

BEMA INDUSTRIES LTD.

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GEOLOGICAL EVALUATION

SINISTER CLAIM GROUP

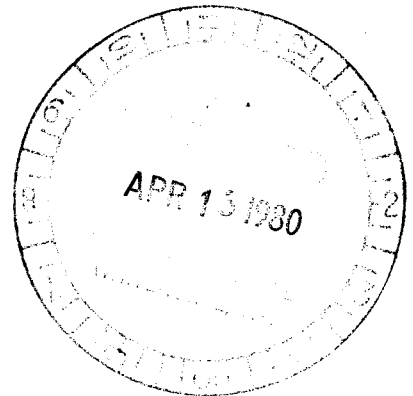
MAYO MINING DIVISION

YUKON TERRITORY 105-M-13

FOR

CANADA TUNGSTEN MINING CORPORATION LIMITED

MARCH 1980



BY

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BEMA INDUSTRIES LIMITED

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1.0 INTRODUCTION

1.1 Terms of Reference and Scope of Report

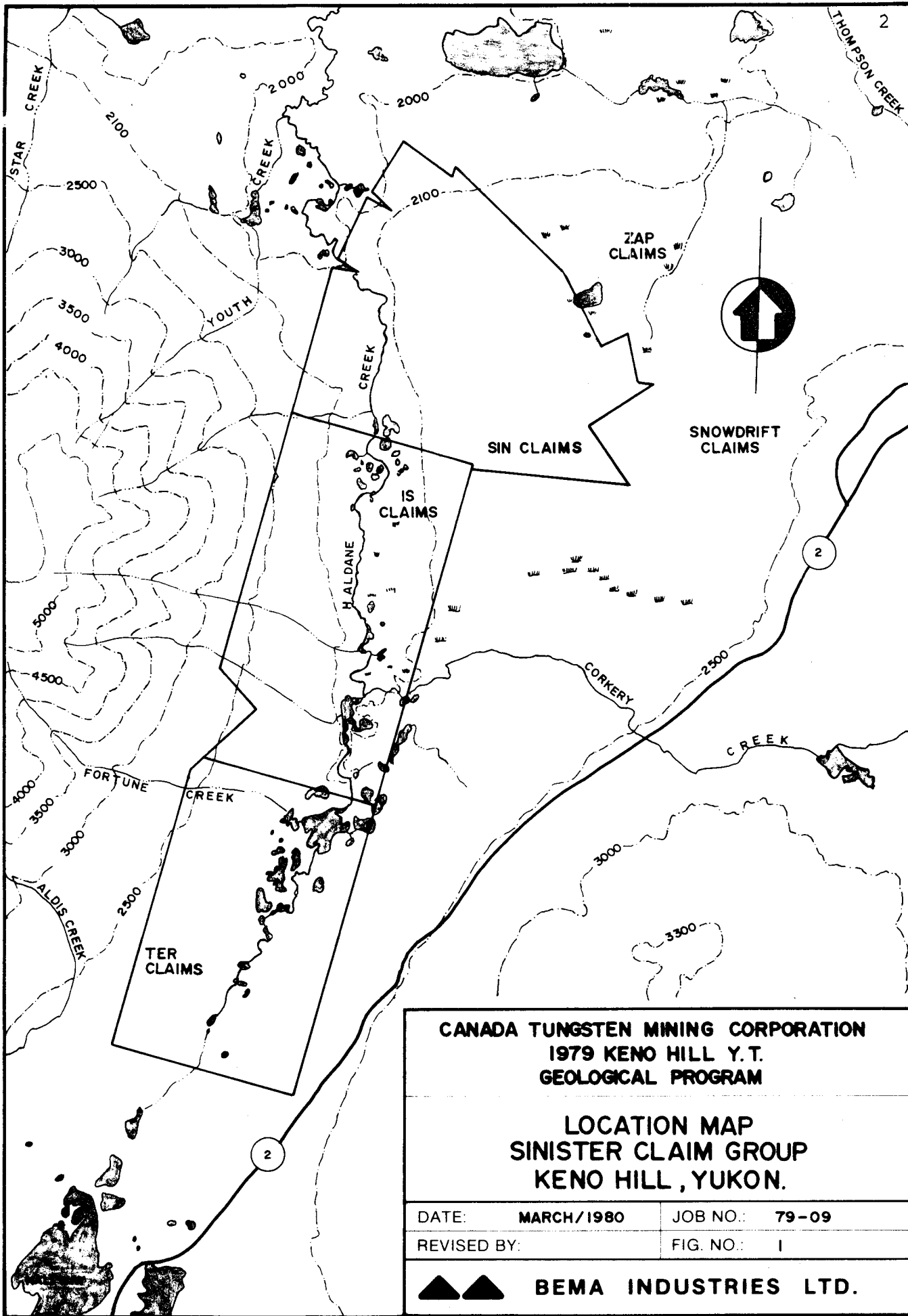
Canada Tungsten has engaged Bema to geologically evaluate the SINISTER claim group presently under option from Archer, Cathro and Associates Ltd. In February 1979, Canada Tungsten contracted Bema Industries to stake nine hundred and ten (910) mineral claims adjacent to the historic mining camp of Keno Hill in conjunction with the optioning of several other mineral claims. This evaluation consists of reviewing published information, performing regional and detailed geological mapping, assessing the economic viability of the claims, and ensuring tenure of mineral rights within the said claim group.

The emphasis of the 1979 field season was to determine the extent of the Central Quartzite Formation in relation to the SINISTER claim group. This report reviews field work and laboratory analysis performed and includes geological, geochemical, and geophysical interpretation.

1.2 Location and Access

The SINISTER claim group is located in central Yukon Territory approximately eleven (11) kilometers west of Elsa, adjacent to Mt. Haldane. The claims are located on N.T.S. map sheet 105-M-13 and are centered on latitude $63^{\circ}52'$ and longitude $135^{\circ}46'$. The area is bisected by Haldane Creek and is bordered by the Halfway Lakes to the south and Proctor Lake to the north.

Access to the SIN claims is supplied by the South McQuesten River road and access to the TER claims is supplied by Highway 2, both are all weather roads. Access to the IS claims is by foot from either the SIN or TER claims. A small fixed wing airstrip is located two (2) kilometers east of the SIN claims. (Refer to Figure No. 1.)



**CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL Y.T.
GEOLOGICAL PROGRAM**

**LOCATION MAP
SINISTER CLAIM GROUP
KENO HILL, YUKON.**

DATE: MARCH/1980

JOB NO.: 79-09

REVISED BY:

FIG. NO.: I



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1.3 Climate

The climate is typical of the central Yukon area with a mean annual temperature of -2° C. The low average temperature is about -10° C and the high average temperature is about 3° C. Temperatures range from a low of -55° C during the winter months to a high of $+30^{\circ}$ C during the summer. The mean annual precipitation is about 38 centimeters with most of the rainfall occurring in May and June. Daily heavy thunder showers occur throughout the summer months. Snow begins to accumulate as early as mid-September and is melted by mid-June at higher elevations. Up to 1.5 meters of snow may accumulate in the Keno and Galena Hills area.

1.4 Topography and Vegetation

The main topographic feature of the project area is the three (3) kilometer wide Haldane Creek valley that trends north-south. The valley is relatively flat with only a few glacial benches and a small hill providing some relief. By far, the larger part of the property is extensively drift-covered with little or no outcrop. The vegetation on the valley floor consists of spruce groves, swamp grasses and large areas of buckbrush.

1.5 History

Information on the exploration history within the SINISTER claim boundary is very sketchy. The first report of exploration activity was in 1962 when Hunting Survey Corporation Limited conducted a Turam electromagnetic survey for Silver Titan Mines Limited. Thirty (30) line kilometers were surveyed on the AA claims which are located south of Proctor Lake and east of Haldane Creek. From this survey many north trending faults and east-west trending EM conductors were interpreted. However, their most significant discovery was finding a massive, blue-grey quartzite outcrop located approximately two (2) kilometers northeast of Shakey Lake.

In 1970, Seigel Associates Limited flew an aeromagnetic survey for Lacanex Mining Company Limited over the McQuesten River valley. Of particular interest is an east-west trending dipole anomaly south and adjacent to Shakey Lake. In the following year, a geophysical

survey was conducted on behalf of Canadian Reserve Oil and Gas Limited by Spartan Aero Limited. The objective of the survey was to relocate conductors discovered by a previous survey. Three (3) kilometers of vertical loop EM, one (1) kilometer of VLF-EM, and magnetic profiling was conducted on old, relocated cut lines. Two east-west trending conductors were relocated and drilling was recommended. Their interpretation suggests that the conductors are covered by fifteen (15) to thirty (30) meters of conductive overburden. These claims are located one (1) kilometer south of Shakey Lake. To date, no exploration or mining firm has confirmed that any of the EM conductors are either sulphide mineralization or graphite-rich sediments, within the McQuesten Valley.

1.6 Claim Status

In April, 1979 Canada Tungsten Mining Corporation optioned the SINISTER claims from Archer, Cathro and Associates of Whitehorse, Y.T. This claim group consists of ninety-six (96) claims and adjoins the ZAP claim group to the northeast. A list of these claims including the grant numbers and date of expiry may be found on Table 1. (Refer to Figure No. 2.)

2.0 GEOLOGY

2.1 Regional Geology

Geology in the Keno Hill - Galena Hill area has been mapped by a number of geologists of the Geological Survey of Canada beginning with the earliest work of Ogilvie (1890). Fieldwork by Bostock (1938-41), McTaggart (1948-50), Kindle (1952-54), Boyle (1953-55) and Green (1962 and 1965) has provided a general picture for regional geology. From this work two basic opposing theories of structural geology have evolved. McTaggart (1960) interpreted the intensely deformed schist and greenstone units and pronounced local thickening in the Central Quartzite to be indicative of complex recumbent folding and low-angle faulting. Boyle (1965), alternatively, interpreted the local stratigraphic section to be a simple homocline implying that the apparent repetition of units and local thickening are sedimentary features. More recent stratigraphic studies by Tempelman-Kluit (1966) and Blusson (1978) are in disagreement with regard to the general age relationships of the various units present. Resolving the ambiguities of structure and age may lead to the discovery of ore.

