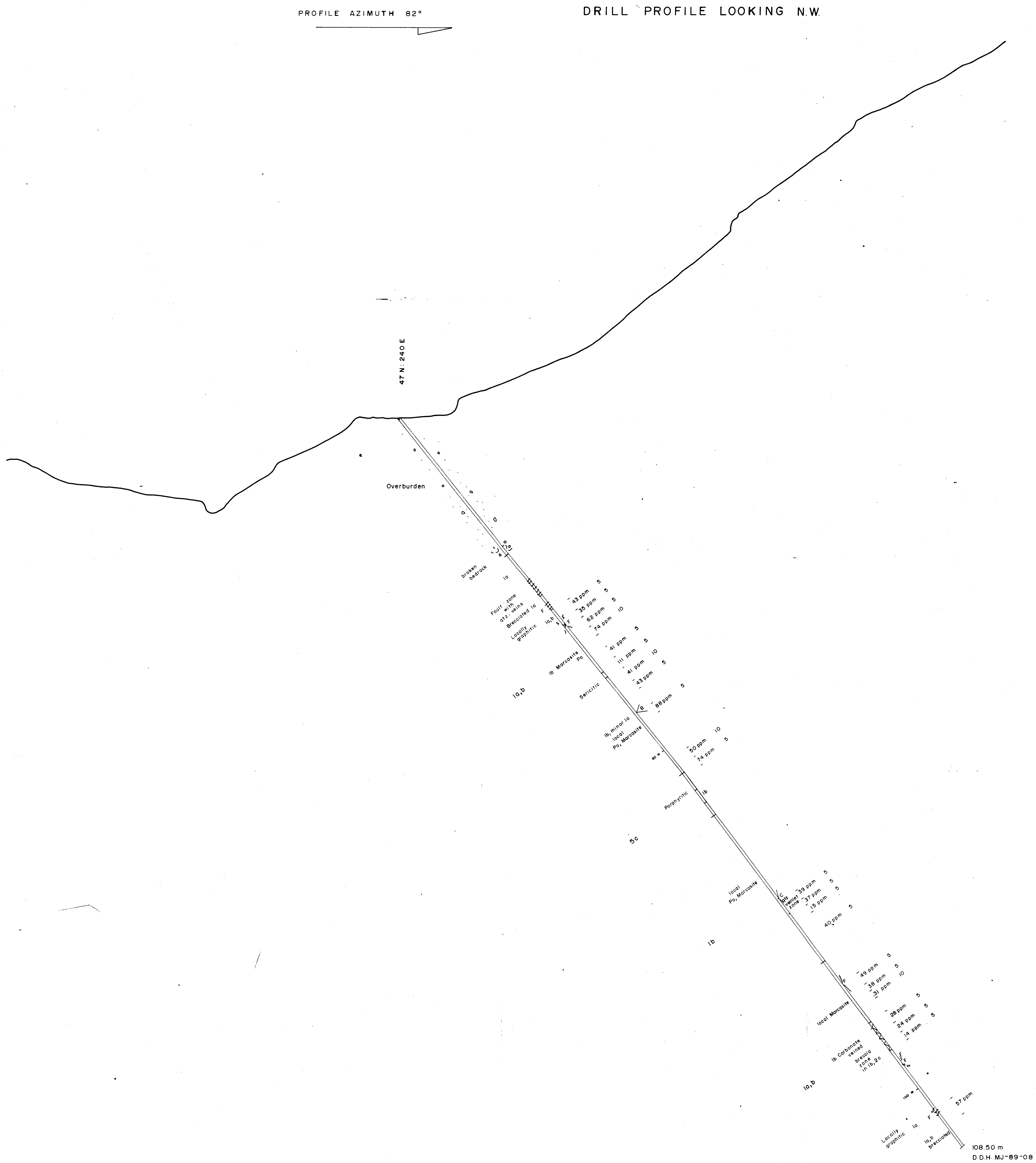
FIGURES 4, 5, 6, 7, 8 AND 9


DRILL PROFILE LOOKING S.E.
PROFILE AZIMUTH 240°
ELEVATION (METRES)
800
780
760
740
720
700
Road
Road
Overburden
151.79 m
DDH MJ-89-09
LEGEND
Overburden
Core angles B=Bedding, L=Layering F=Fractures, C=Contacts
Assay interval - Cu parts per million, Au ppb
Assay interval - Cu%, Au grams/tonne
Assay interval weighted average
width (metres)
Geological contact projected
Geological unit
Contact
Fault
62.49 m Hole length (metres)
D.D.H. MJ-89-01 Hole no.
LITHOLOGY
ALTERED VOLCANIC FLOWS, FEEDER DYKES
5c Fine dacitic flows. Locally feldspar porphyritic.
5b Silicified, bleached and clay altered 5a.
5a Mafic amygdaloidal flows.
FELSIC INTRUSIVE ROCKS
4a Altered diorites, quartz diorites.
PORPHYRITIC ANDESITE
Medium to dark green, feldspar porphyritic
SEDIMENTS
2c Interbedded siltstone, grits, breccias.
2b Interbedded siltstones, cherty siltstones, grits
2a Cherts, cherty (silicified) siltstones.
CARBONACEOUS SILTSTONE, ARGILLITES
1b Interbedded, carbonaceous siltstones and finer argillites
1a Carbonaceous, locally graphitic, strongly deformed argillites.
GEOLOGICAL BRANCH
ASSESSMENT REPORT
20,203
Part 1 of 2
Scale 1:200
0 5 10 metres
CORONA CORPORATION
JEWEL PROJECT
DRILL ASSAY SECTION
D.D.H. MJ-89-09
PREPARED BY: R.W./K.G.
SCALE: 1:200
PROJECT NO.: 1035
N.T.S.: 82 L/5E
DATE: Nov. 1989
MAP NO.: 8


PROFILE AZIMUTH 221°
DRILL PROFILE LOOKING S.E.
ELEVATION (metres)
700
680
660
640
620
Thick sandy O/B
Road
Pad
Cu ppm Au ppb
2c breccias
4b, c Cpy
carb. V
47% 2.05m
Silicified 2
4c broken
Silicified weakly hematized 2
Py minor Cpy
Silicified 2 minor 4
Strong Sil
Py Cpy
Sil 2, 4
4b
Silicified 2 b, C
MJ-90-11
105.16m
4b Carb veining and Alt
Silicified 2a, b, c
Silicified hematized
Ep Cpy
Xenoliths
Br Qtz carb
4c
Silicified, hematized locally chloritic
Chl
weak porphyry
4b
4c
Chl Cpy Py
MIXED ZONE - ALTERED 4, 2
Silicified 2, 4
Silicified
Chl
Carb. veinlets
4c
brecciated Sil
MJ-90-10
153.00 m
LEGEND
Overburden
Core angles B= Bedding, L= Layering F= Fractures, C= Contacts
Assay interval - Cu parts per million, Au ppb
Assay interval - Cu %, Au grams / tonne
7.1% Cu, 3.60g/t Au 3.25m
Assay interval weighted average width (metres)
Geological contact projected
Geological unit
Contact
Fault
62.49 m. Hole length (metres)
D.D.H. MJ-89-01 Hole no.
LITHOLOGY
5 ALTERED VOLCANIC FLOWS, FEEDER DYKES
5c Fine dacitic flows. Locally feldspar porphyritic
5b Silicified, bleached and clay altered 5a
5a Mafic amygdaloidal flows
4 FELSIC INTRUSIVE ROCKS
4c Feldspar, hornblende porphyry dykes
4b Siliceous feldspar porphyry dykes
4a Altered diorites, quartz diorites
3 PORPHYRITIC ANDESITE
Medium to dark green, feldspar porphyritic
2 SEDIMENTS
2c Interbedded siltstone, grits, breccias.
2b Interbedded siltstones, cherty siltstones, grits.
2a Cherts, cherty (silicified) siltstones.
1 CARBONACEOUS SILTSTONE, ARGILLITES
1b Interbedded, carbonaceous siltstones and finer argillites
1a Carbonaceous, locally graphitic, strongly deformed argillites.
GEOLOGICAL BRANCH ASSESSMENT REPORT
20,203
Part 2 of 2
CORONA CORPORATION
JEWEL PROJECT
DRILL ASSAY SECTION
D.D.H. MJ-90-10, DDH-MJ-90-11
PREPARED BY: R.W./K.G.
SCALE: 1:200
PROJECT NO.: 1035
N.T.S.: 82 L/5E
DATE: Apr. 1990
MAP NO.: 9



DRILL PROFILE LOOKING S.E.
PROFILE AZIMUTH 215°
ELEVATION (METRES)
750
730
710
690
670
650
630
Overburden
Av 34% Cu 5.5g/t Ag/2.50m
Av 2% Cu/4.05m
Brecciated 2a,2b,2c
Cpy lens
Brecciated 4a
Strongly silicified 2a some 4a
141.12m
DDH MJ-89-07
LEGEND
Overburden
Core angles B= Bedding, L= Layering
F= Fractures, C= Contacts
Assay interval - Cu parts per million, Au ppb
Assay interval - Cu%, Au grams/tonne
Assay interval weighted average
width (metres)
Geological contact projected
Geological unit
Contact
Fault
62.49 m. Hole length (metres)
DD.H. MJ-89-01 Hole no.
LITHOLOGY
5 ALTERED VOLCANIC FLOWS, FEEDER DYKES
5c Fine dacitic flows. Locally feldspar porphyritic.
5b Silicified, bleached and clay altered 5a.
5a Mafic amygdaloidal flows.
4 FELSIC INTRUSIVE ROCKS
4b Siliceous feldspar porphyry dykes.
4a Altered diorites, quartz diorites.
3 PORPHYRITIC ANDESITE
Medium to dark green, feldspar porphyritic
2 SEDIMENTS
2c Interbedded siltstone, grits, breccias.
2b Interbedded siltstones, cherty siltstones, grits.
2a Cherts, cherty (silicified) siltstones.
1 CARBONACEOUS SILTSTONE, ARGILLITES
1b Interbedded, carbonaceous siltstones and finer argillites.
1a Carbonaceous, locally graphitic, strongly deformed argillites.
GEOLOGICAL BRANCH
ASSESSMENT REPORT
20,203
Part 2 of 2
0 5 10 metres
Scale 1:200
CORONA CORPORATION
JEWEL PROJECT
DRILL ASSAY SECTION
D.D.H MJ-89-07
PREPARED BY: R.W./K.G.
SCALE: 1:200
PROJECT NO.: 1035
N.T.S.: 82 L/5E
DATE: Nov. 1989
MAP NO.: 6



LEGEND

Overburden

Core angles B= Bedding, L= Layering, F= Fractures, C= Contacts

35 ppm 390 — Assay interval - Cu parts per million, Au ppb

0.40 1.02 g/t — Assay interval - Cu%, Au grams/tonne

.71 3.60 / .71 3.60 — .71% Cu, 3.60g/t Au / 3.25 m — Assay interval weighted average width (metres)

4 — Geological contact projected

2 — Geological unit

Contact

Fault

62.49 m. Hole length (metres)

D.D.H. MJ-89-01 Hole no.

LITHOLOGY

5 ALTERED VOLCANIC FLOWS, FEEDER DYKES
- 5c Fine dacitic flows. Locally feldspar porphyritic.
- 5b Silicified, bleached and clay altered 5a.
- 5a Mafic amygdaloidal flows.

4 FELSIC INTRUSIVE ROCKS
- 4b Siliceous feldspar porphyry dykes.
- 4a Altered diorites, quartz diorites.

3 PORPHYRITIC ANDESITE
- Medium to dark green, feldspar porphyritic

2 SEDIMENTS
- 2c. Interbedded siltstone, grits, breccias.
- 2b. Interbedded siltstones, cherty siltstones, grits.
- 2a. Cherts, cherty (silicified) siltstones.

1 CARBONACEOUS SILTSTONE, ARGILLITES
- 1b. Interbedded, carbonaceous siltstones and finer argillites.
- 1a. Carbonaceous, locally graphitic, strongly deformed argillites.

0 5 10 metres

Scale 1:200

GEOLOGICAL BRANCH ASSESSMENT REPORT

20,203

Part 1 of 2

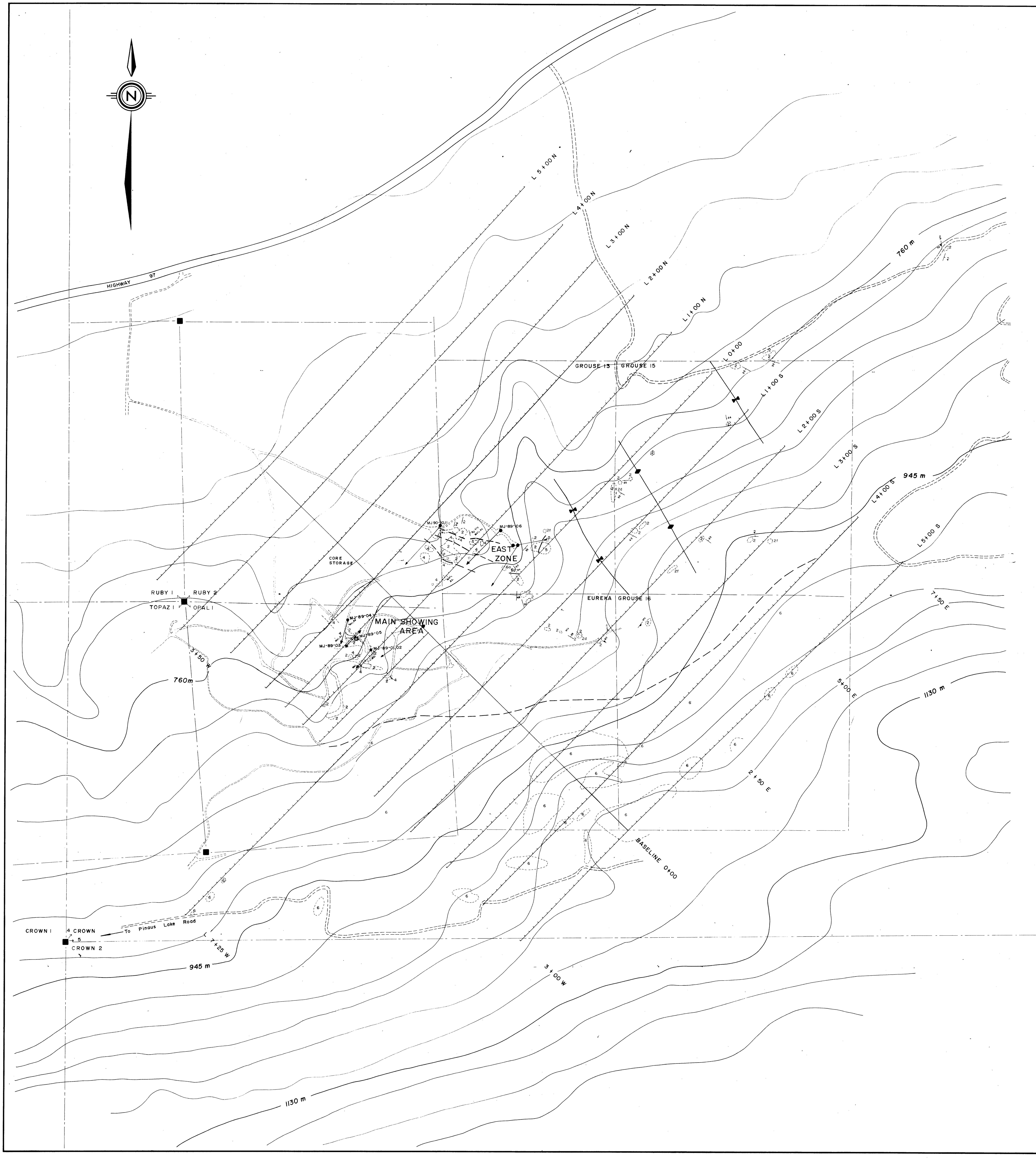
CORONA CORPORATION

JEWEL PROJECT

DRILL ASSAY SECTION

D.D.H MJ-89-08

PREPARED BY: R.W./K.G.	SCALE: 1:200	PROJECT NO.: 1035
N.T.S.: 82 L/5E	DATE: Nov. 1989	MAP NO.: 7



GEOLOGICAL LEGEND

TERTIARY
(Kamloops Group)

6	VOLCANICS *Olivine basalt flows. Coarse grained, vesicular to amygdaloidal, commonly magnetic. Narrower basaltic feeder dykes (6a)*

TRIASSIC OR LATER INTRUSIVE ROCKS

5	FELDSPAR PORPHYRY SILLS *Dark coloured, fine to medium grained, feldspar porphyry.*
4	DIORITE, QUARTZ DYKES *Mottled green and white, medium to coarse grained, equigranular. Altered to grey siliceous, feldspar porphyries commonly with variable chlorite, carbonate, hematite and argillic alteration.*

UPPER PALEOZOIC (HARPER RANCH GROUP)

2f	FOSSILIFEROUS SANDSTONE *Brown, calcareous, shelly sandstone with crinoids, lamellibranches and brachiopods.*
2d	LIMESTONE *Grey, micritic, locally coarsely recrystallized with shelly sections.*
2	QUARTZOSE SEDIMENTS MINOR VOLCANICS *Predominantly grey to green siltstones interbedded with fine argillites, grits, conglomerates and breccias. Minor andesitic flows (3) and tuffs.*
1	CARBANACEOUS SILTSTONES, ARGILLITES *Grey to black, bedded, often strongly deformed*

ABBREVIATIONS

Mal	Malachite
Az	Azurite
S	Silicification
Qtz	Quartz veining

SYMBOLS

- Axial trace of an anticlinal fold
- Axial trace of a synclinal fold
- Outcrop area
- Geological contact defined, inferred
- Bedding
- Jointing

DRILLING LEGEND (1989)

- Vertical hole — collar
- Inclined hole. Collar and projection to surface.

LEGEND

- PAVED ROAD
- 4x4 ROAD
- GRID LINE
- CONTOUR ELEVATIONS IN METRES, CONTOUR INTERVALS APPROX. 30 m

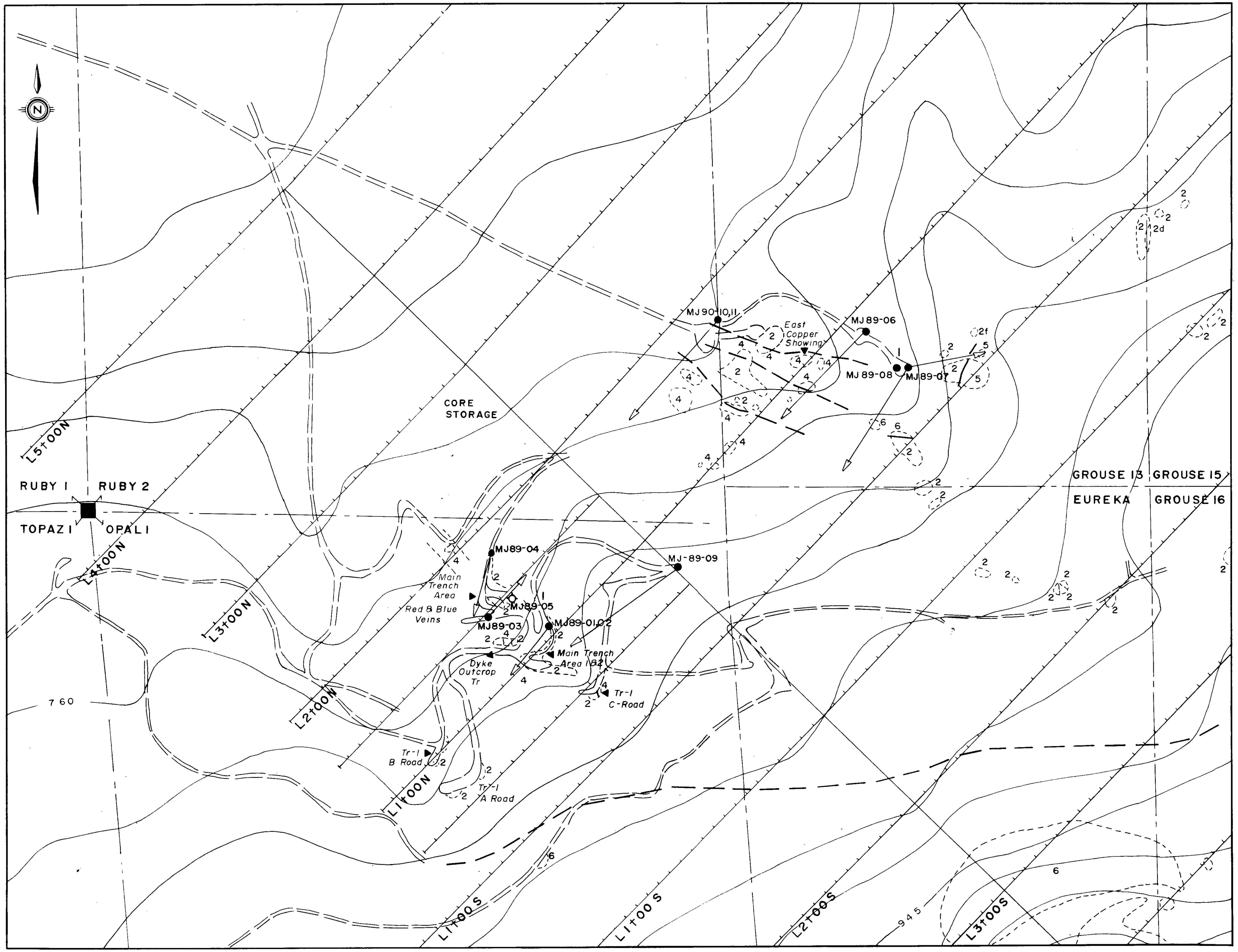
Part 2 of 2

GEOLOGICAL BRANCH ASSESSMENT REPORT

20,203

100 0 100 200
BAR SCALE 1:2500

CORONA CORPORATION	
JEWEL PROPERTY PROPERTY GEOLOGY MAP GRID AREA	
TECHNICAL WORK BY: R.W. / D.M.	SCALE: 1:2500
DRAWN BY: DBM TECHNICAL SERVICES	DATE: June 1990
REVISIONS:	FIGURE NO. 4



GEOLOGICAL LEGEND

TERTIARY (KAMLOOPS GROUP)

6	*Volcanics*

TRIASSIC OR LATER INTRUSIVE ROCKS

5	*Feldspar porphyry sills*
4	*Diorite, quartz diorite dykes*

UPPER PALEOZOIC (HARPER RANCH GROUP)

