INTRODUCTION.

The following report describes the results of an investigation of LION claim units which were staked to cover copper showings in an evironment believed to be favourable for enclosing a massive sulphide ore deposit in volcanic rocks.

Geologic mapping was done by Colin Harivel, a 1972 honours graduate in geology from U.B.C.

The magentometer survey was conducted by field assistant Rob Larsen under supervision of Harivel. Lines were cut by Larsen and field assistant John Dwyer.

PROPERTY:

Location of LION claim units is indicated on fig. 1.

LOCATION AND ACCESS.

LION claim units are located approximately 30 miles north of Takla Landing. The B.C. Railway is located in the Driftwood River valley, 13 miles (21 km) southwest of the property. Access to the property for purpose of this work was by helicopter with supplies taken from Smithers to the airstrip at Driftwood River N.C.P. camp.

TOPOGRAPHY.

(See p.2 LUC report)

GEOLOGY:

PROCEDURE.

~~No~~ A published geological map of the area is Hazelton East Half T Richards 1973 ~~are available for this area~~. The regional geology map prepared in 1973 by ~~Lux~~ LUC Syndicate was available to Harivel. Assessment report No. , "Report on the LION I and II CLAIM GROUPS, TAKLA LAKE AREA", was available and extensive use was made of this report and the geological map therein.

A topography map was available and geology was plotted on this map (1:6000 scale). In the area of major interest control was based on picket grid lines and assisted by use of and altimeter.

Airphotos at 1"=½mile scale were also available.

ROCK TYPES.

(1) Rhyolite - Chert Sequence.

This sequence, believed to underlie the basic and intermediate volcanic sequence, is exposed in the stream course in the NE quadrant of the map-area. The sequence is locally folded, perhaps drag-folded as a result of faulting, and is generally steeply dipping, trending south to south east.

(2) Undifferentiated Andesite Sequence.

These rocks are exposed here and there, over much of the property. Agglomerates, flows, tuffs and breccias are included in the assemblage but attempts to separate this sequence into units failed.

In general the andesites are massive, dark green, fine-grained rocks but in some areas they are altered to maroon and green and

contain abundant hematite and epidote.

In the vicinty of some of the copper occurrences the volcanic rocks are pyritized and, especially around p larger areas of pyrite gossan, are silicified and veined with quartz stockwork.

(2a) Siltstone - Argillite.

Locally, small blocks of thin-bedded siltstone and argillite are exposed in the grid area. These blocks, up to a few metres in large dimension are apparently chaotically arrayed in the enclosing volcanic rocks and are deemed to be fault chaos since they are located in zonesxof inferred zones of faulting.

(3) Light Grey-green Andesite Agglomerate.

This unit crops out in the southwest quadrant of the map-area. It is fresher and more blocky in its fracture habit than the undifferentiated sequence and is therefore placed here as a separate unit. The unit is locally hematized and locally pervasively xxxxx saussuritized but less so than other volcanic rock units in the map-area.

(4) Red Cobble Conglomerate.

This rock type is exposed in the main drainage stream in the north centre of the map-area and in the east central part of the grid area. It overlies the volcanic rocks of unit (2) and probably of unit (3) but the contact is exposed in only one place and the nature of the unconformity was not determined.

These rocks crop out adjacent to faults and may represent fault blocks. However, they may be unconformably overlying the undifferentiated volcanic sequence as outliers in this map-area.

(5) Quartz, Hornblende Feldspar Porphyry.

This intrusive rock crops out in the main drainage stream in the central part of the map-area and in the area of pyrite gossan in the northwest corner of the picket grid area.

Pyrite is disseminated in this rock and makes up to 5% of the volume. In the area of gossan (above) chalcopyrite is present and is associated with vein pyrite and quartz. Alteration has locally rendered the rock chalky and crumbly in outcrop, where it is quartz-albite-chlorite rock, Locally this latter ~~rock~~ has been silicified and the resulting flinty, white, highly fractured rock is reminiscent of rhyolite.

(6) Biotite Hornblende Diotite.

This is a coarse-grained, dark grey to mottled grey and black diorite. Hornblende is generally somewhat chloritized. Magnetite is common as small disseminated specks and the intrusive is associated with a strong north to northwest tending aeromagnetic high.

The intrusive locally contains minor pyrite and rare chalcopyrite. Hematite and epidote alteration with minor sulphides mineralization occurs adjacent to the diorite contact.

MINERALIZATION.

Chalcopyrite and malachite were observed here and there, over much of the property. A known showing with chalcopyrite in fractures is exposed in the main drainage stream in the northeast quadrant of the map-area. A LUC Syndicate assay, of picked material in fractured andesite and adjacent rhydite over a width of 4 feet (1.3m), returned 3.21% Cu, 0.55 oz/ton Ag and Tr. Au.

Adjacent to the narrow mineralized andesite band fractures in massive rhyolite are mineralized with pyrite for several metres. Disseminated pyrite is common. Rusty veins and fracture fillings of calcite and iron carbonates are exposed nearby.

Asecond showing about 1500m south of the first exposes chalcopyrite and pyrite in a rusty curvilinear zone several tens of metres in length. Sampling by LUC Syndicate gave 0.17% Cu over 30' (9.0m), 0.08%/40'(12.2m), 0.17%/60' (18.2m). The highest assay was 0.29%/10'(3.0m). At the top of this zone at the extreme northwest of the grid area blebs and pods of massive pyrite and less commonly, chalcopyrite, were observed in green massive andesite. In this area and to the northwest for a few tens of metres the rock matrix texture becomes coarser than elsewhere on the property.

