RESULTS OF PRELIMINARY EXPLORATION
SLEEPER 1 - 14 & LADY LEE 7 CLAIMS

CLAIM SHEET 105-G-08
61°17'N 130°26'W

JAMES S. DODGE, P.ENG.
20 JULY - 12 AUGUST 1990

EIP
90-008

Painstaking prospecting on SLEEPER #6 claim unearthed this 20 kilogram (44 pound) chunk of copper-zinc-lead-silver stratiform sulfide float with initially only 20 cm^2 (4 square inches) exposed but which led to discovery of its bedrock parent covered by thick turf in upper left corner of photograph.

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ILLUSTRATIONS

ABSTRACT

A new polymetallic stratiform volcanogenic sulfide deposit, and a nearby arsenical gold-bearing breccia zone, have been found on the SLEEPER and LADY LEE claims in the metavolcanics of the Nisutlin allochthon near the headwaters of Money Creek (105-G-08), southeastern Yukon.

As evidenced by float and sparse outcrops largely below timberline, the gently inclined sulfide horizon extends over 1300 meters (4250 feet) in length and may be 3 meters (10 feet) or more thick. Rock chip samples of float contain up to 1.41% copper, 1.65% zinc, 0.48% lead and 0.55 oz/t silver. Concentrations of base metals are now known to occur in two sectors; one 75 meters (245 feet), the other 150 meters (490 feet) long.

Host for sulfide mineralization is a quartz-biotite-garnet schist probably a metavolcanic rock of intermediate composition. The sulfide horizon is underlain by crenulated, thinly foliated, pyritic quartz-muscovite schist, and overlain by pyritic, coarsely foliated, quartz-muscovite schist and lesser amphibolites.

Although the 1990 two-weeks program of detailed prospecting and rock chip sampling of float and bedrock, together with one short diamond core drill outcrop sampling, was followed by only limited familiarization VLF-EM and soil sampling surveys, there are strong indications of a polymetallic sulfide deposit of major dimensions.

Arsenical gold occurs in phyllonitic bedrock within quartz-healed breccia structures (800 m^2) in the Nisutlin allochthon and also in float apparently derived from the vicinity of the thrust fault zone between the Anvil and Nisutlin terranes. Values of up to 1220 ppb gold, 2270 ppm arsenic, and 50 ppm antimony were obtained in a suite of 13 rock chip samples. The anomalous gold area lies over 300 meters (1000 feet) northeast of the known base metal occurrences and, in contrast, may be genetically related to Tertiary bimodal volcanics nearby.

The gold potential was only confirmed by assays received after the field work was concluded. The geological setting and anomalously high gold and arsenic values point to the need for a detailed exploration program.

INTRODUCTION

This report describes the prospecting, geological mapping, and results from familiarization geochemical soil sampling and an electromagnetic survey on the 14 SLEEPER quartz claims and the contiguous LADY LEE #7 quartz claim during 14 days of field work and 2 days of report preparation during 20 July and 24 September, 1990. The claims were staked by James S. Dodge while prospecting under the Yukon's Prospectors' Assistance Program in 1989. There is no field evidence that the property had been staked previously.

CLAIMS OWNERSHIP

Claim Name	Grant Number	Located By	Claim Sheet	Date of Record
LADY LEE #7	YB16458	James Dodge	105-G-08	18 September 1989
SLEEPER #1	YB16459	James Dodge	105-G-08	18 September 1989
SLEEPER #2	YB16460	James Dodge	105-G-08	18 September 1989
SLEEPER #3	YB16461	James Dodge	105-G-08	18 September 1989
SLEEPER #4	YB16462	James Dodge	105-G-08	18 September 1989
SLEEPER #5	YB16463	James Dodge	105-G-08	18 September 1989
SLEEPER #6	YB16464	James Dodge	105-G-08	18 September 1989
SLEEPER #7	YB16465	James Dodge	105-G-08	18 September 1989
SLEEPER #8	YB16466	James Dodge	105-G-08	18 September 1989
SLEEPER #9	YB16467	James Dodge	105-G-08	18 September 1989
SLEEPER #10	YB16468	James Dodge	105-G-08	18 September 1989
SLEEPER #11	YB16469	James Dodge	105-G-08	18 September 1989
SLEEPER #12	YB16470	James Dodge	105-G-08	18 September 1989
SLEEPER #13	YB16471	James Dodge	105-G-08	18 September 1989
SLEEPER #14	YB16472	James Dodge	105-G-08	18 September 1989

On 20 December 1989, 100% interest in each of the 14 SLEEPER claims and the LADY LEE #7 claim was transferred by Mr. Dodge to Dodgex Ltd., a Yukon private corporation wholly owned by Mr. Dodge, under Quartz Regulation Document No. RW06877. Application to Group these 15 quartz claims is supplemented by copies of the Application for Certificate of Work attached to this report being transmitted to the Mining Recorder for Watson Lake Mining District as proof of assessment work on the claims.

CLAIMS LOCATION AND ACCESS

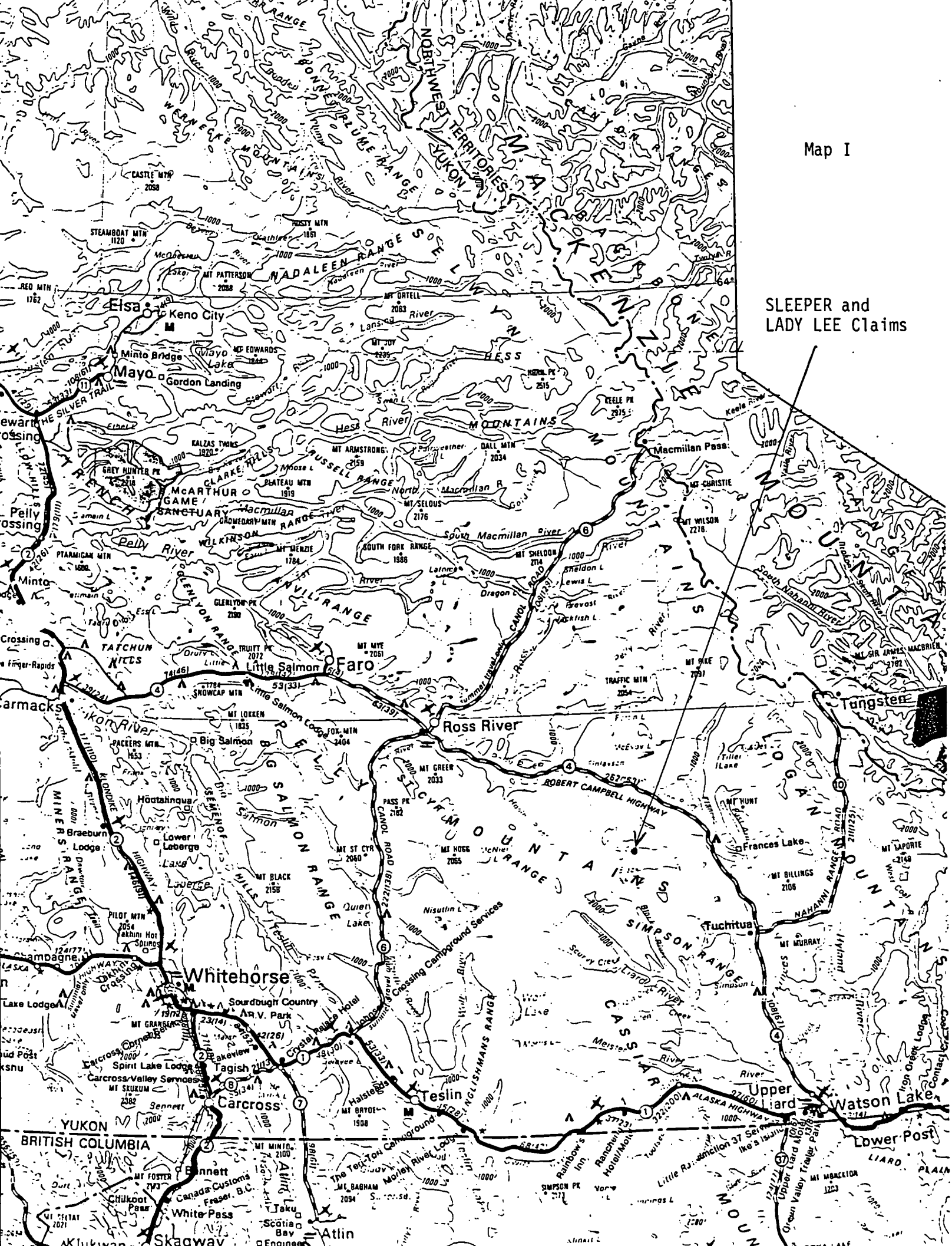
The SLEEPER claims and LADY LEE #7 claim are located in southeastern Yukon (Map I) on claim sheet 105-G-08 (Map II) near the headwaters of Money Creek, a southeast flowing tributary of Finlayson River. The claims are approximately 23 kilometers (14 miles) southwest of Wolverine Lake, the north end of which is reportedly accessible by 15 kilometers (9 miles) of tote road from the Campbell Highway. Center of the claim group is approximately 61°17'N latitude and 130°26'W longitude.

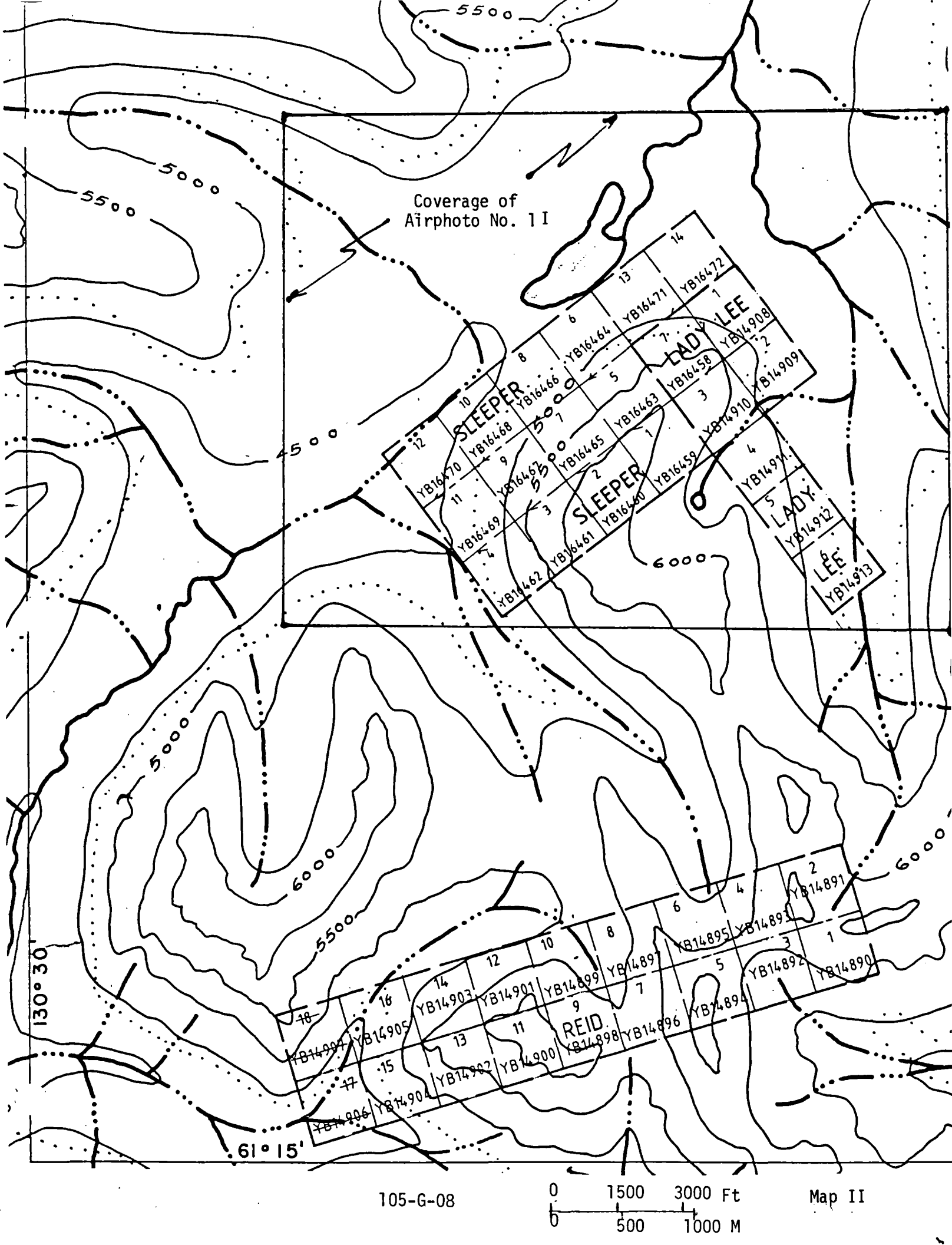
The claims lie along the northeastern flank of the Pelly Mountains in terrain ranging in altitude from 1380 meters (4525 feet) at the valley lake and up to 1780 meters (5840 feet) along the ridge crest covered by SLEEPER 1-4 claims. Roughly one-half the claim area lies above timberline (Photo II).

Access to the claims is by short-takeoff float plane at the cleaver-shaped lake on the broad drainage divide between Money Creek and an unnamed stream flowing west to the north end of Fyre Lake some 10 kilometers (6 miles) distant. The SLEEPER lake is at an altitude of 1380 meters (4525 feet) and is roughly 800 meters (2625 feet) long with shallow (1 meter=3+ feet) near the southwest end. There are no trees at either end of the lake to obstruct plane takeoffs, nevertheless, use of either a Beaver, Otter, or similar performance aircraft is prudent. Watson Lake Flying Service has provided excellent charter service to the lake over the past three years.