TABLE 1CLAIM STATUS - SINISTER CLAIMS

<u>CLAIM NAME</u>	<u>GRANT NOS.</u>	<u>EXPIRY DATE</u>	<u>OWNERSHIP</u>
SIN #1	YA39499	April 9, 1980	Option
SIN #2	YA39500	April 9, 1980	Option
SIN #3	YA39501	April 9, 1980	Option
SIN #4	YA39502	April 9, 1980	Option
SIN #5	YA39503	April 9, 1980	Option
SIN #6	YA39504	April 9, 1980	Option
SIN #7	YA39505	April 9, 1980	Option
SIN #8	YA39506	April 9, 1980	Option
SIN #9	YA39507	April 9, 1980	Option
SIN #10	YA39508	April 9, 1980	Option
SIN #11	YA39509	April 9, 1980	Option
SIN #12	YA39510	April 9, 1980	Option
SIN #13	YA39511	April 9, 1980	Option
SIN #14	YA39512	April 9, 1980	Option
SIN #15	YA39513	April 9, 1980	Option
SIN #16	YA39514	April 9, 1980	Option
SIN #17	YA39515	April 9, 1980	Option
SIN #18	YA39516	April 9, 1980	Option
SIN #19	YA39517	April 9, 1980	Option
SIN #20	YA39518	April 9, 1980	Option
SIN #21	YA39519	April 9, 1980	Option
SIN #22	YA39520	April 9, 1980	Option
SIN #23	YA39521	April 9, 1980	Option
SIN #24	YA39522	April 9, 1980	Option
SIN #25	YA39523	April 9, 1980	Option
SIN #26	YA39524	April 9, 1980	Option
SIN #27	YA39525	April 9, 1980	Option
SIN #28	YA39526	April 9, 1980	Option
SIN #29	YA39527	April 9, 1980	Option

TABLE 1
CLAIM STATUS - SINISTER CLAIMS Cont'd

<u>CLAIM NAME</u>	<u>GRANT NOS.</u>	<u>EXPIRY DATE</u>	<u>OWNERSHIP</u>
SIN #30	YA39528	April 9, 1980	Option
SIN #31	YA39529	April 9, 1980	Option
SIN #32	YA39530	April 9, 1980	Option
SIN #33	YA39531	April 9, 1980	Option
SIN #34	YA39532	April 9, 1980	Option
SIN #35	YA39533	April 9, 1980	Option
SIN #36	YA39534	April 9, 1980	Option
SIN #37	YA39535	April 9, 1980	Option
SIN #38	YA39536	April 9, 1980	Option
SIN #39	YA39537	April 9, 1980	Option
SIN #40	YA39538	April 9, 1980	Option
IS #1	YA39539	April 9, 1980	Option
IS #2	YA39540	April 9, 1980	Option
IS #3	YA39541	April 9, 1980	Option
IS #4	YA39542	April 9, 1980	Option
IS #5	YA39543	April 9, 1980	Option
IS #6	YA39544	April 9, 1980	Option
IS #7	YA39545	April 9, 1980	Option
IS #8	YA39546	April 9, 1980	Option
IS #9	YA39547	April 9, 1980	Option
IS #10	YA39548	April 9, 1980	Option
IS #11	YA39549	April 9, 1980	Option
IS #12	YA39550	April 9, 1980	Option
IS #13	YA39551	April 9, 1980	Option
IS #14	YA39552	April 9, 1980	Option
IS #15	YA39553	April 9, 1980	Option
IS #16	YA39554	April 9, 1980	Option
IS #17	YA39555	April 9, 1980	Option
IS #18	YA39556	April 9, 1980	Option
IS #19	YA39557	April 9, 1980	Option

<u>CLAIM NAME</u>	<u>GRANT NOS.</u>	<u>EXPIRY DATE</u>	<u>OWNERSHIP</u>
IS #20	YA39558	April 9, 1980	Option
IS #21	YA39559	April 9, 1980	Option
IS #22	YA39560	April 9, 1980	Option
IS #23	YA39561	April 9, 1980	Option
IS #24	YA39562	April 9, 1980	Option
IS #25	YA39563	April 9, 1980	Option
IS #26	YA39564	April 9, 1980	Option
IS #27	YA39565	April 9, 1980	Option
IS #28	YA39566	April 9, 1980	Option
IS #29	YA39567	April 9, 1980	Option
IS #30	YA39568	April 9, 1980	Option
IS #31	YA39569	April 9, 1980	Option
IS #32	YA39570	April 9, 1980	Option
TER #1	YA39571	April 9, 1980	Option
TER #2	YA39572	April 9, 1980	Option
TER #3	YA39573	April 9, 1980	Option
TER #4	YA39574	April 9, 1980	Option
TER #5	YA39575	April 9, 1980	Option
TER #6	YA39576	April 9, 1980	Option
TER #7	YA39577	April 9, 1980	Option
TER #8	YA39578	April 9, 1980	Option
TER #9	YA39579	April 9, 1980	Option
TER #10	YA39580	April 9, 1980	Option
TER #11	YA39581	April 9, 1980	Option
TER #12	YA39582	April 9, 1980	Option
TER #13	YA39583	April 9, 1980	Option
TER #14	YA39584	April 9, 1980	Option
TER #15	YA39585	April 9, 1980	Option
TER #16	YA39586	April 9, 1980	Option
TER #17	YA39587	April 9, 1980	Option

TABLE 1
CLAIM STATUS - SINISTER CLAIMS Cont'd

<u>CLAIM NAME</u>	<u>GRANT NOS.</u>	<u>EXPIRY DATE</u>	<u>OWNERSHIP</u>
TER #18	YA39588	April 9, 1980	Option
TER #19	YA39589	April 9, 1980	Option
TER #20	YA39590	April 9, 1980	Option
TER #21	YA39591	April 9, 1980	Option
TER #22	YA39592	April 9, 1980	Option
TER #23	YA39593	April 9, 1980	Option
TER #24	YA39594	April 9, 1980	Option

Rocks of the Keno Hill - Galena Hill area belong to the Yukon Group which until recently was thought to be Precambrian in age. Tempelman-Kluit and Green have revised the stratigraphy of the area and have interpreted Mesozoic ages for the Lower Schist (Jurassic) and Central Quartzite (Lower Cretaceous) and a Precambrian age for the Upper Schist. Blusson, based on limited mapping, suggests that the Lower Schist and Central Quartzite resemble Canol- and Imperial-like strata of Upper Devonian to Mississippian age. Work done in 1979 by Sinclair and Tessari support a Paleozoic age for the units based on radiometric dating of mid-Cretaceous regional metamorphism. TABLE 2 presents various interpretations of the stratigraphy of the Keno Hill - Galena Hill area.

Mapping on a regional scale was undertaken by Bema Industries Ltd. geologists in order to better understand regional trends of favourable stratigraphic units and structures. The area mapped is centered on the South McQuesten River Valley and extends from Mount Haldane in the west to Keno Hill in the east. Work on the south side of Galena Hill and work adjacent to Lynx Dome define the north-south limits of mapping.

The stratigraphic succession in the Keno Hill - Galena Hill area consists of the three main sedimentary units which have been intruded by several plutonic phases. In all portions of the map area the sedimentary sequence consists of a lower graphitic phyllite or schist unit which contains minor quartzite and quartz-sericite schist. This unit is called the Lower Schist Formation.

The Lower Schist Formation is conformably overlain by the Central Quartzite Formation which is predominantly bedded quartzite of varying thickness intercalated with graphitic phyllite, argillite and schist. This sequence of interlayered quartzite and schist shows marked similarity in appearance to a turbidite sequence. Contacts between lamina are often very sharp and individual units are of uniform composition.

The Central Quartzite Formation is overlain by the Upper Schist Formation. As previously indicated, controversy exists concerning the relationship of the Upper Schist to the other formations of this sequence. Mapping during the 1979 field season demonstrated that the contact between the Central Quartzite and Upper Schist Formations

TABLE 1-3
STRATIGRAPHY IN THE KENO HILL - GALENA HILL AREA

	BOYLE (1965)	GREEN (1971)	BLUSSON (1978)	BEMA (1979)
M E S O Z O I C	CRETACEOUS	Quartz-Feldspar Porphyry Unit 11 Granodiorite Diorite, Granite Unit 10	Quartz Monzonite <u>Granodiorite Un.10</u> Greenstone, Keno Hill Quartzite Un8	Qz-Fp-Porphyry Un7 Lamprophyre Unit 6 Quartz Monzonite Grandiorite Unit 5
	JURASSIC		Lower Schist Unit 7	
	TRIASSIC	Greenstone Unit 9		Greenstone Unit 4
P A L E O Z O I C	PERMIAN			Upper Schist Un.3
	PENNSYLVANIAN			Central Quartzite Unit 2
	MISSISSIPPIAN		Central Quartzite	Lower Schist Un.1
	DEVONIAN		Lower Schist	
	SILURIAN	Pebbly Quartzite Unit 4		
	ORDOVICIAN	Upper Schist Unit 3		
CAMBRIAN	Central Quartzite Unit 2			
P R E C A M B R I A N	PROTEROZOIC	Lower Schist Unit 1	Grit Division Unit 3 Gritty Quartzite Unit Pcy Phyllitic Quartzite Un.2 Upper Schist Unit 1	

was both gradational and conformable. This conclusion is based on data collected from the south side of the McQuesten Valley west of Elsa, from the north side of the valley near UR and Poli Creeks and from the south of Lynx Dome.

In all locations, intercalated quartzite and graphitic schist and/or argillite grade into graphitic schist. The contact has been defined as the point where schist comprises fifty percent or more of the stratigraphic section or where the first quartz-sericite schist appears. This interpretation fails however to distinguish between Green's Upper Schist division (Unit 1) on the south side of the McQuesten Valley and the Grit division (Unit 3) on the north side of the valley. Although no gritty rocks were observed south of the South McQuesten River, the Upper Schist in this location is in the same stratigraphic position as that on the north side. Further mapping to the south on Galena Hill is required before the absence of gritty rocks can be accepted.

The stratigraphic succession has been intruded by several plutonic phases. The relative ages of these plutons can be postulated on the basis of metamorphic grade and crosscutting relationships. The oldest intrusive rocks in the area are the greenstone sills. These gabbroic bodies are found throughout the stratigraphic section decreasing in order of abundance from the Lower Schist to the Upper Schist Formation. Greenstone has been observed on both sides of the valley in all stratigraphic units and as far north as Lynx Dome. These bodies often exhibit intense shearing which is likely synchronous with older pervasive regional metamorphism.

The second plutonic phase in the area is represented by the quartz monzonite to diorite stocks that lie along the hinge zone of the Mayo Lake Anticline. These intrusive rocks give potassium-argon model ages which range between 81 Ma and 109 Ma (Wanless et al 1966, 67, 71, 73, Armstrong 1978 cited by Tessari, 1979). These plutons include the Dublin Gulch Stock, the HIT Intrusion and the Hanson Lake Intrusion. Several other smaller stocks may be present beneath the drift covered McQuesten Valley. It is important to note that tungsten and tin mineralization is associated with many of the plutons.