2f	*Fossiliferous sandstone*
2d	*Limestone*
2	*Quartzose sediments, minor volcanics*
1	*Carbonaceous siltstones, argillites*

SYMBOLS

- *Vertical hole collar.*
- *Inclined hole. Collar and projection to surface.*
- *1988 trench location.*
- *1988 grid line*
- *4 X 4 road*

100 0 100 metres

1:2500

CORONA CORPORATION

JEWEL PROPERTY

DRILL AND TRENCH PLAN

PREPARED BY RW/KG	SCALE 1:2500	PROJECT NO. 1035
NTS 82 L S	DATE June 90	MAP NO. 5

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,203 Part 2 of 2

APPENDIX C

DIAMOND DRILL LOGS

CORONA CORPORATION

MJ89-07

12-09-1989 :: 16:32

DIAMOND DRILL LOG

PROPERTY	: Marzoff Option - Jewel	PROJECT #	: 1035		
NTS MAP #	: 82L/05	TOWNSHIP	: Kamloops Mining Division	CLAIM #	: Grouse 13
LINE/STATION:	0+42N / 2+43E	EASTINGS/NORTHINGS:		ELEVATION	: 750.00 m
LENGTH	: 141.12 m	INCLINATION	: -47.0 degrees	AZIMUTH	: 215.0 degrees
OVERBURDEN	: 19.00 m	CASING	: 19.0 metres		
LOGGED BY	: R.C. Wells	DRILLED BY	: Core Enterprises	ASSAYING BY	: Eco-Tech
DATE LOGGED :	1989/11/06 to 1989/11/10	DATE DRILLED	: 1989/11/06 to 1989/11/10	CORE LOCATION:	Property

ACID TESTS

Depth	Dip
93.87	-49.0
139.60	-49.0

From(m)	To(m)	Field Name (Legend)
0.00	19.00	OVERBURDEN HQ to 34.13 m, NQ to 141.12 m.
19.00	26.50	SILTSTONES AND FINE GRITS Medium to dark grey, poorly bedded, relatively immature siltstone, greywacke sandstone and fine grit. Numerous fine quartz and minor carbonate veins. Badly broken core throughout.
26.50	33.70	GREY SILTSTONES, SANDSTONES, MINOR GRITS Medium to dark grey, massive to well bedded, poorly to moderately sorted, sparse carbonate veinlets, weak fracturing.
33.70	34.14	BLEACHED FELDSPAR PORPHYRY Tabular to anhedral phenocrysts to 4 mm in fine locally soft groundmass.
34.14	38.90	STRONGLY ALTERED DYKE OR FLOW? Dark green grey to light pink cream, altered amygdaloidal flow or dyke.
38.90	80.16	VARIABLY BRECCIATED AND SILICIFIED SEDIMENTS Predominantly grey siltstone, cherty silicified siltstone with some grit units. Fractured sections of brecciated feldspar porphyry.
80.16	83.02	BRECCIATED DIORITE Medium to dark green, siliceous, numerous chloritic fractures.
83.02	89.00	STRONGLY SILICIFIED ZONE Hard light grey to cream colour, local feldspar porphyry relics, 5% chloritic fractures, sparse sulfides.
89.00	119.45	SILICIFIED SILTSTONES Various shades of grey to green, massive to well bedded, numerous chloritic fractures, fine quartz veinlets, minor carbonate.
119.45	141.12	SILICIFIED GRITS, BRECCIAS, SILTSTONES Mottled grey green, coarse, poorly sorted, immature, some fine quartz veins.

141.12 END OF HOLE.

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
0.00	19.00	OVERBURDEN Composition Overburden: clay, sand overburden with boulders of feldspar porphyry and green to grey siltstone. HQ used to 34.13 m as casing for NQ (34.13 - 141.12 m).									
19.00	26.50	SILTSTONES AND FINE GRITS Colour: medium grey to dark grey. Rock Texture: poorly bedded, relatively immature siltstone, greywacke sandstone and fine grit. Fracturing: Broken (> 50)/m. Structure Gouge: short clayey sections Veins and Sub-Intervals Carbonate Veining. Core axis angle variable. minor Quartz Veining. Core axis angle variable. numerous, fine, sharp contacts. (19.00)-(19.25): Badly broken siltstone with some feldspar porphyry fragments from above. (19.25)-(20.12): Black chloritic, carbonaceous clay shale. Fine grained, irregular partings at 80-90 deg. cax. Probable FAULT ZONE. (20.12)-(21.40): 1-5 cm angular fragments of poorly bedded siltstone and fine grit. (21.40)-(21.62): As at 19.25 m. Carbonaceous FAULT ZONE, partings at 80-90 deg. cax. (21.64)-(26.50): Less broken, medium grey, poorly bedded siltstone, fine grit. Numerous quartz veinlets and stringers at variable angles. Small faults at 26.00-26.21 m.									
26.50	33.70	GREY SILTSTONES, SANDSTONES, MINOR GRITS Colour: medium grey to dark grey.	32651	30.70	31.95	1.25	<5	NA	0.1	41	NA
		Rock Texture: massive to well bedded, poor to moderately sorted, interbedded fine siltstone, sandstone greywacke and minor grit. Fracturing: Weak (1-10)/m. Structure Bedded: 35 to 70 deg. cax. mainly in finer units. Commonly disturbed with local breccias(depositional slump structures?)	32652	32.55	34.14	1.59	<5	NA	0.1	65	NA

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Veins and Sub-Intervals Carbonate Veining. sparse (26.50)-(28.37): Siltstones and Greywackes. Bedded at 45-50 deg. cax. Broken sections, sparse veining. (28.37)-(28.70): Fragments or boulders of green grey, siliceous, fine grained feldspar porphyry. Jagged, irregular contacts(erosional!) not intrusive. Cut by late sericite? filled fractures. Section between feldspar porphyry is siltstone-greywacke breccia(chaotic)- slump breccia? (29.40)-(29.82): Same as 28.37-28.70 m. (29.82)-(32.60): Chaotically bedde siltstone, greywacke and grits plus breccia. Silicified and fine quartz veined sections at 30.70-31.00 and 31.39-31.80 m. (32.60)-(33.70): Coarse breccia with 45 cm sections of chloritic, sericitic, clay rock with clayey/sericitic veins, minor carbonate. Small aggregates of fine pyrite and pyrrhotite. Rest of section dark carbonaceous schist with schistosity at 80 deg. cax. Numerous quartz-clay veinlets.									
33.70	34.14	BLEACHED FELDSPAR PORPHYRY Colour: pink . Grain Size: Fine. Feldspar Phenocrysts: tabular to anhedral, 1-4 mm Composition Groundmass: fine, locally soft and clayey Alteration Bleached: irregular contact zone or alteration front Silicification: towards end of sections Veins and Sub-Intervals Clay Veining. local veinlets. (34.14)-(34.14): End of HQ core. NQ core for rest of hole.									
34.14	38.90	STRONGLY ALTERED DYKE OR FLOW? Colour: dark green-grey to light pink-cream.	32653	35.00	36.70	1.70	<5	NA	0.1	34	NA
		Rock Texture: Predominantly soft, strongly altered amygdaloidal flow or dyke	32654	36.70	37.45	0.75	<5	NA	0.2	79	NA
		locally crowded with amygdales.	32655	37.45	39.01	1.56	<5	NA	0.1	46	NA
		Composition									

From(m)	To(m)	Description

Xenolith: sedimentary fragments near contacts
Groundmass: soft and clay altered masking original textures.
Amygdales: filled with zeolite/clay-sericite?

Structure
Contact: tend to be brecciated

Veins and Sub-Intervals
Sericite Veining. white to bluish veins(sericite-clay?)

<34.14>-<35.35>: Dark greenish grey, light amygdales to 1 cm. Smaller amygdales/altered phenocrysts are a light green soft mineral. Matrix/groundmass is strongly chloritic. End of section much softer and broken gradational contact.

<35.35>-<36.70>: Pinkish and soft. 10-15 % light amygdales. Matrix/groundmass is fine grained and soft. Local green mineral. Numerous soft clayey veinlets.

<36.70>-<37.45>: Dark grey to black chloritic carbonaceous argillite. Local green bands/beds at 75 deg. cax. Brecciated. No evidence of chilling. Harder and crowded with amygdales at 37.45- 38.90 m. Numerous wallrock fragments near lower brecciated contact. Lower contact at 80 deg. cax. Numerous white to bluish clayey veinlets.

38.90 — 80.16 VARIABLY BRECCIATED AND SILICIFIED SEDIMENTS

Colour: grey to buff .
Rock Texture: siltstone, cherty silicified siltstone, brecciated grits. Short fractured sections of feldspar porphyry

Composition
Dyke: whitish brecciated dioritic feldspar porphyry sections 10-15 cm long. Sharp chloritic fractures, groundmass is clay altered. Patchy, generally weak to moderate silicification.

Sub-Intervals
<38.90>-<42.70>: Grey silicified, fine brecciated siltstone and grit. Quartz veins at 39.50-39.69 m at 40 deg. cax. Sharp contacts, moderately broken, no sulfides.

<42.70>-<46.60>: Brecciated sections of feldspar porphyry with dark chloritic fractures and fine clayey veinlets.

<46.60>-<50.20>: Grey to buff, locally brecciated silicified(cherty) siltstone. Locally fine bedding at 50 deg. cax but broken. Sparse

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32656	39.01	40.00	0.99	<5	NA	0.1	110	NA
32657	41.80	43.50	1.70	<5	NA	0.2	439	NA
32658	43.50	45.11	1.61	<5	NA	0.3	351	NA
32659	45.11	46.60	1.49	<5	NA	0.1	129	NA
32758	48.00	49.00	1.00	100	NA	0.9	246	NA
32759	49.00	50.00	1.00	150	NA	2.4	1800	0.18
32760	50.00	50.20	0.20	350	NA	49.7	29600	2.96
32660	50.20	51.50	1.30	150	NA	1.1	548	NA
32761	51.40	52.00	0.60	<5	NA	0.5	246	NA
32762	52.00	53.00	01.00	50	NA	1.1	868	NA
32763	53.00	54.00	1.00	<5	NA	0.5	190	NA
32764	65.00	66.00	1.00	<5	NA	0.1	201	NA
32765	66.00	67.00	1.00	<5	NA	0.2	138	NA
32766	67.00	68.00	1.00	<5	NA	0.3	146	NA
32767	68.00	69.49	1.49	<5	NA	0.3	105	NA

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		veining.	32661	69.49	71.02	1.53	<5	NA	0.1	328	NA
		(49.00)-(50.00): Strongly broken and chloritic.	32768	71.02	72.00	0.98	<5	NA	0.5	127	NA
		(50.20)-(51.35): Brecciated and variably bleached, chloritic fractures. Some	32769	72.00	73.15	1.15	50	NA	0.4	185	NA
		fractures at 25-35 deg. cax with fine pyrite and chalcopyrite.	32770	73.15	74.00	0.85	<5	NA	0.3	327	NA
		(51.35)-(61.00): Mottled light green, pinkish green and buff cherty siltstone.	32771	74.00	74.70	0.70	<5	NA	0.7	536	NA
		Massive to brecciated, chloritic fractures. Local fine bedding	32662	74.98	76.81	1.83	60	NA	0.6	1900	0.19
		at 50-60 deg. cax. Sparse veining.	32663	76.81	77.81	1.00	1680	1.68	125.2	75800	7.58
		(61.00)-(67.10): Cherty siltstone. Finely bedded at 60 deg. cax. 95 %	32664	77.81	79.00	1.19	<5	NA	1.2	910	NA
		recovery.	32665	79.00	81.15	2.15	<5	NA	0.2	106	NA
		(67.10)-(77.00): Green to buff locally pinkish poorly bedded cherty siltstone. Moderate to strong brecciation increasing with depth. Some irregular veinlets(clayey). Patchy moderate to strong silicification. 60 % recovery.									
		(77.00)-(77.40): MASSIVE SULFIDE. Predominantly coarse chalcopyrite to 40 %, fine pyrite, sphalerite? along fractures, local grey quartz. Crude layering at 60 deg. cax concordant with bedding in sediments.									
		(77.40)-(80.16): Hard greenish grey, brecciated and silicified siltstone. Original texture obscured by alteration. Quartz, chloritic, clay vein to 1 cm below sulfide subparallel to deg. cax for 45 cm.									
80.16	83.02	BRECCIATED DIORITE									
		Colour: medium green to dark green.	32666	81.15	82.56	1.41	<5	NA	0.3	51	NA
		Plagioclase Phenocrysts: white, anhedral to subhedral, up to 3 mm, 5-10 %	32667	82.56	84.00	1.44	<5	NA	0.4	86	NA
		Composition									
		Groundmass: fine grained, altered									
		Alteration									
		Silicification: Strong. hard									
		Veins and Sub-Intervals									
		Fractures Veining. Core axis angle variable. sharp, chloritic									
		(81.20)-(83.02): Non porphyritic, equigranular.									
83.02	89.00	STRONGLY SILICIFIED ZONE									
		Colour: light grey to cream .	32668	84.00	85.50	1.50	<5	NA	0.1	63	NA
		Composition	32669	88.10	89.60	1.50	<5	NA	0.1	82	NA
		Relics: feldspar porphyry as at 84.73 to 84.90 m.									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Mineralisation Sulfides: Trace. Veins Fractures Veining. Core axis angle variable. 5 %, dark chloritic									
89.00	119.45	SILICIFIED SILTSTONES Colour: grey green to pink green-green. Rock Texture: massive to well bedded siltstone Fracturing: Moderate (11-20)/m. Structure Bedding: 60 deg. cax. Alteration Silicification: Strong. hard Veins and Sub-Intervals Quartz Veining. Core axis angle variable. some fine veinlets Carbonate Veining. Core axis angle variable. minor Fractures Veining. Core axis angle variable. numerous,chloritic <89.00>-<104.70>: As above, chloritic at bottom. <104.70>-<104.93>: DIORITIC DYKE. Mottled green white, coarse grained, equigranular. Dark chloritic fractures. <104.93>-<107.65>: Light green to pinkish green, hard silicified siltstone. Poorly bedded. Locally brecciated with irregular quartz veinlets <107.65>-<109.05>: Light brownish grey, fine to medium grained bedded grit. Bedding at 30-35 deg. cax. Has appearance of bedded tuff. <109.05>-<109.48>: FELDSPAR PORPHYRY DYKE. Mottled pinks and whites. Anhedral feldspar phenocrysts to 4 mm. Fine siliceous groundmass cut by chloritic fractures(10-20%). <109.48>-<119.45>: Well bedded silicified siltstone. Local fine quartz veinlets. Bedding and veinlets at 50-60 deg. cax.	32670	104.00	105.00	1.00	NA	NA	NA	NA	NA
119.45	141.12	SILICIFIED GRITS, BRECCIAS, SILTSTONES Colour: mottled grey to mottled green. Rock Texture: Coarse grits, breccias, siltstones. Poorly sorted, immature Alteration Silicification: Strong. Veins and Sub-Intervals									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Quartz Veining. some fine veins <119.45>-<136.24>: Matrix supported breccia, non bedded. <136.24>-<136.97>: SILICEOUS DYKE. Light pinkish grey, fine grained 5-10 % chloritic flecks, vague feldspar phenocrysts. Contacts at 70 deg. cax. <136.97>-<1412.12>: Silicified grits, fine breccias. Matrix supported. Sparse veining. Cherty at end of section.									
	141.12	END OF HOLE.									

Sample No.	From (m)	To (m)	Width (m)	Comment	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32651	30.70	31.95	1.25		<5	NA	0.1	41	NA
32652	32.55	34.14	1.59		<5	NA	0.1	65	NA
32653	35.00	36.70	1.70		<5	NA	0.1	34	NA
32654	36.70	37.45	0.75		<5	NA	0.2	79	NA
32655	37.45	39.01	1.56		<5	NA	0.1	46	NA
32656	39.01	40.00	0.99		<5	NA	0.1	110	NA
32657	41.80	43.50	1.70		<5	NA	0.2	439	NA
32658	43.50	45.11	1.61		<5	NA	0.3	351	NA
32659	45.11	46.60	1.49		<5	NA	0.1	129	NA
32758	48.00	49.00	1.00		100	NA	0.9	246	NA
32759	49.00	50.00	1.00		150	NA	2.4	1800	0.18
32760	50.00	50.20	0.20		350	NA	49.7	29600	2.96
32660	50.20	51.50	1.30		150	NA	1.1	548	NA
32761	51.40	52.00	0.60		<5	NA	0.5	246	NA
32762	52.00	53.00	01.00		50	NA	1.1	868	NA
32763	53.00	54.00	1.00		<5	NA	0.5	190	NA
32764	65.00	66.00	1.00		<5	NA	0.1	201	NA
32765	66.00	67.00	1.00		<5	NA	0.2	138	NA
32766	67.00	68.00	1.00		<5	NA	0.3	146	NA
32767	68.00	69.49	1.49		<5	NA	0.3	105	NA
32661	69.49	71.02	1.53		<5	NA	0.1	328	NA
32768	71.02	72.00	0.98		<5	NA	0.5	127	NA
32769	72.00	73.15	1.15		50	NA	0.4	185	NA
32770	73.15	74.00	0.85		<5	NA	0.3	327	NA
32771	74.00	74.70	0.70		<5	NA	0.7	536	NA
32662	74.98	76.81	1.83		60	NA	0.6	1900	0.19
32663	76.81	77.81	1.00		1680	1.68	125.2	75800	7.58
32664	77.81	79.00	1.19		<5	NA	1.2	910	NA
32665	79.00	81.15	2.15		<5	NA	0.2	106	NA
32666	81.15	82.56	1.41		<5	NA	0.3	51	NA
32667	82.56	84.00	1.44		<5	NA	0.4	86	NA
32668	84.00	85.50	1.50		<5	NA	0.1	63	NA
32669	88.10	89.60	1.50		<5	NA	0.1	82	NA
32670	104.00	105.00	1.00		NA	NA	NA	NA	NA

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CORONA CORPORATION

MJ89-08

12-02-1989 :: 14:41

DIAMOND DRILL LOG

PROPERTY :	Marzoff Option - Jewel	PROJECT #	: 1035		
NTS MAP # :	82L/05	TOWNSHIP	: Kamloops Mining Division	CLAIM # :	Grouse 13
LINE/STATION:	0+47N / 2+40E	EASTINGS/NORTHINGS:		ELEVATION :	750.00 m
LENGTH :	108.50 m	INCLINATION	: -50.0 degrees	AZIMUTH :	80.0 degrees
OVERBURDEN :	20.30 m	CASING	: 20.30 metres		
LOGGED BY :	R.C. Wells	DRILLED BY	: Core Enterprises	ASSAYING BY :	Eco-Tech
DATE LOGGED :	1989/11/10 to 1989/11/12	DATE DRILLED	: 1989/11/10 to 1989/11/12	CORE LOCATION:	Property

ACID TESTS

Depth	Dip
108.50	-53.0

From(m)	To(m)	Field Name (Legend)
0.00	20.30	CASING, OVERBURDEN AND BROKEN BEDROCK Sandy overburden with boulders of feldspar porphyry and siltstone
20.30	53.50	SILTSTONES AND CARBONACEOUS ARGILLITES Dark grey to black, obscured bedding, strong fracturing,lighter chloritic/sericitic sections. Quartz veins and veinlet zones.
53.50	59.78	DACITIC FLOW light grey, porphyritic sections, brecciated sections with chloritic partings, some pyrite cubes.
59.78	81.20	BLACK SILTSTONES, ARGILLITES fine grained, poorly bedded, sparse quartz-carbonate veining, weak to moderate fracturing, aggregates of marcasite, pyrrhotite.
81.20	108.50	CARBONACEOUS ARGILLITES, SILTSTONES, GRITS AND FINE BRECCIAS Dark grey to black, commonly brecciated, locally schistose. Healed by carbonate veins, fine irregular quartz veins.

108.50 END OF HOLE.

From(m)	To(m)	Description
0.00	20.30	CASING, OVERBURDEN AND BROKEN BEDROCK
20.30	53.50	SILTSTONES AND CARBONACEOUS ARGILLITES

0.00 – 20.30 CASING, OVERBURDEN AND BROKEN BEDROCK

Composition

Overburden: sandy with boulders of feldspar porphyry porphyry and siltstone.

20.30 – 53.50 SILTSTONES AND CARBONACEOUS ARGILLITES

Colour: dark grey to black .

Rock Texture: siltstone and carbonaceous argillites. Bedding obscured by fracturing and brecciation. Narrow light coloured chloritic/sericitic sections in lower half.

Fracturing: High (21-30)/m.

Structure

Schistosity: 30 deg. car. well developed

Veins and Sub-Intervals

Quartz Veining. Core axis angle variable. veins and veinlet zones are common

<20.20>-<24.30>: Deformed carbonaceous argillite, minor siltstone. Disturbed bedding locally apparent at 30 deg. car with pinch and swell folding. Local masses of fine grained marcasite, minor pyrrhotite(broken layers?).

<24.30>-<26.82>: Brecciated and fractured carbonaceous argillites locally graphitic. Probably a FAULT ZONE. Section of broken quartz vein subparallel to 20 deg. car.

<26.82>-<27.45>: Brecciated with fragments of siltstone to 2 cm in carbonaceous matrix.

<27.45>-<28.85>: FAULT ZONE. Carbonaceous locally graphitic argillite. Brecciated and sheared with sections of clayey argillites(fault gouge), minor broken quartz veining.

<28.85>-<31.40>: Moderately broken and sheared siltstone, argillite. Locally healed by quartz veinlets and or weak to moderate silicification. Irregular masses of fine marcasitew, pyrrhotite to 1 cm.

<31.40>-<31.75>: Carbonaceous argillite. Schistosity at 20 deg. car. Fault?

<31.75>-<37.55>: Black siltstone, argillite, weak to moderately fractured with numerous fine, irregular quartz veinlets at variable angles to deg. car. Local fine grained aggregates of marcasite and pyrrhotite. Fractures are either quartz filled or carbonaceous.