Map I

SLEEPER and
LADY LEE Claims




Coverage of
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LADY LEE
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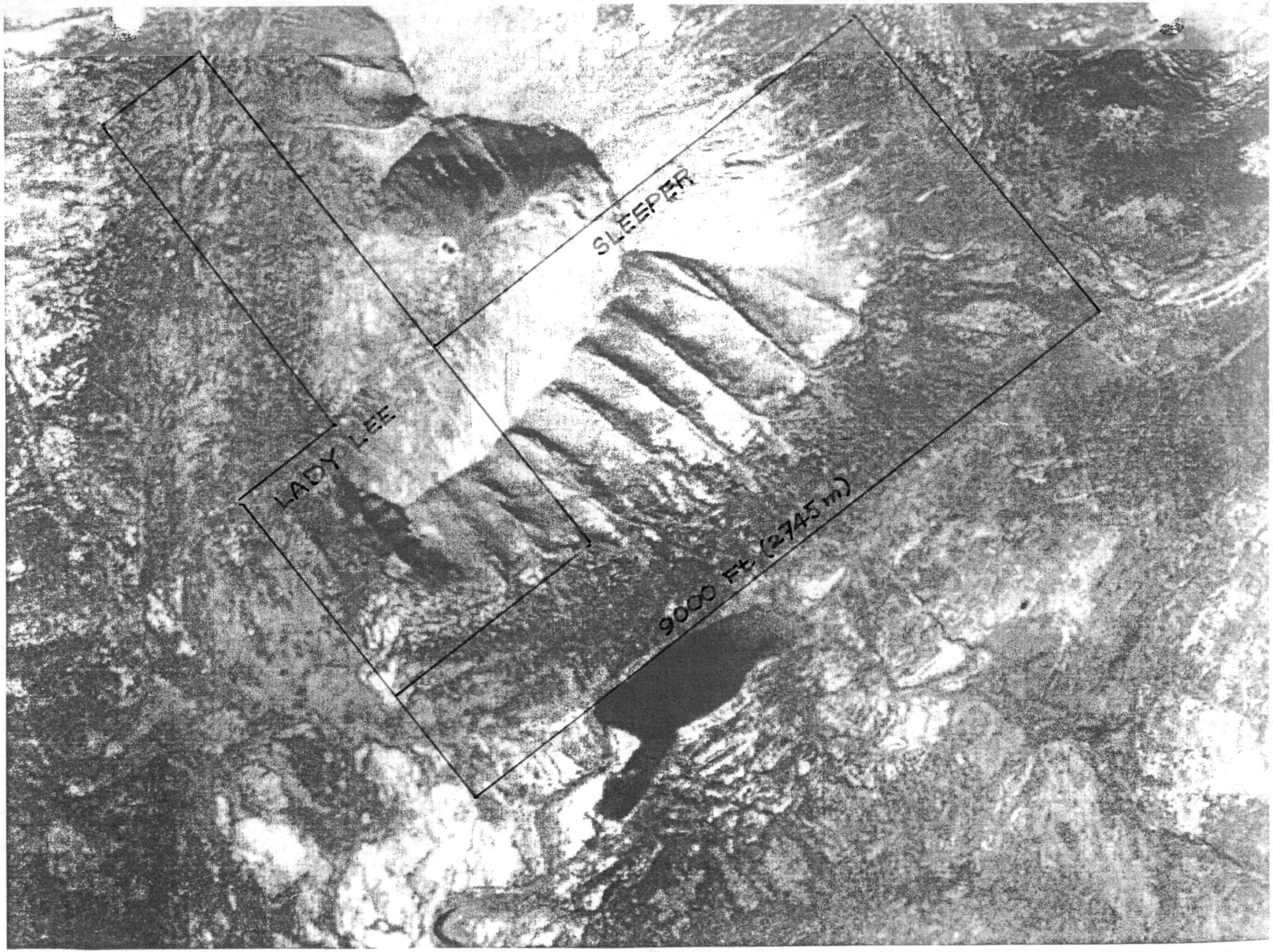
Map II



AIRPHOTO No. II

A 25289-114

HISTORY

The area was chosen in 1988 to prospect the ultramafic rocks of the Money Klippe (Photo III) and surrounding terrane (Finlayson Sheet 105-G) in a continuing search for nephrite (jade) in southern Yukon. The discovery of nephrite led to the staking of the six LADY LEE 1-6 claims in 1988 covering two serpentinite bodies in the basal part of the Anvil allochthon.

During 1989, over 300 kilograms (660 pounds) of in-situ carving grade nephrite were hand picked and backpacked down to the nearby lake and airlifted to Watson Lake. Departure from the area, when snow squalls frequented the region in September, was postponed upon the discovery of one piece of malachite-stained biotite schist float containing fine grained sulfides. Shortly afterwards the discovery of additional mineralized boulders led to the staking of the 14 SLEEPER claims and LADY LEE #7 claim, forming a block contiguous with the LADY LEE 1-6 claims, to cover the possible stratiform sulfide horizon that was indicated.

An Agreement with the Yukon Government (ED90-1/90008) was entered into by James S. Dodge on 27 June, 1990 under the Yukon Mining Incentives Program to assist in financing the preliminary exploration program for the claims. This report provides the results of that program for the Yukon government as well.

Published geological work in the area includes the Finlayson map sheet 105-G by Templeman-Kluitt (1977) followed by published geologic investigations by Templeman-Kluit (1979), Morin (1981), and Erdmer (1981).

PHOTO III

View southwesterly of the northwest sector of Money Klippe (distant left half of photo). Far lake is used by float planes; camp on southeast shore. SLEEPER claims extend from camp up-slope to southeast and over sharp ridge and partly into cirque. LADY LEE claims extend southeasterly across floor of cirque.

Green line marks base of volcanics and top of Anvil allochthon. Blue line marks thrust zone between sole of Anvil allochthon and underlying Nisutlin allochthon.

Granodiorite stock forms mountain mass far right distance.

SCOPE OF 1990 EXPLORATION PROGRAM

The preliminary exploration program on the SLEEPER group of claims during 1990 focused on enlarging the data base on the stratiform sulfide occurrences with respect to lateral extent, thickness, polymetallic grade, and genetic model. The goal was to obtain results sufficiently encouraging to a major mining company which could be interested in further exploration for a massive sulfide deposit on the SLEEPER claims and possibly on all peripheral claims added on.

Within the parameters of a limited budget (50% from Dodge and 50% from Yukon government) James Dodge was to carry out a 14-day solo field program which stressed detailed prospecting largely below timberline on the evident outcrop trend of the sulfide horizon on which the claims had been staked in 1989.

On the premise that promising results would be obtained in prospecting, preparations had been made to lay out a survey baseline, to have VLF-EM equipment and soil sampling tools available for familiarization surveys on several crosslines to the baseline to test the efficacy of these methods for future detailed exploration.

A Boyles JKS-10 GSC sampler core drill was on hand to be used to sample any well-mineralized bedrock exposure of polymetallic sulfides.

EXPLORATION MODEL

Exploration models differ for polymetallic Cu-Zn-Pb-Ag stratiform volcanogenic sulfide mineralization and for epithermal gold mineralization on the SLEEPER and LADY LEE claims. The conformable disseminated to massive sulfides are all a part of a single (?) stratiform accumulation which formed at or near submarine hydrothermal vents. In contrast, the gold occurrence is hosted by a quartz-healed breccia zone and is of evident epithermal origin possibly genetically related to Tertiary igneous activity nearby.

Polymetallic Sulfides

Host for the sulfides is quartz-biotite-garnet schist containing sericite and relict feldspars with minor chlorite. A petrographic description of transparent and opaque minerals in polished thin section of a sulfide sample from Line 1+58E (15N) by Vancouver Petrographics Ltd. of Vancouver (Appendix) summarizes as follows:

"This is a strongly metamorphosed rock from the mid- to upper greenschist facies (garnet-biotite). It probably was originally a volcanic, possibly tuffaceous with about 20% each of feldspar and mafic phenocrysts/shards, and probably of intermediate composition."

The gently inclined foliation of the sulfide horizon is conformably underlain by pre-ore hydrothermally altered, flaser textured, pyritic quartz-sericite (muscovite) schist which suggests a proximal deposit. That this represents a stringer zone is uncertain, owing to the deformation occurring during emplacement of the Nisutlin allochthon. Likewise, a possible synvolcanic heat source for the sulfide-rich hydrotherma solutions, is not evident. Both the granodiorite stock and the bimodal basalt-rhyolite assemblages of volcanic and subvolcanic igneous rocks nearby tilt and intrude the Nisutlin metavolcanics. Thus, there are not considered likely sources of the Stratiform sulfides on the SLEEPER claims.

The structural setting of the sulfide horizon is noteworthy. The deposit occurs near the northern tip of the Money Klippe as described by Erdmer (1981)(Photo III). Host for the SLEEPER sulfide horizon is the Nisutlin allochthon of sheared and cataclastic rocks presumed to have originated within or near the present Teslin Suture Zone (Templeman-Kluit, 1979)(Photos IV,V).

The Teslin transverse fault zone (perhaps the extension of an oceanic transform fault on the subducting plate) is postulated to have controlled an island-arc spreading basin with its dominant felsic submarine volcanism. As Sangster (1972) and Franklin (1981) pointed out, massive volcanogenic sulfide deposits tend to be aligned parallel to linear zones of weakness serving as conduits for rising sulfide-bearing solutions discharging at or near the pre-ore ocean floor which in turn, under the influence of the fissure zone, may have become an elongated trough.

The Fyre Lake massive pyrite-chalcopyrite deposit (Morin, 1981), located 12 km (7 miles) to the south-southwest, whose distinct north-northwest elongation within the Nisutlin terrane, evokes support for the premise that massive sulfide occurrences such as on the SLEEPER claims, will likely be elongated parallel to the Teslin Geosuture Zone as well.

It follows then that the trend of massive sulfide outcrops and float on the SLEEPER property, along which the 45° AZ baseline was laid out, may be exposing roughly the cross-section of the south-southeasterly trending deposit of undetermined extent.

A brief review of the literature found similar geologic settings to the SLEEPER occurrences in the Khayyam and Stumble-On deposits on Prince of Wales Island, Alaska (Barrie and Kyle, 1988) and at the Stekenjokk-Levi mine in Sweden (Zachrisson, 1984). Further, even though no sulfate minerals were identified in the petrographic study of a sulfide sample from the felsic to intermediate composition metavolcanics on the SLEEPER, the Kuroko-type setting is suggested from the comparable criteria used by Neathery and Hollister (1984) in their summary of massive sulfide exploration models.

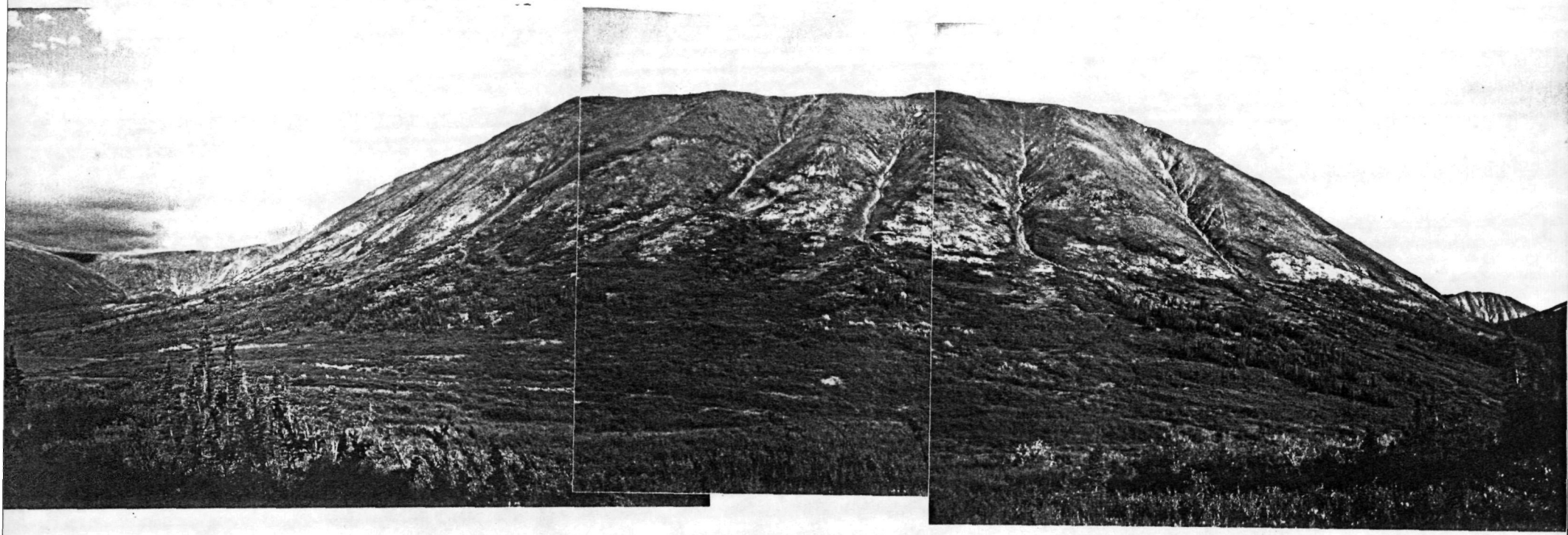


PHOTO No. IV

Panoramic view of SLEEPER claims area looking southeasterly. Western end of the access lake (1380 m) is at far left edge of photo.

Crest of mountain (1780 m) comprises bimodal basalt-rhyolite Tertiary volcanic flows and tuff with several rhyolite para-sill intrusives. Green line marks base of volcanics and top of Anvil allochthon amphibolites, the latter being slightly recessive weathering. The blue line marks thrust plane between sole of Anvil allochthon and top of the felsic metavolcanics of Nisutlin allochthon. The red line approximates trend of volcanogenic sulfide stratiform horizon.

The oval-shaped red patch outlines site of anomalous gold/arsenic mineralization in bedrock breccia and talus float.

PHOTO III

Airphoto enlargement of core area of SLEEPER and LADY LEE claims.
Green line marks base of bimodal basalt-rhyolite volcanics and contact with eroded underlying amphibolites and serpentinite bodies of Anvil allochthon.
Blue line marks approximate zone of thrust faulting between sole of Anvil allochthon and underlying meta-volcanics of Nisutlin allochthon.
Red identifies trend of volcanogenic sulfides with dots for sites where float or bedrock have been found. Red also outlines known area of anomalous gold and arsenic in an epigenetic setting (lower left).