Biotite lamprophyre sills and dykes and quartz-feldspar porphyry sills and dykes are the youngest

intrusions in the district. These units have not been observed to show crosscutting relationships, therefore relative ages cannot be determined. However, a lamprophyre sill and dyke was observed to crosscut a greenstone body near Hex Creek.

At least three periods of structural deformation are thought to have occurred in the Keno Hill - Galena Hill area. The earliest event recognized involved large scale recumbent folding and low-angle faulting. Though largely obscured by later deformation these folds and faults are identified by many overturned minor folds and small scale thrust faults. Minor structures of this nature trend east-west and show northerly vergence. Where the hinge zones of large scale recumbent folds are thought to occur, rocks are intensely warped and sheared and contain massive contorted quartz veins. Recumbent folding and low-angle faulting may account for anomalous local thickening of some units in the Keno Hill area.

The second period of deformation comprises several subsequent events which have contributed largely to the present geometry of the stratigraphic units. The first of these events produced the broad northwest-southeast trending fold known as the Mayo Lake Anticline. This structure and subsequent erosion has exposed a broad belt of Central Quartzite immediately north of Mayo Lake which dips under a cover of Upper Schist on the southwest flank. Near Keno Hill the quartzite narrows and the underlying Lower Schist occurs to the northeast. North of Keno Hill and in the McQuesten Valley only Lower Schist is exposed. On the ridge between the South McQuesten River and Lynx Creek, Lower Schist and Central Quartzite form the hinge and flanks of the anticline. Across Lynx Creek Central Quartzite lies in the hinge with Upper Schist on the flanks. To its terminus near Lynx Dome the anticline plunges gently and occurs entirely within the Upper Schist Formation.

The distribution of units on the Mayo Lake Anticline was altered somewhat by the subsidiary McQuesten River Anticline and the Lynx Creek Anticline. These subparallel structures trend northeast-southwest along their respective valleys and intersect the Mayo Lake Anticline at oblique angles. Both appear to plunge gently to the southwest. The effect of these anticlines on earlier features, particularly the Mayo Lake Anticline, is very pronounced. West of Keno Hill and west of the Hanson Lakes the effects of the Mayo Lake Anticline are largely obscured.

In the McQuesten Valley the Lower Schist Formation is the lowest unit exposed in the hinge area of the McQuesten River Anticline. Overlying the schist on the flanks of the McQuesten Valley is the Central Quartzite Formation. Toward Mount Haldane to the southwest, the Central Quartzite appears to converge in the hinge zone beneath the drift cover of the McQuesten Valley. On both sides of the valley the quartzite is overlain by the Upper Schist Formation.

The latest significant phase of deformation in the district was predominated by extensive fault development. It is not possible to determine if fault development was contemporaneous with folding so it is here treated as a separate phase of deformation. It is possible, however, that the development of faults is directly related to the earlier periods of fold development. There are two types of faults that are of interest, these are vein faults and cross faults. Each will be discussed separately below.

Vein faults are the most economically significant faults in the Keno Hill-Galena Hill area as they are often host to rich silver-lead loads. They occur throughout the district in all types of rocks but differ in their internal nature where cutting greenstone, quartzite, phyllite or schist. The regional pattern of the vein faults is complex and difficult to systematize. Nearly all strike northeasterly and dip to the southeast. In general the principal vein faults, also called longitudinal faults constitute a series of parallel and subparallel faults which strike between $N35^{\circ}E$ and $N80^{\circ}E$. Another less common set of vein faults are cross-over or transverse faults. These range in strike from north to $N35^{\circ}E$.

The second major type of faults are cross faults. Cross faults have long been thought to be post-ore faults but in fact may have played a fundamental role in the localization of ore shoots. Franzen (1979) has found many of the United Keno Hill Mines Ltd. orebodies to be severed by cross faults and has observed "floods of ore fluids backed up behind these faults". Cross faults generally strike northwesterly and dip approximately at 60° to the southwest. It is important to note that there may be at least two sets of cross faults; an ore-related shallow dipping early set called precursor faults and a post-ore, steeply dipping later set.

2.2 Local Geology

The SINISTER claim group lies in a north-south trending valley bounded by Mount Haldane to the west and Field Hill to the east. The valley is covered by glacial deposits of unknown thickness, and outcrops were observed in only two (2) locations. The east-west trending regionally metamorphosed sediments on either side of Haldane Creek are offset by a north-south trending fault. This fault is referred to as the Haldane Creek Fault. Strata to the west of the Haldane Fault appears to have been uplifted to form Mount Haldane while strata to the east appears to have down-dropped. The Haldane Creek Fault is terminated to the north by the east-west trending McQuesten Valley Fault.

Due to the lack of outcrop on the SINISTER claim group it was necessary to map the areas adjacent to the claims with outcrop exposure. Since the majority of silver-lead-zinc lodes in the district are found in the Central Quartzite Formation, emphasis was placed on correctly positioning the quartzite unit within the property limits. As a result of the mapping program it was determined that the formation strikes westerly from Elsa onto the SINISTER claim group. (Refer to Figure No. 3.)

Only in Galena Creek is the contact between the Upper Schist Formation and the Central Quartzite Formation fully exposed. To the west, this contact can be roughly traced west-southwest across Highway 2, then approximately three hundred and fifty (350) meters north of the highway at Thompson Creek.

In the area of Thompson Creek, the Central Quartzite-Upper Schist contact bends to an east-west strike. This trend is accurately determined by the presence of Upper Schist outcrops north of the airport and by Central Quartzite drill cuttings from a line of overburden drill holes six hundred and fifty (650) meters further west.

This apparent change in the strike of the contact near or at Thompson Creek may be interpreted as either a flexure on the contact or as a right lateral fault offset which shifts the contact north along the west side of an inferred fault. Since the west-northwest trending Brefalt Creek fault near Elsa offsets the

contact approximately 800 meters in a horizontal direction, one or more of the west-northwest and north trending airphoto linears present in the area may be structures along which fault-offsets occur.

Between the area north of the airport and Shakey Lake, bedrock exposure is poor. However, two significant areas, west and northwest of Shakey Lake, contain outcrop which were important in determining the position of the Central Quartzite-Upper Schist contact.

2.3 Detailed Geology

Much of the area within the SINISTER claim group has been examined on a regional scale of 1:31,000 and selected areas of interest have been mapped at a scale of 1:500. Detailed mapping was limited to areas in which trenching had exposed bedrock. It is convenient to discuss the detailed geology of the exposures separately and to refer to these areas as Area A and Area B.

Area A

Four (4) trenches expose fresh bedrock approximately thirteen hundred (1300) meters south of Proctor Lake and twelve hundred (1200) meters northwest of Shakey Lake. Several small outcrops of quartzite were also mapped east and north of the trenches.

The trenches expose a continuous section of medium to dark grey phyllite and graphitic quartzite. The massive quartzite is interbedded with one (1) to three (3) meter thick beds of graphitic phyllite which accounts for approximately fifteen per cent of the exposed bedrock. Bedding attitudes vary from 065° to 080° in strike and dip 30° to 35° to the southeast. (Refer to Figure No. 4). In thin section the rock is composed of quartz (95%-97%), sericite (1-2%), carbonaceous matter (0.5%-3%), chlorite (1%), and opaques, zircon (0.5%). Laminations in the quartzite contain either chlorite, sericite or graphite which give the rock a banded appearance. These bands generally are less than a centimeter thick.

Locally the quartzite is cut by quartz veins which range from one (1) to twenty (20) centimeters thick,

strike an average of 030° and dip vertically. Some of these veins are impregnated with pyrite and/or have pyritic selvages. In certain locations pyrite is found disseminated within the quartzite, however no other mineralization has been encountered. The rock lithology described is interpreted to be of the Central Quartzite Formation or the bottom section of the Upper Schist Formation.

Area B

Sixteen hundred (1600) meters west-northwest of Shakey Lake a series of old trenches expose a one hundred and fifty (150) meter section of phyllite with limy horizons. The most prominent lithology consists of a light grey-green siliceous phyllite with beds ranging in thickness from two (2) to fifteen (15) meters. This lithology occasionally grades into a grey-black graphitic phyllite with an increase of carbonaceous matter. Buff to grey limestone and phyllitic limestone form as interbeds within the phyllites. These interbeds range in thickness from one (1) to five (5) meters. In thin section the rock is composed of elongated anhedral grains of calcite (90-97%), carbonaceous matter (1-10%) and quartz (1%). The color of the limestone varies with the percentage of carbonaceous matter. Bedding attitudes vary from 040° to 075° in strike and dip 20° to 40° to the southeast. (Refer to Figure No. 5.)

Bostock (1947) gives the following description:

"The succeeding member is composed mainly of schists, of which graphitic types are prominent. Quartzite beds similar to those of the underlying member, and quartz-mica, mica and chlorite schists are also important constituents. Bodies of crystalline limestone follow a horizon about 500 feet above the base of the member."

The writer is in general agreement with Bostock concerning the approximate stratigraphic position of the limestone horizon. The above described rock lithologies are only located within the Upper Schist Formation.

In the area west of Shakey Lake the position of the Upper Schist - Central Quartzite contact cannot be determined precisely. It is apparent that the contact lies farther north than an east-west extension of the contact from the area north of the airport. This suggests that the contact either curves north or that it is faulted north. If the latter is true, a long north-south airphoto linear located east of Shakey Lake may be the surface expression of this fault.

3.0 GEOCHEMISTRY

The writer in the 1979 report, "Proposed Exploration Program for Keno Area Properties of Canada Tungsten Mining Corporation Limited", recommended a mercury, lead, zinc (Hg, Pb, Zn) geochemical survey be conducted over the Central Quartzite Formation within the McQuesten Valley. A preliminary program to test the feasibility of the use of mercury as a pathfinder for fault structures or silver-lead-zinc bearing vein faults was to be carried out prior to the McQuesten Valley survey. This survey was conducted on various properties on Keno Hill and Galena Hill and consisted of determining the content of mercury in ore samples and in different soil horizons over known veins. Samples were analysed for mercury by Bondar, Clegg and Company Ltd. of North Vancouver. (Refer to Table 3.) A copy of the Geochemical Lab Report is attached as Appendix A.

High mercury values in ore samples clearly demonstrate that mercury is associated with Keno Hill - Galena Hill vein type mineralization. Sphalerite, specifically the "blackjack" variety is more likely to be associated with mercury than galena. Tessari (1979) and Jonasson and Sangster (1974) have also documented high mercury values contained in Galena Hill - Keno Hill ore samples, up to 20.0 ppm mercury.