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32672	22.70	24.30	1.60	10	NA	0.1	52	NA
32673	24.30	25.50	1.20	5	NA	0.1	35	NA
32674	25.50	26.82	1.32	5	NA	<0.1	41	NA
32675	28.80	30.35	1.55	5	NA	<0.1	43	NA
32676	30.35	31.40	1.05	5	NA	<0.1	35	NA
32677	31.40	32.92	1.52	5	NA	<0.1	62	NA
32678	32.92	34.30	1.38	10	NA	0.1	74	NA
32679	35.97	37.55	1.58	5	NA	0.1	41	NA
32680	37.55	39.02	1.47	5	NA	<0.1	111	NA
32681	39.02	40.50	1.48	10	NA	0.1	41	NA
32682	40.50	42.06	1.56	5	NA	0.3	43	NA
32683	44.53	45.80	1.27	5	NA	<0.1	88	NA
32684	51.21	52.55	1.34	10	NA	0.1	50	NA
32685	52.55	53.95	1.40	5	NA	<0.1	74	NA

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		(37.55)-(38.98): Light greenish, sericitc altered unit. Fairly soft, moderately fractured with irregular quartz veinlets. Contacts at 45 deg. cax. (38.98)-(44.53): Black siltstone, argillite as at 31.75. Local fine bedding at 60-70 deg. cax with concordant marcasite, pyrrhotite? lenses to 1 cm. Fine irregular quartz veinlets throughout. (44.53)-(45.45): As at 37.55 m. Greenish and weakly brecciated sericitic unit-possibly flow? Contacts at 70-80 deg. cax. Chloritic flecks(altered phenocrysts?) to 2 mm. Sections of bedded grey siltstone at 45 deg. cax with and near lower contact. (45.45)-(53.50): Black siltstone, argillite as at 31. 75 m. Irregular quartz carbonate veinlets. Sparse marcasite. Local bedding at 60 deg. cax.									
53.50	59.78	DACITIC FLOW Colour: light grey. Rock Texture: equigranular with porphyritic sections Feldspar Phenocrysts: light green(altered) with rims, also dark green chloritic altered phenocrysts(less common) Composition Groundmass: fine grained, equigranular and siliceous. Structure Brecciated: sections with chloritic partings Contact: irregular and rubbly with quartz veining. Some incorporated sedimentary fragments. Mineralisation Pyrite: sparse cubes Sub-Intervals (53.50)-(54.88): Porphyritic, altered and rimmed phenocrysts to 2 mm. Rubbly upper contact. (54.88)-(56.95): Inclusions of black siltstone with numerous irregular quartz veinlets. (56.95)-(59.78): Grey, equigranular, fine to fine medium grained dacite. 1-5% chloritic locally rimmed phenocrysts to 2 mm in upper part of section. Lower contact irregular and rubbly.									
59.78	81.20	BLACK SILTSTONES, ARGILLITES									

From(m)	To(m)	Description

Colour: black .
Grain Size: Fine.
Rock Texture: poorly bedded siltstone and finer argillites
Fracturing: Moderate (11-20)/m.

Mineralisation
Pyrrhotite: local fine grained aggregates commonly in argillites.
Marcasite: local fine grained aggregates commonly in argillites

Veins and Sub-Intervals
Quartz-carbonate Veining. sparse
(63.20)-(63.40): Greenish grey, fine grit, bedding at 45 deg. cax.
(72.50)-(74.50): Quartz vein, veinlet zone at 20-25 deg. cax. Pyrrhotite, marcasite aggregates up to 1.5 cm in siltstone up to 5 %.
(74.50)-(79.32): Lighter grey and hard, fine grained and cherty, bedding at 45-50 deg. cax. Larger quartz-carbonate veins to 1 cm at 20 deg. cax. Finer veinlets at irregular angles. Local irregular masses up to 5 cm of fine to medium grained marcasite, minor pyrrhotite.
(79.32)-(81.20): Black cherty siltstone, fine quartz veins commonly at 50 deg. cax.

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32686	72.54	73.60	1.06	5	NA	0.2	39	NA
32687	73.60	74.50	0.90	5	NA	0.2	37	NA
32688	74.50	75.59	1.09	5	NA	<0.1	15	NA
32689	77.23	78.60	1.37	5	NA	0.1	40	NA

81.20 — 108.50 CARBONACEOUS ARGILLITES, SILTSTONES, GRITS AND FINE BRECCIAS

Colour: dark grey to black .
Grain Size: Fine.
Rock Texture: carbonaceous siltstone and argillite, commonly brecciated, locally schistose, interbedded with sedimentary breccias and grits usually matrix supported.

Structure
Schistosity: parallel to foliation to 20 deg. cax.
Brecciated: structural zones commonly healed by carbonate veins

Veins and Sub-Intervals
Quartz Veining. fine, irregular
Carbonate Veining. minor
(81.20)-(90.28): Black siltstones, minor argillites, locally cherty. Moderate to strongly brecciated. Irregular quartz veinlets. Carbonaceous fractures usually at low angles to deg. cax to 20 deg. cax. Local blebs of fine grained marcasite.
(90.28)-(94.23): Coarse carbonate veining healing brecciated grit, sedimentary

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32690	84.70	86.20	1.50	<5	NA	<0.1	49	NA
32691	86.20	87.20	1.00	5	NA	0.1	38	NA
32692	87.20	88.20	1.00	10	NA	<0.1	31	NA
32693	90.28	91.89	1.61	5	NA	<0.1	22	NA
32694	91.89	93.34	1.45	5	NA	<0.1	24	NA
32695	93.34	94.50	1.16	5	NA	<0.1	14	NA
32696	103.02	105.46	2.44	5	NA	<0.1	57	NA

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		breccia. Matrix supported sedimentary clasts. Veins are pure milky carbonate and at vasriable orientations. Many are at 20-30 deg. cax. No visible sulfides.									
		(94.23)-(108.50): Strongly brecciated, carbonaceous argillite with local clay gouge as at 103.00- 104.00 m(FAULT ZONE).Fracture planes at variable angles many at 20-45 deg. cax locally graphitic. Sparse fine quartz-carbonate veinlets.									
108.50		END OF HOLE.									

Sample No.	From (m)	To (m)	Width (m)	Comment	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32672	22.70	24.30	1.60		10	NA	0.1	52	NA
32673	24.30	25.50	1.20		5	NA	0.1	35	NA
32674	25.50	26.82	1.32		5	NA	<0.1	41	NA
32675	28.80	30.35	1.55		5	NA	<0.1	43	NA
32676	30.35	31.40	1.05		5	NA	<0.1	35	NA
32677	31.40	32.92	1.52		5	NA	<0.1	62	NA
32678	32.92	34.30	1.38		10	NA	0.1	74	NA
32679	35.97	37.55	1.58		5	NA	0.1	41	NA
32680	37.55	39.02	1.47		5	NA	<0.1	111	NA
32681	39.02	40.50	1.48		10	NA	0.1	41	NA
32682	40.50	42.06	1.56		5	NA	0.3	43	NA
32683	44.53	45.80	1.27		5	NA	<0.1	88	NA
32684	51.21	52.55	1.34		10	NA	0.1	50	NA
32685	52.55	53.95	1.40		5	NA	<0.1	74	NA
32686	72.54	73.60	1.06		5	NA	0.2	39	NA
32687	73.60	74.50	0.90		5	NA	0.2	37	NA
32688	74.50	75.59	1.09		5	NA	<0.1	15	NA
32689	77.23	78.60	1.37		5	NA	0.1	40	NA
32690	84.70	86.20	1.50		<5	NA	<0.1	49	NA
32691	86.20	87.20	1.00		5	NA	0.1	38	NA
32692	87.20	88.20	1.00		10	NA	<0.1	31	NA
32693	90.28	91.89	1.61		5	NA	<0.1	22	NA
32694	91.89	93.34	1.45		5	NA	<0.1	24	NA
32695	93.34	94.50	1.16		5	NA	<0.1	14	NA
32696	103.02	105.46	2.44		5	NA	<0.1	57	NA

CORONA CORPORATION

MJ89-09

04-04-1990 :: 10:42

DIAMOND DRILL LOG

PROPERTY	: Marzoff Option - Jewel	PROJECT #	: 1035		
NTS MAP #	: 82L/05	TOWNSHIP	: Kamloops Mining Division	CLAIM #	: Grouse 13
LINE/STATION:	0+60N / 0+07W	EASTINGS/NORTHINGS:		ELEVATION	: 800.00 m
LENGTH	: 151.79 m	INCLINATION	: -50.0 degrees	AZIMUTH	: 240.0 degrees
OVERBURDEN	: 16.00 m	CASING	: 16.00 metres		
LOGGED BY	: R.C. Wells	DRILLED BY	: Core Enterprises	ASSAYING BY	: Eco-Tech
DATE LOGGED	: 1989/11/13 to 1989/11/17	DATE DRILLED	: 1989/11/13 to 1989/11/17	CORE LOCATION:	Property

ACID TESTS

Depth	Dip
84.73	-48.0
137.50	-48.0

CORONA CORPORATION
SUMMARY LOG

04-04-1990 :: 10:42

From(m)	To(m)	Field Name (Legend)
0.00	16.00	CASING IN OVERBURDEN AND BROKEN BEDROCK Sandy overburden with boulders of cherty siltstone and diorite.
16.00	30.35	CHERTY(SILICIFIED) SILTSTONE WITH MINOR SANDSTONE AND GRIT BEDS light brownish green to medium green, weak to moderate fracturing, sparse qsz veins.
30.35	40.43	PORPHYRITIC DIORITE INTRUSIVE coarse grained, brecciated with angular inclusions of green siltstone and sandstone, numerous irregularr quartz-carbonate veinlets, local pyrite.
40.43	106.00	SILICIFIED, CHERTY SILTSTONE, MINOR SANDSTONE BEDS light to medium green and pinkish green, locally bedded, patchy silicification, weakly fractured and brecciated, sparse veining, hematitic alteration.
106.00	126.62	ALTERED DIORITE, QUARTZ DIORITE DYKE Patchy silicification, weak clay carbonate alteration, chloritic moderately fractured, local quartz or clay veinlets, sparse sulfides.
126.62	151.79	STRONGLY SILICIFIED AND FRACTURED SEDIMENTS Light grey to greenish grey, predominantly fine grained, silicified, fractured siltstone and fine sandstone. Quartz and or clay, carbonate veinlets, chloritic sections with native copper.

151.79 END OF HOLE.

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
0.00	16.00	CASING IN OVERBURDEN AND BROKEN BEDROCK									
		Composition									
		Overburden: Sandy overburden with boulders of cherty siltstone and diorite to 16.00 m. Casing continued to 18.29 m. in broken cherty siltstone.									
16.00	30.35	CHERTY(SILICIFIED) SILTSTONE WITH MINOR SANDSTONE AND GRIT BEDS									
		Colour: light brown-green to medium green.	32701	23.17	24.70	1.53	25	NA	0.3	51	NA
		Rock Texture: cherty siltstone interbedded with narrow dark green greywacke	32702	24.70	26.22	1.52	10	NA	0.6	282	NA
		sandstone and grit beds	32703	29.35	30.35	1.00	25	NA	0.2	109	NA
		Fracturing: Moderate (11-20)/m.									
		Structure									
		Bedding: 50 deg. cax. finely in siltstone.									
		Alteration									
		Silicification: Strong.									
		Veins and Sub-Intervals									
		Quartz Veining. sparse									
		(16.00)-(23.35): Light buff green, cherty, silicified siltstone, finely bedded at 50 deg. cax. Weakly fractured.									
		(23.35)-(24.40): Dark green, bedded at 50 deg. cax, coarse sandstone and grit. Angular sedimentary clasts up to 1 cm.									
		(24.40)-(26.87): Light grey, bleached, moderately fractured sandstone, fine grit. Patchy silicification. Local clay gouge(Fault Zone). 70 % recovery.									
		(26.87)-(30.35): Light green, silicified, cherty siltstone locally interbedded with narrow sandstone beds. Alteration and moderate to strong fracturing obscures bedding. Irregular white clay veinlets and lenses. Numerous quartz veins at 30.05-30.35 m up to 1 cm at 70 deg. cax.									
30.35	40.43	PORPHYRITIC DIORITE INTRUSIVE									
		Colour: sj green-white.	32704	30.35	31.72	1.37	10	NA	<0.1	176	NA
		Grain Size: Coarse.	32705	33.22	34.75	1.53	295	NA	1.2	337	NA
		Rock Texture: coarse brecciated with numerous coarse angular inclusions of	32706	34.75	36.00	1.25	25	NA	0.4	132	NA
		green siltstone and sandstone	32707	36.00	37.44	1.44	15	NA	0.3	50	NA
		Plagioclase Phenocrysts: tabular to 4 mm	32708	37.44	39.01	1.57	15	NA	0.2	115	NA
		Structure	32709	39.01	40.43	1.42	20	NA	0.3	118	NA

From(m)	To(m)	Description

Contact: 45 deg. cax. lower
Mineralisation
Pyrite: local
Veins and Sub-Intervals
Fractures Veining. Core axis angle variable. chloritic, variable size
Quartz-carbonate Veining. numerous fine irregular veinlets
(30.35)-(34.00): Brecciated with coarse angular sedimentary inclusions. Numerous dark chloritic fractures. Fine quartz-carbonate veinlets.
(34.00)-(37.44): Light green, less brecciated, some hematitic fractures especially at 35.10-35.40 m. Quartz-carbonate veinlets common at variable angles
(37.44)-(40.43): As above but moderately brecciated with dark chloritic fractures locally hematitic. Significant white quartz in strongly brecciated sections.

40.43 106.00 SILICIFIED, CHERTY SILTSTONE, MINOR SANDSTONE BEDS
Colour: light medium-green to pink green.
Rock Texture: Patchy silicified siltstone, cherty siltstone locally interbedded with narrow sandstone units.
Fracturing: Weak (1-10)/m.
Structure
Bedding: 40 deg. cax. local
Alteration
Hematitic: pinkish sections
Silicification: patchy
Veins and Sub-Intervals
Fractures Veining. dark chloritic partings with local pyrrhotite and chalcopyrite
(40.43)-(44.69): Green cherty siltstone, moderately broken, locally hematitic. Bedding obscured.
(44.69)-(45.68): Darker green sandstone unit with some broken quartz or chert. Patchy epidote. Moderately fractured, broken.
(45.68)-(54.50): Green to pinkish, cherty siltstone. Weakly fractured. Some fine quartz veinlets. Local hematitic fractures.
(54.50)-(62.20): Bedded cherty siltstone. Bedding at 45-50 deg. cax. More fractured and hematitic.

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32710	40.43	41.90	1.47	45	NA	0.4	1600	0.16
32772	41.90	43.00	1.10	5	NA	0.1	47	NA
32773	43.00	44.00	1.00	5	NA	<0.1	61	NA
32774	44.00	44.69	0.69	5	NA	<0.1	85	NA
32711	44.69	45.68	0.99	1530	1.53	<0.1	385	NA
32775	45.68	47.00	1.32	10	NA	<0.1	131	NA
32776	47.00	48.00	1.00	5	NA	<0.1	164	NA
32777	48.00	49.00	1.00	10	NA	<0.1	145	NA
32778	49.00	50.00	1.00	10	NA	<0.1	126	NA
32712	55.00	56.50	1.50	55	NA	<0.1	143	NA
32713	58.55	60.00	1.45	10	NA	<0.1	246	NA
32779	60.00	61.00	1.00	15	NA	<0.1	507	NA
32780	61.00	62.00	1.00	10	NA	0.1	488	NA
32781	62.00	63.00	1.00	5	NA	<0.1	479	NA
32782	63.00	64.20	1.20	5	NA	0.4	941	NA
32714	64.20	65.85	1.65	5	NA	0.4	1200	0.12
32783	65.85	66.70	0.85	10	NA	<0.1	410	NA
32715	66.70	68.20	1.50	10	NA	0.2	353	NA
32716	68.20	69.20	1.00	25	NA	0.2	908	NA
32717	69.20	70.20	1.00	55	NA	0.5	684	NA

From(m)	To(m)	Description
		<62.20>-<64.80>: Darker green greywacke sandstone. Massive not silicified. From 63.90-64.80 m. is a lighter green cherty brecciated unit.
		<64.80>-<65.85>: FAULT ZONE. Strongly brecciated with clay filled fractures.
		<65.85>-<66.90>: Bedded cherty siltstone. Bedding at 50-55 deg. cax.
		<66.90>-<71.98>: Medium green, moderate to strongly brecciated coarse sandstone to grit. Chloritic fractures with 1-5 % sulfides - chalcopyrite,pyrrhotite andpy. Vague bedding at 50 deg. cax. From 70.71-70.32 strongly broken - FRACTURE ZONE(60 % recovery) .
		<71.98>-<76.00>: Green to pinkish bedded cherty siltstone. Bedding at 55 deg. cax. Numerous chloritic fractures at variable angles.
		<76.00>-<77.10>: FAULT in cherty siltstone. 30 % recovery.
		<77.10>-<86.20>: Cherty siltstone, strongly brecciated, chloritic, local hematitic fractures. 1-2 % fine fracture filled sulfides.
		<86.20>-<92.50>: Less brecciated siltstone, bedded cherty siltstone. Bedding at 70 deg. cax, locally weakly hematitic. Hairline chloritic fractures. Sparse sulfides.
		<92.50>-<94.87>: Hard, silicified and bleached fine siltstone. Hairline fractures at 45-85 deg. cax with peripheral orange alteration for 1-2 mm. Few narrow quartz-carbonate veinlets at variable angles.
		<94.87>-<99.95>: Green to pinkish, weak to moderately fractured, brecciated, silicified siltstone. Weakly bedded at 70-80 deg. cax. More pinkish(hematitic) with depth. Chloritic fractures.
		<99.95>-<106.00>: Silicified siltstone, sandstone. Moderately fractured and healed by alteration. Original textures vague. Chloritic lenses at 45 deg. cax. Local specks of nt copper, some chalcopyrite on fracture planes. Inclusions of siliceous quartz diorite dyke at 101.60-101.85 m ; 103.72-104.18 m.

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32718	70.20	71.50	1.30	15	NA	0.6	507	NA
32719	77.11	78.60	1.49	10	NA	0.4	579	NA
32720	78.60	80.10	1.50	35	NA	<0.1	386	NA
32721	80.10	81.68	1.58	30	NA	0.1	359	NA
32722	82.90	83.90	1.00	45	NA	0.2	200	NA
32723	85.64	87.20	1.56	10	NA	0.3	123	NA
32724	92.50	93.87	1.37	35	NA	0.3	137	NA
32725	93.87	94.87	1.00	30	NA	0.4	117	NA
32726	98.47	99.97	1.50	20	NA	0.2	297	NA
32727	99.97	101.50	1.53	65	NA	0.1	424	NA
32728	101.50	103.02	1.52	20	NA	3.3	874	NA
32729	103.02	104.56	1.54	30	NA	2.4	776	NA
32730	104.56	106.00	1.44	5	NA	1.5	555	NA

From(m)	To(m)	Description
106.00	126.62	**ALTERED DIORITE, QUARTZ DIORITE DYKE**
		Colour: mottled white-grey to mottled green.
		Grain Size: Coarse.
		Rock Texture: equigranular to weakly feldspar porphyritic
		Fracturing: Weak (1-10)/m.
		Alteration
		Silicification: Moderate. patchy

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32731	106.00	107.57	1.57	80	NA	3.5	1700	0.17
32784	107.57	109.00	1.43	40	NA	0.3	543	NA
32785	109.00	110.00	1.00	20	NA	<0.1	542	NA
32786	110.00	111.00	1.00	10	NA	0.2	635	NA
32787	111.00	112.30	1.30	5	NA	0.4	386	NA
32732	112.30	113.66	1.36	30	NA	3.2	1300	0.13

From(m)	To(m)	Description
		Clay: Weak.
		Carbonate: Weak.
		Mineralisation
		Us: sparse
		Veins and Sub-Intervals
		Quartz Veining. Core axis angle variable. variable veinlets
		Clay Veining. Core axis angle variable. variable veinlets
		Fractures Veining. chloritic
		(106.00)-(109.00): Upper dyke contact at 70 deg. cax. Brecciated diorite with large xenoliths of silicified,chloritic siltstone.
		(109.00)-(112.30): Fairly massive, light coloured, coarse eq with few chloritic fractures. Weakly carbonated and clay altered, sparse veining.
		(112.30)-(115.80): Moderately fractured with chloritic sections. Numerous fine clay veinlets, local quartz stringers.
		(115.80)-(116.20): Strongly broken and chloritic.
		(116.20)-(117.20): Moderately(chloritic) fractured, local white clayey fractures. 1-2 % sulfides mainly as small lenses of chalcopyrite pyrrhotite and pyrite.
		(117.20)-(119.30): Moderately broken and chloritic. 1-5 % chalcopyrite, pyrite, pyrrhotite in lenses up to 2 cm locally.
		(119.30)-(126.62): Eq to weakly feldspar porphyritic. Chloritic fractures with locally siliceous margins. Up to 1 % chalcopyrite locally.
126.62	151.79	STRONGLY SILICIFIED AND FRACTURED SEDIMENTS
		Colour: light grey to green grey.
		Grain Size: Fine.
		Rock Texture: siltstone, fine sandstone
		Fracturing: Moderate (11-20)/m.
		Alteration
		Silicification: Strong. pervasive silicification obscures original textures.
		Mineralisation
		Copper: native on fracture planes in chloritic sections
		Veins and Sub-Intervals
		Quartz Veining. Core axis angle variable. fine veinlets
		Clay Veining. Core axis angle variable. fine veinlets
		Fractures Veining. Core axis angle variable. dark chloritic

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32733	113.66	115.21	1.55	140	NA	1.7	880	NA
32734	115.21	116.20	0.99	125	NA	2.4	734	NA
32735	116.20	117.20	1.00	565	NA	12.6	2200	0.22
32736	117.20	118.70	1.50	1090	1.09	13.4	3800	0.38
32737	118.70	119.85	1.15	5	NA	0.7	272	NA
32738	119.85	121.20	1.35	125	NA	3.3	1600	0.16
32739	121.20	122.20	1.00	730	NA	4.9	852	NA
32746	122.70	124.20	1.50	90	NA	0.1	426	NA
32747	124.20	125.70	1.50	55	NA	0.8	1600	0.16
32748	125.70	126.79	1.09	40	NA	1.0	2000	0.20
32740	126.79	127.79	1.00	60	NA	1.1	1300	0.13
32741	127.79	128.93	1.14	215	NA	5.9	4200	0.42
32742	128.93	130.45	1.52	95	NA	4.3	2600	0.26
32743	130.45	131.45	1.00	60	NA	0.3	724	NA
32744	131.45	133.00	1.55	25	NA	1.2	766	NA
32745	133.00	134.50	1.50	15	NA	0.5	831	NA
32749	134.50	136.00	1.50	40	NA	0.9	414	NA
32750	136.00	137.46	1.46	50	NA	0.2	694	NA
32751	137.46	139.00	1.54	15	NA	0.4	2600	0.26
32752	139.00	140.00	1.00	25	NA	0.5	542	NA
32753	140.00	140.95	0.95	65	NA	0.8	2700	0.27

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Carbonate Veining. Core axis angle variable. fine veinlets (126.62)-(129.00): Transition zone from feldspar porphyry to silicified sediments. Weak chloritic fracturing. (129.00)-(131.44): More brecciated and dark chloritic. Irregular quartz-carbonate veinlets, minor hematitie. (131.44)-(135.63): Moderately fractured and chloritic, silicified siltstone. (135.63)-(140.95): Pinkish green to grey, silicified siltstone. Weak to moderately fractured. Dark chloritic fractures. Some quartz-carbonate veinlets at variable angles to deg. cax. (140.95)-(143.00): As above, stronger chloritic fracturing with 1-5 % dendritic native copper on some fracture planes. (143.00)-(151.79): Silicified moderately fractured siltstone. Chloritic sections. Alteration is quite patchy and variable in strength. Local quartz-carbonate veinlets. More broken from 145.00-147.00 m.(Fault?).									