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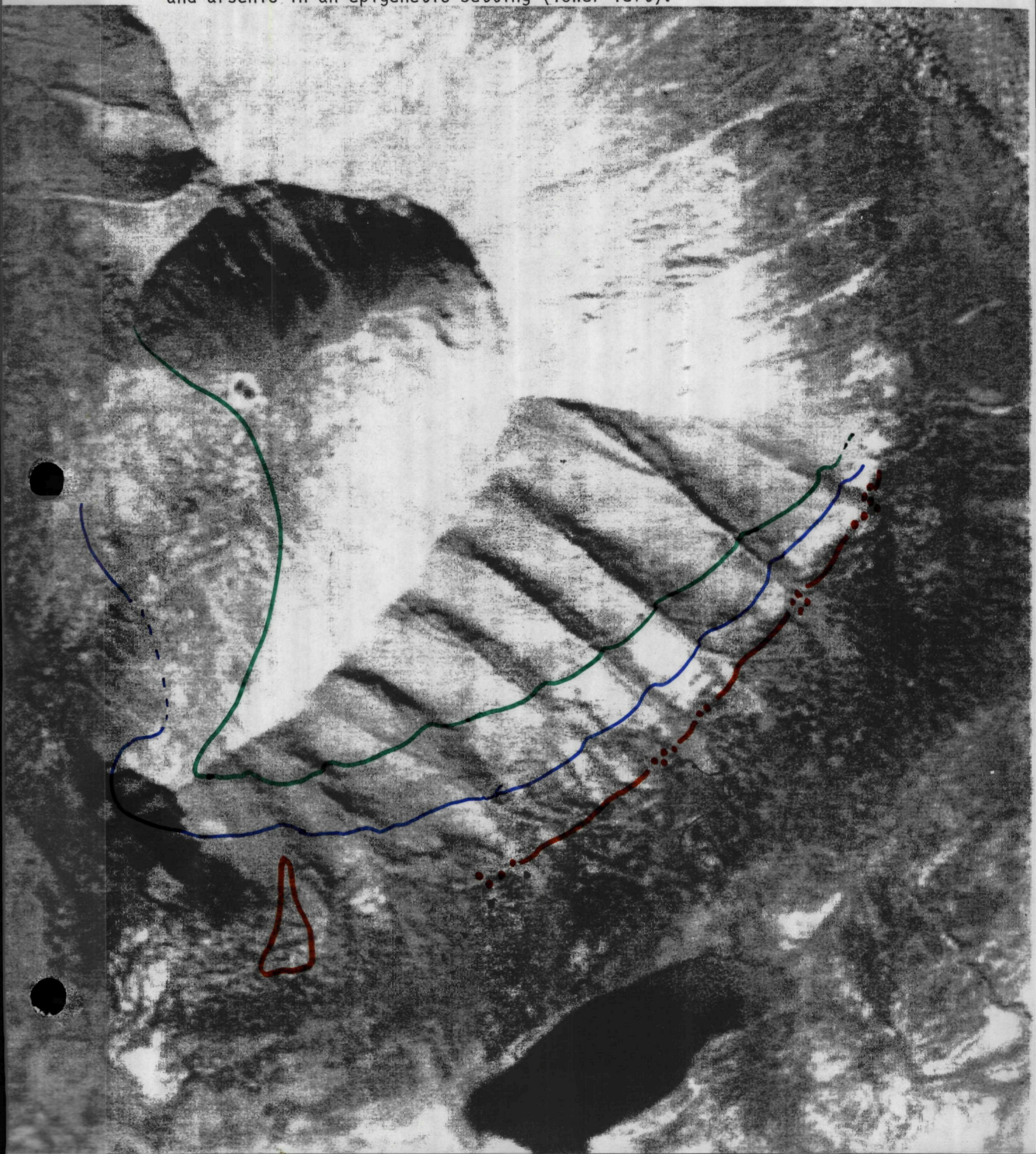
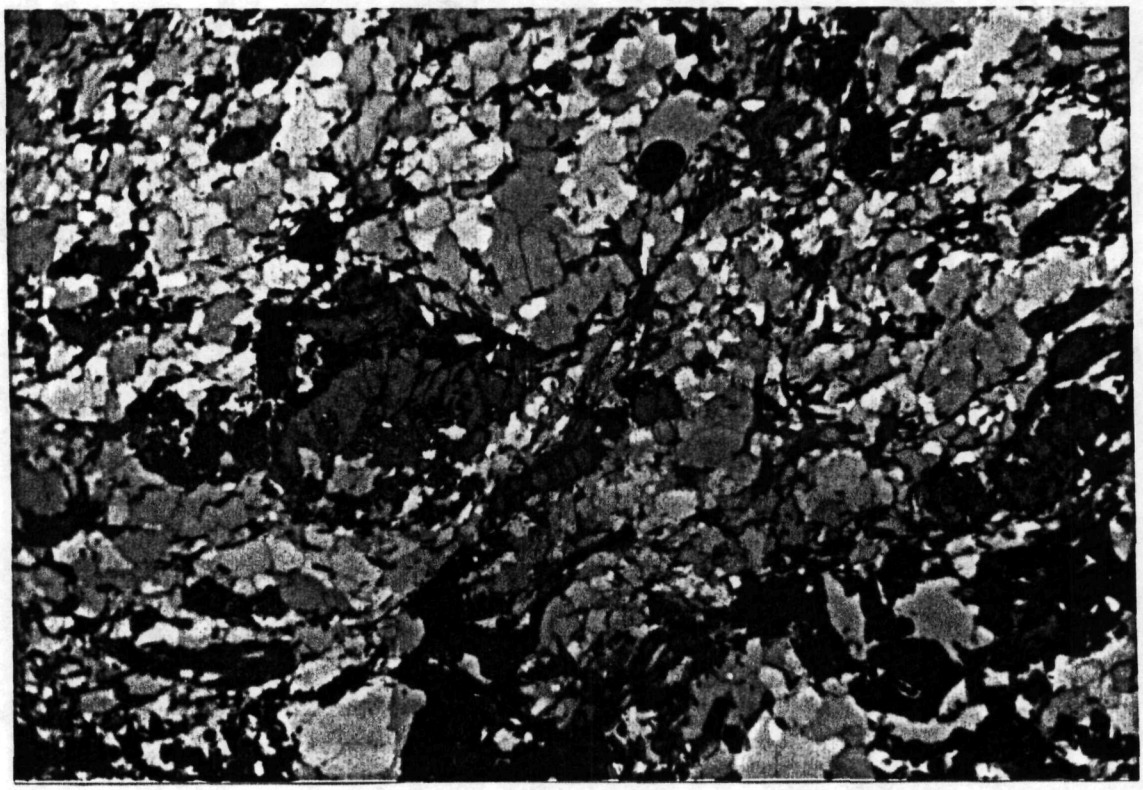
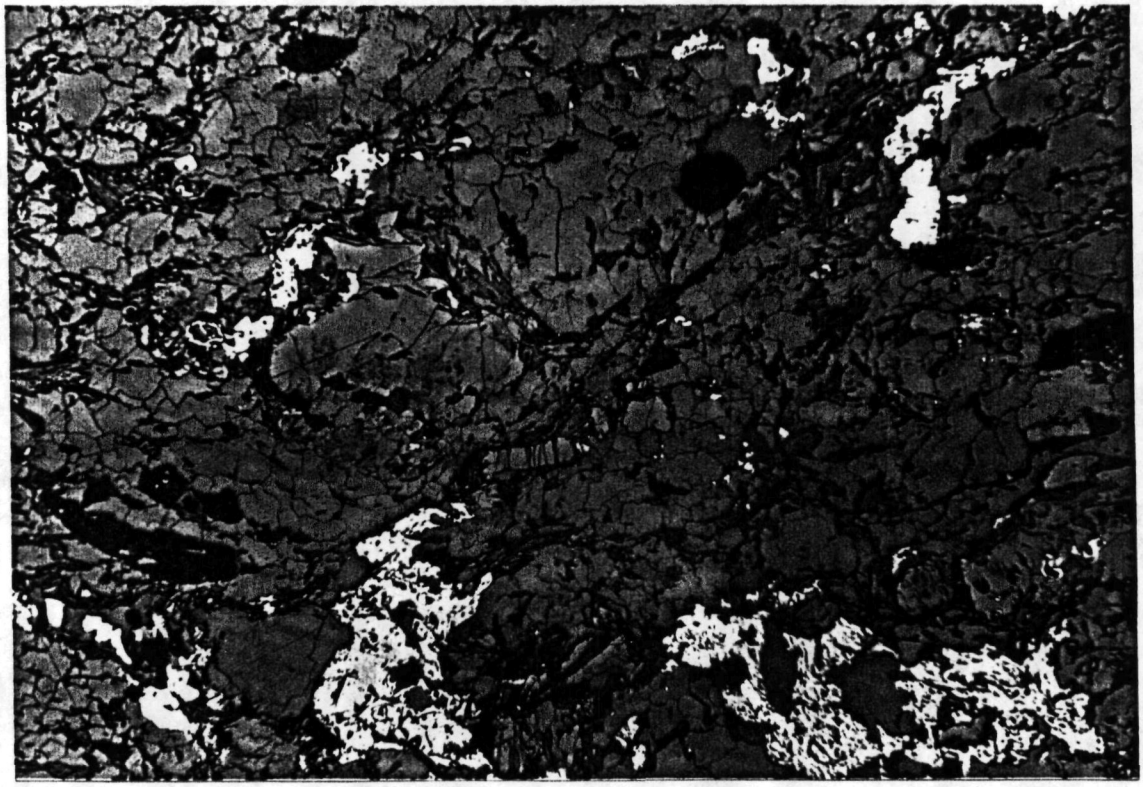
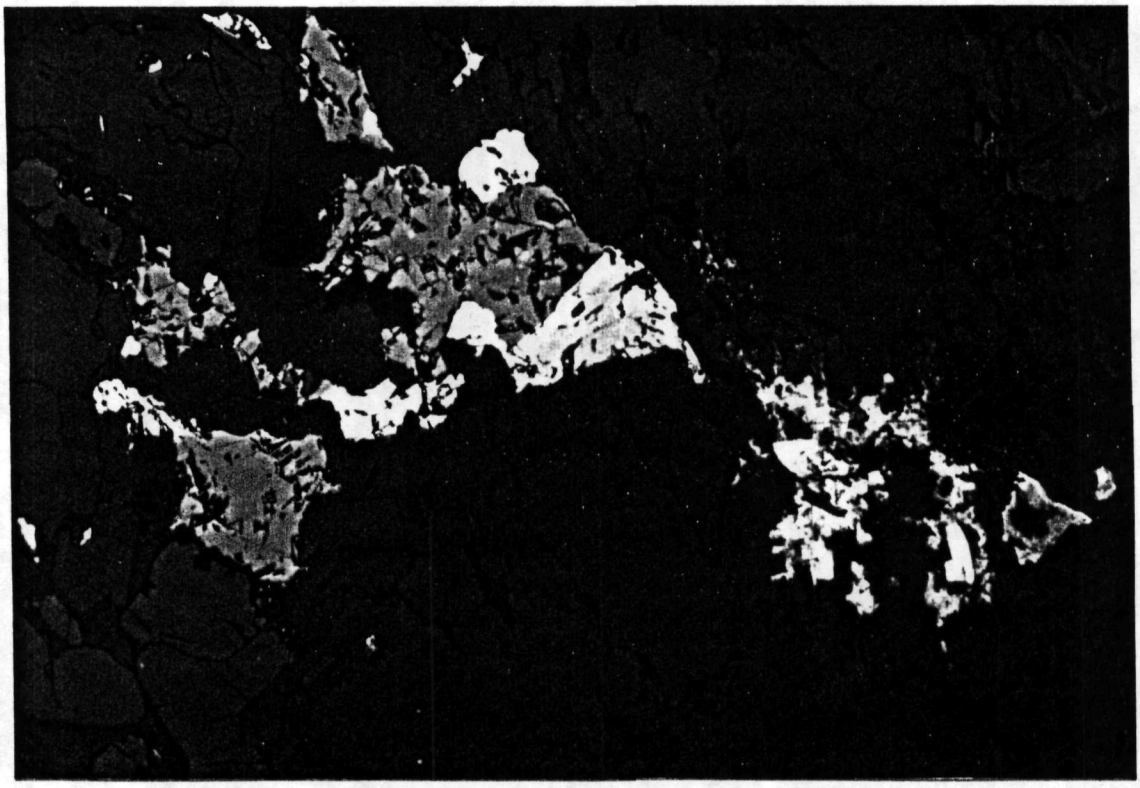




Sample A: Thin section views (above: plane polarized, and below: crossed polars, transmitted light) showing pale green garnet porphyroblasts in quartz-biotite matrix. Opaques are sulfides (see next page). Field of view is 3 mm wide.



Sample A: Reflected light views (plane polarized) showing sphalerite (light grey) pyrite (white) and chalcopyrite (creamy) grains. Same field of view as previous (above, 3 mm wide) and enlarged (below, 1.3 mm wide) showing composite sphalerite-chalcopyrite-minor covellite grains and pyrite after pyrrhotite (dark grey high relief grains are garnet).



PROSPECTING

Prospecting "systemmatique", after the model of the French Atomic Energy Commission, was carried on during the initial five days in the Program. Having obtained a general indication of the trend of the sulfide outcrops from the end-1989 field season, the prospecting area was divided into east and west sectors with the separation arbitrarily at a pyritic bedrock outcrop approximately 600 meters (1970 feet) east of the original discovery area in a steep gully.

Using a Griffin light weight, long handled grub-pick, traverses were slowly made for roughly 50 meters (165 feet) both up and down slope from the apparent 'trend' on lateral lines estimated to be no more than 5-6 meters (16-20 feet) apart. This spacing would permit spotting even small exposures of suspect sulfide float or bedrock between lines.

At the outset it became apparent that prospecting would be ineffective in rather broad areas where Recent fans of scree and boulders were present (Photo II, IV and Map III). The slide rock and debris derived from serpentinite and amphibolite of the Anvil allochthon and also blocky Tertiary volcanic material, from outcrops high on the mountain slope, in places covered the potential outcrops of the stratiform sulfides to a thickness of over 5 meters (16 feet).

Detailed prospecting paid off with the sighting of a 20 cm^2 exposure of a piece of weakly limonitic foliated float (1+58E 17N). Unearthed, this proved to be a 20 kg (44 pound) chunk containing visible polymetallic sulfides in schist; however, it showed no evidence of being far removed from its bedrock parent (Frontispiece). Well hidden by thick turf, the bedrock was located only 2 meters (6½ feet) up slope. Spurred on by this success, further float discoveries were made in this vicinity and also in an area 400 meters (1300 feet) farther to the east.

At the end of five days of prospecting, sufficient sulfide indications had been obtained to determine an appropriate location for a baseline from which locations of float and bedrock could be mapped. The VLF-EM and soil sample familiarization survey crosslines could also then be laid out. Using a brunton compass, a baseline at 45° AZ was established by means of topoline and lath markers at each 100-meter (328-foot) interval. The baseline extends 700 meters (2295 feet) east and 600 meters (1970 feet) west. Owing to many large boulders of magnetic serpentinite in the 1+58E to 2+50E interval, it was subsequently shown that compass deviations occurred and the baseline is kinked. In the best employment of time, only occassional line cutting was carried out along the baseline.

GEOPHYSICAL SURVEY

A Very Low Frequency electromagnetic (VLF-EM) familiarization survey was conducted over the two main areas in which significant Cu-Zn-Pb-Ag sulfide mineralization in float and bedrock had been located (Photo IV).

Crosslines were turned off the Baseline at right angles in southeasterly and northwesterly directions. With a view to facilitating subsequent soil sampling along those lines, the crossline sites took advantage of open areas where possible in order to reduce the amount of line cutting in thick brush.

Stations on each line were spaced at 15-meter (49-foot) intervals and identified with marked and flagged lath. The length of each crossline varied depending upon the relative positions of sulfide float or bedrock with respect to the Baseline.