Different soil horizons were analysed for mercury over known vein systems which include the Lucky Queen, Werneke, Ladue Sadie-Friendship, Formo, Mount Keno and a vein at the airport. The Ladue Sadie-Friendship survey best demonstrates the use of mercury geochemistry as an applicable exploration technique for finding buried orebodies. (Refer to Figure No. 6.) The mercury values decrease with depth and tend to be higher closer to the vein fault. These results have verified that Keno Hill - Galena Hill vein type mineralization can be traced in areas of overburden with the use of mercury geochemistry.

Hg CONTENT OF ORE SAMPLES

<u>SAMPLE NUMBER</u>	<u>DESCRIPTION</u>	<u>Hg ASSAY VALUES (in ppb)</u>
8834	minor galena and sphalerite sample from airport west of Elsa.	250
8835	(black-jack) sphalerite sample * G.T. from SILVER KING mine dump.	5000
8836	Galena-rich sample from SILVER KING mine dump.	1350
8837	(black-jack) sphalerite and quartz sample from FORMO mine dump.	* G.T. 5000
8838	galena sample from FORMO mine dump.	520
8839	manganese oxide stained siderite sample from LADUE mine dump.	400
8840	sphalerite + pyrite sample from south LADUE mine dump.	* G.T. 5000
8841	highly oxidized vein sample, minor sphalerite and galena, from WERNEKE #1 claim	* G.T. 5000
8842	galena chips from MT. KENO vein.	* G.T. 5000

* G.T. - Greater Than

In the 1979 exploration proposal the writer recommended that the B soil horizon be analysed for mercury. However, the preliminary survey demonstrated that the A soil horizon gave significantly higher mercury values than the B soil horizon, therefore the A horizon was sampled. A more comprehensive mercury-lead-zinc geochemical survey was conducted on the northern portion of the SIN claims which are thought to be underlain by the Central Quartzite Formation.

3.1 Field Procedure

The A and B soil horizons were sampled from one hundred and eleven (111) stations. Samples were collected at 50 meter intervals on lines spaced 150 meters apart. Samples containing approximately 230 grams were collected by mattock and auger. The interface between the A and B soil horizons occurs at a depth of less than fifty (50) centimeters. An organic-rich sample was collected above the interface and an organic-free sample was collected below the interface. Samples were tagged, placed in Kraft paper bags and slowly dried at a constant temperature in a drying tent. Samples were then sent to Bondar, Clegg Co. Ltd. of North Vancouver to be analysed for mercury, lead and zinc. Copies of the Geochemical Lab Reports are attached as Appendix B.

3.2 Analytical Techniques

For mercury 500 mg of organic-rich sample cold digested in a concentrated acid mix (90% HNO₃ and 10% HCl) for 1 to 3 days. The test-tubes were subsequently placed in a hot water bath at 100° C, digested for ½ hour, removed from the bath and diluted to 100 ml with metal free water. Reduction of mercury to its elemental state was accomplished by the addition of stannous sulphate. The evolved mercury or vapour was then passed through a closed absorption cell of an atomic absorption spectrophotometer. For lead-zinc the organic-free samples and organic-rich samples were re-dried and screened to -80 mesh.

The digestion procedure is the same, however, determinations were made by atomic absorption spectrophotometry.

3.3 Results

Eighty-eight (88) lead-zinc soil samples remain to be analysed. From the plotted data no lead-zinc anomalies have been determined. Seven hundred (700) meters northwest of Shakey Lake and between line 9+000 and line 10+000 there is a large mercury anomaly trending 065° and enclosing mercury values varying from 75 ppb to 115 ppb. The background value for mercury is 53 ppb. This trend is interpreted to represent a fault zone parallel to the trend of the McQuesten River Valley, or possibly a longitudinal vein fault. South of this anomaly lies a smaller mercury anomaly trending 095° for six hundred (600) meters and enclosing values varying from 75 ppb to 95 ppb. Crosscutting the two anomalies is a long and broad mercury anomaly trending 340° . This anomaly may mark the northerly extension of the Haldane Creek fault or a splay from that fault. Mercury values range from 50 ppb to 124 ppb. (Refer to Figure Nos. 7 & 8).

4.0 GEOPHYSICS

4.1 Electromagnetic Survey

During the 1979 field season a horizontal loop electromagnetic (HEM) survey was conducted over the northern SIN claims. Donald B. Sutherland, M.A., P. Eng., consulting geophysicist, recommended the survey and the system used. Floyd Hussey for Tom Gledhill, P. Eng., performed the survey. The survey was conducted on cut and flagged grid lines and covered 45 line kilometers. Work began on August 1st, 1979 and was completed on August 6th, 1979. The instrument and survey parameters are outlined below.

Instrument:	APEX MAXMIN II
Coil Separation:	X=150 meters
Frequency:	High Frequency 1777 Hertz
	Low Frequency 888 Hertz
Line Spacing:	150 meters

The purpose of the HEM survey designed by Sutherland was to map conducting, graphitic stratigraphic horizons beneath the drift covered McQuesten Valley and to infer geological structures on the basis of this mapping. The conducting horizons are inferred to be graphitic phyllites and schists and are interbedded with resistive, thick bedded quartzite horizons. Material which was highly conductive but showed little variation in conductivity is interpreted to be the graphitic Lower Schist Formation. The thick bedded quartzite of the Central Quartzite Formation is recognized as a succession of both broad and narrow conductive zones alternating with broad resistive units. The Upper Schist unit is expressed as a broad unvarying, resistive zone. The Upper Schist is predominantly composed of buff phyllite, phyllitic quartzite and quartz-sericite schist. The inferred geological contacts can be compared with the geophysical data by comparing Figure No. 3 and Figure No. 9 of the geophysical plan. The technique of mapping used is to identify conductive stratigraphic intervals and attempt to correlate these across the surveyed area. Where the lateral continuity of conductive horizons are broken and an offset apparent, a fault is inferred to exist. Several northeast trending faults have been interpreted from the data.

Glen E. White, B.Sc., P. Eng., consulting geophysicist was commissioned to review and analyse the field data. The data was plotted on a plan at a scale of 1:5,000 (metric) and drafted for interpretation. From his analysis White suggests that in the area in which 150 meter line spacing was used, the survey provided useful data for mapping purposes.

Several areas of interest have been delineated by the HEM survey. At least three north-northeast trending fault structures are located in the area believed to be underlain by the Central Quartzite Formation. The most significant of these structures consists of a 750 meter wide zone in which complex faulting appears to be concentrated. This zone lies between L9+250 and L10+000 and between Proctor and Shakey Lakes. It is of interest to note that the mentioned area is associated with anomalous mercury geochemistry.

In addition to structural information White studied in detail the most prominent conductor. It strikes approximately east-west, dips to the north at 60° to 70° , and trends slightly north of Shakey Lake. At Shakey Lake this conductive zone is apparently 30 meters thick, occurs at a depth of 30 meters, and has a conductivity of 4000 mhos. A conductor of this magnitude is likely composed of graphite or sulphides or a combination of both. Since this zone is coincident with a strong dipole aeromagnetic anomaly, White suggests that the expression of this conductor is very similar to that of a graphite-pyrrhotite massive sulphide body. West of Shakey Lake the HEM anomaly is offset right laterally in what appears to be a fault zone. Within this zone the conductor's attitude changes from an east-west trend and a northerly dip to a northeast trend and a vertical dip.

5.0 SUMMARY AND CONCLUSIONS

Mapping south of the Western ZAP claim group has resulted in the projection of the Central Quartzite Formation into the area between Shakey and Proctor Lakes. The apparent thickness of this favourable zone is estimated to be fifteen hundred (1500) meters with a strike of approximately 290° and a 25° dip to the south.

This conclusion is supported by the presence of an outcrop that has been trenched 1.25 kilometers northwest of Shakey Lake which consists of massive grey quartzite interbedded with approximately 10% to 15% graphitic phyllite. The southern contact of the Central Quartzite Formation is projected through the northern part of the SIN claims. It is probably terminated to the west by the Flat Creek fault.

An apex Maxmin II horizontal loop electromagnetic survey over the northern portion of the SIN claims outlined several areas of interest. By mapping conductive graphitic stratigraphic horizons,

favourable geological structures were inferred. A major north-northeast trending fault zone has been outlined. It is seven hundred and fifty (750) meters wide and lies between lines 9+250 and 10+000 in which faulting appears to be concentrated. This major structural break appears to be a right lateral offset which is typical of the Keno Hill - Galena Hill area.

Of special interest is a large west-northwest trending electromagnetic conductor centered on the northwest side of Shakey Lake. This strong conductor dips steeply to the north. Coincident with the HEM anomaly is a strong dipole aeromagnetic anomaly. Glenn E. White, consulting geophysicist, suggests that the coincident anomalies have a geophysical expression similar to that of a massive sulphide body, however, the writer interprets this strong conductor as being a graphitic rich horizon marking the contact between the Upper Schist Formation and Central Quartzite Formation. The depth of overburden in the area of the conductor is estimated to be approximately thirty (30) meters.

In order to locate major fault structures and undiscovered silver-lead-zinc vein faults, a one hundred and eleven (111) sample mercury-lead-zinc soil geochemical survey was carried out. This survey, covering part of the SIN claim area, resulted in the discovery of two mercury anomalies.

Centered on line 10+000 there is a major northerly trending mercury anomaly which is 1500 meters long (open to the north and south) and up to 700 meters wide. This anomaly is coincident with a previously mentioned EM structurally anomalous zone. A smaller mercury anomaly lies northeast of Shakey Lake. This anomaly lies immediately north of the large west-northwest trending coincident HEM and magnetic anomalies.

6.0 RECOMMENDATIONS

Three types of follow-up work are recommended:

6.1 Soil and Silt Geochemistry

Follow-up mercury soil geochemistry should be

done to the south in an attempt to locate new structures and the highly anomalous zone along line 10+000 should also be closed off to the south. In addition, silts should be collected in this area and analysed for Ag, Pb, Zn, Mn and As.

6.2 Magnetometer Survey

A ground proton precession magnetometer survey should be conducted over the entire SIN claims. As faults are often detected in such surveys, ground magnetics may locate important vein faults and cross faults. In addition major greenstone bodies may be discovered.

6.3 Overburden Drilling

The major exploration thrust in 1980 should be a program of overburden drilling to test two geologically, geochemically, and geophysically anomalous areas:

- (a) Two south-dipping holes should be drilled into the west-northwest trending EM conductor that has coincident airborne magnetic and a mercury soil geochemical anomaly.
- (b) Two north-south fences of overburden drill holes should be drilled across the inferred zone of Central Quartzite where an area of faulting is HEM-indicated between lines 9+250 and 10+000. This zone also is the site of large, coincident mercury soil geochemical anomaly.