151.79 END OF HOLE.

Sample No.	From (m)	To (m)	Width (m)	Comment	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32701	23.17	24.70	1.53		25	NA	0.3	51	NA
32702	24.70	26.22	1.52		10	NA	0.6	282	NA
32703	29.35	30.35	1.00		25	NA	0.2	109	NA
32704	30.35	31.72	1.37		10	NA	<0.1	176	NA
32705	33.22	34.75	1.53		295	NA	1.2	337	NA
32706	34.75	36.00	1.25		25	NA	0.4	132	NA
32707	36.00	37.44	1.44		15	NA	0.3	50	NA
32708	37.44	39.01	1.57		15	NA	0.2	115	NA
32709	39.01	40.43	1.42		20	NA	0.3	118	NA
32710	40.43	41.90	1.47		45	NA	0.4	1600	0.16
32772	41.90	43.00	1.10		5	NA	0.1	47	NA
32773	43.00	44.00	1.00		5	NA	<0.1	61	NA
32774	44.00	44.69	0.69		5	NA	<0.1	85	NA
32711	44.69	45.68	0.99		1530	1.53	<0.1	385	NA
32775	45.68	47.00	1.32		10	NA	<0.1	131	NA
32776	47.00	48.00	1.00		5	NA	<0.1	164	NA
32777	48.00	49.00	1.00		10	NA	<0.1	145	NA
32778	49.00	50.00	1.00		10	NA	<0.1	126	NA
32712	55.00	56.50	1.50		55	NA	<0.1	143	NA
32713	58.55	60.00	1.45		10	NA	<0.1	246	NA
32779	60.00	61.00	1.00		15	NA	<0.1	507	NA
32780	61.00	62.00	1.00		10	NA	0.1	488	NA
32781	62.00	63.00	1.00		5	NA	<0.1	479	NA
32782	63.00	64.20	1.20		5	NA	0.4	941	NA
32714	64.20	65.85	1.65		5	NA	0.4	1200	0.12
32783	65.85	66.70	0.85		10	NA	<0.1	410	NA
32715	66.70	68.20	1.50		10	NA	0.2	353	NA
32716	68.20	69.20	1.00		25	NA	0.2	908	NA
32717	69.20	70.20	1.00		55	NA	0.5	684	NA
32718	70.20	71.50	1.30		15	NA	0.6	507	NA
32719	77.11	78.60	1.49		10	NA	0.4	579	NA
32720	78.60	80.10	1.50		35	NA	<0.1	386	NA
32721	80.10	81.68	1.58		30	NA	0.1	359	NA
32722	82.90	83.90	1.00		45	NA	0.2	200	NA
32723	85.64	87.20	1.56		10	NA	0.3	123	NA
32724	92.50	93.87	1.37		35	NA	0.3	137	NA
32725	93.87	94.87	1.00		30	NA	0.4	117	NA

CORONA CORPORATION

MJ89-09

04-04-1990 :: 10:47

ASSAY LOG

Sample No.	From (m)	To (m)	Width (m)	Comment	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
32726	98.47	99.97	1.50		20	NA	0.2	297	NA
32727	99.97	101.50	1.53		65	NA	0.1	424	NA
32728	101.50	103.02	1.52		20	NA	3.3	874	NA
32729	103.02	104.56	1.54		30	NA	2.4	776	NA
32730	104.56	106.00	1.44		5	NA	1.5	555	NA
32731	106.00	107.57	1.57		80	NA	3.5	1700	0.17
32784	107.57	109.00	1.43		40	NA	0.3	543	NA
32785	109.00	110.00	1.00		20	NA	<0.1	542	NA
32786	110.00	111.00	1.00		10	NA	0.2	635	NA
32787	111.00	112.30	1.30		5	NA	0.4	386	NA
32732	112.30	113.66	1.36		30	NA	3.2	1300	0.13
32733	113.66	115.21	1.55		140	NA	1.7	880	NA
32734	115.21	116.20	0.99		125	NA	2.4	734	NA
32735	116.20	117.20	1.00		565	NA	12.6	2200	0.22
32736	117.20	118.70	1.50		1090	1.09	13.4	3800	0.38
32737	118.70	119.85	1.15		5	NA	0.7	272	NA
32738	119.85	121.20	1.35		125	NA	3.3	1600	0.16
32739	121.20	122.20	1.00		730	NA	4.9	852	NA
32746	122.70	124.20	1.50		90	NA	0.1	426	NA
32747	124.20	125.70	1.50		55	NA	0.8	1600	0.16
32748	125.70	126.79	1.09		40	NA	1.0	2000	0.20
32740	126.79	127.79	1.00		60	NA	1.1	1300	0.13
32741	127.79	128.93	1.14		215	NA	5.9	4200	0.42
32742	128.93	130.45	1.52		95	NA	4.3	2600	0.26
32743	130.45	131.45	1.00		60	NA	0.3	724	NA
32744	131.45	133.00	1.55		25	NA	1.2	766	NA
32745	133.00	134.50	1.50		15	NA	0.5	831	NA
32749	134.50	136.00	1.50		40	NA	0.9	414	NA
32750	136.00	137.46	1.46		50	NA	0.2	694	NA
32751	137.46	139.00	1.54		15	NA	0.4	2600	0.26
32752	139.00	140.00	1.00		25	NA	0.5	542	NA
32753	140.00	140.95	0.95		65	NA	0.8	2700	0.27

CORONA CORPORATION

MJ-90-10

05-23-1990 :: 12:15

DIAMOND DRILL LOG

PROPERTY	MARZOFF Option - Jewel	PROJECT #	1035		
NTS MAP #	82L/05	TOWNSHIP	Kamloops Mining Division	CLAIM #	RUBY 2
LINE/STATION:	1+75N 1+55E /	EASTINGS/NORTHINGS:		ELEVATION	Surface
LENGTH	153.00 m	INCLINATION	-50.0 degrees	AZIMUTH	221.0 degrees
OVERBURDEN	33.30 m	CASING	33.30		
LOGGED BY	R.C. WELLS	DRILLED BY	CONNORS DRILLING	ASSAYING BY	ECO-TECH
DATE LOGGED	1990/04/21	DATE DRILLED	1990/04/18 to 1990/04/21	CORE LOCATION:	PROPERTY

ACID TESTS

Depth	Dip	Azimuth
67.67	-50.0	0.0
103.63	-50.0	0.0

From(m)	To(m)	Field Name (Legend)
0.00	33.30	CASING IN OVERBURDEN Sandy overburden, numerous boulders.
33.30	35.28	SILICIFIED FELDSPAR PORPHYRY Hard grey to cream coloured albite phenocrysts in siliceous groundmass. Moderately/strong fracturing. Carbonate veinlets. Patchy pyrite.
35.28	36.72	FRACTURE ZONE Fault gouge, well carbonated below.
36.72	51.25	ALTERED SEDIMENTS Hard grey siltstones, sandstone and grits. Local bedded 40-50 deg. car. Moderately fractured. Silicification throughout, lesser hematization, chloritization.
51.25	54.87	FELDSPAR PORPHYRY DYKE Crowded feldspar (albite) porphyry. Large tabular hornblende phenocrysts also. Dark xenoliths to 2 cm. Light siliceous groundmass.
54.87	72.75	ALTERED SEDIMENTS As at 36.72-51.25. Bedding obscured by strong alteration. Silicification, lesser hematization, chloritization.
72.75	107.97	MIXED ZONE. ALTERED PORPHYRITIC DIORITE AND SILICIFIED SEDIMENTS Mixed, silicified sediments with broken and silicified diorite, minor cream coloured feldspar porphyry.
107.97	153.00	DIORITIC INTRUSIVE Hard mottled whites and greens. Equigranular. Numerous fine carbonate veinlets. Local small xenoliths. Sparse sulfides.

153.00 END OF HOLE.

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
0.00	33.30	**CASING IN OVERBURDEN**									
		Sub-Intervals									
		(17.00)-(33.30): Large boulders and sand seams. BOULDER composition - predominantly sediments, rarer silicified feldspar porphyry. Some malachite staining on fragments.									
33.30	35.28	**SILICIFIED FELDSPAR PORPHYRY**									
		Colour: light -grey to cream .	81251	33.30	34.30	1.00	10	na	0.2	58	na
		Porphyry Texture: light coloured, fine grained, highly siliceous groundmass.	81252	34.30	35.28	0.98	15	na	0.2	113	na
		Plagioclase Phenocrysts: Tabular up to 3mm									
		Fracturing: Moderate (11-20)/m.									
		Sub-Intervals									
		(33.30)-(34.45): Relatively solid, silicified feldspar porphyry with numerous quartz-carbonate veinlets.									
		(34.45)-(35.28): Brecciated dark grey siltstones, sandstone invaded by cream coloured feldspar porphyry. Numerous irregular fractures with large oxidized areas. Many irregular carbonate, minor quartz veins and veinlets at variable orientations.									
35.28	36.72	**FRACTURE ZONE**									
		Composition	81253	35.28	36.72	1.44	20	na	0.2	425	na
		Fractured: Strongly oxidized, broken and carbonated. Numerous veinlets, well carbonated for lower 45 cm. Above, largely fault gouge.									
36.72	51.25	**ALTERED SEDIMENTS**									
		Colour: light green-grey to dark -grey.	81254	41.13	42.63	1.50	15	na	0.2	76	na
		Fine grained Texture: Well bedded units 40-50 deg. cax. Coarser units massive.	81255	42.63	44.00	1.37	15	na	0.2	150	na
		Fracturing: Moderate (11-20)/m.	81287	44.00	45.10	1.10	25	na	0.1	109	na
		Composition	81256	48.95	50.15	1.20	10	na	0.1	34	na
		Siltstones: Sandstones and minor grits.	81257	50.15	51.25	1.10	10	na	0.2	67	na
		Alteration									
		Silicification: moderate to strong, pervasive.									
		Hematization: variable strength, patchy									
		Chloritic: As above, fracture controlled.									
		Veins and Sub-Intervals									
		Carbonate Veining. as above									

From(m) | To(m) | Description

Chloritic Veining. Fracture controlled at various angles

(36.72)-(42.63): Grey to pink grey siltstones, moderately to strong silicified, weakly hematized, becoming stronger with depth. Numerous fine carbonate veinlets. Weak to moderately fractured, some fractures are dark and chloritic (increase in number with depth.

(42.63)-(45.10): Medium green to grey, silicified and chloritic. Weak to local moderately fractured with dark chloritic partings. Carbonate veinlets sparse. Weak hematization. Local weak epidote alteration. Patchy fine to medium grained chalcopyrite in epidote areas. Minor amounts with chloritic fractures.

(45.10)-(48.95): Pink grey, silicified and hematized siltstones. Local bedded 50 deg. cax. Weakly fractured with carbonate veinlets local dark chlorite.

(48.95)-(51.25): Grey, locally pink, stronger silicification and chloritic fracturing (later). Patchy hematization.

51.25 54.87 FELDSPAR PORPHYRY DYKE

Colour: white to grey .

Fine grained Texture: Siliceous groundmass with partially assimilated subrounded xenoliths to 2cm.

Feldspar Phenocrysts: To 4 mm, crowded. Lesser hornblende phenocrysts, tabular to 10mm.

Fracturing: Weak (1-10)/m.

Structure

Fractures: Chloritic, few, irregular. Variable angles.

Sub-Intervals

(51.25)-(52.10): Finer porphyritic, upper contact is not sharp but gradational.

(52.10)-(54.87): As per general description, crowded porphyritic with xenoliths. Lower contact broken, suggestion of 30 deg. cax.

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
81258	51.25	54.42	3.17	10	na	20.1	32	na
81259	54.65	56.02	1.37	10	na	2.2	135	na

54.87 72.75 ALTERED SEDIMENTS

Fracturing: Weak (1-10)/m.

Composition

Sediments: As at 36.72 - 52.25. Silicified, hematized and local chloritized siltstones. Bedding obscured.

Alteration

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
81260	58.91	60.40	1.49	10	na	0.9	85	na
81261	65.80	66.80	1.00	35	na	0.1	88	na
81262	70.90	72.00	1.10	30	na	0.2	245	na
81263	72.00	72.80	0.80	35	na	0.1	109	na

From(m)	To(m)	Description

Silicified: Moderate to Strong. Pervasive
Hematization: Variable strength, patchy.
Chloritic: As above

Sub-Intervals

(54.87)-(56.40): Medium green, chloritic, badly broken sections.
(56.40)-(58.91): Light pink, hematized and silicified siltstones. Local weakly brecciated with softer chloritic matrix. Fine carbonate veinlets 30-40 deg. cax.
(58.91)-(61.30): Stronger brecciation, locally with significant quartz, carbonate (main). Numerous quartz-carbonate veinlets of variable angles. Silicified, originally a grit?
(61.30)-(65.95): Pink green to grey, silicified and hematized shattered. Irregular weak to moderate fracturing and veining throughout- generally fine. Fractures commonly dark chloritic.
(65.95)-(66.77): Stronger fracturing, much dark chlorite. Local specks of fine pyrite, chalcopyrite along chloritic fractures.
(66.77)-(72.75): Silicified, weakly hematitic. Strongly broken sections. Rare quartz-carbonate veinlets. Local pyrite along chloritic fractures.

72.75 107.97 MIXED ZONE. ALTERED PORPHYRITIC DIORITE AND SILICIFIED SEDIMENTS

Colour: mottled green to grey .
Fracturing: Weak (1-10)/m.

Composition

Sediments: Mixed, silicified, with broken and silicified diorite, minor cream coloured feldspar porphyry. Transitional contacts.

Alteration

Silicification: Strong. pervasive throughout.

Sub-Intervals

(72.75)-(74.90): Cream coloured, crowded feldspar porphyry, strong/fine chloritic fracturing, variable angles to deg. cax.
(74.90)-(78.82): Light pink green, silicified, weakly developed porphyritic texture (alteration?) Irregular chloritic areas.
(78.82)-(81.46): Better developed medium grained equigranular 'dioritic' textures mixed with silicification as above. Better developed dark chloritic zones along fractures.
(81.46)-(82.22): Weak porphyritic texture, silicified and broken with greater

Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
81264	72.80	73.80	1.00	40	na	0.2	134	na
81265	73.80	75.00	1.20	35	na	0.1	87	na
81266	75.00	75.85	0.85	65	na	0.1	94	na
81267	78.82	80.30	1.48	50	na	0.1	46	na
81268	80.30	81.25	0.95	60	na	0.1	83	na
81269	81.25	82.25	1.00	55	na	0.2	192	na
81270	82.25	83.50	1.25	60	na	0.1	48	na
81271	83.50	85.05	1.55	55	na	0.1	78	na
81272	85.05	86.17	1.12	35	na	0.1	270	na
81273	86.17	87.60	1.43	20	na	0.1	190	na
81274	102.50	104.00	1.50	25	na	0.2	912	na
81275	104.00	105.50	1.50	40	na	0.1	225	na
81276	105.50	106.75	1.25	60	na	0.7	549	na
81277	106.75	107.97	1.22	110	na	0.4	158	na

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		than 40% dark chloritic matrix. Within chloritic zones local fine chalcopyrite, pyrite along fracture planes.									
		(82.22)-(85.05): Strong silicification overprinting brecciated sediments and feldspar porphyry? Poorly developed porphyritic texture throughout. Patchy hematization. Chloritic fractures (late) with fine pyrite, minor chalcopyrite. Numerous carbonate veinlets at var. angles.									
		(85.05)-(102.50): Mixed greens and pinkish greens, strong silicification obscures original textures. Weak to moderately hematization throughout. Weak to moderately chloritic fractured. Local pyrite, minor cpy. Remnant textures suggest feldspar porphyry and siltstones grits mixt. @93 metres sediments dominant, less dark chloritic fractures, coarser grained.									
		(102.50)-(107.97): Stronger chloritic fracturing, increasing with depth. Few fine carbonate fractures. Moderately to strong silicification, weak local moderately hematization. Some chloritic zones have 45 deg. cax. Local fine to medium grained pyrite, sparse chalcopyrite.									
107.97	153.00	DIORITIC INTRUSIVE									
		Colour: mottled white to green .	81278	107.97	109.50	1.53	50	na	0.1	25	na
		Medium grained Texture: equigranular, white tabular feldspar.	81279	109.50	111.00	1.50	45	na	0.1	38	na
		Fracturing: Weak (1-10)/m.	81280	111.00	112.50	1.50	55	na	0.1	89	na
		Composition	81281	122.53	124.05	1.52	10	na	0.1	36	na
		Mafics: 5 to 10%. chloritized	81282	124.05	125.57	1.52	25	na	0.1	236	na
		Hematite: local, minor	81283	126.67	128.13	1.46	20	na	0.8	377	na
		Xenoliths: up to 5cm	81284	132.55	133.55	1.00	25	na	0.2	143	na
		Sub-Intervals	81285	133.55	134.72	1.17	10	na	0.1	83	na
		(107.97)-(113.50): Hard mottled white and green. Medium to coarse grained equigranular with white tab. feldspar. 5-10% chloritic mafics. Numerous carbonate veinlets at var. angles. Weak to moderately s' fracturing.	81286	145.91	146.91	1.00	25	na	0.1	37	na
		(113.50)-(121.47): Less fractured, good dioritic text. Number of partially assimilated finer grained xenoliths to 10+ cm.									
		(121.47)-(126.67): Coarse equigranular diorite, +10% mafics. Few dark chloritic fractures at variable angles to deg. cax.									
		(126.67)-(128.13): Light greenish grey, weakly prophyritic, fine to medium									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		grained with local blebs of diss. pyrite									
		(128.13)-(132.55): Coarse diorite, broken sections									
		(132.55)-(133.40): Darker, finer grained, quite chloritic									
		(133.40)-(146.30): Coarse equigranular diorite 10-20% chloritic mafics. Few xenoliths. Chlorite and/or carbonate veinlets, local. sparse dissem. medium grained pyrite becoming more hematitic with depth.									
		(146.30)-(146.85): Brecciated section with hematitic matrix. Patchy silicification.									
		(146.85)-(153.00): Coarse equigranular diorite. Strongly chloritic section at 151.4-151.8, with carbonate vein 60 deg. cax. Fine hematitic fractures.									
153.00		END OF HOLE.									

CORONA CORPORATION

ASSAY LOG

05-23-1990 :: 12:18

MJ-90-10

Sample No.	From (m)	To (m)	Width (m)	---Comment---	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
81251	33.30	34.30	1.00		10	na	0.2	58	na
81252	34.30	35.28	0.98		15	na	0.2	113	na
81253	35.28	36.72	1.44		20	na	0.2	425	na
81254	41.13	42.63	1.50		15	na	0.2	76	na
81255	42.63	44.00	1.37		15	na	0.2	150	na
81287	44.00	45.10	1.10		25	na	0.1	109	na
81256	48.95	50.15	1.20		10	na	0.1	34	na
81257	50.15	51.25	1.10		10	na	0.2	67	na
81258	51.25	54.42	3.17		10	na	20.1	32	na
81259	54.65	56.02	1.37		10	na	2.2	135	na
81260	58.91	60.40	1.49		10	na	0.9	85	na
81261	65.80	66.80	1.00		35	na	0.1	88	na
81262	70.90	72.00	1.10		30	na	0.2	245	na
81263	72.00	72.80	0.80		35	na	0.1	109	na
81264	72.80	73.80	1.00		40	na	0.2	134	na
81265	73.80	75.00	1.20		35	na	0.1	87	na
81266	75.00	75.85	0.85		65	na	0.1	94	na
81267	78.82	80.30	1.48		50	na	0.1	46	na
81268	80.30	81.25	0.95		60	na	0.1	83	na
81269	81.25	82.25	1.00		55	na	0.2	192	na
81270	82.25	83.50	1.25		60	na	0.1	48	na
81271	83.50	85.05	1.55		55	na	0.1	78	na
81272	85.05	86.17	1.12		35	na	0.1	270	na
81273	86.17	87.60	1.43		20	na	0.1	190	na
81274	102.50	104.00	1.50		25	na	0.2	912	na
81275	104.00	105.50	1.50		40	na	0.1	225	na
81276	105.50	106.75	1.25		60	na	0.7	549	na
81277	106.75	107.97	1.22		110	na	0.4	158	na
81278	107.97	109.50	1.53		50	na	0.1	25	na
81279	109.50	111.00	1.50		45	na	0.1	38	na
81280	111.00	112.50	1.50		55	na	0.1	89	na
81281	122.53	124.05	1.52		10	na	0.1	36	na
81282	124.05	125.57	1.52		25	na	0.1	236	na
81283	126.67	128.13	1.46		20	na	0.8	377	na
81284	132.55	133.55	1.00		25	na	0.2	143	na
81285	133.55	134.72	1.17		10	na	0.1	83	na
81286	145.91	146.91	1.00		25	na	0.1	37	na

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CORONA CORPORATION

MJ90-11

05-23-1990 :: 12:20

DIAMOND DRILL LOG

PROPERTY	: MARZOFF option - Jewel	PROJECT #	: 1035		
NTS MAP #	: 82L/05	TOWNSHIP	: Kamloops Mining Division	CLAIM #	: Ruby 2
LINE/STATION:	1+75N 1+56.5E /	EASTINGS/NORTHINGS:		ELEVATION	: Surface
LENGTH	: 105.16 m	INCLINATION	: -85.0 degrees	AZIMUTH	: 221.0 degrees
OVERBURDEN	: 32.00 m	CASING	: 33.35		
LOGGED BY	: R.C. Wells	DRILLED BY	: Connors Drilling	ASSAYING BY	: Eco-Tech
DATE LOGGED	: 1990/04/23 to 1990/04/23	DATE DRILLED	: 1990/04/21 to 1990/04/22	CORE LOCATION:	Property

ACID TESTS

Depth	Dip	Azimuth
67.00	-85.0	0.0

From(m)	To(m)	Field Name (Legend)
0.00	32.00	OVERBURDEN HQ casing to 33.52. Sandy overburden with numerous boulders.
32.00	35.20	BRECCIA Coarse, poorly sorted, heterolithic breccia. No core 32.0 to 33.52.
35.20	39.83	BLEACHED FELDSPAR PORPHYRY Hard, light pink, strongly broken F.P. Variable carbonate, clay, chlorite veining. Local fracture controlled Cpy.
39.83	55.20	SILICIFIED SEDIMENTS hard variable greens, greys, pinks. Fine grained, mod to strong pervasive silicification. Patchy hematization and chloritization.
55.20	57.52	BROKEN DIORITE DYKE Hard, medium greens and greys, bleached and brecciated, feldspar porphyry porphyritiic diorite.
57.52	84.20	SILICIFIED SEDIMENTS As at 39.83, hard silicified. Patchy hematitic alteration, variable chlorite. Fine carbonate veinlets. Local minor epidote.
84.20	87.30	SILICIFIED AND PROPHYRITIZED SEDIMENTS Hard, light pinkish greys, poorly formed albitic phenocrysts, silicified matrix. Remnant breccia textures.
87.30	89.55	FELDSPAR PORPHYRY DYKE Hard, pinkish grey, crowded feldspar porphyry with fine tabular hornblende phenocrysts (smaller) few xenoliths
89.55	97.30	SILICIFIED AND PORPHYRITIZED SEDIMENTS As at 84.2, less hematitic. Numerous fine carbonate veinlets. Few remnant textures. Local pyrite and chalcopyrite.
97.30	100.71	FELDSPAR PORPHYRY DYKE Hard, cream to grey, medium grained equigranular to weakly feldspar porphyritic.
100.71	103.68	SILICIFIED SEDIMENTS Hard, pinkish greys, silicified and hematized, grits and fine breccias. Colour banding 60 DEG. CAX
103.68	105.16	FELDSPAR PORPHYRY DYKE As at 97.30. Fine quartz-carbonate and epidote veinlets. Dark chloritic fracture zones.