Field data from dip angle readings on a Sabre VLF-EM unit were filtered according to the Fraser technique (Fraser, 1969) (Figures 3-6) and plotted as contous (Map IV). The contous reafirm the stratiform sense of sulfide mineralization as being essentially parallel to the surface trend of polymetallic sulfides and to the strike of the three outcrop areas. Superpositioning of locations of sulfide bedrock (Lines 0+17W and 1+58E) and float (Lines 5+30E and 6+00E) onto the VLF profiles (Figures 7-10) may indicate that the gently southeasterly inclined sulfide horizon, where highest base metal values are now known, extends southeasterly.

It is to be noted, however, that pervasive disseminated fine-grained pyrite within the gently (10^{o}-20^{o}) inclined foliated thick (40 meters=130 feet) sequence of meta-chert or -tuffite overlying the polymetallic sulfide unit may be considered a broad conductor which could influence the interpretation of the VLF survey.

Unlike the Besshi-type of massive sulfides, e.g. Fyre Lake, which have detectable magnetic signatures, random field checks on the SLEEPER base metal sulfides and their host rocks failed to identify any magnetically anomalous samples. The efficacy of a magnetometer survey is questioned, inasmuch as highly magnetic serpentinite bodies occur near the base of the Anvil allochthon and, more importantly, their erosional boulders are common constituents in the broad scree fans which the eastern half of the Baseline crosses.

GEOCHEMICAL SOIL SAMPLING

A familiarization soil sampling survey was conducted along the four crosslines used during the earlier VLF-EM survey. The objective was to test for the presence of anomalous concentrations of base metals in soil both up- and down-slope at 15-meter (49 feet) intervals from sites where well-mineralized float or bedrock had been identified by detailed prospecting (Map V).

Soil sampling sites were hand dug with grub hoe and shovel. Underlying a thick grass sod was thin volcanic ash layer, a thick zone of dark brown to black humus soil, and then a characteristic light brown to tan sandy loam down to subcrop rock chips. Samples were taken from the upper 8-10 cm (3-4 inches) of the sandy loam.

Typically, the soil profile from top to bottom comprised 15 cm (6 inches) of sod; 5-7 cm (2-3 inches) of Recent off-white volcanic ash; 25-30 cm (10-12 inches) of dark brown to black loamy humus, and from 25-40 cm (10-16 inches) of light brown to tan sandy loam bottoming in rock chips of subcrop zone.

Samples averaged about 350 grams (12 ounces) each in weight and were placed in marked draft geochemical sample bags. Although only slightly damp at most sites, samples were hung up at camp and air dried before delivery to Bondar-Clegg in Whitehorse for geochemical determinations.

The assay report from Bondar-Clegg (Figure 1) on the 21 soil samples gave values for copper, lead, zinc, silver, molybdenum, arsenic, antimony and mercury in parts per million, and for gold in parts per billion.

The limited extent of soil sampling in this familiarization survey makes it impractical to employ any statistical methods in the interpretation of results. Nevertheless, a cursory study of the data leads to several observations which may be pertinent in planning future expanded geochemical soil surveys, namely:

a) On the 15-meter sample site spacing, anomalously high values in base metals are confined to a single or perhaps two adjacent sample sites on each crossline. That the dispersion of metal ions is not greater on the 10^{o}-15^{o} slopes may be explained by the generally low iron sulfide content of the sulfide horizon resulting in only weak lowering of the pH in weathering solutions and, thereby, relatively little liberation of metals from subcrops.

b) All 5 soil samples on Line 6+00E and two rock chip samples of float to the east have distinctly high arsenic values, a geochemical signature common to many Kuroko-type deposits. It is uncertain as to the proper interpretation of the low, but anomalous, antimony values.

c) As a cost-saving comment: there appears no need to include gold in the general massive sulfide base metal "package" of elemental geochemical determinations called for in future soil sampling along this Kuroko-type setting - in contrast to the Besshi-type massive sulfide deposits, e.g. Fyre Lake.

PHOTO VII

Equipment used in ground electromagnetic survey: Sabre VLF-EM unit, brunton compass, 100-meter tape, lath, flagging, brunton compass, axe, topoline.

PHOTO VIII

Equipment used in geochemical soil sampling. Griffin grub-pick, 100-meter tape, kraft bags, flagging, gloves.

OUTCROP CORE SAMPLING

Although it was anticipated that there would be a paucity of bedrock exposures of the polymetallic sulfide horizon below timberline, the JKS-10 GSC sampler core drill had been brought in to augment chip sampling of outcrops where found.

The JKS-10 core drill (Photo IX) is a light weight one-man gasoline driven drill with a coring capacity to a nominal depth of 3 meters (10 feet). Low fuel and water consumption make this an ideal field-use sampling tool. The I.R.W. series diamond bit delivers core with a nominal diameter of 25.1 mm (0.99 inches).

The bedrock outcrop discovered at Station 15N on Line 1+58E, which contained visible chalcopyrite and sphalerite, was selected as the ideal site to use the core drill for sampling. Drilling recovered sulfide-bearing core representing at least 90% of the length of the hole to a depth of 1.28 meters (4.2 feet). At this depth circulation of drilling water was lost and coring was continued only to a total hole depth of 1.46 meters (4.8 feet) in hydrothermally bleached pyritic quartz-muscovite schist; here core recovery was reduced to 60%-70% of the hole length. Because of the small diameter of core, splitting and assaying have been postponed pending evidence of serious interest by a major company in optioning the property.

Hand trenching nearby revealed base metal sulfide-bearing subcrop and float in soil up-slope from the drill site, indicating that the total thickness of the polymetallic sulfide horizon is conservatively not less than 2 meters (6.6 feet) at this site.

PHOTO IX

JKS-10 sampler core drill at the 0.5-meter (1.6-foot) depth during coring of the outcrop of horizontal stratiform base metal sulfides. The site is Line 0+58E(15N) near the common end line between claims SLEEPER 6 & 8. Core lies on plastic tray in foreground.

Chartreuse colored pressure tank supplies water during drilling. Black hose leads to gasoline drum in shade far right.

View is northerly toward access lake in distance.

Epigenetic Gold/Arsenic

Prospecting on SLEEPER #13 claim identified a pyritic quartz-healed phyllonite breccia zone outcropping on a low knoll at timberline. The exposure is approximately 300 meters (1000 feet) northeast of the end of the baseline over the stratiform sulfide occurrences, and is at least 40 meters (130 feet) long and 20 meters (65 feet) wide (Photo No. IV and V).

Samples in this area exhibited typical epithermal deposition characteristics and, because of the proximity of the suite of bimodal basalt-rhyolite volcanics less than 500 meters (1600 feet) to the southeast, they were natural candidates to host gold mineralization. Accordingly, from the breccia zone and from the steep scree slope above on LADY LEE #1 and #7 claims, numerous samples of open-space-filling pyritic quartz were collected from sites as high on the mountain as the projected thrust fault zone between the Nisutlin and Anvil allochthons.

Geochemical rock chip assays of 13 samples by Chemex Labs of North Vancouver (Figure 2) revealed anomalously high gold and arsenic values; the latter a common 'pathfinder' element for gold in the epithermal environment. The highest values were in a float sample from near the base of the scree slope in which 1220 ppb (parts per billion)(0.035 oz/t) and 2270 ppm (parts per million) arsenic were reported. Two samples (#420757 and #420758) from breccia outcrops yielded anomalous but low (80 ppb) gold values, yet their arsenic content was highly anomalous (>400 ppm).

The geologic setting and arsenical gold anomaly sets this area apart genetically and physically from the known extent of the volcanogenic polymetallic sulfide horizon; it represents a distinct exploration target with a probable Tertiary epigenetic hydrothermal model.

CONCLUSIONS

Rock chip sampling of boulder float and outcrops confirms the presence of important concentrations of Cu-Zn-Pb-Ag in two segments totallying 225 meters (740 feet) within the known 1300 meter (4265 feet) long sulfide horizon of disseminated sulfides in the Nisutlin allochthon. Scree fans mask possible outcrops over one-half of the total extent of the sulfide band. Outside the scree fans, geochemical soil sampling can be useful in close proximity to the subcrop of the sulfide horizon.

Very low frequency electro-magnetic (VLF-EM) geophysical familiarization survey results may indicate that the gently inclined polymetallic sulfide horizon extends southeasterly.

The dominant felsic metavolcanic suite, and intensely hydrothermally altered schist immediately underlying the poly-metallic sulfide zones, together with anomalously high arsenic values, indicate a Kuroko-type volcanogenic setting. Assuming a district-wide tendency for fissure controlled NNW/SSE elongation of tabular massive sulfides in the Nisutlin allochthon parallel to the Teslin geosuture (e.g. Fyre Lake pyrite-copper deposit), there is a reasonable probability that the base metal mineralization on the SLEEPER claims extends in a SSE direction.

Anomalous gold and arsenic values in rock chip grab samples from a bedrock quartz-healed breccia zone and in float nearby are indicative of epithermal gold mineralization near the northeast end of the claims.

The 1990 program confirmed the presence of important stratiform volcanogenic Cu-Zn-Pb-Ag concentrations and, nearby, the site of highly anomalous gold-arsenic values; both warrant subsequent advanced exploration efforts.

RECOMMENDATIONS

A. Polymetallic volcanogenic sulfide horizon

1. Extend the baseline both east and west; realign where required.
2. Expand the VLF-EM survey with supplemental lines off the baseline.
3. Soil sample at all EM stations in vicinity of trend of sulfide horizon.
4. Stake additional claims where deemed prudent.
5. Select appropriate sites for fences of vertical core drilling to test possible south-southeast elongation of polymetallic concentrations.
6. Conduct Phase I of core drilling.

B. Gold-Arsenic geochemical anomaly

1. Map geology of quartz-healed breccia area, while expanding prospecting of the area.
2. Soil and bedrock geochemical sampling.
3. Establish baseline and conduct VLF-EM survey.
4. Determine if core drilling warranted.

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STATEMENT OF QUALIFICATIONS

I, James S. Dodge, of 14 MacDonald Road, Whitehorse, Yukon submit the following information which establishes some of my qualifications bearing on the necessary level of competence required to carry out the field work and preparation of this report qualifying for assessment work credit on the SLEEPER 1 to 14 claims and the LADY LEE 7 claim.

Education

Missouri School of Mines, B.S. Mining Engineering, 1941
Princeton University, Field Geology, 1940
Stanford University, M.S. Economic Geology, 1951
Albert Ludwigs Universitaet (Germany), Economic Geology, 1952

Experience

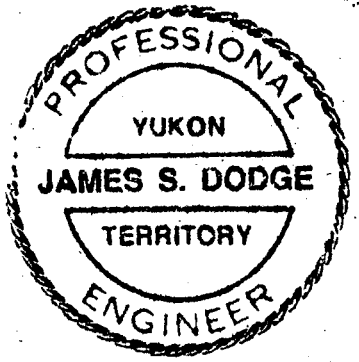
Active in mineral industry since 1941 (including Army engineers) in North and South America, Asia and Africa as prospector, company geologist, mining engineer, mine operator, and consultant in ferrous and non-ferrous metals and in industrial minerals. Among the many organizations with which I have been associated as an employee or consultant:

> Anaconda, Esso, Mitsui, USAEC, Ventures, DIAND, SCAP-Japan, Atlas, Glidden, Spartan/Nuspar, Hirst-Chichagof, Floyd Odlum, Yukon Barite and numerous small mining ventures.

Field experience includes familiarization tours of five of the Japanese Kuroko polymetallic volcanogenic sulfide mines and the massive sulfide deposit of the Besshi mine. Examined massive and disseminated volcanogenic copper-zinc deposits on Prince of Wales Island, Alaska and worked in the Mount Shasta, California district.

Professional Affiliations

Registered Professional Engineer (No. 311) by Association of Professional Engineers of the Yukon Territory
Fellow of the Society of Economic Geologists
Member of American Institute of Mining Engineers.



James S. Dodge, P.Eng.

Vancouver Petrographics Ltd.

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CRAIG LEITCH, Ph.D. Geologist
JEFF HARRIS, Ph.D. Geologist
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PETROGRAPHIC REPORT ON TWO ROCK SPECIMENS FROM YUKON

Report for: James S. Dodge, P. Eng.
14 MacDonald Road
Whitehorse
Yukon
Y1A 4L2.

Invoice CL-12-90
Job #'s 60, 64

Sept. 11, 1990

A: SULFIDE-RICH QUARTZ-BIOTITE-GARNET SCHIST CONTAINING RELICT FELDSPARS, WITH ?RETROGRADE SERICITE-CHLORITE

Described as from a dynamically metamorphosed stratiform volcanogenic polymetallic sulfide deposit in the allochtohonous Nisutlin terrane. Dark grey-green rock with strong limonite staining and phyllitic sheen, characterized by white ?relict feldspar shards, abundant biotite, and common sulfide. It does not react to cold dilute HCl, and id not magnetic. In polished thin section, the modal mineralogy is approximately as follows:

Quartz	40%
Green ("hydro-") biotite	20%
Sericite (muscovite)	10%
Relict plagioclase	5%
K-feldspar	5%
Chlorite	5%
Garnet (green)	5%
(clear)	1%
Pyrite (after pyrrhotite)	3%
Sphalerite	3%
Chalcopyrite	2%
Apatite	1%

This rock is composed principally of granular quartz, with irregular thin laminae that are richer in biotite, and scattered garnet prophyroblasts. There are scattered clots, 1-3 mm in diameter, of relict (sericitized) feldspar and chloritized ?former mafics that may have been phenocrysts or shards in a volcanic or tuffaceous rock.

Quartz forms anhedral grains of up to 0.5 mm diameter. Most grains show signs of mild strain (undulose extinction) but they are annealed rather than fractured. Biotite has greenish brown pleochroism, and forms euhedral flakes up to 0.3 mm long. Garnet forms subhedral to euhedral grains up to 2 mm diameter; there are both pale green (most abundant) and colourless varieties side by side (not actually touching). The garnets enclose both sulfides and other silicates, suggesting they grew around the sulfides.

Most of the relict feldspars appear to be plagioclase in thin section, but the etched and stained slab suggests the presence of K-feldspar (yellow stain). Except in rare cases, the plagioclase is strongly altered to fine-grained sericite (muscovite) flakes of 0.01 to 0.03 mm diameter. One grain displays reverse compositional zoning, ranging from about ?labradorite at the rim to andesine at the core. The former ?mafic grains are now completely pseudmorphed by fine-grained chlorite and biotite. Most of these former phenocrysts have been crushed and disaggregated by the metamorphism.