Southwest of this last mentioned area is an extensive area of gossan. Within this zone small outcrops crop out through rusty talus. Two chip sample traverses were made through altered volcanics and altered quartz porphyry intrusive . Chips were taken at regular intervals over lengths of 3m. The highest assay returned 0.17% Cu with 0.02 oz/ton Ag. See fig. 2 for sketch of sampling.

Within the gossan areas shattered vein quartz with associated pyrite and lesser chalcopyrite are exposed adjacent to small outcrops of quartz porphyry intrusive. The volcanic rocks are locally thoroughly altered.

Southeast of this area, about 130m distant, and within the larger area of gossan, a sampling traverse was made in 100% exposure. of quartz veined volcanics. Locally, chalcopyrite grains were noted in association with pyite in this area. The rock chip samples were collected in a similar manner to those mentioned above and were analysed for ppm(Total), ppm(Zinc), and ppm Ag. Figure 3 is a sketch showing results. The highest values were 625ppm Cu, 75ppm Zn, 0.2 ppm Ag.

Rock chips taken from outcrops in the creek where high values in ppm Cu in stream sediments had been reported, returned a high of 495 ppm Cu and a low of 8 ppm; with zinc a high of 200ppm, and silver a high of 0.2ppm

ALTERATION.

Alteration is of propylitic facies (hematite-albite-epidote-calcite). In the main drainage in the western central part of the map-area extensively altered massive outcrops of andesite exhibit much epidote. This is believed to result from fluids chanelled along NNE-SSW faulting mapped in this area.

Immediately east of the copper showing in the main stream, north of the grid area, a zone of extensive carbonate alteration is exposed and apparently bounded by faults which trend SE-NW.

In the west central part of the grid area local gossans are exposed. In some places the associated alteration is of sulphateric type. Only areas of extensive or especially intense gossan are indicated on the map.

An area of intense quartz stockwork veining is noted on the map east of the camp site. This has no strong pyrite association.

STRUCTURE.

The Ominicetla valley to the northeast of the claim units is the site of a major northwest-trending fault. Strong shearing in the main stream course in its NNE trend, together with air photo linears and mapping southeast of the claim units, suggest strong, south-trending faults which separate the host rocks on the LION property from older sediments to the east. An east-trending airphoto linear running along the creek in the northwest corner of the map-area suggests a transverse fault.

The most common fracture directions measured trended NW-SE with steep dips to the south. Flatter-lying fractures which trend NE-SW were also measured.

The magentometer survey indicates strong dislocation along SE and SSE trends. The location of faults plotted on the geology map were largely based on the confirmatory evidence supplied by interpretation of the magnetometer survey. West of the north end of the grid area an extensive area of mag. low is interpreted to represent an underlying intrusive and associated alteration apron.

MAGNETOMETER SURVEY.

A McPhar Fluxgate magnetometer was used and readings taken at 25m intervals along grid lines. The values used in the magnetometer survey map have been corrected for diurnal variation and adjusted to a base datum day's readings. (Delete The tables of readings are included as an appendix.)

DISCUSSION AND CONCLUSIONS.

Two features of the property viz., the presence of podiform massive sulphide mineralization and, an interpreted rhyolite breccia, justified investigation of the area for presence of a massive sulphide ore body.

The "rhyolite breccia" has been mapped, for this report, as shattered quartz and silicified volcanic rock associated with intrusive rocks exposed nearby. The podiform mineralization is believed to be caused by the relatively substantial thickness of the flow in which the pyrite occurred. That is, in other thinner units the pyrite is disseminated in small gains but in the thicker flows sulphide-rich solutions remain unfixed for longer times making pod formation possible. The relative thickness is also believed to results in the coarser textures of the andesite in the area of podiform sulphide.

The distribution of most significant Cu (copper) mineralization in the grid area and environs is at least curvilinear and is probably structurally related. There is permissive evidence for this within the mag. (magnetometer) survey in that, within the area surveyed, the Cu (copper) mineralization crops out over an area of broad, flat mag. (magnetic) low.

It is concluded that the most significant Cu mineralization, in terms of greatest possible tonnage, is associated with intrusive rocks. The area of indicated intrusive activity within the grid area is open to the west. However the assay results do not offer much encouragement for extending the grid area. The relatively rapid fall-off in this area of the anomalous Cu results in soils should not be given too much weight as negative evidence for extension. ~~because~~ The high proportion of pyrite in the ~~exposed~~ intrusive area results in effective leaching of copper in exposed areas but ~~which~~ this effect may be masked and neutralized by overburden.

In the far northwest of the map-area high Cu soil geochem. results made investigation of this area worthwhile. No outcrop was discovered and no explanation of the high results was gained through examination of the float on surface or in the soil holes. The rocks in the extreme northwest of the map-area offer no good source of high total-rock Cu geochem. It is suggested that high geochem in the area as well as the redder colouration of the soils are the results of mineralizing fluids associated with east-trending faulting along the creek in this area. A magnetometer survey would probably confirm this suggestion.

The area of high Cu result in a stream sediment analysis was examined and duplication of this high results was attempted. No reasonable replication of this result was made but one rock chip result was 495 ppm Cu. This suggests that the original result was caused by detrital chalcopyrite.

C. P Harrison

J.C. STEPHEN EXPLORATIONS LTD

BALANCE SHEET AS AT MARCH 31, 1977