105.16 END OF HOLE.

CORONA CORPORATION

05-23-1990 :: 12:21

DIAMOND DRILL LOG

MJ90-11

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
0.00	32.00	OVERBURDEN									
32.00	35.20	BRECCIA									
		Veins	81288	33.52	35.20	1.68	10	na	0.1	215	na
		Carbonate Veining. Local.									
35.20	39.83	BLEACHED FELDSPAR PORPHYRY									
		Colour: light pink.	81289	35.20	37.80	2.60	5	na	0.1	289	na
		Porphyry Texture: Medium grained groundmass, hematitic.	81291	37.80	39.00	1.20	110	na	1.2	5506	0.71
		Plagioclase Phenocrysts: white, anhedral to subhedral to 3mm.	81292	39.00	39.83	0.83	15	na	1.2	1282	na
		Fracturing: Moderate (11-20)/m.									
		Mineralisation									
		Chalcopyrite: 3 to 5%. Local, fine grained along fracture planes.									
		Veins									
		Chlorite Veining. Fracture controlled.									
		Chloritic-carbonate Veining. Core axis angle 30 degrees. Distinct vein set.									
39.83	55.20	SILICIFIED SEDIMENTS									
		Colour: green grey to pink .	81293	39.83	41.15	1.32	40	na	0.7	395	na
		Fracturing: Weak (1-10)/m.	81294	41.15	42.65	1.50	15	na	0.3	178	na
		Alteration	81295	42.65	44.20	1.55	10	na	0.8	54	na
		Silicification: Moderate to Strong. Pervasive	81290	44.20	45.20	1.00	10	na	0.2	79	na
		Hematization: patchy weak to moderate.	81297	47.60	48.80	1.20	5	na	0.2	149	na
		Chloritic: local	81298	53.70	55.20	1.50	10	na	0.3	64	na
		Mineralisation									
		Sulfides: sparse along fracture lines									
		Sub-Intervals									
		(39.83)-(42.65): H`grey, silicified moderately broken with irregular carbonate and clayey veinlets. Local quartz veins									
		(42.65)-(47.08): As above but weak to moderately fractured quartz-carbonate veining 25 to 55 deg. car. Weakly hematitic, sparse sulfides.									
		(47.08)-(49.29): Mixed green and pink, silicified with weak to mod. Hematite alteration. Local moderately chloritic with 1 to 5% patches of fine pyrite									
		(49.29)-(55.20): Grey to weak pinkish grey, Strongly silicified and badly broken. Fine quartz and or carbonate veinlets, local dark									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		chlorite. Weakly hematized. Sparse sulfides.									
55.20	57.52	BROKEN DIORITE DYKE									
		Colour: medium grey to green .	81299	55.20	56.39	1.19	10	na	0.4	85	na
		Porphyry Texture: medium grained, bleached and brecciated. Broken. Original textures locally apparent.	81300	56.39	57.52	1.13	10	na	0.2	32	na
		Plagioclase Phenocrysts: to 3 mm									
		Fracturing: Moderate (11-20)/m.									
57.52	84.20	SILICIFIED SEDIMENTS									
		Colour: grey .	81301	57.52	59.04	1.52	10	na	0.3	26	na
		Fine grained Texture: predominantly sediments	81302	67.38	68.58	1.20	15	na	0.2	164	na
		Fracturing: Moderate (11-20)/m.	81303	68.58	70.08	1.50	5	na	0.1	183	na
		Alteration	81304	70.08	71.00	0.92	5	na	0.2	80	na
		Silicification: throughout	81305	71.00	72.00	1.00	10	na	1.7	1158	na
		Hematization: patchy, variable strength	81306	77.60	78.86	1.26	5	na	0.2	207	na
		Chloritic: patchy associated with stronger fracturing	81307	78.86	80.00	1.14	5	na	0.3	638	na
		Sub-Intervals	81308	80.00	81.30	1.30	5	na	0.1	214	na
		(57.52)-(60.40): Grey, strongly silicified with chloritic fractures.	81309	81.30	82.37	1.07	10	na	0.1	181	na
		(60.40)-(67.58): Silicification siltstones, patchy skarn hematitic alteration,	81310	82.37	83.82	1.45	5	na	0.1	124	na
		broken sections. Fine carbonate veining, local epidote.	81311	83.82	85.20	1.38	5	na	0.1	110	na
		(67.58)-(71.60): Weakly hematitic, local chloritic sections with up to 20% pyrite, minor chalcopyrite. 1 cm wide 70 DEG. CAX band of massive pyrite at 67.59. 20% pyrite @ 71.0 to 71.6									
		(71.60)-(77.60): Weakly hematitic, medium fractured, silicified siltstones. Zones of carbonate cemented breccia. Local chloritic fracture planes.									
		(77.60)-(84.20): Silicified, locally hematized sediments. Weak to moderately chloritic fracturing with up to 10% fine pyrite aggregates. Lenses along fractures. Local weak epidote.									
84.20	87.30	SILICIFIED AND PROPHYRITIZED SEDIMENTS									
		Colour: light pink to grey .	81312	85.20	86.20	1.00	5	na	0.1	67	na
		Porphyry Texture: Silicified matrix, renmant breccia textures, not intrusive	81313	86.20	87.30	1.10	5	na	0.2	187	na
		Plagioclase Phenocrysts: anhedral									
		Fracturing: Weak (1-10)/m.									
		Structure									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Contact: gradational with dyke below									
		Alteration									
		Silicification: Strong. pervasive in matrix									
		Hematitic: Weak.									
		Veins									
		Fault Veining. chlorite and carbonate veinlets along fractures. Sparse sulfides.									
87.30	89.55	FELDSPAR PORPHYRY DYKE									
		Colour: pink to grey .									
		Porphyry Texture: with partially assimilated xenoliths.									
		Plagioclase Phenocrysts: anhedral to sub-hedral 1-3mm, fine tabular hornblende, phenocrysts to 1.5mm									
		Fracturing: Weak (1-10)/m.									
		Composition									
		Chloritic: Weak to moderate (fractures).									
		Epidote: Local, minor carbonate									
89.55	97.30	SILICIFIED AND PORPHYRITIZED SEDIMENTS									
		Fracturing: Weak (1-10)/m.	81314	92.15	93.47	1.32	5	na	0.2	256	na
		Structure	81315	93.47	94.85	1.38	5	na	0.3	678	na
		Fractured: chloritic	81316	94.85	96.01	1.16	5	na	0.5	497	na
		Veins and Sub-Intervals	81317	96.01	97.50	1.49	5	na	0.2	294	na
		Carbonate Veining. Numerous, fine									
		(89.55)-(93.50): As at 84.2, less hematitic. Weak to moderately chloritically fractured. Numerous fine carbonate veinlets. Few remnant textures. Numerous dark chloritic fractures.									
		(93.50)-(94.50): Very strongly silicified. Up to 2% pyrite, chalcopyrite along fractures.									
		(94.50)-(97.30): Weakly porphyritized, numerous quartz carbonate veins. Some dark chloritic.									
97.30	100.71	FELDSPAR PORPHYRY DYKE									
		Plagioclase Phenocrysts: subhedral 1-4 mm	81318	99.06	100.56	1.50	5	na	0.1	41	na
		Composition	81319	100.56	102.11	1.55	5	na	0.1	91	na
		Chlorite: 1 to 5%. Alteration of mafics. Chloritic or epidotitic fractures.									
		Mineralisation									

From(m)	To(m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
		Pyrite: minor diss. Veins Quartz-carbonate Veining. Numerous, along with epidote									
100.71	103.68	SILICIFIED SEDIMENTS Colour: pink to grey . Grits Texture: And fine breccias. Fracturing: Weak (1-10)/m. Structure Fractures: dark chloritic Veins Quartz-carbonate Veining. Fine.									
103.68	105.16	FELDSPAR PORPHYRY DYKE Plagioclase Phenocrysts: 1-3mm, anhedral, subhedral Composition Groundmass: siliceous, as at 97.3. Structure Chloritic: chloritic fracture zones common. Upper dyke contact 60-70 DEG. CAX Veins Quartz-carbonate Veining. Fine veinlets Epidote Veining. Fine veinlets									

105.16 END OF HOLE.

CORONA CORPORATION

ASSAY LOG

05-23-1990 :: 12:23

Sample No.	From (m)	To (m)	Width (m)	Comment	Au (ppb)	Au (g/t)	Ag (ppm)	Cu (ppm)	Cu (%)
81288	33.52	35.20	1.68		10	na	0.1	215	na
81289	35.20	37.80	2.60		5	na	0.1	289	na
81291	37.80	39.00	1.20		110	na	1.2	5506	0.71
81292	39.00	39.83	0.83		15	na	1.2	1282	na
81293	39.83	41.15	1.32		40	na	0.7	395	na
81294	41.15	42.65	1.50		15	na	0.3	178	na
81295	42.65	44.20	1.55		10	na	0.8	54	na
81290	44.20	45.20	1.00		10	na	0.2	79	na
81297	47.60	48.80	1.20		5	na	0.2	149	na
81298	53.70	55.20	1.50		10	na	0.3	64	na
81299	55.20	56.39	1.19		10	na	0.4	85	na
81300	56.39	57.52	1.13		10	na	0.2	32	na
81301	57.52	59.04	1.52		10	na	0.3	26	na
81302	67.38	68.58	1.20		15	na	0.2	164	na
81303	68.58	70.08	1.50		5	na	0.1	183	na
81304	70.08	71.00	0.92		5	na	0.2	80	na
81305	71.00	72.00	1.00		10	na	1.7	1158	na
81306	77.60	78.86	1.26		5	na	0.2	207	na
81307	78.86	80.00	1.14		5	na	0.3	638	na
81308	80.00	81.30	1.30		5	na	0.1	214	na
81309	81.30	82.37	1.07		10	na	0.1	181	na
81310	82.37	83.82	1.45		5	na	0.1	124	na
81311	83.82	85.20	1.38		5	na	0.1	110	na
81312	85.20	86.20	1.00		5	na	0.1	67	na
81313	86.20	87.30	1.10		5	na	0.2	187	na
81314	92.15	93.47	1.32		5	na	0.2	256	na
81315	93.47	94.85	1.38		5	na	0.3	678	na
81316	94.85	96.01	1.16		5	na	0.5	497	na
81317	96.01	97.50	1.49		5	na	0.2	294	na
81318	99.06	100.56	1.50		5	na	0.1	41	na
81319	100.56	102.11	1.55		5	na	0.1	91	na

REPORT ON RESULTS
OF
INDUCED POLARIZATION
AND RESISTIVITY SURVEY
ON
MARZOFF (JEWEL) PROPERTY
Vernon Mining Division, B.C.
Lat. 50°28'N, Long. 119°39'W
NTS 82L/5E
For
Corona Corporation

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,203

October, 1989
Vancouver, B.C.

Kevin D. Lund, B.Sc.
MPH CONSULTING LIMITED

TABLE OF CONTENTS

LIST OF FIGURES

PSEUDOSECTIONS

1.0 INTRODUCTION

1.1 General Statement

This report presents and discusses the results of a test Induced Polarization/Resistivity survey conducted by MPH Consulting Limited of Vancouver on behalf of Corona Corporation, on the latter's Marzoff (Jewel) property near Falkland, B.C. The work was conducted during the period September 14 to 20, 1989.

The objectives of the test IP/resistivity survey were twofold. The first was to determine whether there is a characteristic IP/resistivity signature over two zones of copper and precious metal mineralization previously located during a small drill program conducted by Corona Corporation in April 1989 (Wells, 1989). The second objective of the program was to identify and further delineate the stratigraphy hosting the known mineralization.

Three lines (L0+00N, L1+00N, L2+00N) were surveyed using a pole-dipole array measuring dipole separations n=1 to 6 with a 100 m dipole spacing, and moving the array at 50 m intervals along the line. Line 0+00N was also surveyed with a dipole spacing of 50 m and dipole separations of n=1 to 6 in order to further define the eastern zone. An attempt to survey L3+00N was aborted due to strong electrical interference from hydro lines located 500 m to the north. In total, 5.5 km of surveying was completed.

1.2 Property Description

The Marzoff (Jewel) property is located approximately 10 km west of Falkland, B.C. along Highway 97 (Figure 1) at latitude 50°28'N and longitude 119°39'W (NTS 82L/5E).

The grid is located south of Highway 97 and accessed by 4x4 truck on a road leading from Highway 97 and the Pinaus Lake road.

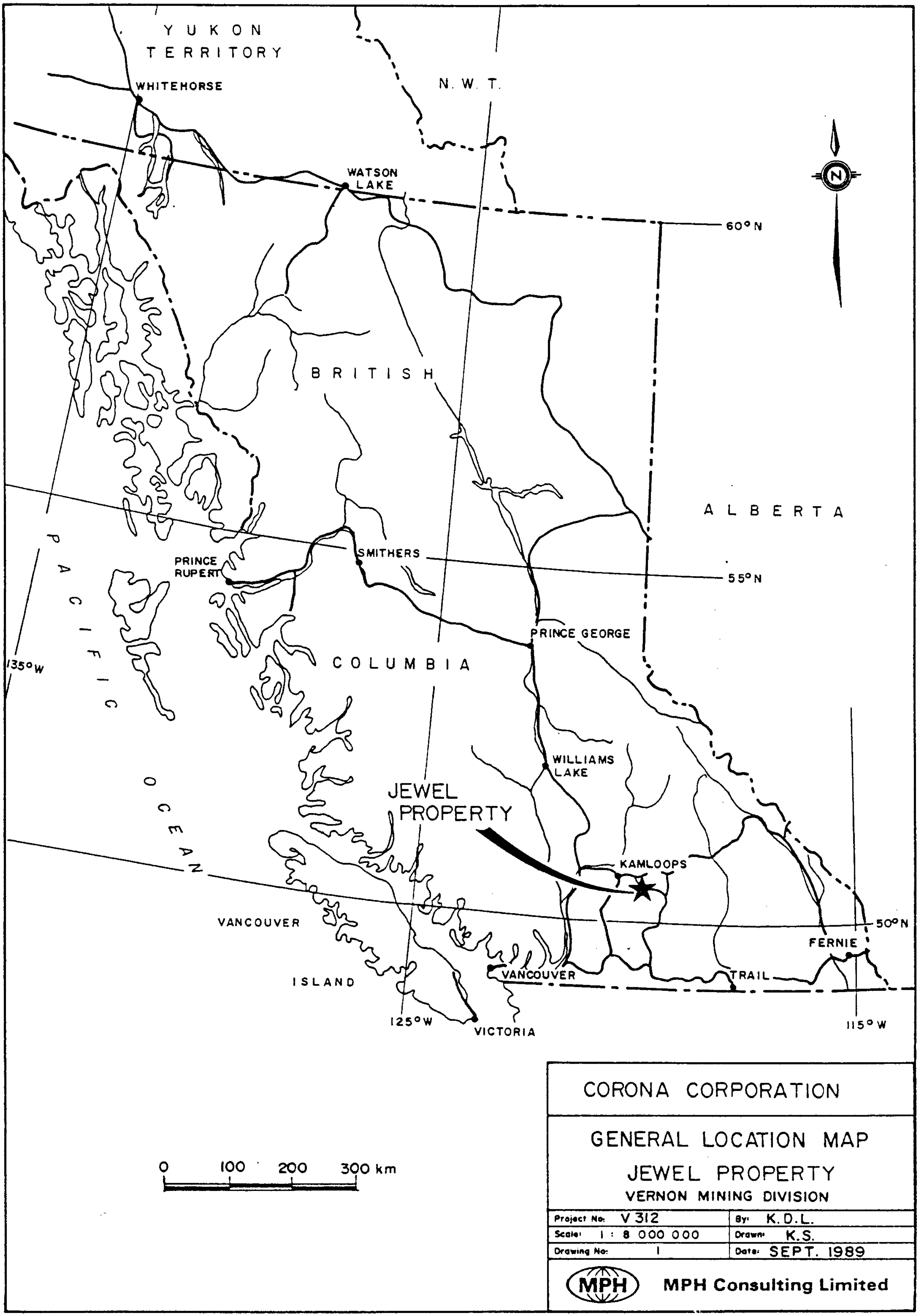
The topography is steep along the slopes with deeply incised dry creeks and ridges of sandy gravels. The vegetation consists of sparse regrowth evergreen pine.

1.3 Property Geology (from Wells, R., 1989)

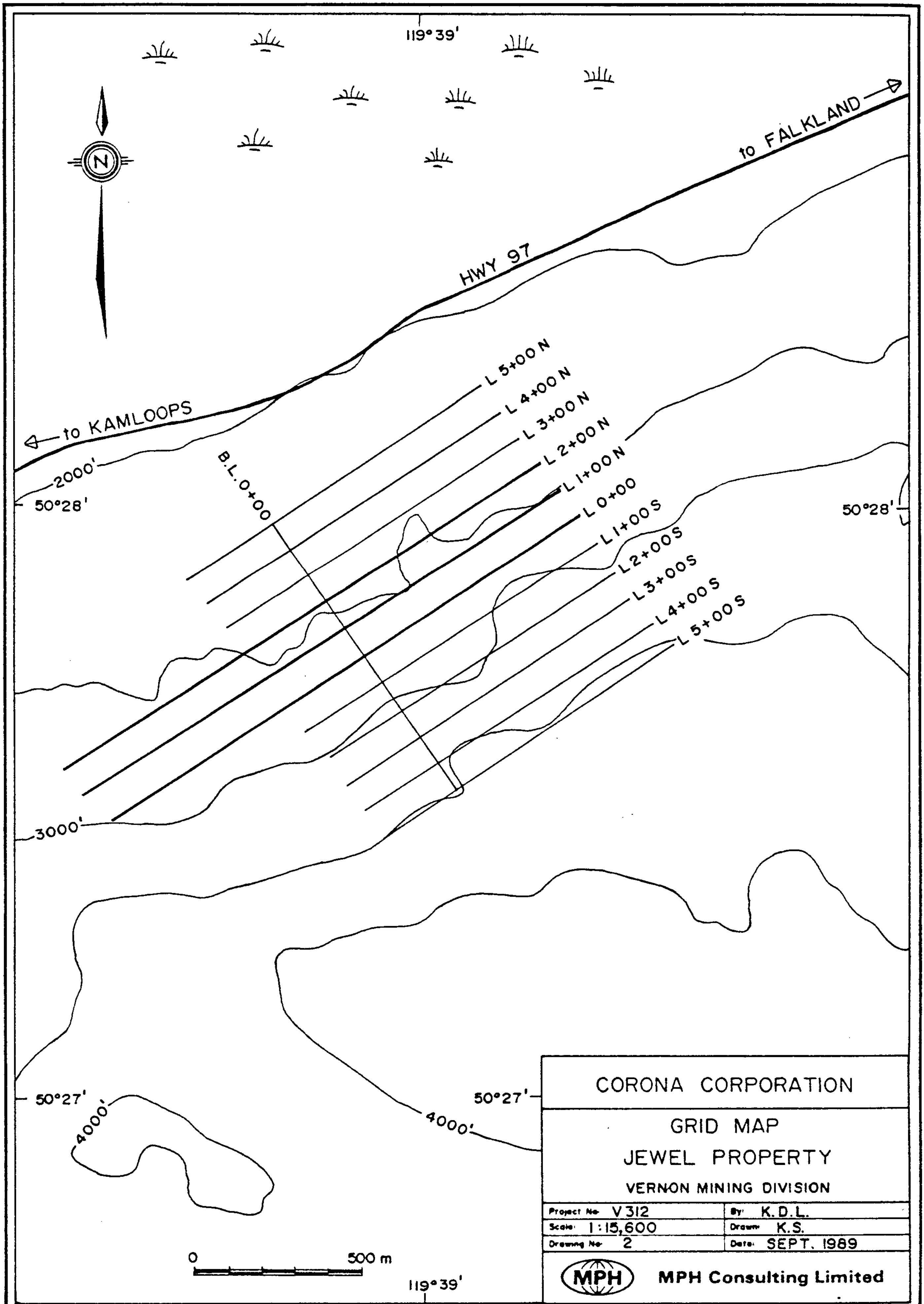
The property geology is described by Ron Wells, Regional Geologist with Corona Corporation and included below to complete the geophysical interpretation.