This is a strongly metamorphosed rock from the mid- to upper greenschist facies (garnet-biotite). It probably was originally a volcanic, possibly tuffaceous with about 20% each of feldspar and mafic phenocrysts/shards, and probably of intermediate composition.

Although by no means a massive sulfide, this rock contains interesting amounts of base-metal (Cu and Zn) sulfides. Sphalerite forms ragged, anhedral grains up to 0.5 mm across, and chalcopyrite is a litle less abundant, forming subhedral grains up to 1 mm long. Pyrite is the most abundant sulfide, forming subhedral grains up to 0.5 mm in diameter, but at least half of it has apparently formed by replacement of pyrrhotite (typical "bird's-eye" texture), probably during retrograde or weathering conditions. The sulfides are generally interstitial to the silicates, and are associated with the most biotitic layers.

Bondar-Clegg & Company Ltd.

136 Industrial Road
Whitehorse, Yukon Territory Y1A 2V1
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Telex 036-8-460

BONDAR-CLEGG

Geochemical Lab Report

SLEEPER CLAIMS (105-G-08)

REPORT: V90-36204.0

DATE PRINTED: 28-AUG-90
PROJECT: NONE GIVEN PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au 30g PPB	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	As PPM	Sb PPM	Hg PPM	Line-Station	
S1 76251		<5	0.4	46	105	363	4	24.0	1.3	0.038	6+00E(45S)	
S1 76252		<5	0.3	332	221	1693	5	9.5	0.6	0.069	6+00E(30S)	
S1 76253		<5	<0.2	30	26	325	4	14.0	0.5	0.057	6+00E(15S)	
S1 76254		<5	<0.2	34	24	201	3	26.0	1.2	0.050	6+00E(BL)	
S1 76255		<5	<0.2	95	27	342	4	18.0	1.6	0.090	6+00E(15N)	
S1 76256		<5	<0.2	144	47	401	7	4.9	0.6	0.062	5+30E(60S)	
S1 76257		<5	<0.2	80	73	720	5	6.8	0.5	0.060	5+30E(45S)	
S1 76258		<5	<0.2	124	<2	243	3	1.7	<0.2	0.051	5+30E(30S)	
S1 76259		<5	<0.2	29	6	265	2	3.1	1.0	0.072	5+30E(15S)	
S1 76260		<5	<0.2	76	17	463	4	8.6	1.1	0.062	5+30E(BL)	
S1 76261		<5	<0.2	25	19	191	3	7.2	0.8	0.064	5+30E(15N)	
S1 76262		<5	<0.2	43	17	157	3	6.3	0.8	0.045	1+58E(30S)	
S1 76263		<5	<0.2	204	24	461	6	7.4	1.2	0.050	1+58E(15S)	
S1 76264		<5	<0.2	121	27	261	3	5.4	0.8	0.073	1+58E(BL)	
S1 76265		<5	<0.2	292	67	2017	3	3.2	0.5	0.031	1+58E(15N)	
S1 76266		<5	<0.2	41	41	365	3	4.1	0.6	0.019	1+58E(30N)	
S1 76267		<5	<0.2	68	58	492	4	2.2	0.6	0.076	1+58E(45N)	
S1 76268		24	8.4	1266	4804	1720	5	2.7	<0.2	0.076	1+75E(10N)	
S1 76269		<5	0.4	613	689	5288	6	10.0	2.1	0.046	1+75E(10N)	
S1 76270		16	<0.2	40	28	260	5	5.6	<0.2	<0.010	0+17W(45N)	
S1 76271		<5	<0.2	67	18	225	4	10.0	0.8	0.022	0+17W(30N)	
R2 76272		<5	<0.2	682	4	91	8	9.3	<0.2	<0.010	6+85E(55S)	Float
R2 76273		<5	<0.2	56	20	50	4	19.0	0.8	0.022	1+58E(45N)	Subcrop
R2 76274		8	0.3	110	46	301	9	14.0	7.7	0.035	6+45E(BL)	Float
R2 76275		24	7.2	1706	4485	2286	10	3.4	5.2	0.194	5+30E(30S)	Float
R2 76276		36	5.5	4350	2148	5702	5	3.2	<0.2	0.135	5+30E(30S)	Float
R2 76277		23	4.1	2402	2383	6142	4	2.5	<0.2	0.086	1+58E(17N)	Float
R2 76278		29	3.1	2962	1311	10894	3	2.5	<0.2	0.185	1+58E(15N)	Bedrock
R2 76279		24	5.2	2985	3244	12697	4	<1.0	<0.2	0.098	1+58E(15N)	Bedrock
R2 76280		27	18.5	14141	3169	16458	4	2.5	<0.2	0.288	6+00E(30S)	Float
R2 76281		39	10.9	5103	2237	7976	5	1.8	<0.2	0.232	1+75E(10N)	Subcrop
R2 76282		17	4.6	1157	3026	11396	5	1.5	<0.2	0.077	1+08E(45N)	Float

SOILS

CHIP

ROCK

Figure 1.

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DODGE, JAMES S.

14 MACDONALD RD.
WHITEHORSE, YUKON
Y1A 4L2

Page Number : 1
Total Pages : 1
Invoice Date: 21-AUG-90
Invoice No. : I-9021085
P.O. Number :

Project :
Comments: LADY LEE #7 and #13 (105-G-08)

CERTIFICATE OF ANALYSIS A9021085

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm Aqua R	As ppm	Hg ppb	Sb ppm					
420751 H	205	294	1220	0.3	2270	40	50.0	Scree float				
420752 H	205	294	170	1.1	112	150	26.0	Scree float				
420753 H	205	294	220	2.0	326	160	23.0	Scree float				
420754 H	205	294	110	0.8	176	90	11.8	Scree float				
420755 H	205	294	55	1.3	280	40	3.2	Scree float				
420756 H	205	294	185	1.3	112	160	15.8	Scree float				
420757 H	205	294	80	0.7	482	50	3.8	Bedrock breccia				
420758 H	205	294	85	0.6	412	30	3.4	Bedrock breccia				
420759 H	205	294	15	0.5	50	20	1.0	Scree float				
420760 H	205	294	200	0.8	416	100	19.2	Scree float				
420761 H	205	294	45	0.4	214	80	9.6	Scree float				
420762 H	205	294	< 5	< 0.2	5	30	0.8	Bedrock rhyolite in amphibolite (L.L.#2)				
420763 H	205	294	50	0.3	302	50	24.0	Scree float				

CERTIFICATION: Hart Bichler

Figure 2.

Figure 2.

VLF-EM

PROPERTY: SLEEPER TRANSMITTER: SEATTLE PAGE:
OPERATOR: J.S DODGE INSTRUMENT: SABRE DATE: 01-08-90

LINE	STATION	ALTITUDE	NULL	FILTER	NOTES
0+17W	1+05N	4670	+2	-2	
	90 N	4690	+2	-6	
	75 N	4695	+4	-8	
	60 N	4700	+6	-9	
	45 N	4705	+8	-10	
	30 N	4710	+11	-8	
	15 N	4720	+13	-4	
	BL %	4730	+14	-1	SULFIDE OUTCROPS
	15 S	4760	+14	+1	
	30 S	4780	+14	+3	
	45 S	4800	+13	+5	
	60 S	4820	+12	+6	
	75 S	4840	+10	+3	
	90 S	4860	+9	0	
	1+05 S	4880	+10		

Figure 3.

VLF-EM

PROPERTY: SLEEPER TRANSMITTER: SEATTLE PAGE:
OPERATOR: J.S.DODGE INSTRUMENT: SABRE DATE: 07-31-90

LINE	STATION	ALTITUDE	NULL	FILTER	NOTES
1+58 E	75N	4655	0		
	60N	4660	+1	-9	
	45N	4665	+4	-9	
	30N	4675	+6	-6	
	15N	4690	+8	-5	* SULFIDE BEDROCK
	BL%	4705	+8	-6	
	15S	4725	+11	-4	
	30S	4735	+11	-2	
	45S	4750	+12	+2	
	60S	4760	+12	+8	
	75S	4780	+9	+9	
	90S	4800	+7	+7	
	1+05S	4820	+5	+4	
	1+20S	4845	+4		

Figure 4.

VLF-EM

PROPERTY: SLEEPER | TRANSMITTER: SEATTLE | PAGE:
OPERATOR: J.S. DODGE | INSTRUMENT: SABRE | DATE: 07-28-90

LINE	STATION	ALTITUDE	NULL	FILTER	NOTES
5+30E	1+05N	4650	+1	-2	
	90N	4670	+2	-7	
	75N	4685	+2	-15	
	60N	4720	+8	-11	
	45N	4730	+11	-2	
	30N	4750	+10	-2	
	15N	4760	+11	-4	
	BL	4765	+12	-3	
	15S	4770	+13	-3	
	30S	4790	+13	-3	
	45S	4805	+15	+5	SULFIDE FLOAT
	60S	4815	+14	+13	
	75S	4840	+9	+9	
	90S	4860	+7	+2	
	1+05S	4870	+7	0	
	1+20S	4880	+7		

Figure 5.

VLF-EM

PROPERTY: SLEEPER TRANSMITTER: SEATTLE PAGE:
OPERATOR: J.S.DODGE INSTRUMENT: SABRE DATE: 07·29·90

LINE	STATION	ALTITUDE	NULL	FILTER	NOTES
6+00 E	90 N	4645	+2		
	75 N	4655	+2	-4	
	60 N	4670	+2	-8	
	45 N	4680	+6	-4	
	30 N	4700	+6	-1	
	15 N	4720	+6	-3	
	BL %	4725	+7	-3	
	15 S	4735	+8	-2	
	30 S	4740	+8	-1	* SULFIDE FLOAT
	45 S	4750	+9	+1	
	60 S	4760	+8	+6	
	75 S	4785	+8	+9	
	90 S	4810	+3	+4	
	1+05 S	4820	+4	+1	
	1+20 S	4825	+3	+1	
	1+35 S	4840	+3	0	

Figure 6.

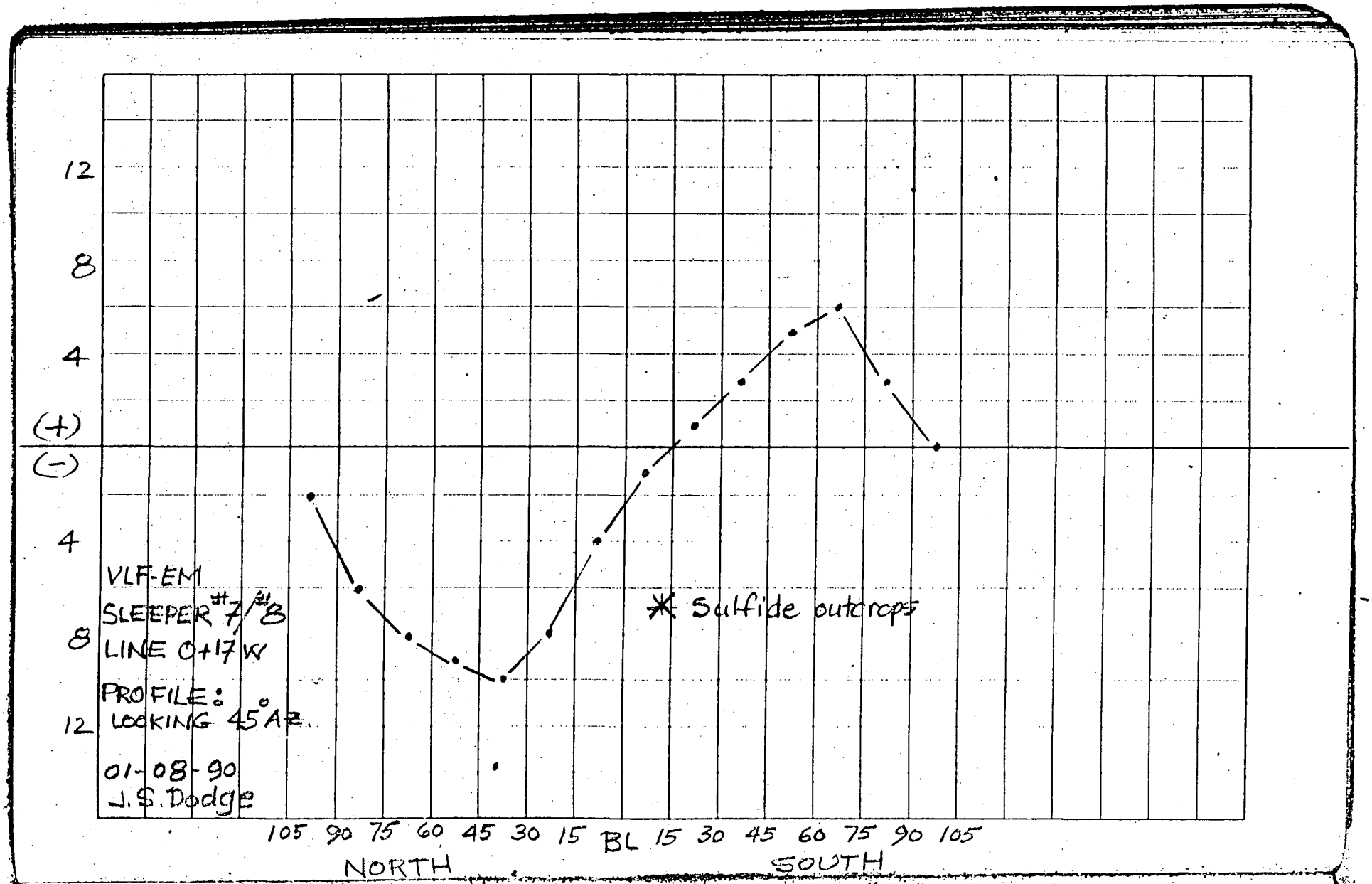

12
8
4
(+)
(-)
4
8
12
VLF-EM
SLEEPER #7/#8
LINE 0+17 W
PROFILE:
LOOKING 45° AZ.
01-08-90
J.S. Dodge
* Sulfide outcrop
105 90 75 60 45 30 15 BL 15 30 45 60 75 90 105
NORTH
SOUTH

Figure 7.