Where sulphides are encountered, fill-in holes should be drilled. Prior to the overburden drilling program in 1980 a systematic method of handling and analysing overburden and bedrock chips should be devised. In addition, optimum hole spacing, length of sample and the type of multi element geochemical analysis required should be investigated. Considerable work has been done in this regard by Boyle, R.W., Gleeson, C.F., Tessari so that a comprehensive format can be devised quickly and efficiently.

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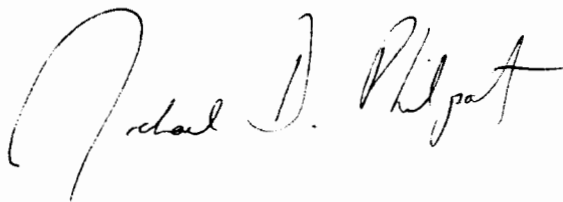
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and YUKON Claim Groups."

CERTIFICATION

I, Michael D. Philpot, of 2724 Bayview St., in the municipality of Surrey, in the Province of British Columbia, DO HEREBY CERTIFY:

1. That I am a Geologist for Bema Industries Ltd., with a business address at 5780 - 203rd Street, in the City of Langley, in the Province of British Columbia.
2. That I am a graduate of the University of British Columbia (1978) where I obtained my B.Sc. degree.
3. That I have practiced my profession as a geologist for the past 2 years.
4. That the information contained in this report on the ZAP, CONE, and BE M.C. is based on field work during the summer of 1979.
5. That I have no direct or indirect interest in any of the securities or claims of Canada Tungsten Mining Corporation Ltd., nor do I expect to receive or acquire any.

Dated this 14th day of February, 1980.

A handwritten signature in cursive script that reads "Michael D. Philpot". The signature is written in dark ink and is positioned above the printed name.

M.D.Philpot, B.Sc.

APPENDIX A

Hg Rock Geochemical Report

APPENDIX B

Hg-Pb-Zn Soil Geochemical Lab Reports



Geochemical Lab Report

Extraction Pb, Zn, Ag; Hot Aqua Regia
Hg; Controlled Aqua Regia
Method Pb, Zn, Ag; Atomic Absorption
Hg; Closed Cell Atomic Absorption
Fraction Used _____

Report No. 29 - 2264 PROJECT: 79-09
From Bona Industries
Date October 23 19 79

SAMPLE NO.	Hg ppb	Pb ppm	Zn ppm	Ag ppm	SAMPLE NO.	Hg ppb			
UKR - 30 ROCKS	-	47	76	0.9	J - 24 A	65			
32	-	9	67	0.2	x 25	55			
34	-	8	63	0.2	y 26	60			
36	-	18	82	0.2	y 27	50			
38	-	10	78	0.3	x 28	60			
40	-	12	90	0.3	y 29	95			
42	-	13	90	0.2	x 30	75			
44	-	9	85	0.2	x 31	100			
J - 1 A	60	-	-	-	x 32	90			
x 2	60	-	-	-	y 33	75			
x 3	60	-	-	-	y 34	60			
x 4	80	-	-	-	x 35	65			
x 5	60	-	-	-	x 36	60			
y 6	60	-	-	-	37	35			
x 7	70	-	-	-	38	50			
x 8	65	-	-	-	39	70			
x 9	65	-	-	-	40	60			
x 10	50	-	-	-	41	85			
x 11	30	-	-	-	42	65			
12	70	-	-	-	43	70			
13	15	-	-	-	44	45			
14	50	-	-	-	45	30			
15	50	-	-	-	46	45			
16	60	-	-	-	47	70			
17	70	-	-	-	48	70			
19	80	-	-	-	49	65			
20	50	-	-	-	50	50			
21	40	-	-	-	51	60			
22	40	-	-	-	52	50			
23	40	-	-	-	53	70			

X - sample from the SIN claim

JONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 29 - 2264

Page No. 2

SAMPLE NO.					SAMPLE NO.				
J - 54 A	65				J - 89 A	35			
55	50				90	45			
56	30				91	20			
57	30				92	30			
58	45				93	30			
59	35				94	25			
60	90				95	35			
61	30				96	20			
62	30				97	20			
63	30				98	30			
64	65				99	65			
65	80				100	60			
66	40				101	65			
67	50				102	70			
68	70				103	80			
69	45				104	50			
70	65				105	40			
71	40				106	40			
72	70				107	50			
73	100				108	110			
74	120				Z - x 1A	70			
75	65				x 2	65			
76	45				x 3	50			
77	55				x 4	45			
78	60				x 5	50			
79	55				x 6	35			
80	75				x 7	50			
81	60				x 8	100			
82	70				x 9	55			
83	65				x 10	50			
84 -20M	135				x 11	50			
85	45				x 12	40			
86	55				x 13	55			
87	60				x 14	55			
88	40				x 15	60			

X - sample from the SIN claim

BONDAR-CLEGG & COMPANY LTD.

Geochemical Lab Report

Report No. 29 - 2264

Page No. 3

SAMPLE NO.	PPB				SAMPLE NO.	PPB			
Z - 18 A	75				X Z - 55 A	40			
19	50				X 57	55			
20	65				Y 59	40			
22	40				V 60	15			
23	40				Y 61	30			
24	25				Y 62	55			
25	85				Y 63	60			
26	115				X 64	35			
27	65				Y 65	20			
28	95				Y 66	20			
29	55				Y 67	30			
30	60				68	30			
31	50				69	40			
33	15				Y 70	30			
34	50				Y 71	40			
X 35	70				X 72	40			
Y 36	40				X 73	20			
Y 37	50				Y 74	50			
X 38	25				X 75	40			
Y 39	45				X 76	60			
X 40	55				Y 79	55			
X 41	65				X 80	30			
X 42	50				X 81	60			
Y 43	80				X 82	55			
Y 44	50				X 83	70			
X 45	60				X 84	50			
Y 46	65				X 85	40			
Y 47	55				X 86	55			
Y 48	45				Y 87	60			
49	30				X 88	30			
50	60				X 89	45			
51	45				X 90	30			
52	60				Y 91	25			
X 53	60				Y 92	85			
X 54	50				X 93	15			

X - sample from the SIN claim

Geochemical Lab Report

Report No. 29 - 2264

Page No. 4

SAMPLE NO.	PPS			SAMPLE NO.	PPS		
x 2 - 94 A	15			x 2 - 130 A	85		
x 95	20			x 131	85		
x 96	30			x 132	95		
x 97	45			x 133 -20M	55		
x 98	50			x 134	55		
x 99	25			x 135	75		
x 100	30			137	70		
x 101	50			138	80		
102	50			139	80		
x 103	40			140	115		
x 104	70			141	50		
x 106	40			142	80		
x 107	50			143	85		
x 108	90			144	85		
x 109	100			145	60		
110	80			146	50		
111	70			147	65		
112	125			148	80		
113	75			149	55		
114	80			150	70		
115	50			151	40		
116	115			152	80		
117	85			153	75		
118	100			154	35		
119	60			155	80		
120	65			156	60		
121	100			157	75		
122	95			158	45		
123	105			159	80		
124	80			160	40		
125	85			161	75		
126	105			163	95		
x 127	75			164	50		
x 128	65			165	65		
x 129	70			166	35		

X - sample from the SIN claim



BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C.

PHONE: 985-0681

TELEX: 04-352667

Geochemical Lab Report

Pb,Zn; Hot Aqua Regia

Extraction Hg; Controlled Aqua Regia

Pb,Zn; Atomic Absorption

Method Hg; Closed Cell Atomic Absorption

Report No. 29 - 2422 PROJECT: 79 - 09

From Bema Industries Ltd.

Reaction Used

Date November 12 19 79

SAMPLE NO.	Pb ppm	Zn ppm		SAMPLE NO.	Pb ppm	Zn ppm	
γ J 2 B	10	45		J 72 B	12	58	
γ J 5 B	11	39		J 73 B	10	56	
γ J 6 B	8	38		J 74 B	12	44	
γ J 7 B	11	49		J 75 B	8	49	
× J 8 B	11	53		Z 110 B	8	49	
× J 9 B	8	38		Z 111 B	10	53	
× J 10 B	9	49		Z 119 B	6	55	
γ J 11 B	9	42		Z 121 B	14	77	
J 22B	8	37		Z 122 B	13	90	
J 23 B	13	72		Z 123 B	7	46	
γ J 27 B	12	52		Z 124 B	13	70	
× J 28 B	10	50		Z 125 B	12	47	
γ J 31 B	10	43		Z 126 B	10	54	
γ J 32 B	8	49		γ Z 127 B	10	80	
γ J 33 B	6	20		Z 131 B	13	66	
γ J 34 B	14	66		Z 132 B	12	79	
γ J 35 B	13	59		γ Z 135 B	13	74	
× J 36 B	13	61		× Z 138 B	12	63	
J 40 B	9	45		γ Z 139 B	14	54	
J 41 B	12	49		Z 141 B	13	64	
J 42 B	13	61		Z 142 B	5	27	
J 45 B	11	52		Z 143 B	14	54	
J 47 B	13	65		Z 144 B	9	51	
J 48 B	12	59		Z 145 B	6	36	
J 49 B	12	65		Z 146 B	10	74	
J 50 B	11	68		Z 148 B	13	105	
J 51 B	15	79		Z 190 B	12	50	
J 58 B	18	62		Z 199 B	10	63	
J 64 B	13	51		Z 200 B	12	55	
J 66 B	10	34		Z 201 B	9	42	

X - sample from the SIN claim

APPENDIX C

Survey Personnel

APPENDIX C - SURVEY PERSONNEL

The following people were employed by BEMA INDUSTRIES LTD. in performing the work described in this report:

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ODORFER, Margaret
6868 Toderick St.
Vancouver, B.C.
V6S 3N3

ORSSICH, Cyril
2 Bertona St. #27
Ottawa, Ontario
K2G 0W2

SLIPETZ, Jan
R.R. #5
Thunderbay, Ontario
P7C 5M9

COMPASSMEN

PROKE, Brian
#202 - 2350 W. 39th Ave
Vancouver, B.C.
V6M 1T9

SOMERS, Ian J.
P.O. Box 5164
Whitehorse, YT
Y1A 4S3

SURVEYOR

NORDLI, Steve H.
9609 13th St.
Dawson Creek, B.C.
V1G 3V9

LINECUTTERS

BANNON, Mervin
General Delivery
Vancouver, B.C.

DENNIS, Daryl
Iskut, B.C.
V0J 1K0

EDWARDS, Robert
9971 Deagle Rd.
Richmond, B.C.
V7A 1P9

ENG, Helge
c/o Stanley C. Bartlett

GATENSBY, John
506A Drury St.
Whitehorse, YT
Y1A 1T4

HAGEN, R.
General Delivery
Mayo, YT

Appendix C - Survey Personnel Cont.....