The Upper Paleozoic (Cache Creek) rocks on the property consist of a folded sequence of interbedded limestones, siltstones, immature grits, conglomerates and breccias. Siltstones, which can be quite calcareous, make up the bulk of the sequence. A distinct band of fossiliferous, calcareous sandstone was noted in the central part of the grid and is a good geological marker. Within the Main Showing area, a narrow unit of highly chloritized feldspar porphyritic andesite may be present. It is not clear whether this is a flow within the sedimentary sequence of an alteration product in the vicinity of intrusives.

The sediments have been folded into a series of fairly open anticlines and synclines



YUKON TERRITORY
N. W. T.
WHITEHORSE
WATSON LAKE
60° N
BRITISH COLUMBIA
ALBERTA
SMITHERS
PRINCE RUPERT
55° N
PRINCE GEORGE
135° W
PACIFIC OCEAN
WILLIAMS LAKE
JEWEL PROPERTY
KAMLOOPS
50° N
VANCOUVER ISLAND
FERNIE
VANCOUVER
TRAIL
125° W
VICTORIA
115° W
0 100 200 300 km
CORONA CORPORATION
GENERAL LOCATION MAP
JEWEL PROPERTY
VERNON MINING DIVISION
Project No: V 312
By: K.D.L.
Scale: 1 : 8 000 000
Drawn: K.S.
Drawing No: 1
Date: SEPT. 1989
MPH
MPH Consulting Limited



119°39'
N
to FALKLAND
HWY 97
to KAMLOOPS
2000'
50°28'
50°28'
B.L. 0+00
L 5+00 N
L 4+00 N
L 3+00 N
L 2+00 N
L 1+00 N
L 0+00
L 1+00 S
L 2+00 S
L 3+00 S
L 4+00 S
L 5+00 S
3000'
50°27'
50°27'
4000'
4000'
0
500 m
119°39'
CORONA CORPORATION
GRID MAP
JEWEL PROPERTY
VERNON MINING DIVISION
Project No. V 312
By: K. D. L.
Scale: 1:15,600
Drawn: K.S.
Drawing No. 2
Date: SEPT. 1989
MPH
MPH Consulting Limited

with northwest trending axial traces. These folds are responsible for structural repetitions of units, east-west across the grid.

A small swarm of pre-Tertiary (Mesozoic), feldspar porphyry dykes intrude and disturb the Paleozoic sequence in the central and western parts of the grid. At least five northwest trending dykes have been recognized between the Main Showing gully and Copper Showing gully 300 m to the east. The dykes generally have vertical to steep easterly dips.

The dykes are quite variable in appearance and size, ranging from 1 m to over 20 m in width. Where thick, the dykes are coarse grained and quartz diorite to diorite in composition. Where narrow (higher level), they are strongly silicified, locally carbonated and feldspathized, commonly with chloritized fractures (brecciated). Some of the dykes pinch-out with elevation up the hillside. Adjacent to the dykes, the sedimentary country rocks are strongly silicifed and fractured for many metres outward (depending on dyke size). Siltstones become distinctly cherty.

The environment appears to be the roof zone to an intrusive system (diorite-quartz diorite). A sill? of dark coloured feldspar porphyry occurs above and may be fed by the eastern part of the dyke swarm.

Copper and precious metal (Au, Ag) mineralization occurs within and at the altered margins to the dyke swarm in the Main Showing and gully to the east (East Showings).

The Paleozoic sediments and later intrusives are overlain by a thick sequence of Tertiary (Kamloops Group) olivine basalt flows. The base of this sequence is above 800 m in elevation with a gentle westerly dip. Much of the southern part of the property is covered by the basaltic sequence which can be greater than 300 m thick.

A vesicular pyroxene basalt dyke a few metres thick occurs in the East Showing gully and may be a feeder to the flows above(?).

Two main mineralized areas have been outlined approximately 300 m apart at the eastern (East Showings) and western (Main Trench area) edges of the exposed part of the dyke skarn.

(a) Main Trench Area

The Main Trench is a basin shaped area 25 m wide by over 75 m long, where bedrock has been exposed by bulldozer and excavator stripping on the steep gully sides. Locally, the capping of stratified sands and gravels are over 10 m thick. Much of this work dates back to the Marzoffs in the 1950's.

Exposures in the Main Trench area are badly weathered and hematitic siltstones are badly broken and cherty (silicified) altered by the intrusion of highly silificied, carbonated and brecciated (chloritic fractures) quartz diorite?

dykes, 1 to 3 m wide and east dipping. The dykes appear to be within a strong northwesterly trending fracture zone along the gully.

Secondary copper mineralization, mainly malachite with minor azurite, is widespread, occurring largely within the altered siltstones but locally within the dyke. Some fine native copper was noted in the dyke along fractures.

Chip sampling throughout the area produced wide zones with low copper values generally in the 0.2% to 0.4% range over 4 to 9 m with 1.5 m highs up to 1% Cu. Much of this mineralization is supergene. Gypsum vein systems were noted locally. Later structures such as the Red Vein (dip 40°NE) and Blue Vein (dip 70°NE) are hematitic and post dyke.

These structures are from 30 cm to 1 m wide at surface and enriched in Cu (1 to 2%), Au (1 to 11 g/t) and Ag (20 to 50 g/t). Higher Au (to 35 g/t) and Ag (to 150 g/t) were obtained by grab sampling than standard 1.5 m chip sampling.

(b) East Showing

Three types of mineralization can be distinguished in this gully area:

1. Pods of fracture controlled azurite, malachite mineralization in silicified sections of a large quartz diorite dyke west of the gully. These are well inside the dyke and may be 1 to 2 m wide with up to 0.5% Cu.

2. Copper mineralization similar to the Main Showing area along the margins of dykes. This is exposed along the gully floor and yielded copper values up to 0.56% and Au up to 1.32 g/t.

3. Quartz veins and veinlet zones within silicified siltstones east of the dyke (hangingwall). These veins strike parallel to the contact and are usually less than 20 cm wide. Chip sampling yielded Au values up to 2.25 g/t (over 1 m) while grabs were up to 8.74 g/t Au, 33.1 g/t Ag and 0.2% Cu.

2.0 EQUIPMENT AND SURVEY SPECIFICATIONS

For the test Induced Polarization and Resistivity survey, a pole-dipole array utilizing a 3.0 kw Phoenix IPT-1 time domain system and EDA BRGM-IP6 receiver; and 'a' spacings of 50 m and 100 m were measured for dipole separations of 'n'=1-6.

The survey measured the standard parameters of primary voltage (VP) and secondary voltage (VS) for which the normal parameters of apparent resistivity in ohm-metres and chargeability in milliseconds are obtained. The chargeability was measured over the interval from 100 milliseconds to 1100 milliseconds.

The induced polarization (IP) technique is discussed in greater detail and the specifications for the IP instrumentation are presented in appendices I and II, respectively.

A pole-dipole array was used with the infinite pole located at approximately grid L0+00N, 1700E. The remote electrode location was used for all the lines during the entire test survey.

The IP survey was conducted on three lines (0+00N to 2+00N), located 100 m apart, for a total coverage of 5.5 km. The lines were picketed by Corona Corporation at intervals of 25 slope-corrected metres.

Line 0+00N was surveyed with dipole 'a' spacings of 50 m and 100 m whilst lines 1+00N and 2+00N were surveyed with an a=100 m only. Although the nominal dipole interval was 100 m the surveying array was moved at 50 m intervals to achieve 200% coverage such as to provide additional detail to locate the deep subtle features which are expected to be of interest.

Surveying of line 3+00N was attempted but, due to strong electrical ground noise encountered, was aborted. It is believed that the power transmission lines to the north and electrical fences common to ranching areas were unfortuntely contributing to excessive electrical ground noise, and it was determined in the field that the electrical measurements along L3+00N were of no interpretational usefulness.

3.0 PRESENTATION OF RESULTS

The results of the test IP survey are presented in standard pseudosection format at a scale of 1:2500. The topography is shown along the pseudosection to aid in discriminating topographic responses from real bedrock features. The topography is displayed in a 'cartoon' format.

Observed chargeability highs and resistivity lows are indicated on each pseudosection, providing a graphic characterization of the anomaly source location, strength and geometry. The most significant of these anomalous features have been given designations as shown on these attached pseudosections.

L0+00N is a compilation of a=50 m and a=100 m measurements.

One *Applicon colour plot* of each of the following pseudosections has been produced at a scale of 1:2500 with topography and an interpretation superimposed:

line 2+00N	a=100 m
line 1+00N	a=100 m
line 0+00	a=50 m
line 0+00	a=100 m
line 0+00	a=50 m and 100 m combined

These colour plots were presented to Corona personnel with the report.

4.0 RESULTS AND DISCUSSION

The Induced Polarization/Resistivity surveys conducted on the Marzoff (Jewel) property were carried out across two known mineralized showings: the Main Trench area and the East Showing.

The intepretation of the data has been carried out on an individual pseudosection basis since there is very little lateral coverage which would allow any confident interpretation of anomaly extents.

The severe topography in the area has a severe effect on the apparent resistivity data but much less so on the polarizability data since the latter is a normalized quantity.

For this and other reasons the interpretation is initially confined to the polarizability (chargeability) data with the apparent resistivity data supplementing and/or supporting the polarizability interpretation.

The chargeability data from the three surveyed lines are in essence fairly similar with two chargeability features outlined on each line.

Anomaly A

Anomaly A is a moderate to strong chargeability anomaly with amplitudes ranging up to 28 msecs in a background of 7-10 msecs. This anomaly is interpreted to range in apparent width from very narrow (less than 1/2 a dipole, i.e. 50 m) to a dipole 100 m in width (survey resolution is ± 1/2 dipole). The anomalous zone is interpreted to be near surface (observed in the n=1 data) on line 0+00 with the amplitude and character of the anomaly decreasing and weakening as the anomaly extends to line 1+00N and 2+00N. This may indicate an apparent plunge of the causal source to the north.

Interpretation of the apparent resistivity pseudosections indicate a small amplitude apparent resistivity low associated with chargeability anomaly A. Labelled anomaly 'a' this feature is observed as a very slight resistivity low semi-coincident with the chargeability feature. As with the chargeability responses, the apparent resistivity response weakens perceptibly and becomes much more diffuse as the zone extends to the north.

Anomaly A corresponds to the East zone where copper, gold and silver values have been outlined in quartz veins and veinlet zones within silicified siltstones.

Chargeability anomaly A is located at or near a pronounced apparent resistivity gradient located between 0+00 and 2+00W. This gradient may be reflecting a contact between a moderate resistivity unit to the east and a low resistivity unit to the west. The low resistivity unit may be reflecting the more high siltstones which are reported to contain a narrow unit of highly chloritized feldspar porphyritic andesite. The eastern more resistive portion of the grid may be reflecting a more siliceous siltstone.

Anomaly B

Chargeability Anomaly B, located 300 to 400 metres west of anomaly A, is a weaker chargeability zone with amplitudes up to 19 msec in a background of 7-10 msecs. The zone appears to extend to near surface only on line 1+00N with the main bulk of the zone on all lines being at depths interpreted to be between 25 and 100 metres below surface. Interpretation of the zone is difficult due to the presence of anomaly A which overshadows anomaly B.

A discrete resistivity low anomaly 'b' appears to be coincident with chargeability anomaly B. This resistivity low is a fairly broad zone and may possibly be indicating a formational unit as opposed to a discrete feature.

Anomaly 'B reflects the known mineralization from the Main Trench Showing which consists of copper mineralization within altered siltstone.

Several other discrete resistivity laws are identified from the pseudosections. They are not adequately mapped geophysically at this time to provide a definitive interpretation but may possibly be a reflection of topography(?).

4.1 Discussion

The purpose of the test IP and resistivity survey was to:

1. determine if a geophysical signature/response occurs over known mineralized areas and,
2. extend known mineralization along strike using the geophysical response determined, if any, over the showing areas.

The IP and resistivity survey has shown itself to be effective in spite of severe terrain, deep targets and low sulphide content that characterizes mineralization on the Marzoff property.

The resistivity results clearly define a resistivity low feature coincident with the Main Trench area and interpreted to reflect a major structure labelled 'Resistivity low b'. Resistivity low b is coincident along strike with Chargeability anomaly B on lines 1+00N and 2+00N. The results suggest a very deep zone at approximately 100 m from surface and appearing to be at increasing depths to grid south.

Chargeability anomaly A is a well defined feature which adequately outlines the East showing and was tested by diamond drilling (drillhole MJ-06-89) (Wells, R., 1989). Copper and gold mineralization were intersected.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The test IP/resistivity survey has been useful to resolve two polarizable features coincident with mineralized areas on the Marzoff property, i.e. Main Trench area and East Showing. The IP/resisitivity results indicate the anomalous responses associated with both showings are at increasing depths below surface to grid south indicating that the mineralized horizon plunges to grid south.

It is recommended that IP/resistivity anomalies A and B be tested further by diamond drilling. If these results are encouraging, additional IP/resisitivity surveys utilizing an a=100 m with 50 m moves and detail with an a=50 m if the a=100 m data appears to show a response within the depth of exploration of the a=50 m.

Respectfully submitted,

October, 1989
Vancouver, B.C.

K. Lund, B.Sc.
MPH CONSULTING LIMITED

CERTIFICATE

I, Kevin D. Lund, do hereby certify:

1) That I am a Consulting Geophysicist with business offices at 2406 - 555 West Hastings St., Vancouver, B.C. V6B 4N5.

2) That I am a graduate in Geological Engineering of Michigan Technological University, Houghton, Michigan, USA (BSc., 1983).

3) That I have practised within the geological profession for the past eight years.

4) That the opinions, conclusions and recommendations contained herein are based on field work carried out on the property from September 14 to 20, 1989.

5) That I own no direct, indirect, or contingent interests in the subject property or shares or securities of Corona Corporation or associated companies.

Kevin D. Lund

Kevin D. Lund, BSc.

Vancouver, B.C.
October, 1989

REFERENCES

Wells, R.C., July 13, 1989. Diamond Drilling Report on the Jewel Property, Kamloops Mining Division, British Columbia, NTS 82-L/5E.

APPENDIX I

Notes on IP Surveying

INDUCED POLARIZATION AND RESISTIVITY SURVEYS

General

Induced Polarization (IP)/resistivity surveys are commonly conducted in the time domain and frequency domain, and less frequently, as spectral or complex resistivity measurements. There are a variety of geometrical arrays that can be employed.

The following discussion sets out in some detail the principles and procedures of the IP method as related to the present surveys.

Time Domain Method

As shown in Figure 1, in the time domain a modified, square-wave current consisting of "on/off/on/off" cycles of equal duration is transmitted into the ground through a pair of electrodes (current dipole). The primary (V_p) and secondary (V_s) voltages generated in the ground are measured at another pair of electrodes (potential dipole). The primary voltage, measured during the "on" current cycles, is a function of the electrical resistivity of the ground. The secondary voltage, measured during "off" current cycles, is the IP effect which reflects the amount of polarizable minerals, such as metallic sulphides, graphite, etc., in the ground.

The apparent resistivity of the ground is not directly measured, but is obtained by a mathematical formula utilizing the primary voltage value, the current output from the transmitter at the same instant and a geometrical constant dependent on the array type being used:

$$\rho a = \frac{Vp}{I} \times aF$$

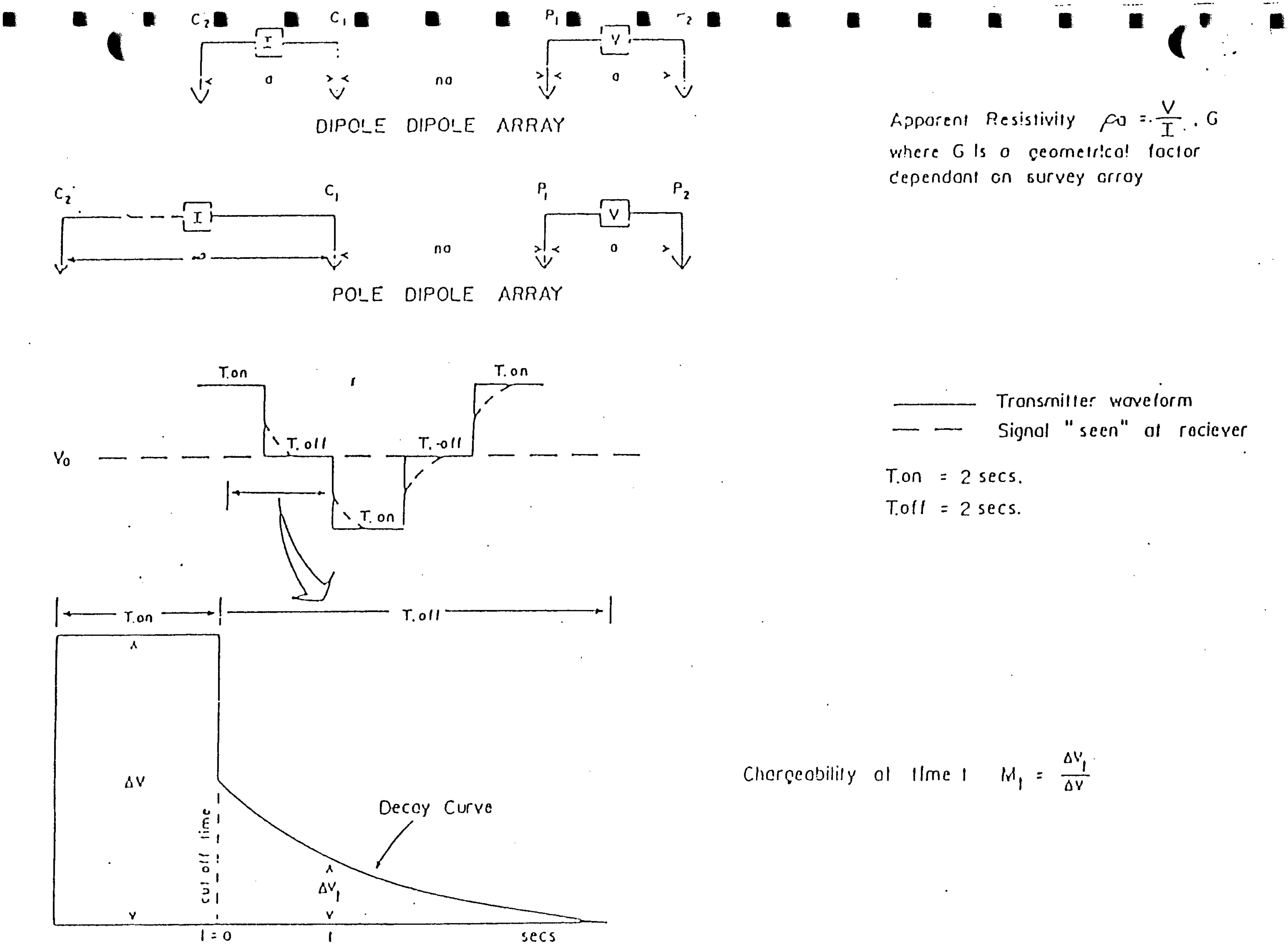
where: ρa = apparent resistivity in ohm-meters

Vp = primary voltage (volts)

I = transmitted current (amps)

a = electrode spacing in meters

F = geometrical factor depending on the electrode array used.



PRINCIPLE OF TIME DOMAIN I.P.

Figure 1

The Huntec Mk IV system measures the secondary voltage or IP effect at 10 time intervals of equal width. The width of the time window (Tp) and the length of the delay (Td) between the start of an "off" cycle and the beginning of the IP measurement are adjustable to suit the conditions of the survey. The IP effect was recorded for each of five individual time windows (M_1, M_3, M_5, M_7 and M_9) and for the total decay voltage (M_T). The secondary voltage divided by the primary voltage yields the parameter chargeability in milliseconds.

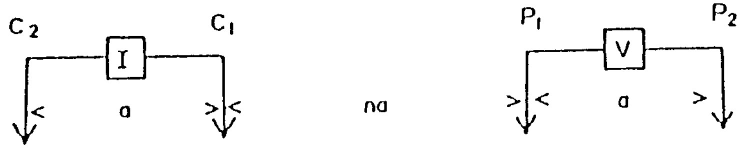
The decay curve constructed from the ten chargeability observations is generally in the form of an exponential decay curve. It frequently can be split into two portions - an early fast decay portion and a later slow decay portion. The fast decay portion is generally due to inductive effects, while the later slow decay predominantly reflects true polarization effects. In theory chargeability is the value of the slow decay extrapolated backwards to the instant of transmitter shut-off.

Frequency Domain Method

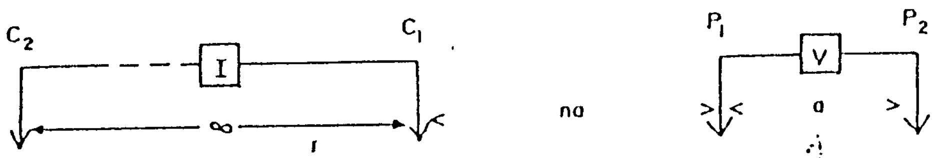
Induced Polarization measurements in the frequency domain involve transmitting a sinusoidal or square wave current at varying frequencies, typically a decade apart, as seen in Figure 2. Generally, only the dipole-dipole or pole-dipole arrays are used in the frequency domain, to avoid EM coupling problems.

As in the time-domain, the apparent resistivity value of the ground is calculated by a mathematical formula utilizing the voltage measured at the potential electrodes, the current output from the transmitter at the same instant, and a geometrical constant dependent on the array type being used and the dipole separation 'n' (Figure 2). The voltage measured at the high frequency is generally used to calculate the apparent resistivity.

For a constant transmitting current, the voltage between the potential electrodes (and hence the apparent resistivity) increases as frequency



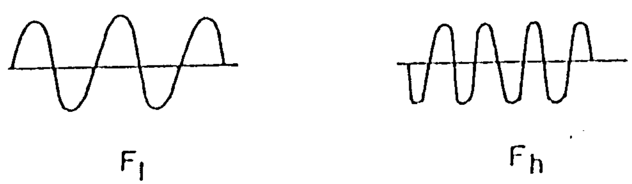
DIPOLE DIPOLE ARRAY



POLE DIPOLE ARRAY

Apparent Resistivity $\rho_a = \frac{V}{I}.G$ where G is a geometric factor dependant on survey array.