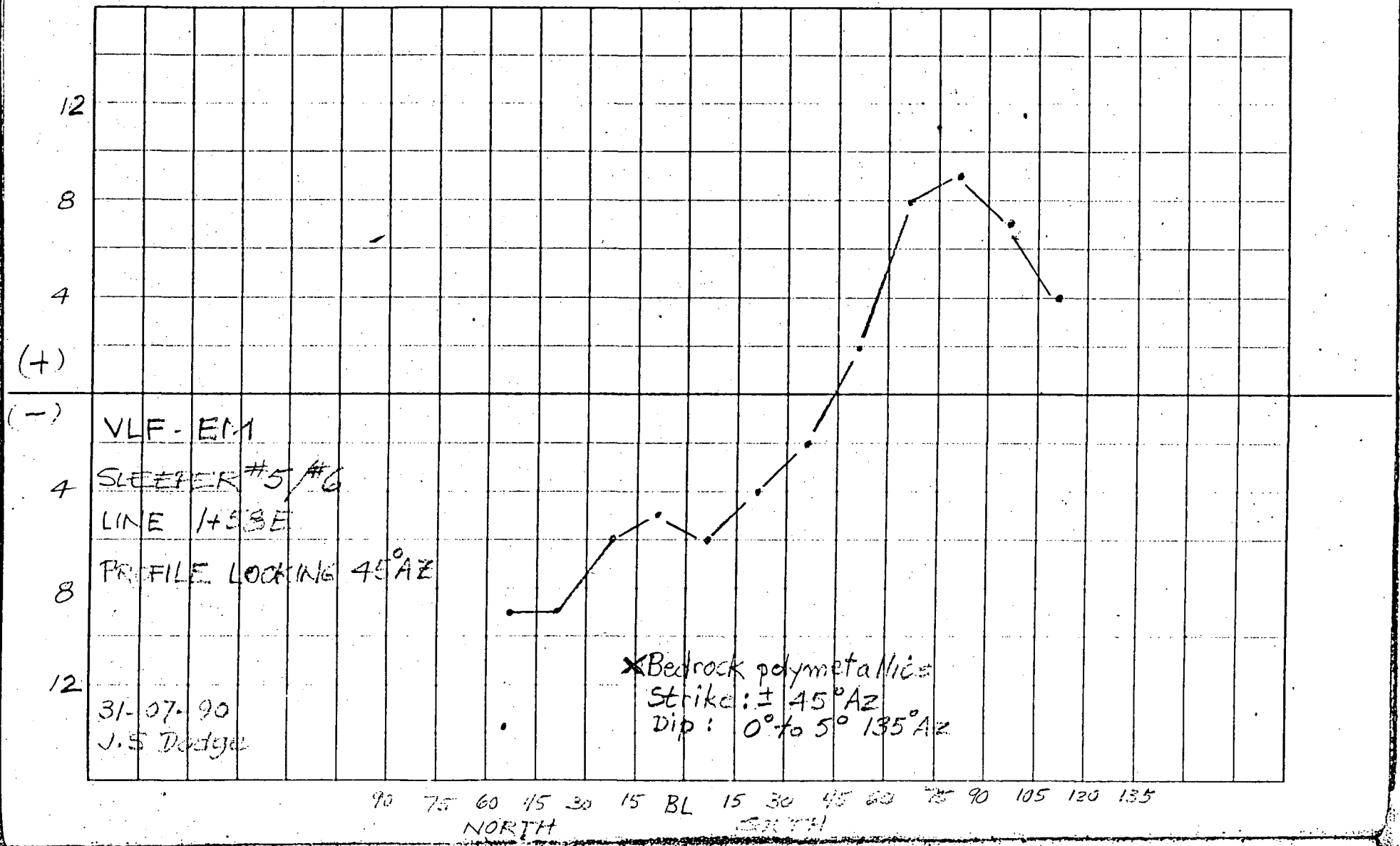

12
8
4
(+)
(−)
4
8
12
VLF - EM
SLEEPER #5/#6
LINE 1+50E
PROFILE LOOKING 45° AZ
31-07-90
J.S Dodge
Bedrock polymetallics
Strike: ± 45° Az
Dip: 0° to 5° 135° Az
90 75 60 45 30 15 BL 15 30 45 60 75 90 105 120 135
NORTH
SOUTH

Figure 8.

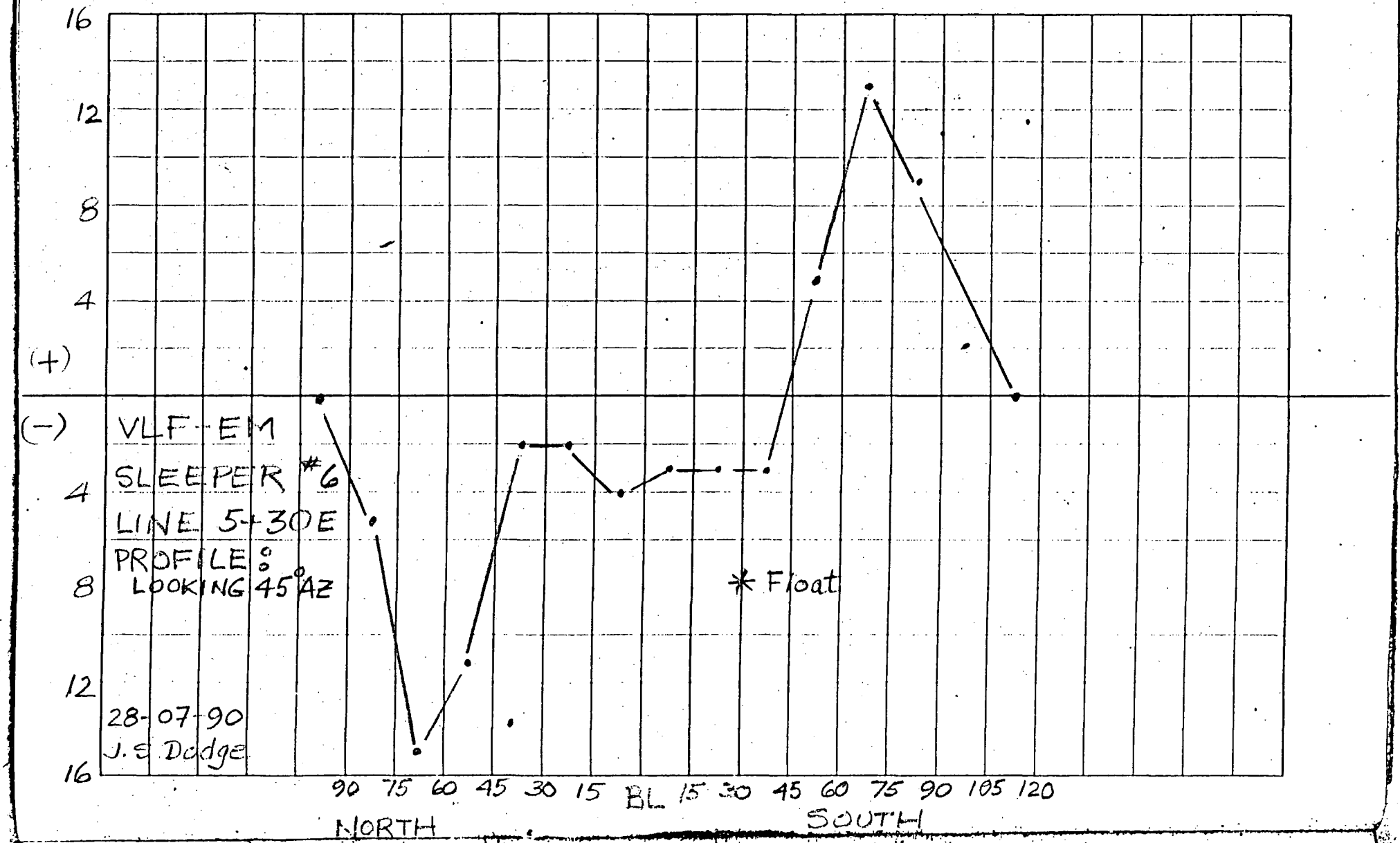

16
12
8
4
(+)
(-)
4
8
12
16
VLF-EM
SLEEPER #6
LINE 5+30E
PROFILE
LOOKING 45° AZ
28-07-90
J. S. Dodge
* Float
90 75 60 45 30 15 BL 15 30 45 60 75 90 105 120
NORTH
SOUTH

Figure 9.

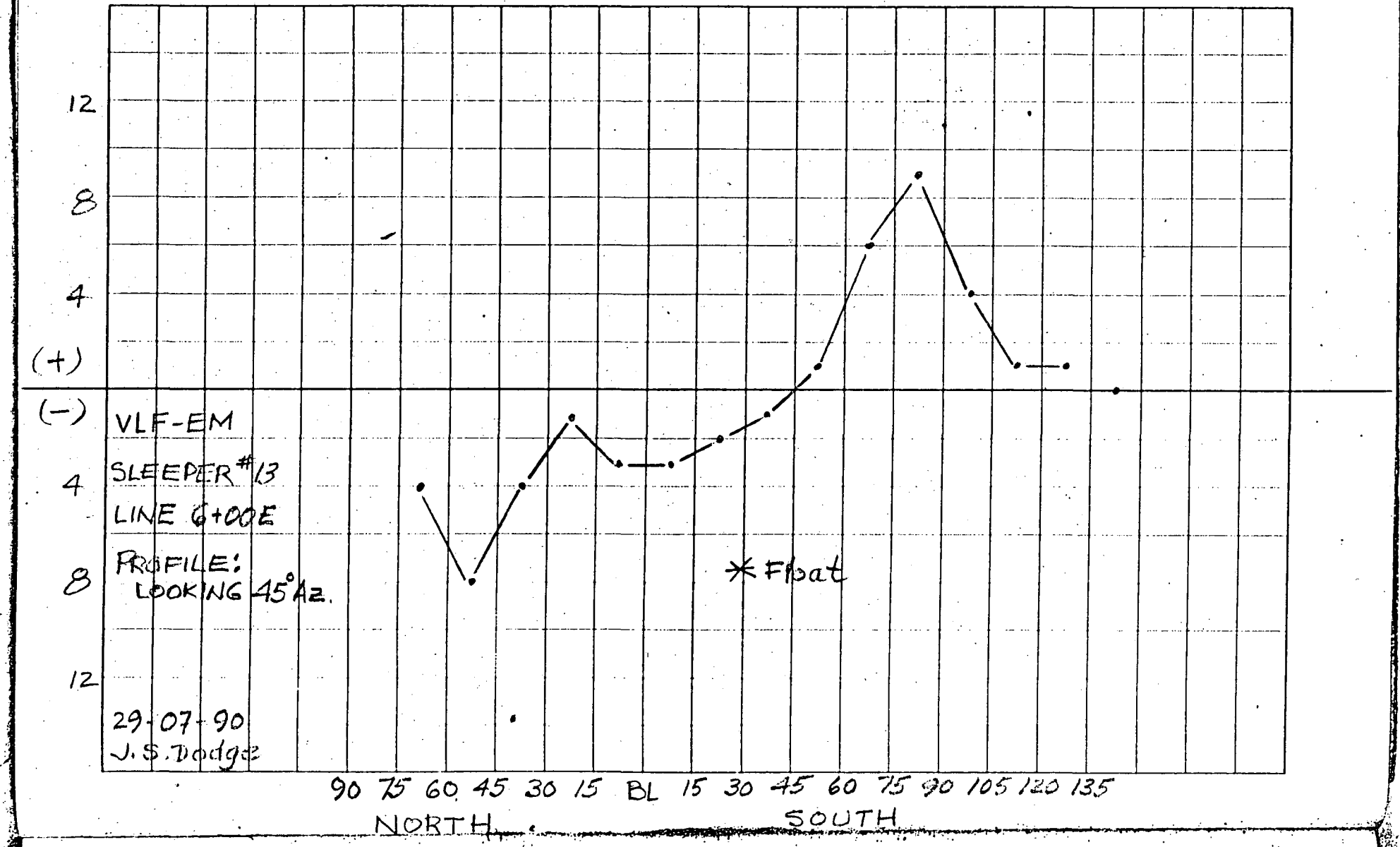
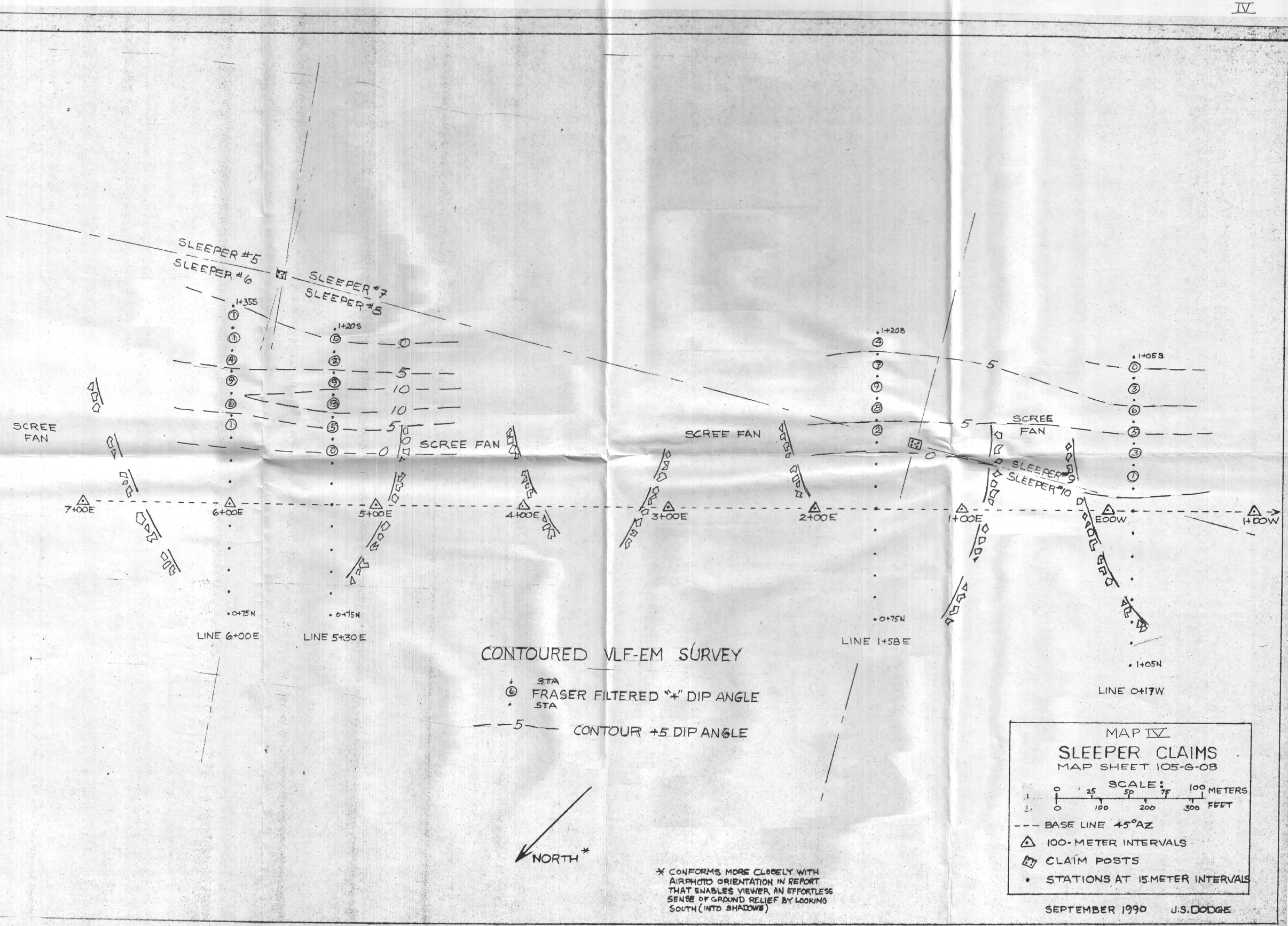

12
8
4
(+)
(−)
4
8
12
VLF-EM
SLEEPER #13
LINE 6+00E
PROFILE:
LOOKING 45° Az.
29-07-90
J.S. Dodge
* Float
90 75 60 45 30 15 BL 15 30 45 60 75 90 105 120 135
NORTH
SOUTH

Figure 10.