LINECUTTERS

HILCHEY, John
4310 Quinton Pl.
North Vancouver, B.C.
V7R 4A7

HORNQUIST, Martin
R.R. #3
Port Alberni, B.C.
V9Y 7L7

HUNT, Ross
7755 126A St.
Surrey, B.C.
V3W 6Z9

KORB, Elli
100 13th Ave. S.
Cranbrook, B.C.
V1C 2V5

MackENZIE, Arthur
Box 610
Salmon Arm, B.C.
V0E 2T0

MCKENZIE, Gerald (William)
1153 22nd Ave.
North Vancouver, B.C.
V7P 2E9

SIMON, J.
General Delivery
Mayo, YT

TODORUK, Steven
375 Nina Place
Dallas, Kamloops, B.C.

COOKS

BOYD, Lillian J.
General Delivery
Whitehorse, YT
Y1A 3S7

GARTNER, Mike
812 Steele St.
Whitehorse, YT
Y1A 2E2

HEWSTAN, Lance
Box 4396
Whitehorse, YT
Y1A 3T5

ADMINISTRATION MANAGER

MILLAR, Barbara
26495 29B Ave.
Aldergrove, B.C.
V0X 1A0

DRAFTSWOMAN

TRENCIANSKY, Swata
20154 80 Ave.
Langley, B.C.
V3A 4P7

APPENDIX D

Labour and Disbursement Costs

APPENDIX D - LABOUR AND DISBURSEMENT COSTSA. Field Employee Salaries (May 1 to September 30, 1979)

<u>NAME</u>	<u>TITLE</u>	<u>SALARY PER DAY (\$)</u>	<u>NUMBER OF DAYS</u>	<u>TOTAL SALARY (\$)</u>
D. Esson	Senior Geologist	149.09	6.33	943.04
M. Philpot	Geologist	127.07	10.04	1,275.29
T. Elliott	Geologist	127.07	1.84	233.30
S. Bartlett	Geologist	127.07	1.08	136.73
M. Bell	Camp Manager	127.07	5.05	642.20
I. Johnson	Surveys, Operations Manager	127.07	0.30	38.63
C. Orssich	Senior Geological Assistant	89.07	2.94	261.04
P. Adams	Geological Assistant	74.75	6.26	467.78
J. Slipetz	Geological Assistant	74.75	6.87	512.93
M. Odorfer	Geological Assistant	74.75	0.53	39.76
J. MacRae	Geological Assistant	74.75	0.15	11.36
D. Amundrud	Geological Assistant	74.75	0.08	5.68
P. Brawn	Geological Assistant	74.75	7.49	559.86
B. Proke	Compassman	112.12	8.63	967.82
B. Proke	Senior Linecutter	127.07	9.41	1,195.99
I. Sommers	Compassman	112.12	17.44	1,956.05
S. Toderuk	Linecutter	112.12	16.38	1,837.47
R. Edwards	Linecutter	112.12	8.95	1,003.02
M. Hornquist	Linecutter	112.12	17.55	1,967.25
A. McKenzie	Linecutter	112.12	10.56	1,184.43
J. Simon	Linecutter	112.12	1.76	197.33
R. Hagen	Linecutter	112.12	.53	59.20
R. Hunt	Linecutter	112.12	2.90	324.25
M. Bannon	Linecutter	112.12	7.36	826.10
D. Dennis	Linecutter	112.12	3.75	420.22
H. Eng	Linecutter	112.12	0.43	47.99
J. Gatensby	Linecutter	112.12	3.78	422.77

Appendix D - Labour and Disbursement Costs Cont.....

NAME	TITLE	SALARY PER DAY (\$)	NUMBER OF DAYS	TOTAL SALARY (\$)
J. Hilchey	Linecutter	112.12	5.33	597.81
U. Korb	Linecutter	112.12	0.15	17.04
G. McKenzie	Linecutter	112.12	0.23	25.56
S. Nordie	Surveyor	127.07	0.15	19.32
L. Boyd	Cook	112.12	4.45	498.49
L. Hewsten	Cook	112.12	0.76	85.21
M. Gartner	Cook	112.12	5.24	587.94
C. Johnson	Senior Linecutter, Camp Manager	127.07	<u>13.04</u>	<u>1,658.46</u>
	SUBTOTAL (A)		187.74	21,027.32

B. Office Employee Salaries (April 1, 1979 to January 31, 1980)

NAME	TITLE	SALARY PER DAY (\$)	NUMBER OF DAYS	TOTAL SALARY (\$)
R. Barclay	Supervisor	175.00	11.63	2,035.72
D. Esson	Senior Geologist	149.09	2.74	409.03
T. Elliott	Geologist	112.12	6.40	717.11
M. Philpot	Geologist	112.12	5.59	626.30
S. Bartlett	Geologist	112.12	2.36	264.15
I. Johnson	Operations Manager	112.12	5.37	602.15
B. Millar	Administration Manager	120.00	2.96	355.68
Secretarial		120.00	3.30	396.44
Drafting		89.07	2.51	223.25
Expediting		112.12	<u>7.41</u>	<u>830.32</u>
	SUBTOTAL (B)		50.27	6,460.15

C. Camp Cost

\$33.40/man day x 190.21 man days \$ 6,353.01

D. Vehicles

\$26.52/man day x 190.21 man days 5,044.37

Appendix D - Labour and Disbursement Costs Cont.....

E.	<u>Communications</u>	
	\$3.64/man day x 190.21 man days	\$ 692.36
F.	<u>Commercial Air</u>	
	\$9.51/man day x 190.21 man days	1,808.90
G.	<u>Geology Supplies</u>	2,052.26
H.	<u>Drafting Services and Supplies</u>	387.00
I.	<u>Office Supplies</u>	83.61
J.	<u>Expediting</u>	288.76
K.	<u>Linecutting</u>	1,463.61
L.	<u>Geochemistry</u>	1,094.43
M.	<u>Geophysics</u>	<u>5,990.90</u>
	SUBTOTAL (C-M)	\$25,259.21
	SUBTOTAL (A)	21,027.32
	SUBTOTAL (B)	<u>6,460.15</u>
	TOTAL (A-M)	\$52,746.68

HALDANE CREEK

ZAP

CONE

SIN

SNOWDRIFT

SIN

SNOWDRIFT

IS



MOUNT HALDANE
△

JOUMBIRA

IS

CORK

TER

TER

SCALE: 1/2 MILE TO 1 INCH

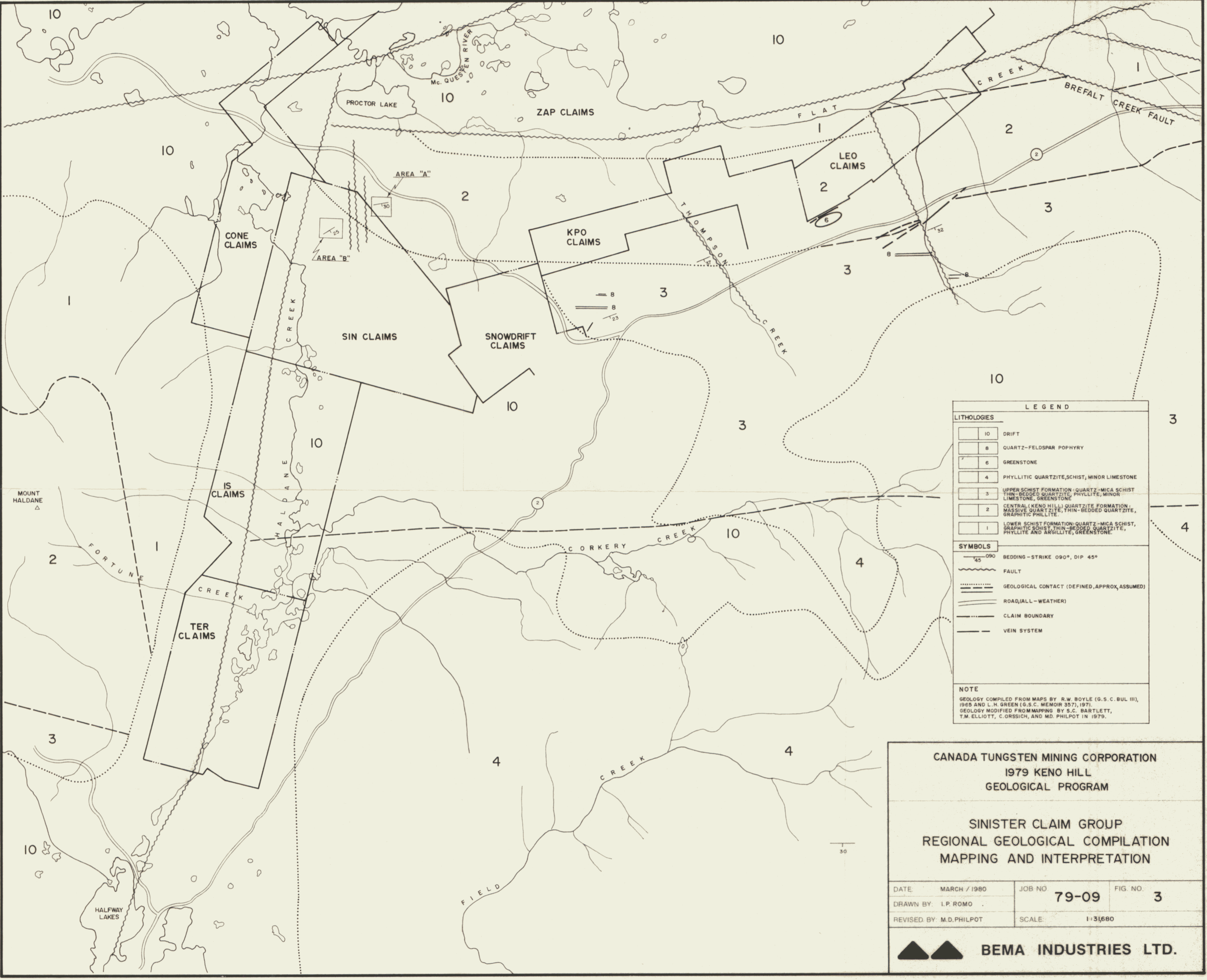
CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL Y.T.
GEOLOGICAL PROGRAM

CLAIM MAP
SINISTER CLAIM GROUP

DATE: MARCH / 80 JOB NO.: 79-09
REVISED BY: FIG. NO.: 2

▲ ▲ BEMA INDUSTRIES LTD.

I.P.R.



