REPORT ON GEOLOGICAL MAPPING
AND GEOCHEMICAL SAMPLING

SHAG CLAIMS
Golden Mining Division

N.T.S. 82-J-11 & 12
Latitude: 50°38'N; Longitude: 115°30'W

Owner: Chris Graf,
Vancouver, British Columbia.

Operator: Esso Resources Canada Ltd.,
237 - 4th Avenue S.W.,
Calgary, Alberta.

Martin H. Lenters
September 9, 1981

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T2P 0H6

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

SHAG CLAIMS
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ESSO MINERALS CANADA
M.H. Lenters
September 1981

SUMMARY

Fourteen small sphalerite-galena occurrences are known to exist along a 5 kilometre length of Shag Creek Valley. Twelve of these showings occur along two separate stratigraphic horizons as discontinuous, elongate lenses, or thin zones of mineralization that form in the upper part of a dolostone, at or near a limestone contact. The mineralization appears to have accumulated in dolomitized and early brecciated portions of a carbonate shoal complex, along the edge of a shale basin.

The mineralization is contained within Middle Cambrian carbonates in the front ranges of southeastern British Columbia (N.T.S. 82-J-11 & 12), and was staked (Shag 1-8; 127 units) in August of 1977.

During 1978 and 1979, Rio Tinto performed soil sampling, geological mapping and diamond drilling work on the claim group.

During July of 1981, Esso Minerals investigated the claims by collecting 68 heavy mineral samples, and geologically mapping a number of areas near both the known showings and geological environments that appeared favourable for hosting additional mineralization.

The lead-zinc occurrences within the Shag Claims are thin, discontinuous lenses of mineralization that suggest they are unlikely to produce significant tonnages. However, the number of showings discovered,

their persistence along two horizons and their location in a favourable geological environment suggest there is some possibility that these showings are an expression of a larger deposit.

No additional mineralized occurrences were discovered during the course of this investigation.

The heavy mineral sampling survey proved successful in locating the known sphalerite-galena occurrences, and has indicated two additional areas where further prospecting should be carried out. The source of one of these anomalous zones could be the C-4 mineralized horizon along a trend that has no known mineralized occurrences.

Geochemical follow-up, to determine the cause of the heavy mineral concentrations in the two new areas, and two or three short diamond drill holes along the C-4 mineralized horizon are recommended as further work. The proposed drill holes should be drilled along the east side of Shag Valley. This part of the C-4 mineralized horizon has not been previously drilled and these holes will aid in determining the nature and extent of the mineralization along this trend.

1. INTRODUCTION

In 1977, Rio Tinto Canada Exploration Limited sponsored the Graf Lead-Zinc Reconnaissance Program in the southeastern Rocky Mountains. One result of this work was the discovery of two small lead-zinc showings, within Middle to Upper Cambrian carbonate strata, near a major carbonate-shale facies front. These showings, together with some associated stream silt anomalies, led to the staking of the Shag claims.

1.1 LOCATION AND ACCESS: (Figure 1A & 1B)

The Shag claims are located at latitude 50°38'N and longitude 115°30'E, in the Albert River drainage, about 35 kilometers east of Radium Hot Springs, B.C. The western and northern parts of the claims are accessible via logging roads originating from Radium Hot Springs (60 km) and Canal Flats (65 km), B.C. The southeastern parts and the higher elevations of the claim group are best approached by helicopter, available through Shirley Helicopters based at Fairmont Hot Springs, B.C., situated 40 km to the southwest of the claim group.

The terrain is rugged with surrounding peaks reaching 2,500 to 3,000 metres (8,000 to 10,000 feet) and valley floors between 1,250 and 1,550 metres (4,000 and 5,000 feet). Snow cover on cirque glaciers remains throughout the summer between peaks within the Royal Ranges, which occur along the eastern side of the claim group. Shag Valley has very steep slopes that are heavily wooded below 2,150 metres (7,000 feet). Vertical cliffs are common and numerous deforested avalanche zones occur along sections of the steeper valley slopes. Above 2,150 metres, vegetation is scarce with outcrop peaks and cliffs, rock debris and talus predominating. The topography of the claims area is included on N.T.S. map sheets 82-J-11W and 12E.