TRANSMITTED WAVE FORMS



F_l = low frequency

F_h = high frequency

$F_l \quad \frac{V_{F_l}}{I}.G$

$F_h \quad \frac{V_{F_h}}{I}.G$

$$PFE = 100(\rho F_l - \rho F_h)/\rho F_h$$

$$MF = PFE/\rho F_l$$

PRINCIPLE OF FREQUENCY DOMAIN I.P.

decreases. The frequency domain IP method is based on this phenomenon, called the Frequency Effect, which is defined as follows:

$$\% \text{ FE} = \frac{\rho_l - \rho_h}{h} \times 100$$

where ρ_l is apparent resistivity at low frequency
ρ_h is apparent resistivity at high frequency

A third parameter which can be calculated from this data is the (apparent) Metal Factor (MF), defined as:

$$MF_a = \frac{PFE_a}{\rho_a}$$

where ρ_a is the apparent resistivity of the ground measured at that station.

The idea behind the metal factor is to compensate more or less for the following effect: disseminated mineralization in a high resistivity rock gives rise to a much larger PFE than the same mineralization in a lower resistivity rock. This occur because the current paths through the barren, non-polarizable rock are actually in parallel with the current paths through the conductive particles. In cases such as this, the metal factor will accentuate the response and location of the mineralized zones. However, non-significant MF anomalies can be created by this calculation when the PFE is very low but the apparent resistivity varies, such as over conductive overburden.

Example: Suppose PFE = 0.1% and the apparent resistivities varied from 4,000 ohm meters to 100 ohm meters. The metal factor would increase from 0.25 to 1.0, thus creating an apparently anomalous situation.

In some areas, the metal factor is a very useful quantity. However, it should never be viewed in isolation since it is dependent upon two measured quantities.

Survey Arrays

A number of different arrays are available for carrying out IP measurements. The ones generally used in mineral exploration are the dipole-dipole, pole-dipole and the gradient array, shown graphically in Figure 3, and described further below.

(1) Dipole-Dipole Array

This array is one of the most commonly used arrays in IP and is the only one used with time-domain, frequency-domain and spectral surveys.

The system employs four moving electrodes with a layout as shown in Figure 3. The two current electrodes C_1 and C_2 and the two potential or measuring electrodes P_1 and P_2 have the same separation, called the 'a' spacing. The interval between the current and potential pair is generally some fixed multiple 'n' of this 'a' spacing. Measurements with the dipole-dipole array are plotted at the mid-point of the array.

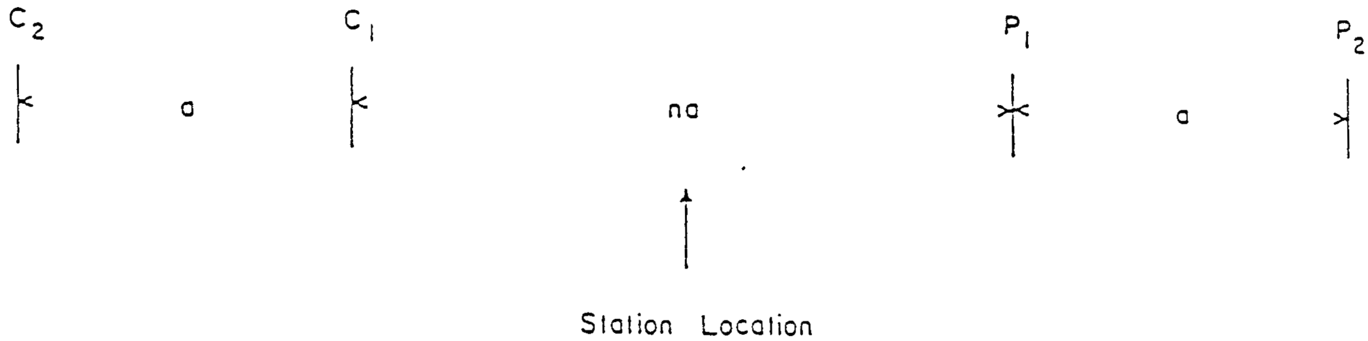
As the 'n' value is increased, (i.e., as the current and potential dipoles are moved farther and farther apart), this has the effect of increasing the depth of exploration. While this is typically quoted as being one half of the total array length, actual depth of exploration is strongly dependent on the distribution of resistivity in the ground and is often much less than half the array length, particularly if conductive overburden is present.

Advantages

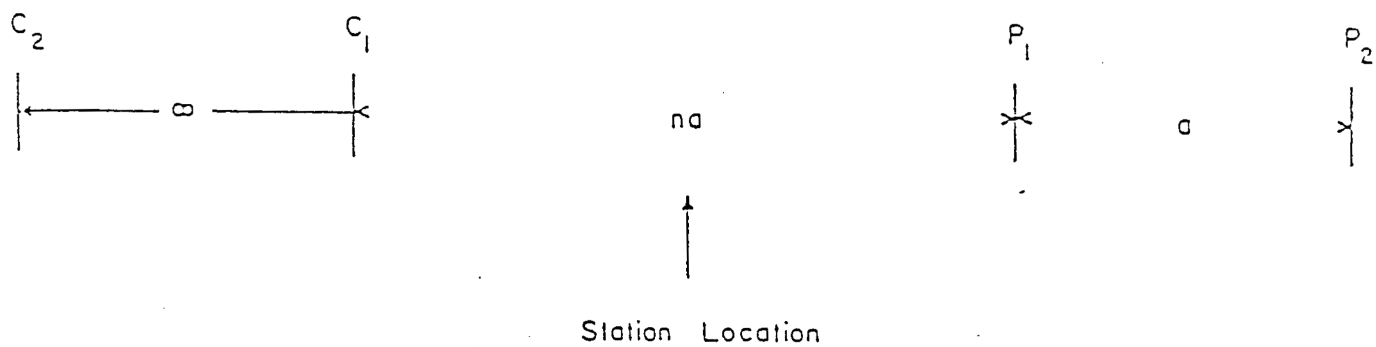
1. The system has low inductive coupling because the current wires and reading wires can be kept separated.

2. Anomalies are symmetrical.

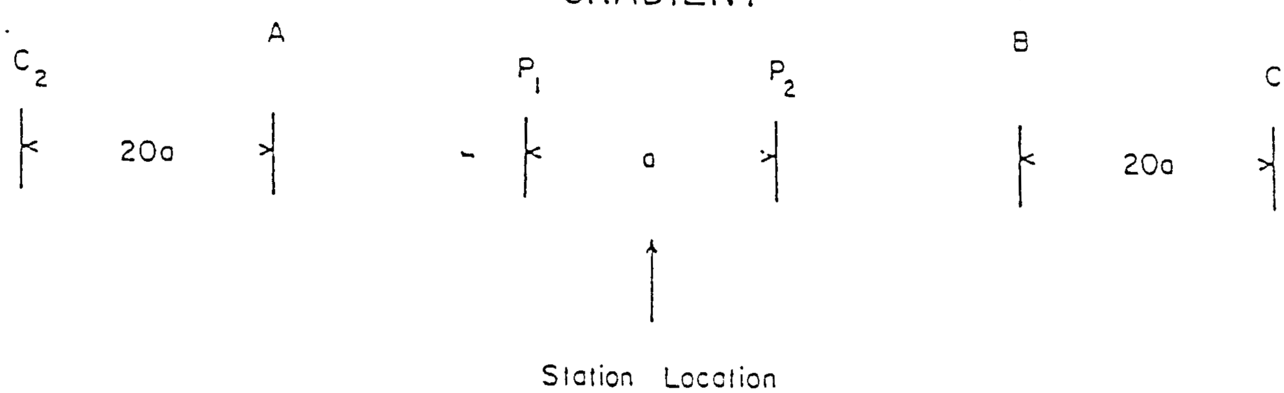
DIPOLE-DIPOLE



POLE-DIPOLE



GRADIENT



A,B = extent of survey

I.P ARRAYS

Figure 3

3. Sensitivity and resolution are good where 'a' and 'n' are chosen appropriately relative to the target dimensions and depth.

Disadvantages

1. Operations can be slow since all four electrodes are moved along the survey line.

2. Electrical contact can be especially difficult in areas with highly resistive surficial materials, such as dry sand, permafrost or exposed bedrock.

3. Primary (V_p) and secondary (V_s) voltages are lower than with other arrays which can cause measurement difficulties and lack of penetration in areas of high surface conductivity.

(2) Pole-Dipole Array

The pole-dipole (or three electrode) array is frequently used, most often in the time-domain.

Electrodes C_1 and P_1-P_2 move along the survey line. While C_2, the remote current electrode, can be anywhere in the area provided it is at a large distance from the station being measured (In highly conductive ground the actual location of C_2 may be critical as current paths may be adversely distorted). The separation between C_1 and P_1P_2 can be increased, usually at integral intervals, to achieve varying depths of exploration. Readings are plotted in several conventions between the potential dipole and the active (moving) current electrode.

Advantages

1. Faster than the double-dipole array since only three electrodes are moved.

2. In areas of bad contact, i.e. dry, frozen or outcrop areas, it is easier to use than dipole-dipole since only one current electrode has to be moved.

3. Better depth of exploration than the double-dipole array.

4. Fairly sensitive and fairly good resolution.

Disadvantages

1. Yields asymmetrical anomalies with the anomaly peak seldom directly over the polarizable source. The anomaly shape is dependent on the direction of C_2.

2. More wire is needed because of the array length; this leads to logistical problems (moose, rabbits, etc.).

3. EM coupling is higher than with the dipole-dipole array.

Gradient Array

In the gradient array, normally only run in the time domain, two current electrodes are placed a large, fixed distance 'D' apart. The potential electrode pair are held at a constant separation 'a' and move along survey lines parallel to the line joining C_1 and C_2. The separation between P_1 and P_2 is not rigidly specified but should not be greater than D/10. Greater resolution is attained with a shorter 'a' spacing, but at the cost of lower primary and secondary voltages.

Generally, survey coverage is restricted to an area comprising the middle 1/3 of C_1C_2. The measurement is plotted at the midpoint of the potential dipole.

<u>Advantages</u>

1. Depth of exploration is good whilst retaining high resolution for small bodies; least susceptible to the masking effect of conductive overburden.

2. Production is fast since only two electrodes are moved; two or more receivers can be used simultaneously.

3. Less hazardous since current electrodes are not handled in moving stations.

4. Least affected by topographic variations.

5. Useful in areas of high resistivity or in frozen terrain, since fixed current electrodes can be located where electrical contact is good, or carefully built to achieve good contact.

6. Can indicate dip of simple targets.

<u>Disadvantages</u>

1. Not practical where long profiles are desired or where survey lines are a long way apart.

2. Low V_p and V_s make the method difficult to impossible in areas of high conductivity.

3. High inductive effect is created by large current dipole.

TABLE 1

Summary of Array Performance

Characteristic	Dipole-dipole	Pole-dipole	Gradient
Magnitude of response	B	A	C
Dip of source	C	C	A
Overburden penetration	B	A	A
Recognition of overburden irregularities	A	B	B
Freedom from interference of overburden irregularities	B	A	C
Horizontal resolution and location	B	C	A
Depth of Detection	B	A	D
Depth: Interpretability	A	B	C
Freedom from inductive coupling, layered earth	A	B	C
Freedom from inductive coupling, finite inhomogeneties	A	B	D

4. Narrow conductive bodies in conducting environment can sometimes produce false resistivity highs.

5. Not readily amenable to detailed interpretation as to depth of source.

The relative performance of the different arrays in terms of various survey and target parameters is summarized in Table 1.

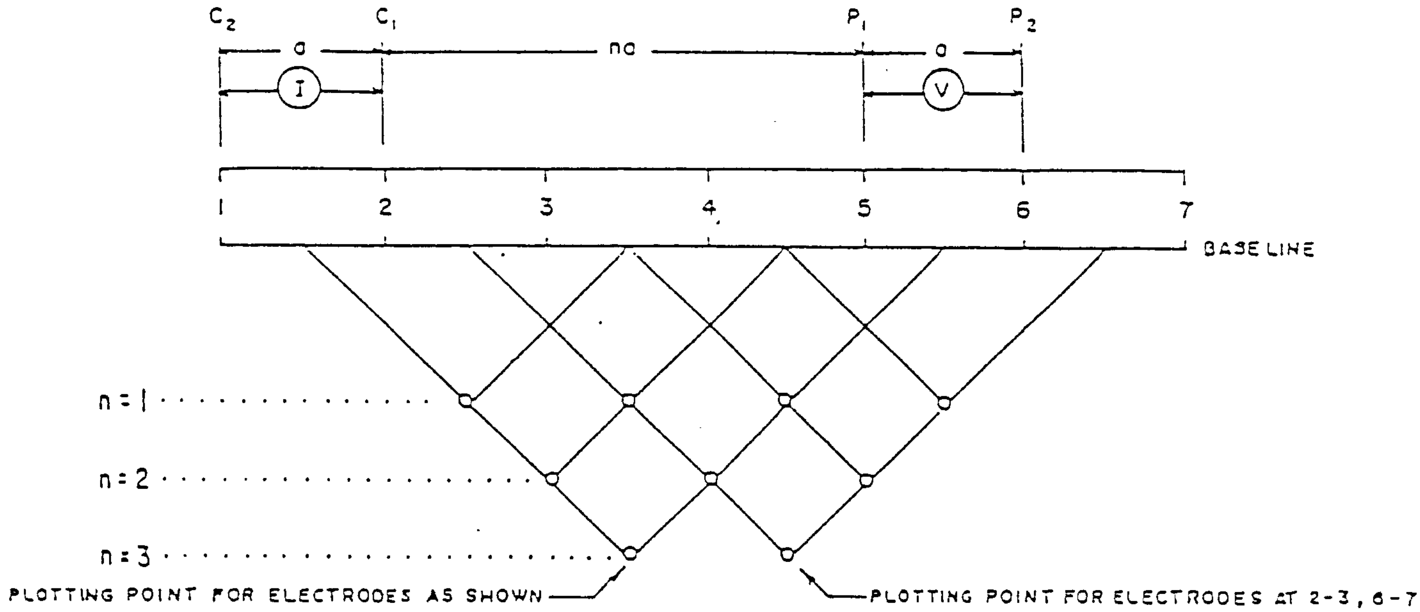
Presentation

Induced Polarization/resistivity data taken with a multi-spaced dipole-dipole array are generally plotted as pseudosections with each measurement plotted at the intersection of a 45° diagonal drawn from the center of the transmitting and receiving dipoles for each value of the separation, as seen in Figure 4. Plotting in this manner builds up a vertical section of data points. The term pseudosection is used because the plotted depth does not represent the actual depth of exploration for that measurement. This actual depth depends on the electrical properties of the ground.

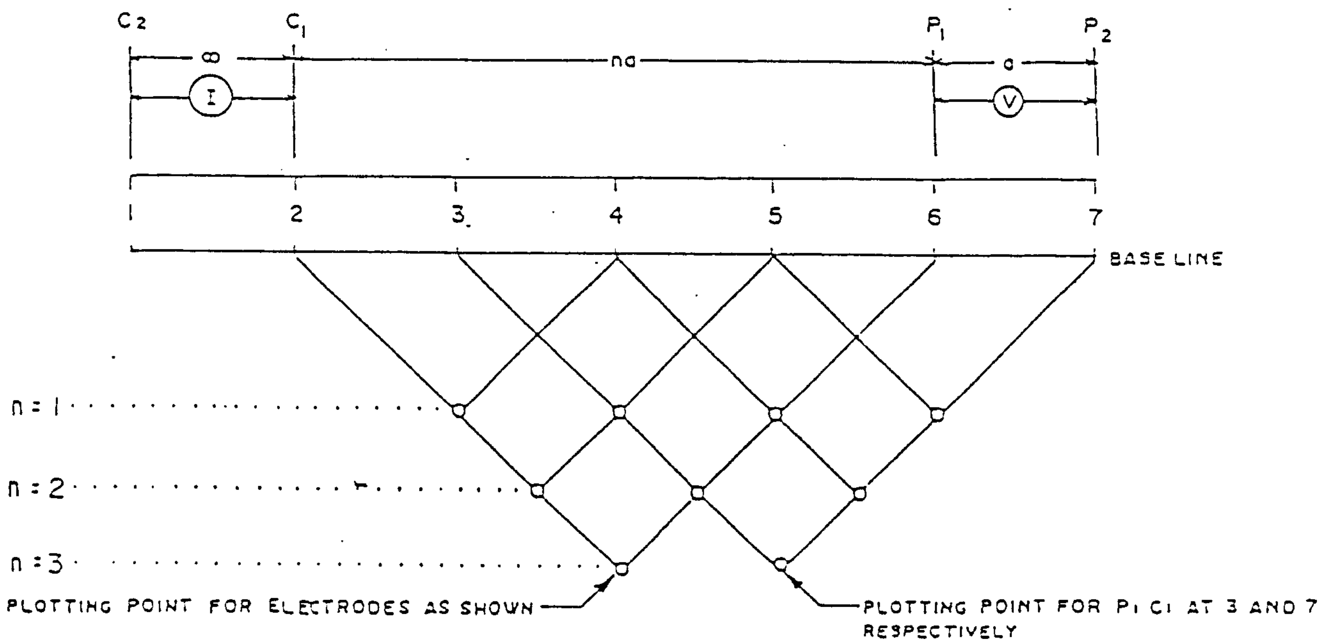
The data presented in the pseudosections is typically contoured at semi-logarithmic intervals ... 1.0, 1.5, 2.0, 3.0, 5.0, 7.5, 10.0 ... rather than at linear intervals because of the large range in the recorded data.

Data taken with a multi-spaced pole-dipole array are also typically plotted in pseudosection form, with the active (moving) current electrode and the midpoint of the potential dipole utilized to form the 45° diagonals.

Note that data taken with several different dipole lengths may be combined and plotted as a composite pseudosection, thereby displaying both shallow and deep anomalies simultaneously. Where overlapp-



DIPOLE DIPOLE ARRAY



POLE DIPOLE ARRAY

Figure 4

PLOTTING POINTS FOR VARIOUS ARRAYS

ing data points are less than fully consistent, contouring (and interpretation) favours the values taken with the shorter dipole.

For the gradient array, resistivity and chargeability values are plotted as profiles at the mid-point of the potential dipole, as shown in Figure 3.

Interpretation

Multi-spaced dipole-dipole (or pole-dipole) data enable delineation of the location, depth and properties of a resistivity or chargeability anomaly. Just as the pseudosection plot is not a true depth section, it is also important to bear in mind that the values recorded and plotted are apparent resistivity and chargeability, which are the actual resistivity and chargeability of the ground only if the earth is homogeneous. In the all-important cases of narrow and/or deep targets, the recorded (apparent) values may bear only a slight indication of the intrinsic values of the target. It is a critical part of the interpretive process to estimate the intrinsic resistivity and chargeability of the causative sources from the apparent values, in addition to determining the geometry and location of the source.

With the gradient array, interpretability as to depth and intrinsic properties is reduced, although repeat surveys with several different dipole lengths can give some qualitative indication of depth.

Additional Remarks

The detectability of a conductive and/or polarizable body with IP is a function of its size and intrinsic electrical properties vis-a-vis the size and type of electrode array. Hence, targets that are very small or deep (relative to the scale of the electrode array) may be undetectable. Consequently, multiple coverage with several different arrays may be required to define shallow, narrow sources and to detect larger targets at depth.

Since IP and resistivity are techniques that reflect the averaged response of a volume of rock, resolution is a function of the array type and size. Typically, with the dipole-dipole array, two conductors or two polarizable sources separated by less than a dipole length cannot be resolved as individual responses.

Geologic sources that yield low resistivities are fairly numerous and include: connected zones of sulphides and graphite; clays and other water-saturated unconsolidated materials; intense hydrothermal alteration; and fault gouge.

Sources of IP anomalies are more restricted. They include: most metallic sulphides, graphite, some oxides and to a lesser extent, clays and zeolites. Under favourable conditions, targets or formations containing a few tenths of a per cent sulphides are detectable.

Finally, polarizable targets that are very highly resistive or very conductive may yield nil or negligible IP responses. In the former case, no current can flow through the rock mass. In the latter case, the conductor acts as a dead short, so that virtually no secondary decay voltage is observed.

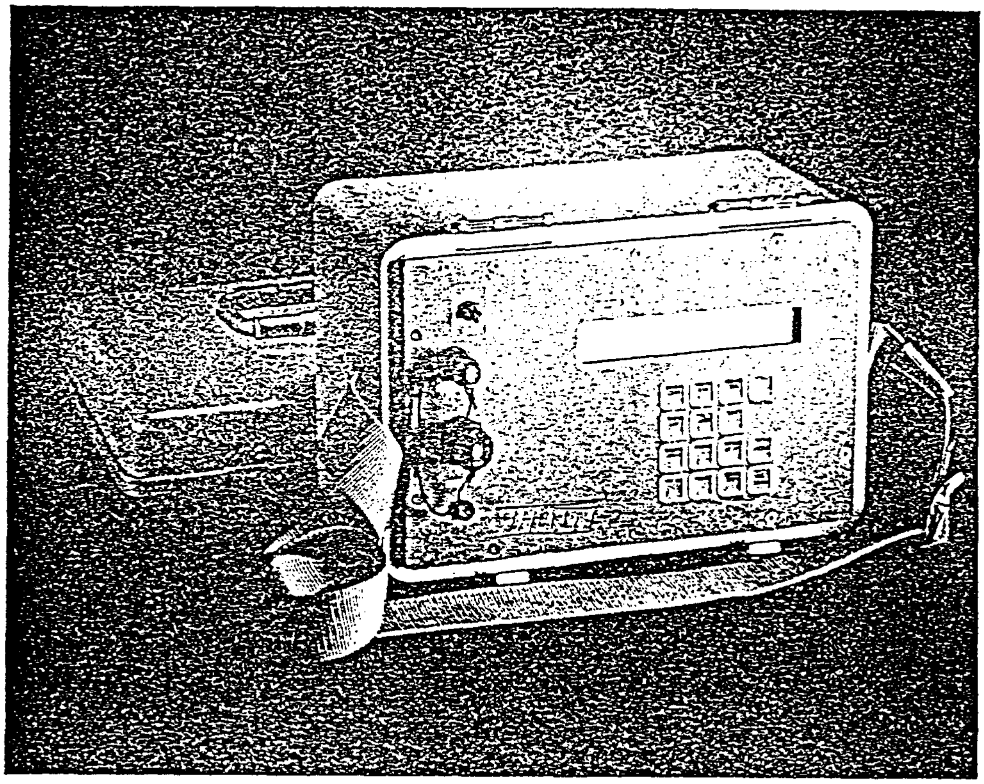
Despite the complexity of survey procedures and interpretation, IP has demonstrated excellent effectiveness in exploration for various types of sulphide-bearing ore deposits in the 30 years since its original implementation. More recently, following the discovery of the Hemlo gold deposits, increasing use has been made of IP in exploration for gold.