SLEEPER #5
SLEEPER #6
SLEEPER #7
SLEEPER #8
SLEEPER #9
SLEEPER #10
SCREE FAN
SCREE FAN
SCREE FAN
SCREE FAN
1+355
1+205
1+208
1+055
0
5
10
10
5
0
5
0
5
7+00E
6+00E
5+00E
4+00E
3+00E
2+00E
1+00E
E00W
1+00W
0+75N
0+75N
0+75N
1+05N
LINE 6+00E
LINE 5+30E
LINE 1+58E
LINE 0+17W
CONTOURED VLF-EM SURVEY
STA
STA
FRASER FILTERED "+" DIP ANGLE
5
CONTOUR +5 DIP ANGLE
NORTH*
* CONFORMS MORE CLOSELY WITH AIRPHOTO ORIENTATION IN REPORT THAT ENABLES VIEWER AN EFFORTLESS SENSE OF GROUND RELIEF BY LOOKING SOUTH (INTO SHADOWS)
MAP IV
SLEEPER CLAIMS
MAP SHEET 105-G-08
SCALE:
0 25 50 75 100 METERS
0 100 200 300 FEET
BASE LINE 45°AZ
100-METER INTERVALS
CLAIM POSTS
STATIONS AT 15 METER INTERVALS
SEPTEMBER 1990 J.S. DODGE

SLEEPER #5
SLEEPER #6
SLEEPER #7
SLEEPER #8
SLEEPER #9
SLEEPER #10

SCREE FAN
SCREE FAN
SCREE FAN
SCREE FAN

7+00E
6+00E
5+00E
4+00E
3+00E
2+00E
1+00E
E00W
1+00W

1+35S
1+20S
1+20S
1+05S

0+75N
0+75N
0+75N
1+05N

LINE 6+00E
LINE 5+30E
LINE 1+58E
LINE 0+17W

CONTOURED VLF-EM SURVEY

STA
FRASER FILTERED "+" DIP ANGLE
STA

—5— CONTOUR +5 DIP ANGLE

NORTH*

* CONFORMS MORE CLOSELY WITH AIRPHOTO ORIENTATION IN REPORT THAT ENABLES VIEWER AN EFFORTLESS SENSE OF GROUND RELIEF BY LOOKING SOUTH (INTO SHADOWS)

MAP III

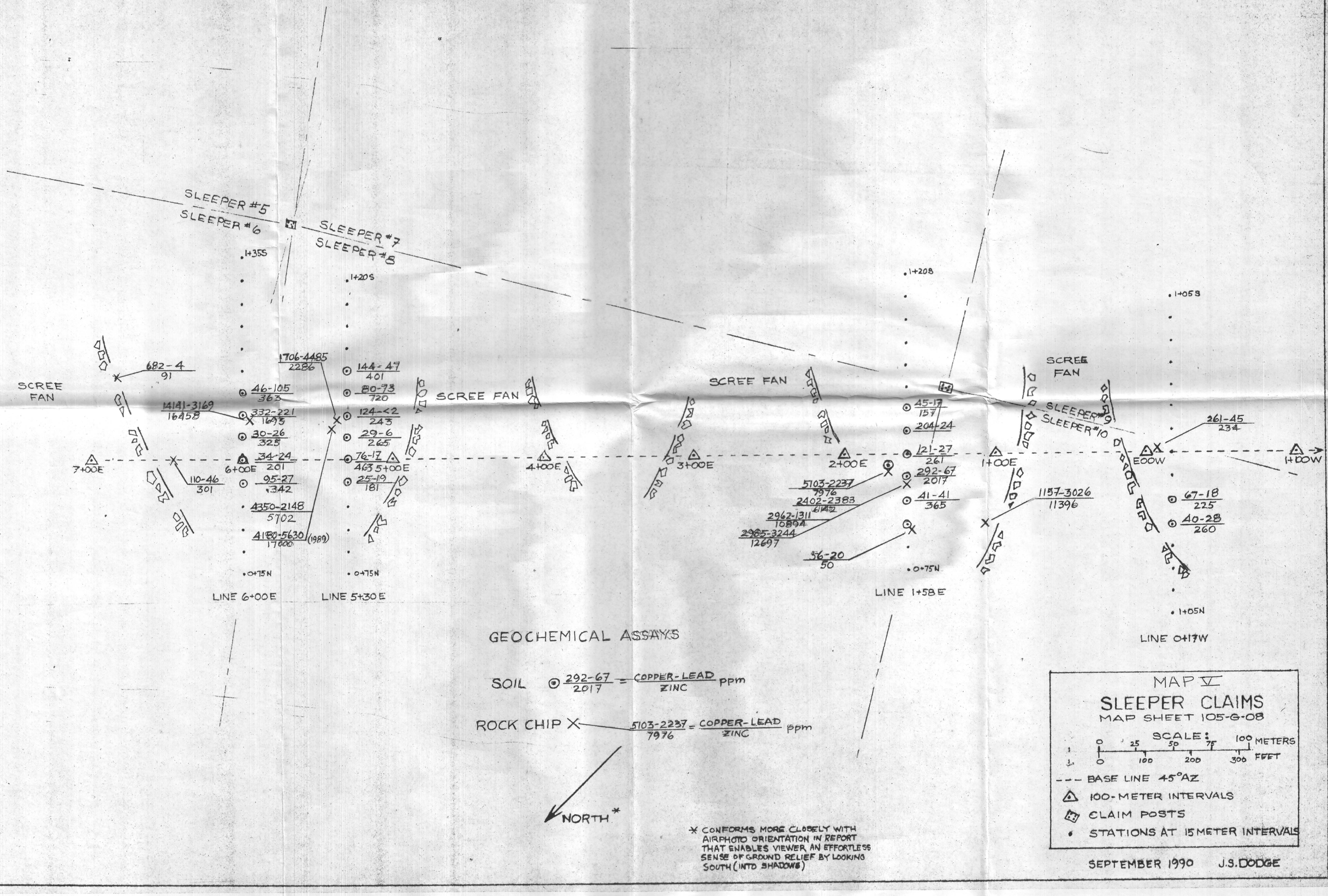
SLEEPER CLAIMS

MAP SHEET 105-G-08

SCALE: 0 25 50 75 100 METERS
0 100 200 300 FEET

--- BASE LINE 45°AZ
△ 100-METER INTERVALS
⊠ CLAIM POSTS
• STATIONS AT 15 METER INTERVALS

SEPTEMBER 1990 J.S. DODGE



GEOCHEMICAL ASSAYS

SOIL ⊙ 292-67 / 2017 = COPPER-LEAD / ZINC ppm

ROCK CHIP X 5103-2237 / 7976 = COPPER-LEAD / ZINC ppm

NORTH *

* CONFORMS MORE CLOSELY WITH AIRPHOTO ORIENTATION IN REPORT THAT ENABLES VIEWER AN EFFORTLESS SENSE OF GROUND RELIEF BY LOOKING SOUTH (INTO SHADOWS)

MAP V

SLEEPER CLAIMS

MAP SHEET 105-G-08

SCALE: 0 25 50 75 100 METERS; 0 100 200 300 FEET

--- BASE LINE 45°AZ

△ 100-METER INTERVALS

CLAIM POSTS

• STATIONS AT 15 METER INTERVALS

SEPTEMBER 1990 J.S.DODGE

J DODGE

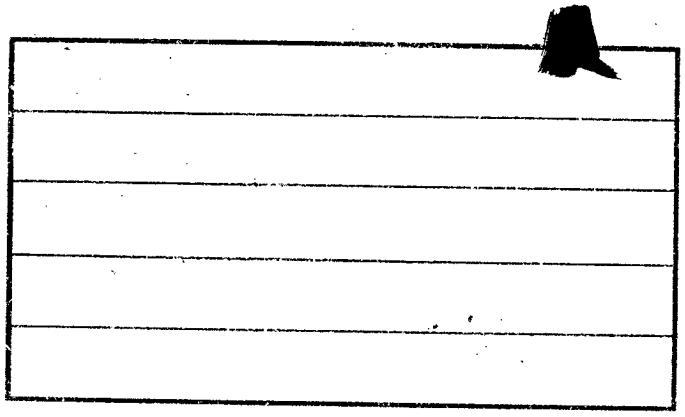
"Rite in the Rain®"

PAP 1490

ALL-WEATHER

FIELD

Notebook No. 351



1990-008

29 June 90 FRIDAY

Odometer (miles) 19980 Porter Cr.
155mi = 260 km 20135 1st Rose River

30 June mostly heavy, frequent showers
Located mega-garnet eclogite in road cut ~~below~~ in Arvid Group meta-volcanic section - serpentinite, Some garnets up to 2 cm dia.

Sampled 25 pcs float (up to 40cm in size) in ditch west side of road 300 m SW of eclogite. Float comprises wHite to pink carbonate with m.gr.l chalcedonic qtz stringers.

01 July - Sun can Dan Rain evening only
No bedrock exposures located in traverse up hillside from chalc-carb. float.

02 July Mon

Return to same area as 01 July but carried on SW 1 mile farther. Excavated shallow pits side road cut exposing bleached, shattered, fault breccia weak FeO_x where weakly silicified crumpled schist fragments. 1 sample for metals.

03 July Tues clear +5°C — cirrus by 10 am +15°C

3 hours locating short in pickup ignition circuit — finally a "GO" @ 10 am. Drove on up Canol Road to Canol Creek and idled 1/2 hr recharging battery.

04 July Wed

Up trail S bluff of Canol Creek to amphibolites in canyon area.

05 July Thur 4°C up to 25° before 3pm rain

Return to Canyon area of Canol Creek examining talc schist for emeralds as per Econ Geol. article by Grundmann & Morteniani - 1989 vol 84, No. 7 p. 1835-1849

06 July Fri

Canol Creek @ game crossing - float of eclogite and CP/Mal? in stgs in white quartz.