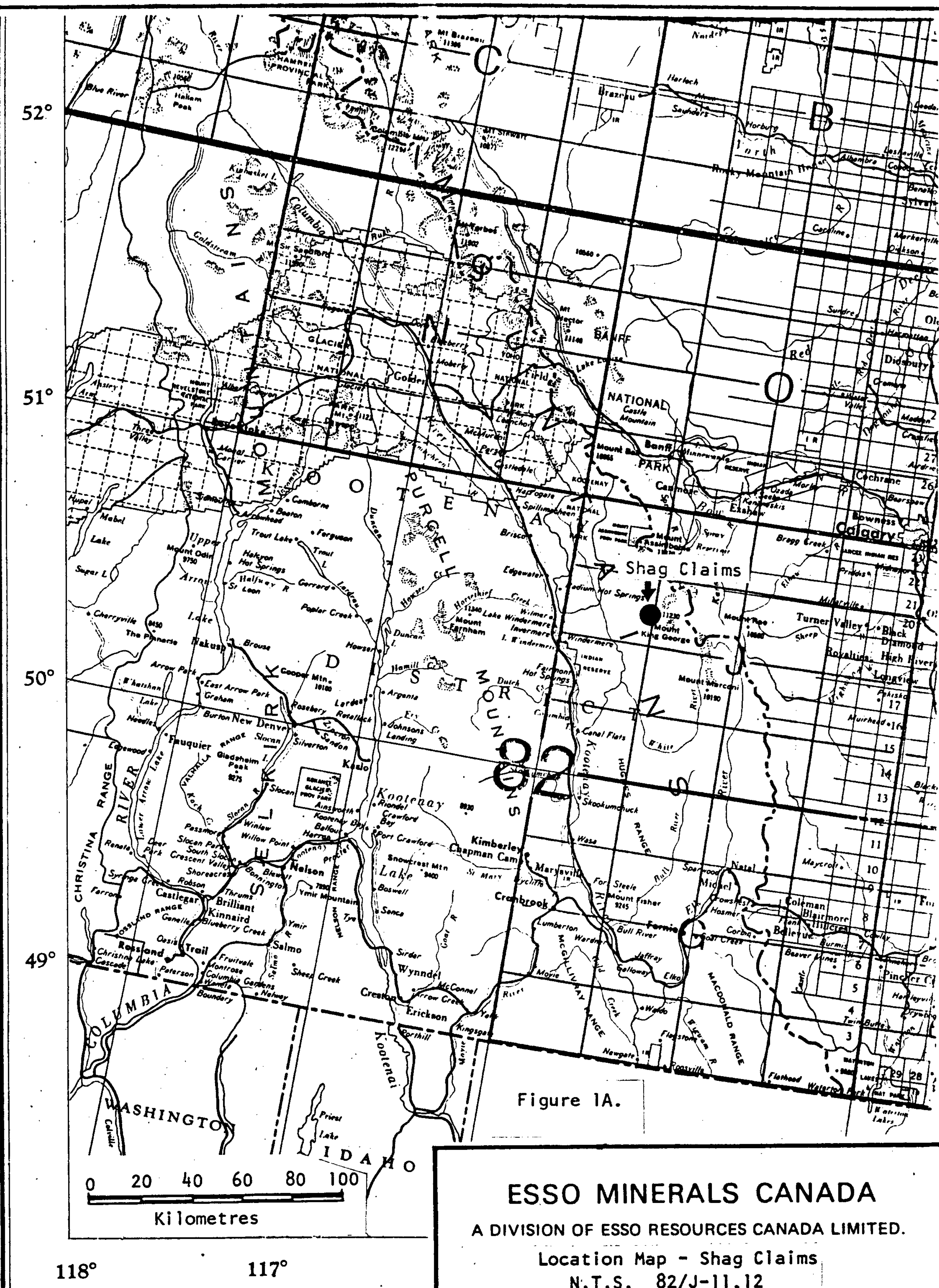

Figure 1A.

ESSO MINERALS CANADA

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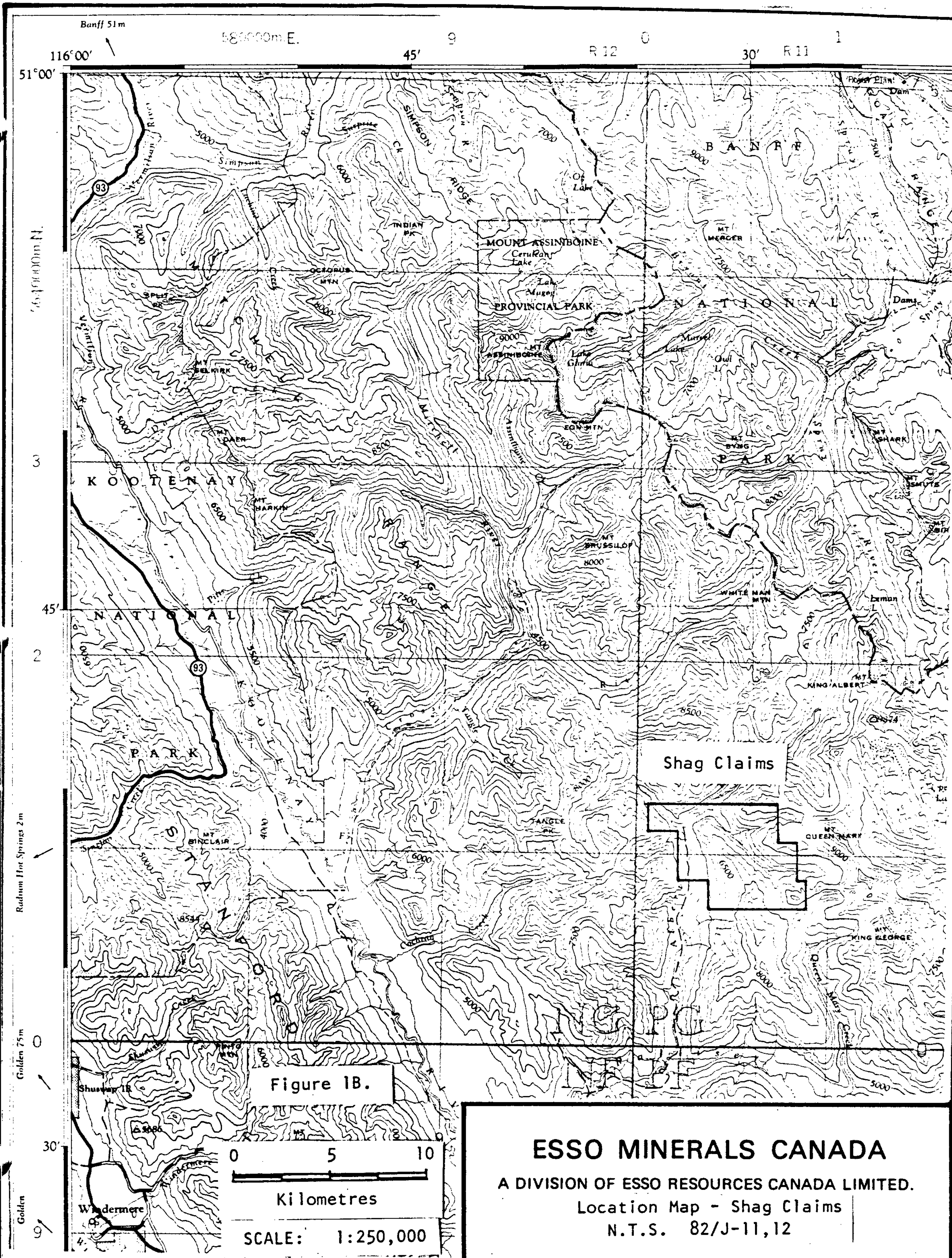
Location Map - Shag Claims