APPENDIX II

Equipment Specifications

IP-6 Six Dipole Time Domain IP Receiver

EDA



Major Benefits

- Six Dipoles Simultaneously Measured
- Ten Windows Available
- Choice of Arithmetic or Logarithmic Window Width
- Programmable Arithmetic Window Width
- High Input Voltage
- Weighs Only 8.5 kg.
- User Friendly

Specifications

Dipoles	Six simultaneous input dipoles.
Input Voltage (Vp) Range	Standard: — 8 volt maximum for each dipole — maximum sum of 12 volts from the second to the sixth dipole. Additional Setting: — attenuation of up to 40 volts on the first dipole.
Input Voltage Protection	Up to 1000 volts.
Vp Resolution	1 microvolt.
Vp Accuracy	0.3% typical; maximum 1% over temperature range.
Chargeability Resolution	1 millivolt/volt for Vp greater than 10 millivolts. 0.1 millivolt/volt for Vp greater than 100 millivolts.
Chargeability Accuracy	0.6% typical; maximum 2% for Vp greater than 10 millivolts over temperature range.
Automatic SP Compensation	±1 volt with linear drift correction up to 1 millivolt/second.
Input Impedance	10 megohm.
Sample Rate	10 milliseconds.
Automatic Stacking	1 to 999 cycles.
Synchronization	Minimum primary voltage level of 40 microvolts.
Rejection Filters	50 and 60 Hz power line rejection greater than 100 dB.
Grounding Resistance Check	0.1 to 128 kilo-ohms.
Compatible Transmitters	Any time domain waveform transmitter with a pulse duration of 1, 2, 4 or 8 seconds and a crystal timing stability of 100 ppm.
Programmable Parameters	Geometric parameters, time parameter, intensity of current, type of array, line and station number, dipole length, window width and delay time (mode 2).
Display	Two-line, 40-character alphanumeric liquid crystal display protected by an internal heater for low temperature conditions.
Memory Capacity	1800 sets of readings.
RS-232C Serial I/O Interface	300 to 19,200 baud rate; 7 or 8 data bits; 1 or 2 stop bits; odd, even, no parity.
Console Power Supply	Six - 1.5V "D" cell alkaline batteries with auto power save feature; 20 hours of operation at 20°C.
Operating Environmental Range	−40°C to +60°C; 0 to 100% relative humidity; weatherproof.
Weight and Dimensions	8.5 kg. (with batteries), 300 x 200 x 240 mm.
Standard System Complement	Instrument console with carrying strap, batteries, data transfer cable and operations manual.
Displayed Parameters	Primary voltage, partial and total decimalized chargeabilities, running and cumulative average of total chargeabilities (in fixed modes), standard deviation of primary voltage and total chargeability, self potential, number of cycles, dipole being measured and contact resistance.
Available Options	Stainless steel transmitting electrodes, copper sulphate receiving electrodes, alligator clips, bridge leads, multi dipole wire cable, wire spools and software programs.

EDA Instruments Inc.
4 Thorncliffe Park Drive
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Telex: 06 23222 EDA TOR
Cable: EDAINSTRMTS TORONTO
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Telephone: (303) 790 2541
Fax: (303) 790 2902

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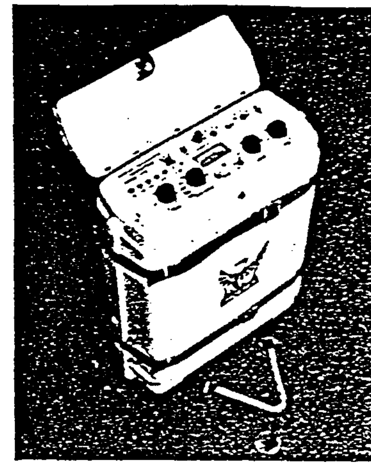
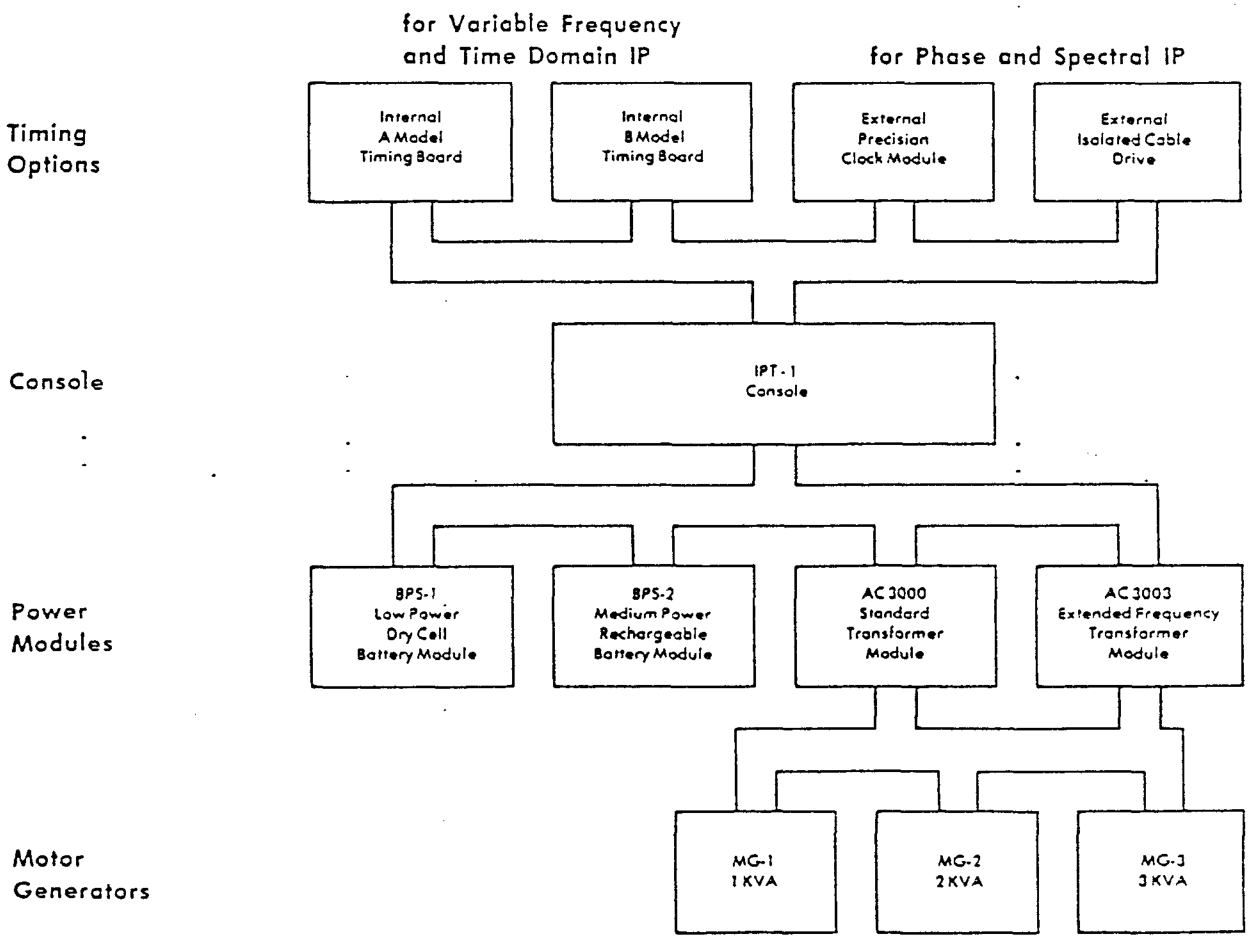
IPT-1

Variable Frequency, Time Domain and Phase IP Transmitter

- Reliable: Backed by twenty years experience in the design and worldwide operation of induced polarization and resistivity equipment
- Versatile: Can be used for resistivity, variable frequency IP, time domain IP or phase angle IP measurements
- Stable: Excellent current regulation
- Lightweight, portable
- *Wide selection of power sources*
- Low cost



Transmitter Configurations



PHOENIX GEOPHYSICS LIMITED

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Timing Options

'NTERNAL TIMING BOARD

here are two available internal timing boards. Both have the same internally mounted crystal oscillator with a stability of 50 PPM over the temperature range -40°C to +60°C.

Model A :

STANDARD FREQUENCY SERIES
Frequency domain mode
±DC, .062, .125, .25, 1, 2 and 4 Hz.
Time domain mode
2 sec +, 2 sec off, 2 sec -, 2 sec off.
Simultaneous transmission mode
.25 and 4.0 Hz standard, other pairs available.

OPTIONAL FREQUENCY SERIES (change link on board)
Frequency domain mode
±DC, .078, .156, .313, 1.25, 2.5, and 5.0 Hz.
Time domain mode
1.6 sec +, 1.6 sec off, 1.6 sec -, 1.6 sec off.
Simultaneous transmission mode
.313 and 5.0 Hz standard, other pairs available.

Model B : The main difference between this timing board and the model A board is that the duty cycle is variable. Frequency domain operation is obtained by setting the duty cycle to 100% and selecting any of nine binary frequencies from 1/64 Hz to 4 Hz. Various time domain waveforms may be obtained by choosing any of the nine frequencies and a duty cycle of 25%, 50% or 75%. The standard 2 sec +, 2 sec off, 2 sec -, 2 sec off time domain waveform is chosen by selecting a duty cycle of 50% and a frequency of .125 Hz.

EXTERNAL HIGH PRECISION CRYSTAL CLOCKS

The IPT-1 may be driven by external high precision crystal clock modules such as the CL-1 and transmitter driver or CL-2 and transmitter driver. These clock modules were designed for use as a time reference between the IPT-1 or IPT-2 transmitters and the Phoenix IPV-2 phase IP receiver. The aging rate of the CL-1 clock module is 5×10^{-10}/day (0.11 mrad/hr at 1 Hz) and the stability of the CL-2 clock module is 10^{-7}/day (2.26 mrad/hr at 1 Hz). These clock modules weigh 7.5 kg., however space is provided for as much as 5 kg of additional internal batteries for operating the CL-1 oven heated clocks all day at -40°C. Clock modules produced by other manufacturers of induced polarization receivers are also compatible with the IPT-1.

EXTERNAL ISOLATED CABLE DRIVE

The isolated cable drive option allows the IPT-1 to be driven by the timing circuitry of the IPV-3 spectral IP receiver. The maximum distance allowed between transmitter and receiver is 500m. For efficient spectral IP field surveying, the distance between the transmitter and receiver is always maintained at one electrode interval. Thus the maximum convenient electrode interval, using the isolated cable drive option, is 500m. The IPV-3 measures the current plus six voltage dipoles (n = 1,6) simultaneously.

Console

Ammeter Ranges : 30 mA, 100 mA, 300 mA, 1A, 3A and 10A full scale.

Meter Display : A meter function switch selects the display of current level, regulation status, input frequency, output voltage, control voltage and line voltage.

Current Regulation : The change in output current is less than 0.2% for a 10% change in input voltage or electrode impedance.

Protection : The current is turned off automatically if it exceeds 150% full scale or if it is less than 5% full scale.

Internal Power Modules

BPS-1 DRY CELL BATTERY POWER MODULE

Output Voltage : 90V, 180V and 360V.

Output Current : 1 mA to 1A maximum.

Output Power : Recommended maximum output power is 30 watts. Absolute maximum output power is 100 watts.

Power Supply : 8x45V dry cell batteries (Eveready 482, Mallory 202 or equivalent). Normal field operation, with low output power, results in an average battery life expectancy of one month. Operation with the absolute maximum output power results in much shorter battery life.

Control Supply : 4 x 6V lantern batteries (Eveready 409, Mallory 908 or equivalent) connected in series/parallel are used to provide the 40 to 70 mA at 12V required for the control circuitry. Average battery life expectancy is six months.

Operating Temperature : 0°C to +60°C.

BPS-2 RECHARGEABLE BATTERY POWER MODULE

Output Voltage : 50V, 106V, 212V, 425V, and 850V.

Output Current : 3 mA to 3A.

Output Power : Maximum output power is 300 watts. Above this output power a protective cut-out is engaged to prevent battery and circuit damage.

Batteries : 4 x 12V rechargeable gell cell batteries connected in series/parallel have a capacity of 9 A-hr. External batteries (such as car or motorcycle batteries) may also be used. A special cord and plug are provided for this mode of operation. An adaptor cord connects the 12V batteries in parallel with the 12V charging unit.

Operating Temperature : -40°C to +60°C. Below 0°C the capacity of the batteries is significantly reduced (by 70% at -40°C).

AC 3000 TRANSFORMER POWER MODULE

Output Voltage : 75V, 150V, 300V, 600V and 1200V.

Output Current : 3 mA to 10A.

Output Power : Maximum continuous output power is
3KW with MG-3 motor generator,
2KW with MG-2 motor generator and
1KW with MG-1 motor generator.

Input Power : Three phase, 400 Hz (350 to 1000 Hz), 60V (50V to 80V) is standard.
Three phase, 400 Hz (350 to 1000 Hz), 120V (100V to 160V) is optional.

Current Regulation : Achieved by feedback to the alternator of the motor generator unit.

Operating Temperature : -40°C to +60°C.

Thermal Protection : Thermostat turns off at 65°C and turns back on at 55°C internal temperature.

AC 3003 TRANSFORMER POWER MODULE

Same as AC 3000 except for:

Output Voltage : 44V, 87V, 175V, 350V and 700V.

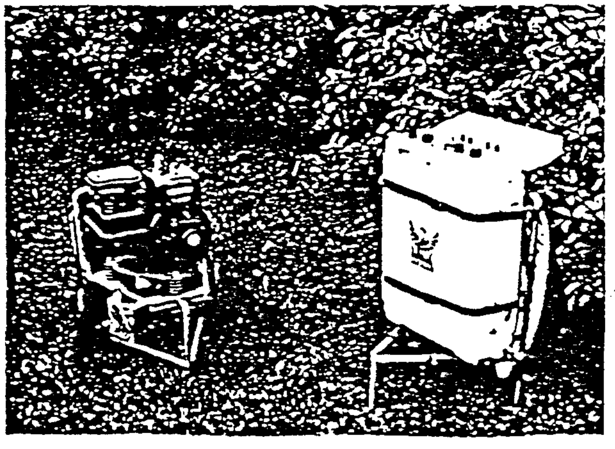
Frequency Range : DC to 3000 Hz under external drive (all other power modules have a maximum frequency of 5 Hz).

General

Dimensions : 20 x 40 x 55 cm (9 x 16 x 22 in).

Weight : 13 kg (29 lb) with BPS-1.
13 kg (29 lb) with BPS-2.
17 kg (37 lb) with AC-3000.
18 kg (40 lb) with AC-3003.

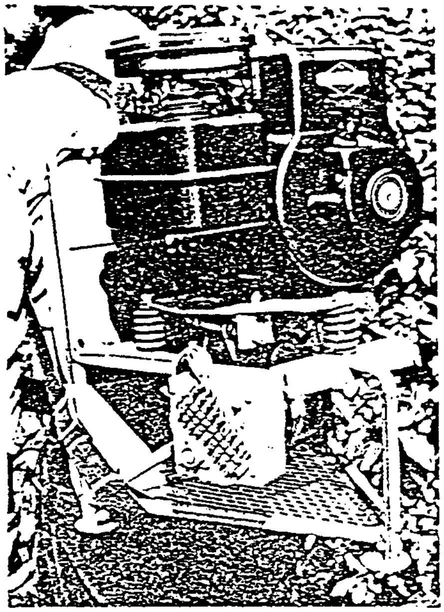
Standard Accessories : Pack frame, manual. At least one of the four possible power modules is required. The transformer power modules in turn require one of the three external 1KVA, 2KVA, 3KVA, motor generators and a connecting cable.



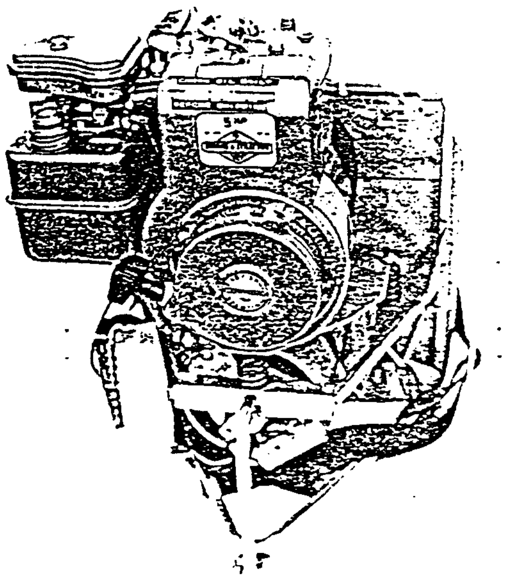
Motor Generators

There are three motor generators, differing in weight and power, which can be used with the transformer power modules. All three supply three phase, 400 Hz (350 to 600 Hz), 60V (45V to 80V). The voltage is regulated by feedback from the transmitter.

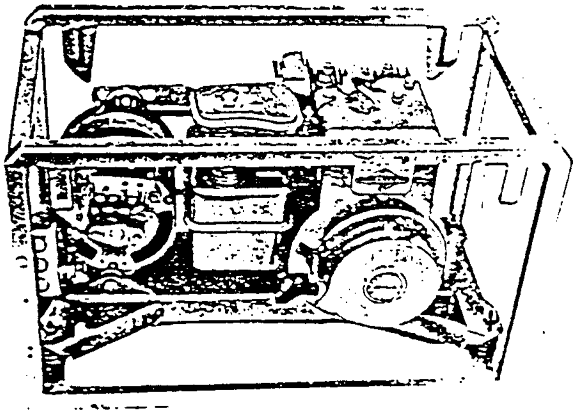
MG-1: This lightweight unit is designed for easy portability in areas of moderately high resistivity. It is well suited for massive sulfide exploration in Northern Canada, Europe and Asia, as well as general IP and resistivity surveys in rugged, mountainous areas around the world. The motor is a 4-cycle Briggs and Stratton which produces 3 HP at 3600 rpm. The dimensions of the unit, including packframe, are 40 x 45 x 60 (16 x 18 x 24 in). Total weight is 25 kg (55 lb).



MG-2: 2KVA motor generator. This versatile unit is adequate for the vast majority of IP and resistivity surveys conducted worldwide. It is light enough to be carried by one man, yet powerful enough for most survey requirements. The motor is a 4-cycle Briggs and Stratton which produces 5 HP at 3600 rpm. The dimensions of the unit, including packframe, are 40 x 45 x 60 cm (16 x 18 x 24 in). Total weight is 34 kg (75 lb).



MG-3: 3KVA motor generator. This two-man portable unit is designed for surveys in areas which require additional power. The motor is a 4-cycle Briggs and Stratton which produces 8 HP at 3600 rpm. The unit is mounted in a square frame with dimensions 40 x 48 x 75 cm (16 x 19 x 29 in). Total weight is 55 kg (120 lb).




600W 500W 400W 300W 200W 100W 0 100E 200E 300E 400E 500E 600E 700E 800E
APPARENT RESISTIVITY
OHM-M
Topographic effects ?
Road
60% slope
O/C
65% slope
Side hill
INFINITE LOCATION 0+00 and 17+00E
TOTAL CHARGEABILITY
MT (MSEC)
DETAILED
LOCATION MAP
SCALE
METRES
LEGEND
TRANSMITTER
RECEIVER
EDA-BRGM IP6
POLE DIPOLE ARRAY
Plotting Point
a=50m, a=100m
n=1,2,3,4,5,6
RESISTIVITY LOW (ohm m)
CHARGEABILITY HIGH (m secs)
Resistivity Low at Surface
Resistivity Low at Depth
IP Anomaly at Depth
Estimated Intrinsic Resistivity (ohm m)
Estimated Intrinsic Chargeability (m secs)
Estimated Depth (m)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
20,203
part 2 of 2
NTS 82L/5E
CORONA CORPORATION
JEWEL PROPERTY
VERNON MINING DIVISION, B.C.
INDUCED POLARIZATION PSEUDOSECTION
LINE 0+00
Drawn MPH
Date September, 1989
MPH Consulting Limited

600W 500W 400W 300W 200W 100W 0 100E 200E 300E 400E 500E 600E 700E 800E
APPARENT RESISTIVITY
OHM-M
b
a
TOTAL CHARGEABILITY
MT (MSEC)
B
A
INFINITE LOCATION 0+00 and 17+00 E
MAIN TRENCH AREA
EAST ZONE
DETAILED LOCATION MAP
LEGEND
TRANSMITTER
RECEIVER
EDA-BRGM IP6
POLE DIPOLE ARRAY
Plotting Point
a=100m
n=1,2,3,4,5,6
RESISTIVITY LOW (ohm m)
CHARGEABILITY HIGH (m secs)
EOLOGICAL BRANCH
SSESSMENT REPORT
20,203
Part 2 of 2
SCALE
METRES
NTS 82L/5E
CORONA CORPORATION
JEWEL PROPERTY
VERNON MINING DIVISION, BC
INDUCED POLARIZATION PSEUDOSECTION
LINE 1+00 NORTH
Project No. V-312
By: K. Lund
Scale: 1:2500
Drawn: MPH
Drawing No. Figure P2
Date: September, 1989
MPH Consulting Limited


600W 500W 400W 300W 200W 100W 0 100E 200E 300E 400E 500E 600E 700E 800E
APPARENT RESISTIVITY
OHM-M
TOTAL CHARGEABILITY
MT (MSEC)
N=1
N=2
N=3
N=4
N=5
N=6
INFINITE LOCATION 0+00 and 17+00E
LEGEND
TRANSMITTER
RECEIVER
EDA-BRGM IP6
POLE DIPOLE ARRAY
Plotting Point
a=100m
n=1,2,3,4,5,6
RESISTIVITY LOW (ohm m)
CHARGEABILITY HIGH (m secs)
DETAILED
LOCATION MAP
SCALE
METRES
GEOLOGICAL BRANCH
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JEWEL PROPERTY
VERNON MINING DIVISION, B.C.
INDUCED POLARIZATION PSEUDOSECTION
LINE 2+00 NORTH
Project No. V-312
By: K. Lund
Scale: 1:2500
Drawn: MPH
Drawing No: Figure P3
Date: September, 1989
MPH Consulting Limited