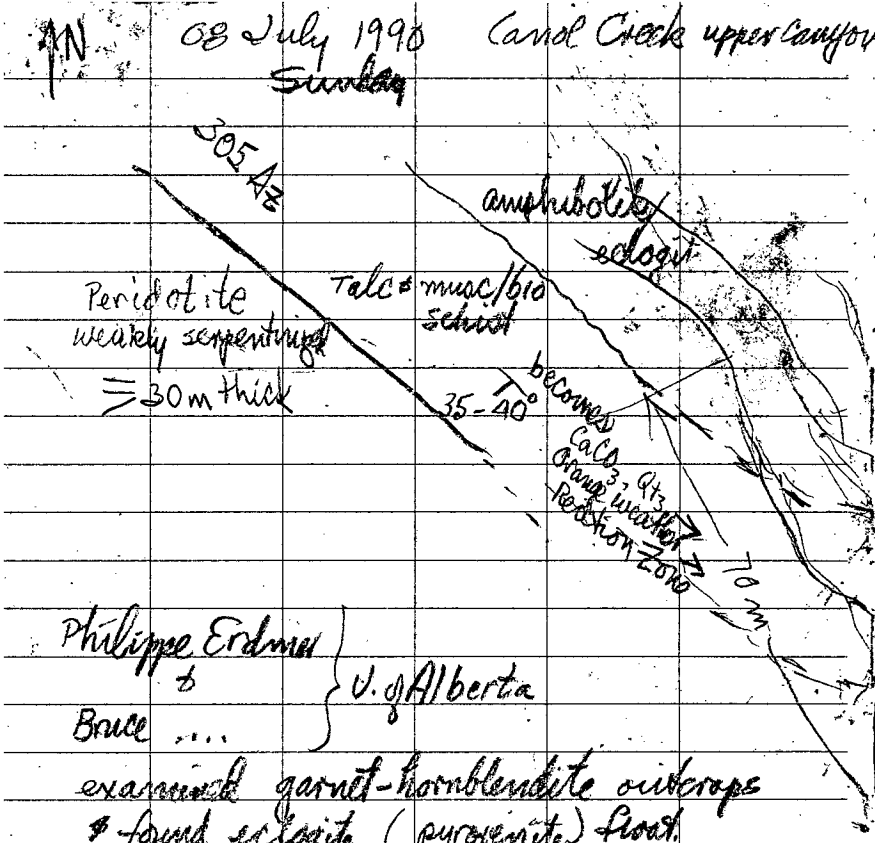
07 July Sat

Eclogite in bdrx Canol Creek canyon

Nephrite boulders (2) much reaction serpentinite float

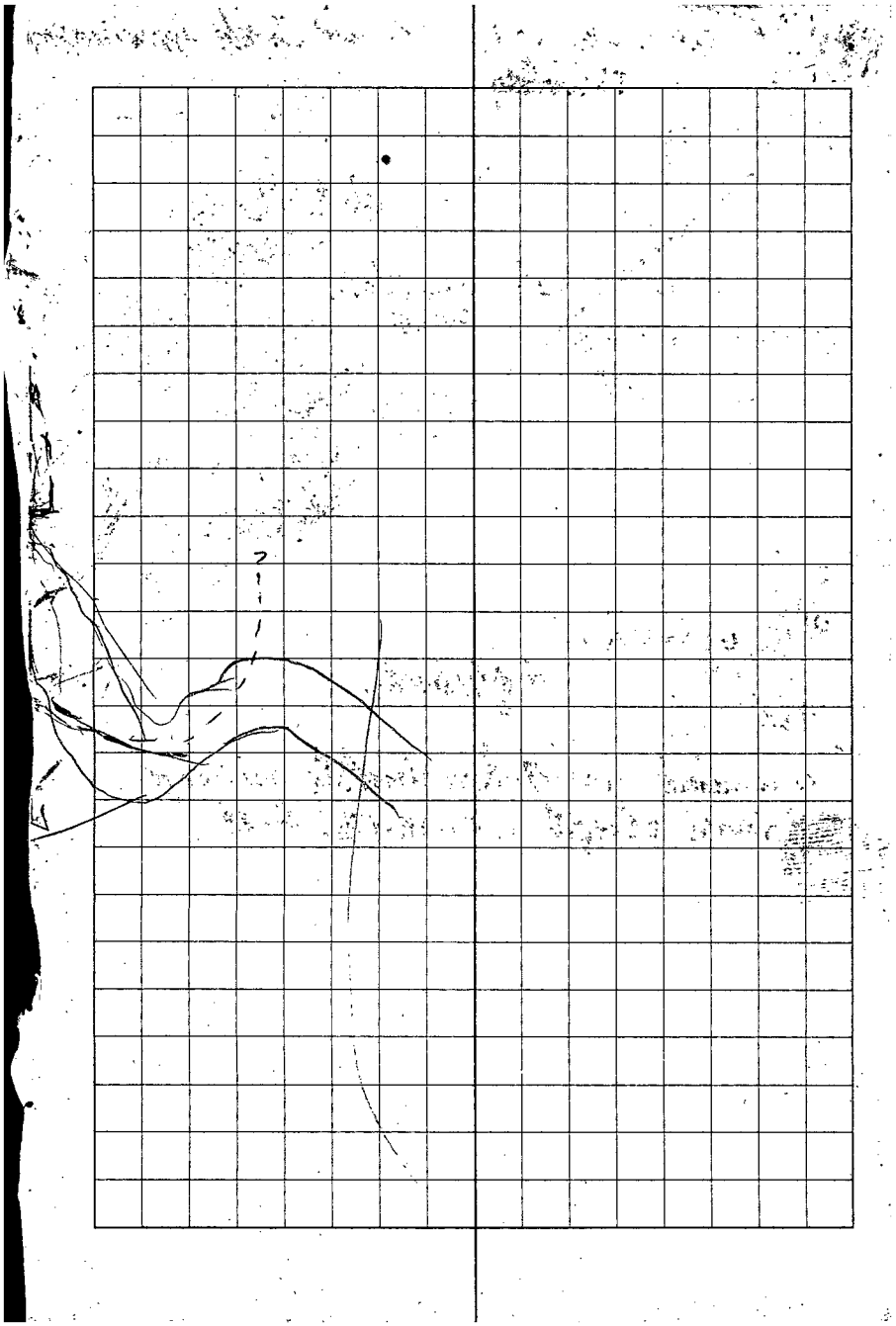
Bear sign on trails (fresh)

08 July 1990 Canol Creek upper canyon
Sunday



Philippe Erdmer & Bruce ... } U. of Alberta

examined garnet-hornblendite outcrops & found eclogite (pyroxenite) float.



09 July - Monday

Returned to Canal Creek upper canyon and recon. steep hillside to south - found serpentinite and eclogite float. Eclogite rx had some greenish pyroxene + was not as schistose as garnet hornblendite. No outcrops or bedrock exposed.

Drove to Sidney Creek then west 17km up S.Cr. to Iron Creek. @ 2019. 5pm. Steady rain 7pm until midnite. Expect to chain-up for return muddy sections unless get drying weather.

10 July - Tues

Still raining - mostly showers - until noon. Scouted up Sidney Valley overburden trail to see if any bedrock exposures on N. side - found none. Returned to camp and followed Iron Creek trail up for approximately ½ km to point where valley widens and few outcrops to be seen near valley bottom. Much pyritic amphib. schist + phyllonites steeply dipping in isoclinal folds with virtually horizontal axes. Flume pipe & old wooden frames testify to earlier placering

11 July Wed

On ridge WNW of Iron Creek camp @ 3750' (not calibrated) (Photo 1)
Qtz-Pyrite schist 30m wide bounded by black graphitic-pyritic slate. Mostly qtz-feldspar-hornblende gneiss - 50m wide - limestone band southside of gneiss
Gossan zone 305 Az, vert in phalias

More samples @ prominent bedrx gossan (Photo 2)

12 Thur.

Returned to limestone band and searched contact with qtz-hbl gneiss but no evidence of manganese enrichment; nor the black slates had hoped to find which could have provided metals.

13 Fri. -

Return to Whitehorse in drizzle after slide, wet 4x4 drive out to Canol Road.

19 July — PAP

Lv. Porter Creek drive to Watson Lake overnight in truck

20 July — PAP — mid-afternoon

Flew in charter Beaver w. Watson Lake Flying Services to Sleeper Lake and set up camp.

SLEEPER PROJECT

21 July → 31 July

11 days

01 Aug (PAP)

Prospected prominent light grey-white weathering boulder "cascade" off a buttress of granite/granodiorite @ 5000-foot altitude just @ timberline. Conformed to description of the Simpson Allochthon which underlies the Nisutlin allochthon. Some migmatitic phases and a crushed, limonite stained zone tops the granodiorite boss. ²carbonate.

Much breccia and some skarn in talus slopes above timberline – will return the 4 km distance from Camp tomorrow – weather permitting.

02 Aug (PAP)

Hiked back down Money Creek valley the 4 km to yesterday's sites. Noted float and subcrops slabs of metasediment intruded by migmatitic sills and dikes (see photo – w. Skagway Lake in distance). All of the evident 30 m true thickness of the meta-sedimentary

appears to be an upper facies in the Simpson allochthon. Several heavily limonite stained brecciated specimens returned to camp.

(PAP)
03 Showers in a.m - began to break up by 11 am - so set out to continue the 'up-section' traverses of area of 2 previous days. Crossed a contact metasomatic hedenbergite/epidote skarn of isoclinally folded calcareous meta-sediments apparently only 15-20m below the thrust fault zone at the sole of the Nisutlin allochthon.

Actual contact not exposed - apparently recessive weathering. Once up-section into the Nisutlin - the succession of brown-weathering, coarsely foliated qtz-musc schist continued up slope from approx 5300' alt to 6500' altitude - all foliation gently 10-15° inclined ESE - with no crenulated folding or secondary horizons.

Returned to camp after passing into north-trending steep walled cirque wherein Nisutlin schists could be seen outcropping over a vertical interval of over 500 feet - no gossan zones or sericite schists visible.

04 (PAP)

Traversed steep slope of same (03 Aug) mountain 500m north of tarn in west facing cirque and returned down scree slope east of tarn and return to camp. Again - all outcrops were of Nisutlin schist; no Simpson meta-plutonic rks outcropping on traverse.

05 (PAP) Clear cool 12°C

Traversed east then south around east perimeter of SLEEPER and LADY LEE claim blocks and into blue-green tarn 500m south of nephritic serpentinite on Lady Lee #4. No float of Nisutlin between north-

flowing creek and the serpentinite body on Lady Lee #4.

While returning to camp on a contour route at timberline - came across a qtz-calcite healed, phyllonite breccia with pyrite around clasts - could be some arsenopyrite? Found more breccia (more quartz replacement) in a broad 30m wide (at bottom) scree slide - returned to camp with two samples of bedrock breccia and several pieces of breccia float from slide up.

15° Windy

06. (PAP)

In camp began looking closely at some of breccia float samples from 5th Bldg. - noted arsenopyrite clearly in 2 pieces, one of which had calcite along with quartz healing.

Returned to scree slide area and followed a sparse train of limonite stained qtz-calcite healed

- plagioclase breccia up slope until grass/soil covered talus but chunks of serpentinite derived from close to base of thrust allochthon. Unclear whether serpentinite breccia coming from the thrust fault zone between Nesikep & Gambier allochthons or if coming out of a steeply dipping? tertiary fault zone which on air photo appears to be NW trending and likely responsible for abrupt cliff topography which bounds the northeast end of SLEEPER mountain. This normal? fault zone is parallel to the distinct set of NW trending parallel gullys on the SLEEPER mtn (which form the scree faces marking the stratiform sulfide horizon of Nesikep terrane.

Could these other fault sets be similarly Au/As mineralized?

Altogether collected 15 samples in this area - perhaps 13 to Chaney?

12th/13th days

07, 08 Aug (PAP) – SLEEPER

Partly Cldy – windy 12°

09 August

Reconnoitered up (south) valley at southwest end of SLEEPER cleavage attempting to locate float of an extension (down the inclined foliation) of the volcanogenic sulfide horizon. No definite clues to its presence – perhaps the zone is dipping 30° (as in plunge & dip of foliation above 6+00 W – and then being covered by timbered slopes. not readily identified. More detailed exam of cliffs needed.

10 Aug (PAP)

Retraced route of yesterday – found much Tertiary volcanics float covering most outcrops. Possible that a goochem reconn would indicate presence of sulfide horizon – wherever vol. slide rock is absent. Still no sign of qtz-sericite-pyrite schist as pathfinder to the sulfide horizon.

11 Aug – SLEEPER 14th field day

12 Aug (PAP) – Broke camp & flew out to Watson Lake in late afternoon.

13 Aug (PAP) – Drove – Watson Lake to Porter Creek –

PAP Aug 1998

Wed 15 - Drove - PC to Stewart's Crossing
16 couldn't ford Crooked Creek
Thu to get to Austin Creek - so
drove via P.C. to Smith River
17 Smith River to Watson Lake -
FRI wait until 7 pm for plane to
Stewart Lake

SAT 18 Don Taylor came by am.
Located one eclogite outcrop
area - not sure which of those
mapped by Erdmer. Believe
found jadeite stringer 2cm
wide in eclogite. Tangle of
wind / snow downed trees.
Chert & serpentinite trending
N/S to N25E steeply dipping
to W - "underlying" eclogite?

SUN 19 Rain - steady by noon - bush
really wet. Compass essential for travel as
no sun to guide by - low relief. Huik Hunker
chiselled out several sm pcs jadeite
(emerald green) - noted pale green omphacite
(no % jadeite) with few garnets. Hardness
~7 - could be jadeitable? Collected
specimens for cutting!

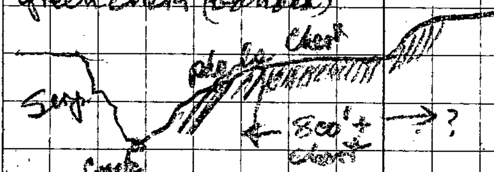
19 Aug Cont'd
Stumbled into bee's nest - one bite.

Mon 20 Aug
Drive out + cut trail 1 km towards eclogite

Tues 21 Aug
Contact between eclogite and serpentinite - chilled border of eclogite and alteration of serp. Garnet in matrix and disseminated. Part of contact would think is skarn - i.e. metamorphosed was dunite.
Located emerald-green bladed masses in eclogite within 1 m of contact w. serp. Hardness ~6.5-6.5 Could be Jadeite - will cut + polish. Brought down 6 kg. However, more likely actinolite?
Gabbro w sulfide - maybe pyrrhotite not magnetic, however.
Contacts E-W 30° N some sites steeper. Eclogite appears to be intruding the ophiolite

Wed 22 Aug

Carried on up main SE flowing creek to canyon where trail first crosses @ uppermost beaver dam. Serpentinite on S west slope. No East cliff area steeply dipping 65-75° SW: phyllonite, underlying white ls, underlying green chert (banded)



Strike N20W

Looking NWest

Thur 23 Aug

N30E 40° NW contact between eclogite & serpentinite on cliffs 50 m N of musc/chl schist + gabbro ridge.

On fault (major) scarp – breccia healed w. microbx qtz, py – N65W 70°N is the face of hinge of fault (major). At least 50 m exposed in TRENCH (Bk flies bad) and 3 m in height. In places bx & py extends 15 m N of scarp. Some clear qtz.

37 24 Pick up by WLFS afternoon

38 25 Return drive WLK to Porter Creek and prepare samples for assaying 22 to 90

01 Sep Sat — Ar Canal Creek 22244
Lv. Porter Creek 22087 mile
157

02 Sep Sun

Up Canal Creek valley 3 Km where found peridotite-hosted breccia veins within the garnet-hornblendite (a variety of peridotite), serpentinized dunite terrane. Decided to send to Tom Retzmaphics for identification.

Located E-W fault zone (essentially vertical) at north edge of tropical SiO_2/$CaCO_3$/FeS_2 reaction zone underlying the serpentinite. Several samples with FeS_2 taken for assessing.

03 Sep
Mon L.D

Returned to Coral Creek valley where took 4 3 kg sediment samples from deep, boulder-lee sites.

Took samples from a number of float samples (derived from mostly covered outcrops on N. hillside — SiO_2 crisscross veinlets and calcite patches / stringers w. assoc. FeS_2 FeS. Greenschist (overprint—retrograde) of garnet hornblendite overlying reaction zone.

04 Sept Tu

Tues - Rain began 3 am and continued until 2 pm. Remained in camp reading Econ Geol issues on massive sulfide geology.

LV 6622244
PC 22480

156

Sept.
05 Wednesday

Pulled out 5 slabs of jade-appearing material from Canol creek about 100 metres downstream from reaction zone - although two had considerable nephrite, none had sufficient hardness (vis-a-vis serpentine) to be considered as nephrite.

Located small boulder of quartz (and a pinkish-salmon colored mineral - a zoisite?) thulite perhaps. However, was in glacial till - so of decorative interest only.

Sept.
06 Thursday

Drove south on Canol Road to Km 116 where spent 2 hours scouting west route to reach limestone west of Road with view to using that route to the nearest lake area - for rhodonite at borders of ls mapped near north end of lake.

Returned Porter Creek - late afternoon

@ 22400 hrs odometer

LVP, C 22453 nom. 12 Sep wed.

Arr Stewart King 6 pm - camped @ Crooked Creek crossing.

13 Sep Thurs. - raging high runoff from rains of past week pushed depth of fast water at 1 meter - too dicey to cross. Decided again to postpone hike 7 km to Airstrip Creek to examine syenite on SW side of Tintina Fault.

891
453
438

22891 Drove back to Porter Creek & on to
22990 Km 14 on So Canol.

14 Sep - Fri Sunny strong S winds 50 kph
Climbed mtn to west and on W for 6 km to overlook of Muskrat Lake.
At 3 km encountered NW strike NE 30°-45° dipping pyritized - schist with some white qtz stringering near base (contact w. granodiorite boss which trends NW/SE.
Gray weathering phyllite underlies pyritic mss in saddle E of last peak before Muskrat.
Pcs of manganiferous (or graphitic) schist in glacial debris.

15 Sep -
Clouded up, began raining 6 am - thru 2 pm - bush really wet. Hail @ 5 pm. Camp - reading.

16 Sep - Heavy frost -5° clear in am - puffy clouds + @ 5 breeze. Climbed mtn to west again and spent day on west + north slopes examining skarn outcrops. Ls beds interbedded w. biotite-calc gneiss, FeS in unique silky fa, much diopside, some hedenbergite, a few salmon-colored garnets. Took 10 kg samples of variety of rock types - for UV and assay (incl Au).

17 Sep 23090 mi
Returned to Porter Creek and sort/weigh samples.