N.T.S. 82/J-11,12



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Location Map - Shag Claims

N.T.S. 82/J-11,12

1.2 DESCRIPTION OF THE SHAG CLAIMS: (Figure 2A)

The Shag claims consist of eight claim blocks comprising 127 claim units. They were staked in the summer of 1977 and recorded on August 15, 1977 as follows:

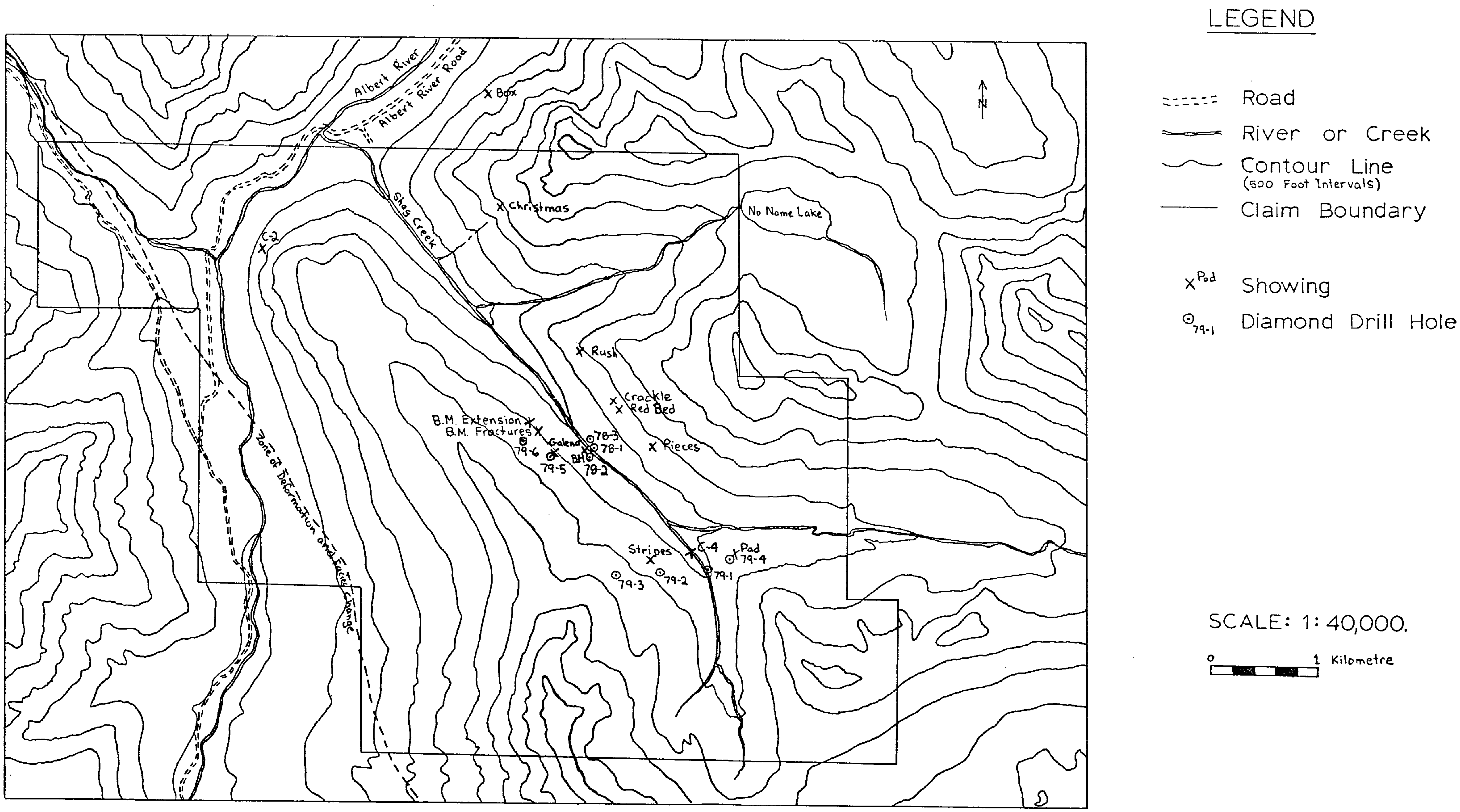
Claim Name	No. of Units	Record No.	Recording Date
SHAG 1	20	158	Aug. 15, 1977
2	12	159	Aug. 15, 1977
3	20	160	Aug. 15, 1977
4	20	161	Aug. 15, 1977
5	12	162	Aug. 15, 1977
6	18	163	Aug. 15, 1977
7	15	164	Aug. 15, 1977
8	10	165	Aug. 15, 1977

Shag Claims 1 and 4, and 3 and 5 were grouped together as Shag Claim Groups 636 and 637 respectively, in April of 1980. Shag Claims 2, 7 and 8 have been added to Shag Claim Group 636, and Shag Claim 6 has been added to Shag Claim Group 637, in a Notice to Group Supplement dated August 11, 1981, for this report (Appendix IV).

1.3 PREVIOUS EXPLORATION WORK: (Figure 2B)

In the summer of 1978, Rio Tinto utilized a crew of five men for six weeks to perform prospecting, soil sampling and 1:10,000 scale geological mapping. Their work located eight additional Pb-Zn showings along two main stratigraphic horizons. Six showings occurred discontinuously along the C-4 horizon, while two more extensive, but lower grade showings lay along the B.M. horizon. The soil sampling survey detected several zinc anomalies and smaller lead anomalies associated with known showings, and one significant lead anomaly that has not been associated with any known mineralization to date.

FIGURE 2B. SHAG CLAIM MAP SHOWING LOCATION OF Pb-Zn OCCURRENCES AND DIAMOND DRILL HOLES



In September of 1978, three diamond drill holes totalling 160 metres (520 feet) were drilled to test the main B.M. showing. Each hole was spotted directly behind exposed mineralization and intersected mineralization that was as low grade and spotty in occurrence as that of the outcrop exposures. Diamond drill hole 78-1 had the best mineralized intersection, yielding assays showing 4% Zn over 0.5 metres.