LEGEND

LITHOLOGIES

10	DRIFT
8	QUARTZ-FELDSPAR PORPHYRY
6	GREENSTONE
4	PHYLLITIC QUARTZITE, SCHIST, MINOR LIMESTONE
3	UPPER SCHIST FORMATION: QUARTZ-MICA SCHIST, THIN-BEDDED QUARTZITE, PHYLLITE, MINOR LIMESTONE, GREENSTONE
2	CENTRAL (KENO HILL) QUARTZITE FORMATION: MASSIVE QUARTZITE, THIN-BEDDED QUARTZITE, GRAPHITIC PHYLLITE
1	LOWER SCHIST FORMATION: QUARTZ-MICA SCHIST, GRAPHITIC SCHIST, THIN-BEDDED QUARTZITE, PHYLLITE AND ARGILLITE, GREENSTONE

SYMBOLS

- BEDDING - STRIKE 090°, DIP 45°
- FAULT
- GEOLOGICAL CONTACT (DEFINED, APPROX, ASSUMED)
- ROAD, (ALL-WEATHER)
- CLAIM BOUNDARY
- VEIN SYSTEM

NOTE

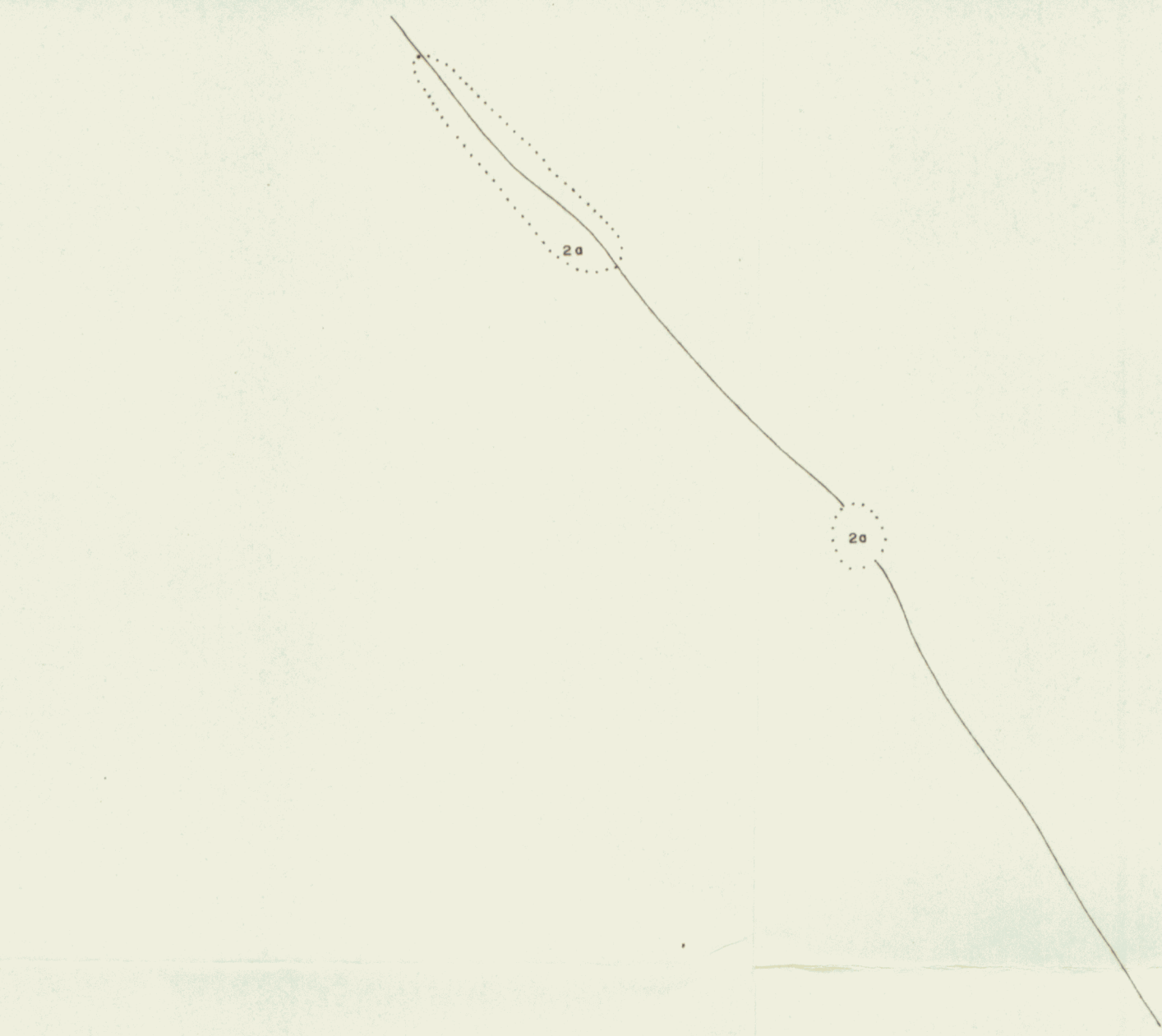
GEOLOGY COMPILED FROM MAPS BY R.W. BOYLE (G.S.C. BUL III), 1965 AND L.H. GREEN (G.S.C. MEMOIR 357), 1971. GEOLOGY MODIFIED FROM MAPPING BY S.C. BARTLETT, T.M. ELLIOTT, C. ORSICH, AND M.D. PHILPOT IN 1979.

CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL
GEOLOGICAL PROGRAM

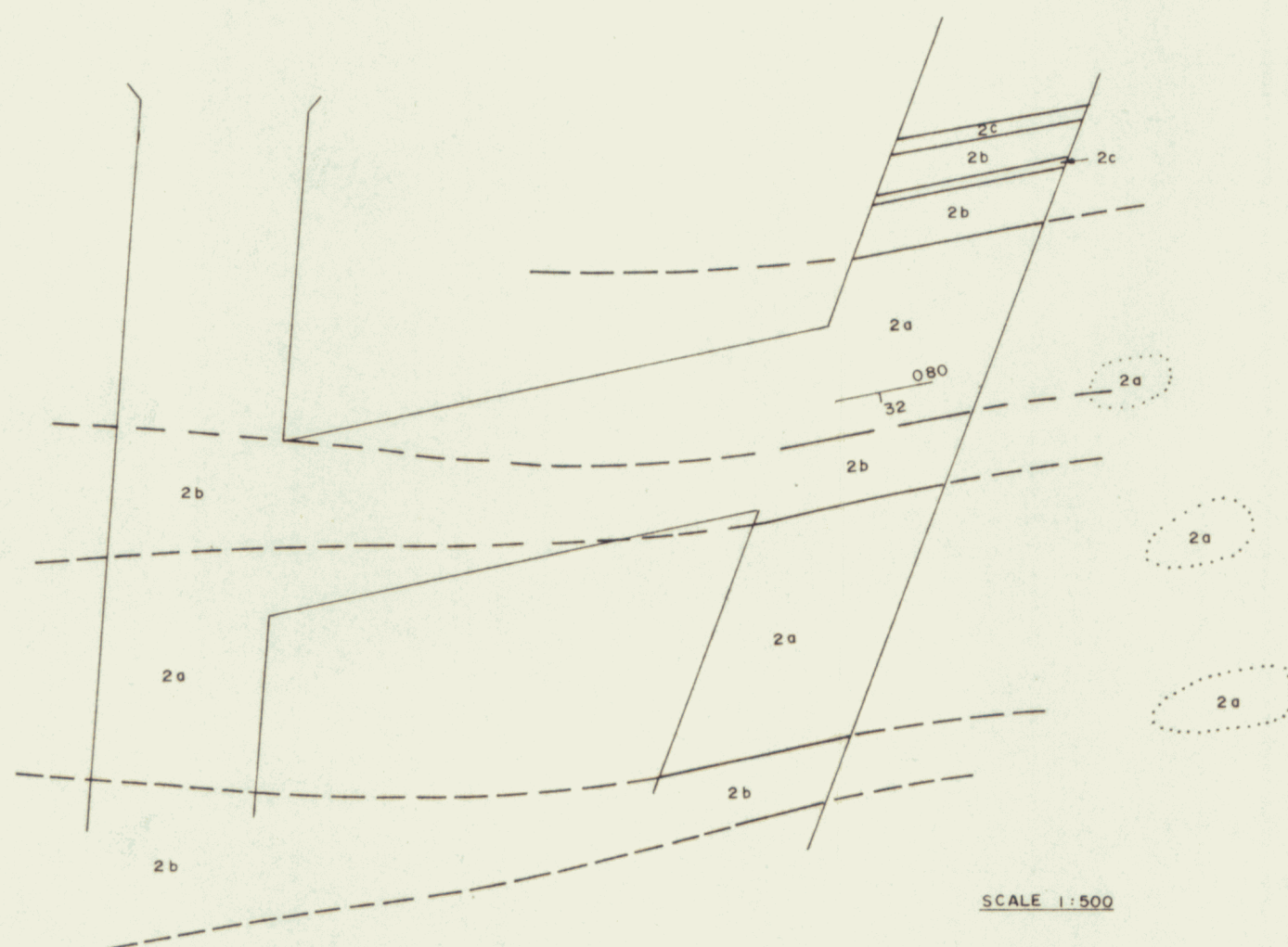
SINISTER CLAIM GROUP
REGIONAL GEOLOGICAL COMPILATION
MAPPING AND INTERPRETATION

DATE: MARCH / 1980	JOB NO: 79-09	FIG. NO: 3
DRAWN BY: I.P. ROMO	REVISED BY: M.D. PHILPOT	SCALE: 1:31,680

BEMA INDUSTRIES LTD.