During the summer of 1979, two Rio Tinto geologists spent ten days remapping a number of mineralized horizon contacts, mapping the main C-4 showing, and performing follow-up prospecting on a number of soil anomalies not yet associated with known mineralization. Their work produced two new sphalerite occurrences, one on each of the B.M. and C-4 mineralized horizons.

In the fall of 1979, six diamond drill holes totalling 460 metres (1,497 feet) were drilled to test the two major mineralized horizons. The first four holes were designed to intersect the C-4 mineralized horizon. These holes were spotted at different locations within 150 metres of a known showing and/or strong soil anomaly, and though each of these holes intersected the contact that should have been mineralized, only DDH 79-4 encountered weak mineralization. The other two diamond drill holes tested the B.M. mineralized horizon with DDH 79-5 encountering no mineralization and DDH 79-6 having to be abandoned, due to extreme freezing, at a point where it was beginning to enter weak mineralization. Two additional showings, one on each of the main horizons, were located during the course of spotting and prospecting around these holes. This brought the number of showings along Shag Creek to its present total of fourteen.

In 1980, Rio Tinto became disinterested in the Shag property and relinquished interest in it to Chris Graf.

1.4 1981 FIELD PROGRAM: (Figure 2A)

Esso Resources Canada Ltd. optioned the Shag property in the spring of 1981. The writer, together with a second geologist, spent four weeks performing heavy mineral sampling and geological mapping on the Shag claims during the month of July 1981.

A base was established in Fairmont, B.C. and a fly camp set up in the south-central part of the property. A helicopter and the fly camp were utilized for work in the southern and eastern parts of the property, while work in the northern and western parts was accessed by driving in along the logging roads from Canal Flats, B.C. About a third of the field time was spent on each of heavy mineral sampling, mapping contacts near the known lead-zinc showings, and mapping reported facies changes, structural complexities and stratigraphic horizons that appeared favourable for additional mineralization.

2. GEOLOGY AND MINERALIZATION

2.1 REGIONAL GEOLOGY: (Figures 3A & B, 4, G.S.C. Open File 634)

The Shag Property lies near the southern end of the Main Ranges Subprovince of the Rocky Mountain Fold and Thrust Belt, along a line that separates gently dipping, resistant Cambrian carbonates from recessive, cleaved and locally contorted Cambrian slates and argillaceous carbonates (Figure 3A & B).

These two packages of Middle to Upper Cambrian strata comprise two principal, laterally equivalent facies that underly most of the Shag claims. The eastern facies consists of alternating thick-bedded or massive carbonate formations, and thin-bedded, argillaceous carbonates and shales. These alternating units are given a number of formational names as shown in the Stratigraphic Column of Figure 4. The western facies, comprising thin-bedded, cleaved, argillaceous carbonates and thick sections of calcareous shale and slate, are grouped together as the Chancellor Formation.

These two facies form part of the lower section of a miogeocline-platform sedimentary assemblage that appears to have accumulated as a continental terrace wedge prograding into a transgressing ocean basin. The eastern facies strata accumulated on the outer edge of the platformal shelf - along a raised bank margin or hinge line of carbonate deposition that was interrupted by cyclical incursions of muddy sediments. Inside the carbonate bank margin, the interior platformal shelf featured a sag or interior basin in which clastics and fine-grained carbonates were deposited. The western facies (Chancellor Formation shales) accumulated in an adjacent deeper water shale basin.

Aitken (1971) named the Cambrian ridge or high along the edge of the platform shelf the "Kicking Horse Rim". It is best developed along the Trans Canada Highway near Field, B.C., but extends north and south for a

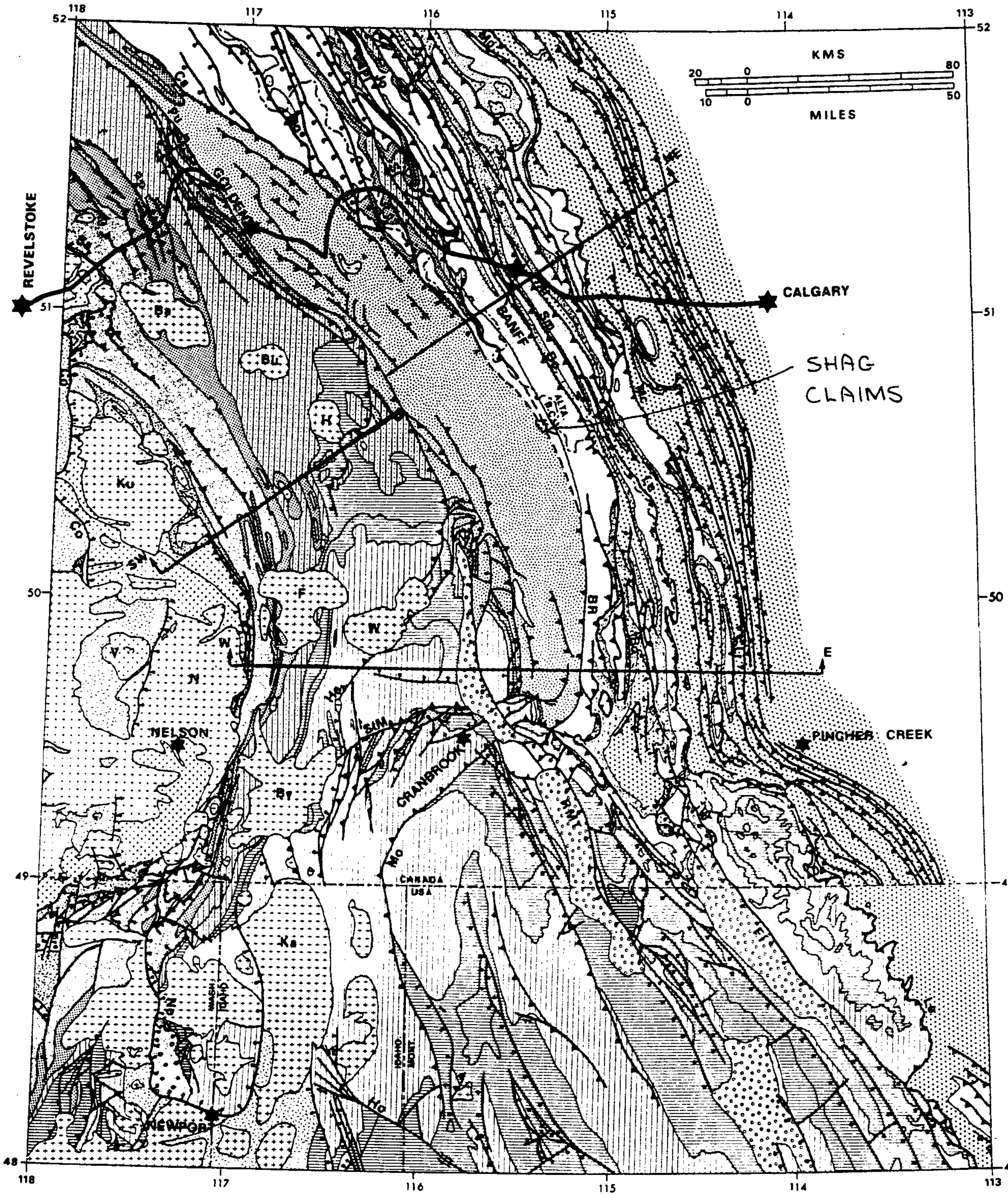


Figure 3A. Generalized geological map of Southeastern British Columbia, (After Price, 1980).

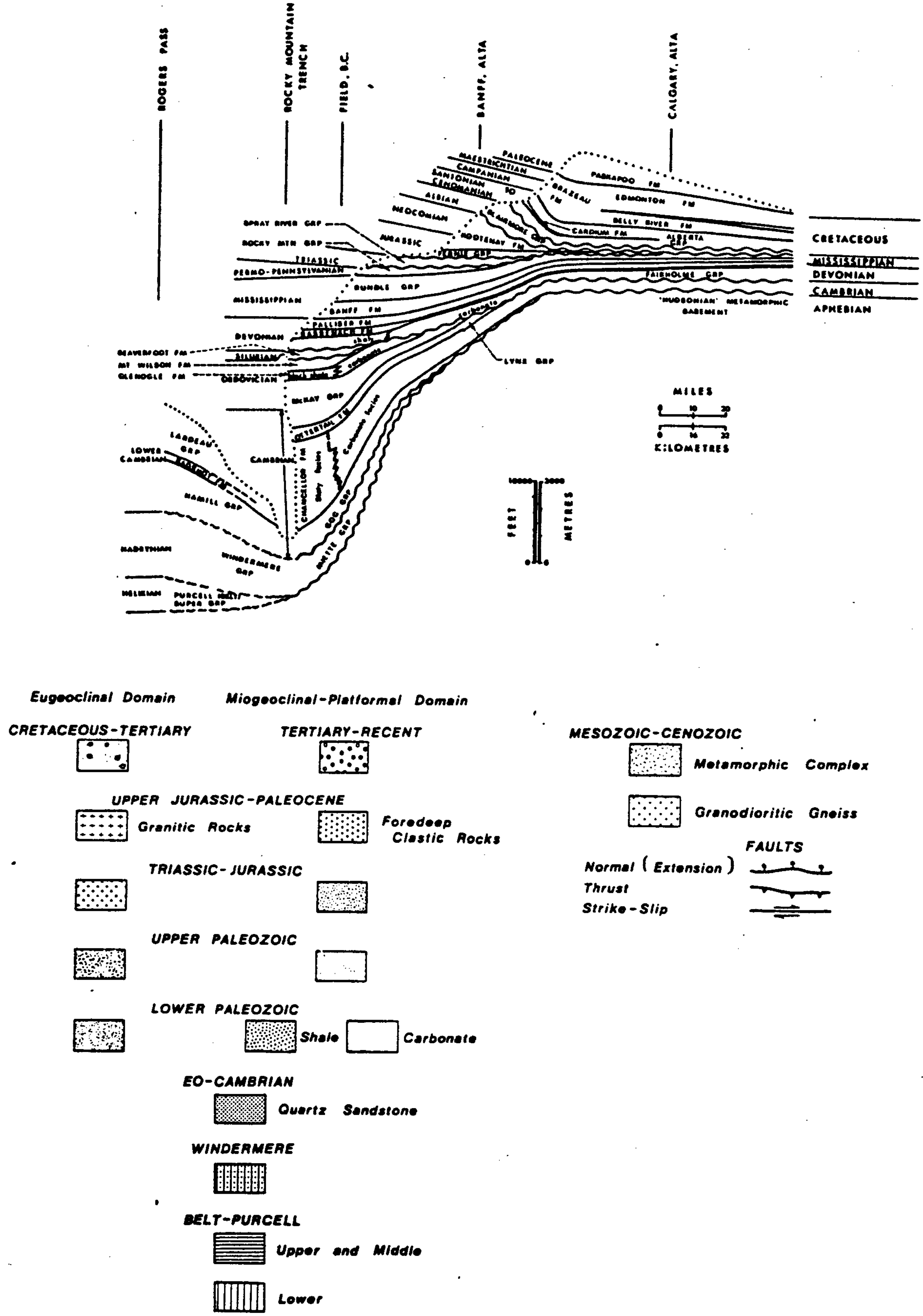
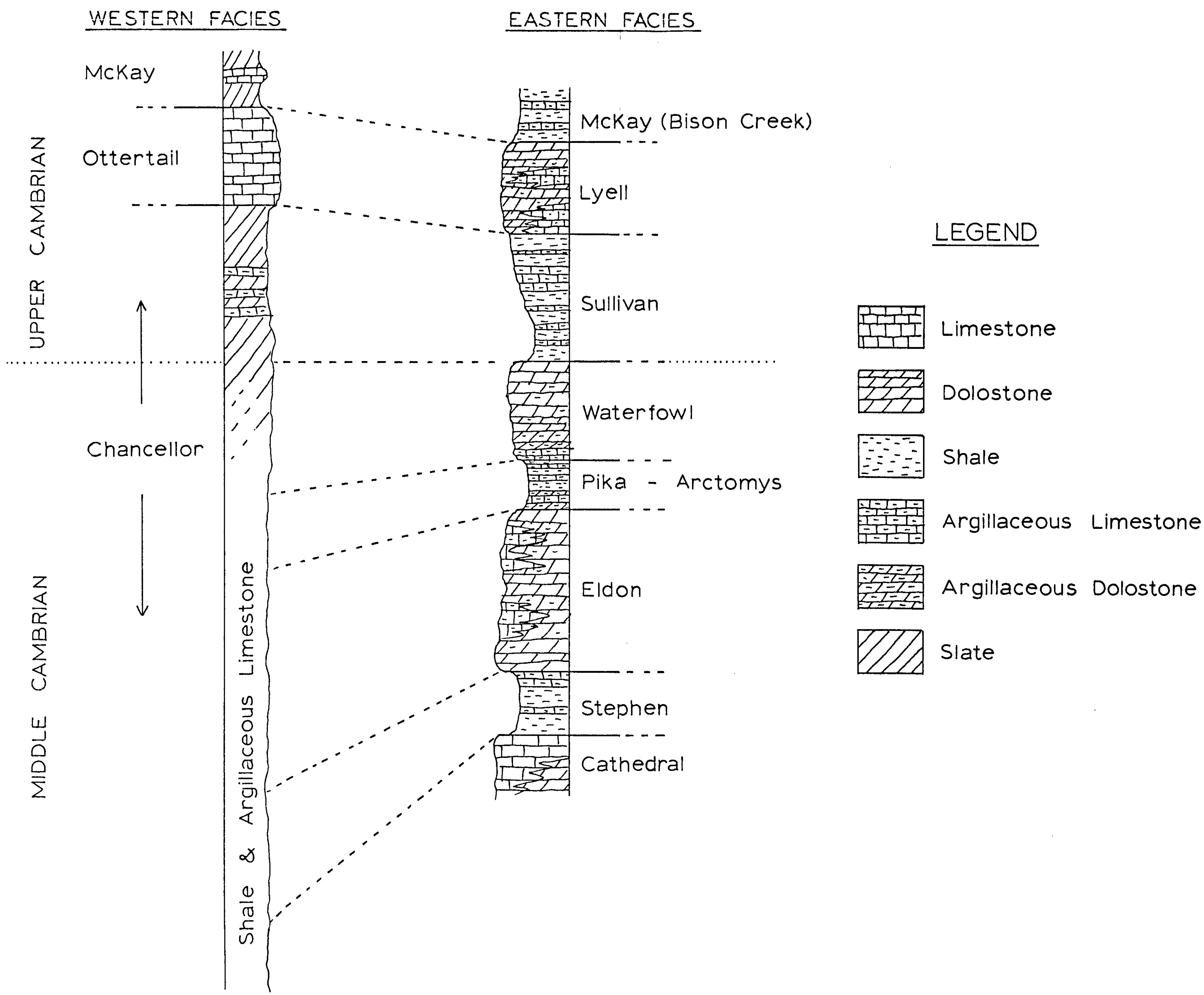