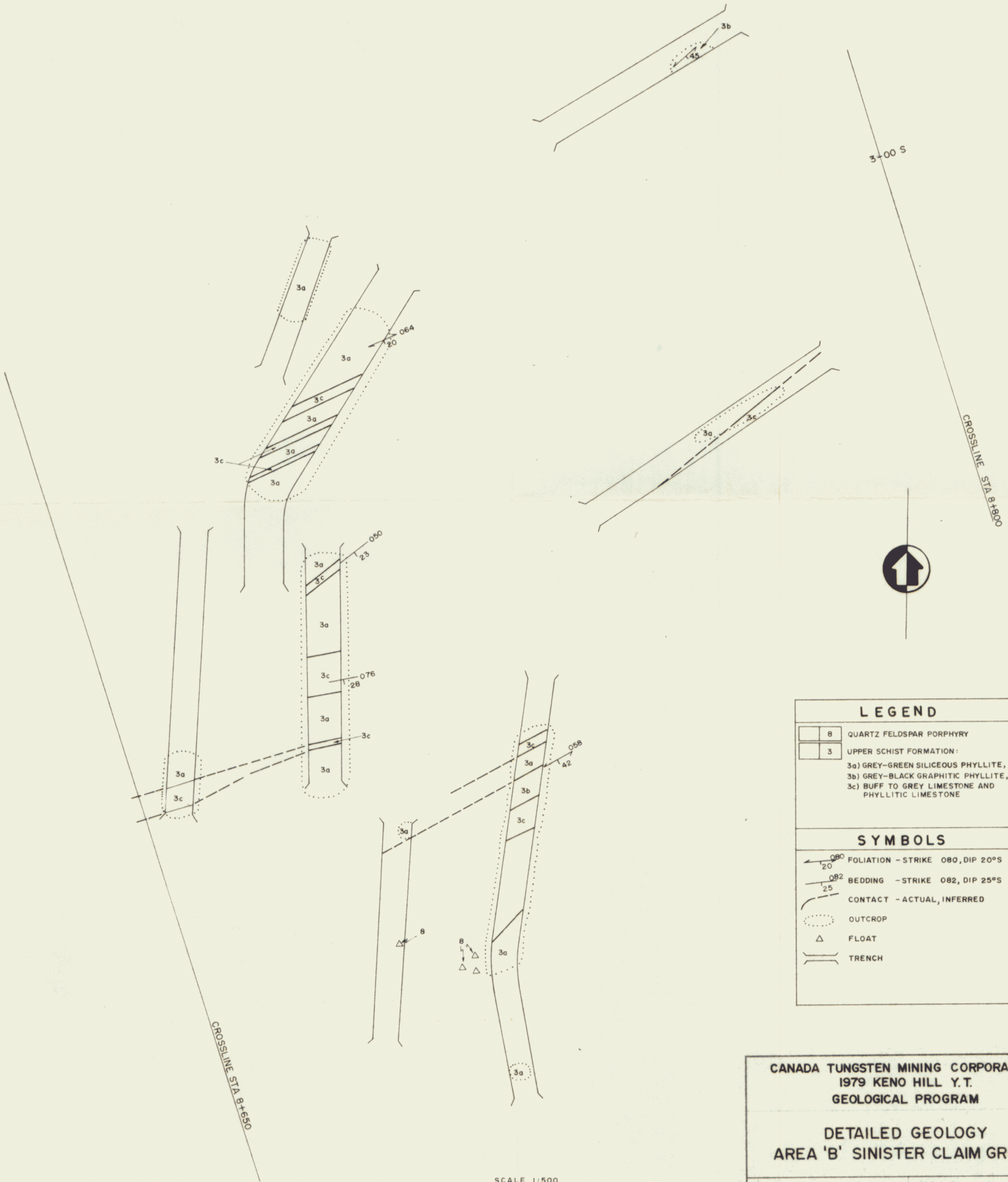
LEGEND	
2	CENTRAL QUARTZITE FORMATION: 2a) MASSIVE BLUE-GREY QUARTZITE 2b) PHYLLITIC QUARTZITE, AND 2c) GRAPHITIC QUARTZITE
SYMBOLS	
	BEDDING - STRIKE 085, DIP 25°S
	OUTCROP
	TRENCH
	CONTACT - ACTUAL INFERRED



SCALE 1:500



CANADA TUNGSTEN MINING CORPORATION 1979 KENO HILL Y.T. GEOLOGICAL PROGRAM			
DETAILED GEOLOGY AREA 'A' SINISTER CLAIM GROUP			
DATE:	MARCH/80	JOB NO.:	79-09
REVISED BY:		FIG. NO.:	4
BEMA INDUSTRIES LTD.			



3-00 S

CROSSLINE STA B+800

CROSSLINE STA B+550



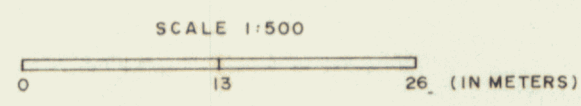
LEGEND	
	QUARTZ FELDSPAR PORPHYRY
	UPPER SCHIST FORMATION:
	3a) GREY-GREEN SILICEOUS PHYLLITE,
	3b) GREY-BLACK GRAPHITIC PHYLLITE,
	3c) BUFF TO GREY LIMESTONE AND PHYLLITIC LIMESTONE
SYMBOLS	
	FOLIATION - STRIKE 080, DIP 20°S
	BEDDING - STRIKE 082, DIP 25°S
	CONTACT - ACTUAL, INFERRED
	OUTCROP
	FLOAT
	TRENCH

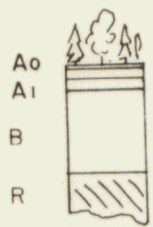
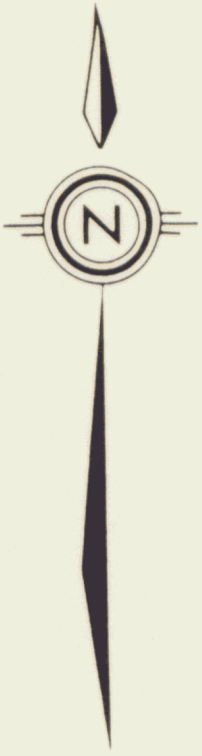
CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL Y.T.
GEOLOGICAL PROGRAM

DETAILED GEOLOGY
AREA 'B' SINISTER CLAIM GROUP

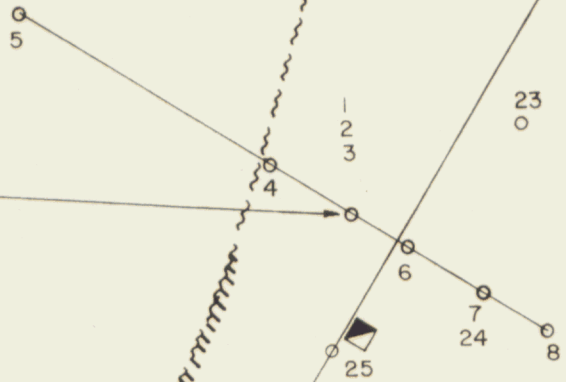
DATE:	MARCH/80	JOB NO.:	79-09
REVISED BY:		FIG. NO.:	5

BEMA INDUSTRIES LTD. LPR

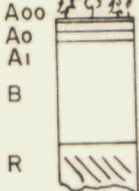
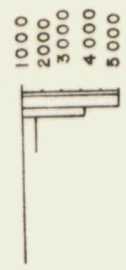




Hg (ppb)



Hg (ppb)


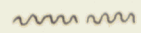




Hg (ppb)



PLAN OF 200-FOOT LEVEL

LEGEND

-  SIDERITE-GALENA-SPHALERITE-QUARTZ LODES
-  FAULT
-  SHAFT
-  14 SAMPLE SITE AND NUMBER

CANADA TUNGSTEN MINING CORPORATION
 MERCURY SOIL SURVEY
 SADIE-FRIENDSHIP MINE AREA

DATE DECEMBER 21, 1979. JOB NO. 79-09
 REVISED BY FIG NO. 6

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ZAP CLAIMS

SNOWDRIFT CLAIMS

SIN CLAIMS

IS CLAIMS

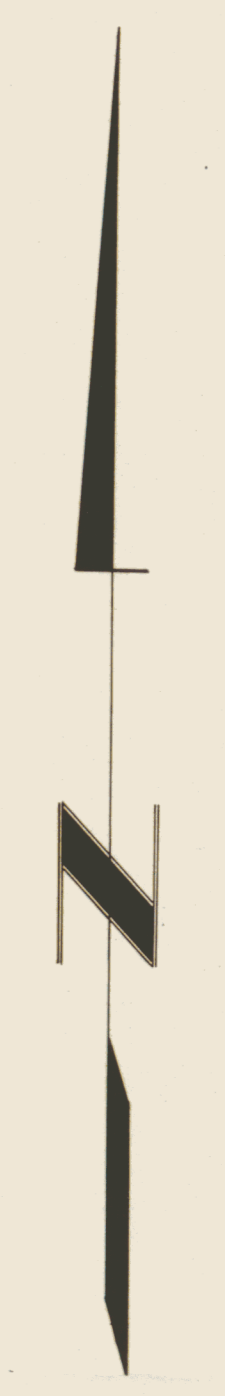
CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL, Y.T.
GEOLOGICAL PROGRAM

Hg GEOCHEMISTRY (in ppb.)
SIN CLAIMS
INTERPRETATION

DATE: MARCH / 1980	JOB NO: 79-09	FIG. NO: 7
DRAWN BY: L.PROMO	SCALE: 1:5000	
REVISED BY:		

LEGEND
----- Hg ANOMALY TRENCH

BEMA INDUSTRIES LTD.





BASE LINE



ZAP CLAIMS

SNOWDRIFT CLAIMS

SIN CLAIMS

IS CLAIMS

SHAKEY LAKE

CANADA TUNGSTEN MINING CORPORATION
1979 KENO HILL, Y.T.
GEOLOGICAL PROGRAM

Pb-Zn GEOCHEMISTRY (in ppm.)
B - SOIL HORIZON
SIN CLAIMS

DATE	MARCH / 1980	JOB NO.	79-09	FIG. NO.	8
DRAWN BY	I. PROMO	REVISOR		SCALE	1:5000

BEMA INDUSTRIES LTD.



ZAP CLAIMS

LEGEND

HIGH FREQUENCY	1777 Hz	---
LOW FREQUENCY	444 Hz and 888 Hz	---
IN - PHASE	I.P.	---
QUADRATURE - PHASE	Q.P.	---
HIGH FREQUENCY	I.P.	---
LOW FREQUENCY	I.P.	---
HIGH FREQUENCY	Q.P.	---
LOW FREQUENCY	Q.P.	---
Rx	Tx	---
+	+	---
+	+	---

NOTE

LOW FREQUENCY OF 444 Hz FOR LINES
 LP+450-LP+350 AND LP+812-LP+100
 LOW FREQUENCY OF 888 Hz FOR LINES
 LB+900-LB+725

PLOT OF $\frac{H_z}{H_p}$

WHERE:

- H_z = FIELD STRENGTH OF THE HORIZONTAL COMPONENT OF THE SECONDARY FIELD
- H_p = FIELD STRENGTH OF THE HORIZONTAL COMPONENT OF THE PRIMARY FIELD

1 cm = 10%

DATUM VARIATION

INFERRED FAULT

CONDUCTOR

SNOWDRIFT CLAIMS

SIN CLAIMS

IS CLAIMS

CANADA TUNGSTEN MINING CORPORATION
 1979 KENO HILL, Y.T.
 GEOLOGICAL PROGRAM

GLEN WHITE'S GEOPHYSICAL INTERPRETATION

DATE:	FEB / 1980	JOB NO:	79-09	FIG. NO:	9
DRAWN BY:	I.PROMO	SCALE:	1:5000		