Figure 3B. Legend for Figure 3A, (After Price, 1980); and a schematic cross-section of the wedge of supracrustal rocks lying on the Hudsonian basement, along a line from just east of Calgary to just east of Revelstoke.

FIGURE 4. STRATIGRAPHIC COLUMN AND CORRELATION CHART FOR GEOLOGIC FORMATIONS IN THE SHAG CLAIMS AREA



total length of at least 120 km, localizing the eastern carbonate to western shale facies change to within a narrow belt. The carbonate units cannot be traced westward across the facies boundary, which is thought to represent a possible fault zone (active in late Proterozoic and earliest Paleozoic time) that formed a steep escarpment which controlled deposition within the sedimentary basin.

Overlying both the western shale and eastern carbonate facies strata are younger Cambrio-Ordovician argillaceous sedimentary strata of the McKay Formation.

The geology of the area surrounding the Shag claims is shown on a recent reconnaissance (1:126,720) scale map, released by the Geological Survey of Canada as Open File Report 634 (Leech, 1980). As suggested on this map, distinctions between the various Middle to Upper Cambrian Formations of the eastern facies become increasingly difficult south of Mount Assiniboine, since adjoining formations are lumped together for mapping purposes. This is particularly true for the area south of White Man Mountain (located 10 km north of the Shag claims), as no distinction is made for most of the various Middle Cambrian strata. Aitken (1967), who has carried out extensive mapping in the Lower Paleozoics of the Southern Rocky Mountains states that "the Upper Cambrian Formations are recognizable as far south as White Man Mountain, but immediately to the south and west of that point, the distinctive character of the Upper Cambrian sequence cannot be recognized at all. Even the easily recognizable Arctomys Formation disappears without structural cause, when traced from White Man Mountain down the Cross River." A change in the character of the sedimentary basin, possibly influenced by the Precambrian Montalta rise, inhibited the deposition of the strongly cyclical (shale to carbonate) sedimentation south of White Man Mountain. However, the main Cambrian Formations (Figure 4) of the eastern facies can be recognized on the Shag claims even though their relative thickness and character is different from that of the type sections to the north, and the contacts between these formations are less distinct.

In the area surrounding the Shag claims there are several carbonate-hosted Pb-Zn mineral occurrences of Cambrian age that are generally associated with the dolomitized portions of prominent biogenetic-bioclastic carbonate complexes. Though most of these represent clearly different styles of mineralization, they demonstrate the availability of metals and potential for concentration within these rocks. In the Lardeau area (and south in the U.S.) mines occur in the Badshot Formation and its correlatives. In the Kicking Horse area, mines and occurrences are found in Middle Cambrian carbonates in close proximity to the carbonate-shale facies front along the Kicking Horse Rim. Along the Rocky Mountain Trench and westward, mines and showings occur in the Upper Cambrian Jubilee Formation.

2.2 STRATIGRAPHY AND STRUCTURAL GEOLOGY OF THE SHAG CLAIMS
(Figures 4 & 5)

A summary of the Cambrian Formations occurring in the Shag claims area is presented in Figure 4. The location of those formations occurring over the Shag claims as mapped during the 1981 field season, together with the location of known lead-zinc showings, some previously mapped geology, and helicopter reconnaissance geology, is presented on a 1:10,000 scale Geological Map (Figure 5). A description of these rock units as encountered on the Shag claims follows.

Cathedral Formation

The Cathedral Formation is exposed at the north end of Shag Creek, along the Albert River and in roadcuts along the Albert River road. Exposure of this formation is very poor; as it occurs in the lowermost parts of cliffs and in river beds where it is usually covered by talus or recent sediments. The base of the Cathedral Formation is not exposed.

The Cathedral Formation is composed of both, thinly to thickly bedded, medium to dark grey, generally fine-grained limestones and dolomitic limestones, and massive, coarsely crystalline, light grey to white dolostones.

The latter are pale grey weathering with minor orange staining on many surfaces. Minor amounts of disseminated pyrite are very common within these dolostones. No original texture or structure is preserved within these dolomitized sections, which generally form concordant, stratiform bands through the bedded carbonates. Cross-cutting coarse dolomitization has been recognized on a hand specimen scale, but lack of exposure prohibits identification of such features on a larger scale in this area.

The bedded carbonates are generally dense and very hard with conchoidal fracture. The darker, bedded Cathedral carbonates tend to occur lower in the section and closer to the major carbonate-shale facies front, while the lighter grey bedded carbonates occur beneath the Stephen Formation, further away from the facies front. Birdseye textured horizons are common within the darker dolostones. Laminated and bioturbated beds occur at several locations. These strata also contain numerous irregular white sparry dolomite and calcite veinlets and pods, and some small zones of pseudo-brecciation.

Adjacent to the major carbonate-shale facies front, the Cathedral Formation is a medium to thickly bedded, dense, black, slightly dolomitic, silty limestone, with thin argillaceous partings. The rock is brown weathering, and in places exhibits cross laminations and truncation of previous beds by later deposition on a 1 to 2 centimetre scale. Coarse white dolomite, in veins up to one centimetre thick, generally occur along joint surfaces (2 to 3 cm joint spacing), and in some places as irregular cross-cutting veins. A few minor brecciation zones containing sparry dolomite and calcite veining also occur. This veining is interpreted to be a late feature associated with the regional development of the Rocky Mountain Main Ranges.

The contact with the overlying Stephen Formation is gradational and is marked by a change from thick-bedded limestone and dolostone to thin-bedded argillaceous limestones.

Stephen Formation

The Stephen Formation is exposed in the north end of Shag Creek and Shag Ridge.

In the creek, it consists of approximately 50 metres of recessive, very thinly and evenly bedded, light to medium grey, fine-grained limestones, dolomitic limestones, and slightly calcareous dolostones - all with argillaceous partings. These strata are brown-grey, shaly to flaggy weathering and not as well jointed as the carbonate units above and below it.

At the north end of Shag Ridge, the Stephen Formation consists of very thinly-bedded to laminated, slightly calcareous, grey shales, that weather red - grey-green. These shales are 70 to 100 metres thick, and contain fossil trilobites.

The contact with the overlying Eldon Formation is well exposed on the north end of Shag Ridge, and is transitional from shales, through shaly and silty limestones, to massive dolostones and calcareous dolostones. This transition is not gradational, but shows at least one major and several smaller breaks, or periods of emergence and erosion. The transition, from shale to limestone, breaks at the top of the first good limestone bed. This bed is 5 metres thick and has its upper limit defined by a paleokarsting, erosional surface, that has local relief in the order of 1 metre. A 15 metre unit of typical Stephen Formation shales fills in this surface. A thin unit of limestone is again encountered before entering typical Eldon Formation dolostones.

The limestones in this transition zone are medium grey, thin-bedded, flaggy-weathering, calcilutites and calcisiltites with coarser sections containing intraclasts, and some zones of intraformational brecciation. The intraclasts lie in 1-2 cm bands at the base of finer grained limestone units and consist of grey weathering clasts within rusty brown weathering muddy limestone. The overlying Eldon Formation in this area is a thin-bedded, generally fine grained, dark grey dolostone with numerous minor zones of brecciation and pseudo-brecciation. The unit is well jointed and light grey to rusty-brown weathering. Small scale folding and minor thrusting are common within the Stephen Formation of this area.

Eldon Formation

The Eldon Formation is a massive, cliff forming dolostone unit about 300 metres thick. It is similar to the Cathedral Formation but contains much more dolostone. It is commonly a thick-bedded, massive, white to light grey, fine to medium grained, sucrosic dolostone. Many of these thick-bedded sections are finely laminated. The formation contains units of dark-grey to black, argillaceous dolostone that have a fetid odour, and these darker sections contain minor zones of pseudo-brecciation and brecciation.

The upper Eldon Formation strata along Shag Creek are dominated by these darker dolostones that seem to have been derived from shallow-water limestones and include oolite and pisolite beds, cryptalgalaminate beds, and birdseye textured dolostones. These beds generally weather a light grey with yellow stained sections and have minor styolite development. A thin-bedded, grey, calcareous dolostone with shaly partings occurs at the confluence of the Shag and No Name Creeks. It weathers light grey-medium brown and contains white dolomite in en echelon tension gashes aligned perpendicular to the bedding.

The lower Eldon Formation along Shag Creek, and that exposed further away from the major carbonate-shale facies front, contain large, massive, irregular, sharply bounded, coarsely sucrosic, white dolostones. These are more abundant, thicker and less uniform in following specific stratigraphic horizons than those of the Cathedral Formation. These strongly dolomitized sections generally lack any original sedimentary structures.

The Eldon Formation is generally well jointed, particularly nearer the carbonate-shale facies front. A moderate amount of open vuggy porosity exists within parts of the Eldon Formation. Most vugs are lined by dolomite crystals that do not have curved faces. However, much of the unit is fairly tight, particularly the light-coloured, even textured, finer grained, sucrosic dolostones.

Pika-Arctomys Unit

The Pika and Arctomys Formations are combined to form a thin, recessive unit that is poorly exposed over the Shag caims. Along No Name Creek, it is about 40 metres thick, but appears thicker to the north on parts of Mount Soderham, where it is also seen to thin to the west.

Along No Name Creek it consists of a basal unit of thin-bedded dolostone and limestone with argillaceous partings, a middle unit of red to green-black shales and dolomitic siltstones, and an upper unit in which the latter become interbedded with progressively more, and thicker sections of medium grey, mottled limestones and massive dolostones that are typical of the Waterfowl Formation. A contact with the Waterfowl was not observable and it is assumed to be gradational.

Waterfowl Formation

The Waterfowl Formation is a massive, resistant unit that is generally a light grey to white, fine to medium grained sucrosic dolostone. It contains numerous interbeds of dolomitic limestones and darker grey dolostones. The latter contain units of birdseye textured dolostone, a few brecciation zones, small pods of pseudo-breccia and thin, white dolomite veins in fractures, that in places weather to form box works structures. These features are more common in the Waterfowl Formation strata than in any of the other carbonate units. The occurrence of pseudo-breccias, with light grey to white dolostone "veins" in medium to dark grey dolostone is particularly common. Open vugs, some intragranular porosity, and disseminated pyrite (particularly surrounding showings) are also common within the Waterfowl Formation. A few styolites were noted.

The formation seems particularly coarse near the upper contact with the Sullivan Formation along the east side of Shag Creek where thick-bedded, white, recrystallized sucrosic dolostones predominate.

A number of dolomite mottled limestones occur within the Waterfowl horizon. These show differential weathering with tan brown amoeba-shaped dolomitic bands standing up relative to the recessive weathering pale grey limestone. Such a unit lies just above the C-4 showing dolostones.

In a general sense, the lower part of the formation contains more darker grey, fine to medium grained, pseudo-brecciated strata, while the upper section contains progressively more massive, thick-bedded, light grey, fine to coarse, sucrosic dolostones.

A large, late brecciation zone in which the fragments were not well recemented together occurs along Upper Shag Creek. This zone is found within white dolostones near the stratigraphic level of the C-4 showing, but contains no visible mineralization. It is interpreted as a feature related to late faulting.

The formation is usually well jointed, with fracture spacing commonly about 1 to 3 cm apart, particularly on the Shag Ridge side of Shag Creek.

Sullivan Formation

The Sullivan Formation is a recessive weathering unit composed of "mottly-banded" argillaceous limestones, limestones and calcareous shales. In places, on both sides of Shag Creek, the upper Sullivan Formation strata form steep cliffs, where it tends to have a higher carbonate content and is capped by protective Lyell Formation dolostones. Much of the lower Sullivan Formation is recessive weathering forming slopes that are covered by vegetation. The formation thickens rapidly from east to west as one approaches the major carbonate-shale facies front, varying from about 150 metres in the east, to greater than 300 metres at the facies front.

Most of the Sullivan Formation is a medium to dark grey, argillaceous limestone that attains a distinctive "mottly-banded" appearance upon weathering. The bands are irregular, amoeba-shaped and consist of alternating medium brown weathering, silty-sandy units and light grey weathering more calcareous units. In the upper Sullivan these bands are in the order of 1 to 2 cm thick, but lower in the section the relative proportion of the silty bands decreases leaving thin, wavy, argillaceous partings within a grey argillaceous limestone. The Sullivan Formation, particularly the silty horizons, is very fossiliferous, containing units with an abundance of trilobite cranidia and pygidia, as well as a few wholely-preserved specimens and numerous lingula.

On the east side of Shag Creek, just below the Lyell contact, the silty limestones of the Sullivan Formation contain a number of oolitic and calcarenite to conglomeratic beds, oncolite horizons and some well bioburbated zones below the oncolite horizon.

A 50 to 80 metre section of limestones, interbedded limestones and typical Sullivan Formation argillaceous limestones occurs within the middle to upper part of the Sullivan Formation. This unit is well exposed on the west side of Shag Ridge. The upper Sullivan Formation strata contain widely spaced, thin (1 metre) resistant limestone interbeds to within 80 metres of the Lyell Formation contact. These became progressively closer together and thicker (1-4 metres), until they are interbedded with equal amounts of banded argillaceous limestones that overlie a 30 to 40 metre thick section of thick-bedded limestone. The limestone of these units is medium grey, light brown weathering, fine grained with coarse recrystallized calcite pods (0.5 to 1 cm) giving it a birdseye type texture. It has irregular, wavy breakage along thin wavy argillaceous partings. The base of the limestone unit is not well exposed, but the lower Sullivan Formation strata again consist of "mottly-banded" argillaceous limestones and calcareous argillites. Near the major facies change, the Sullivan Formation strata are steeply dipping to the west and become more argillaceous, making it difficult to distinguish these units from Chancellor Formation strata. The rocks here also have a strongly developed cleavage, with a strike approximately parallel to the carbonate-shale facies front boundary.

A number of structurally complex zones, containing large scale folding and shearing along argillaceous partings, occur in association with both the No Name Fault and the major facies change to Chancellor Formation strata. Quartz and calcite veining and infilling of tension gashes occur throughout the unit, but are particularly common near these structural complexities.

A light to medium grey, mottly-banded unit just below the southern end of No Name Fault contains amoeba-shaped blobs in irregular, discontinuous bands that appear boudinaged. The strata here also contain 0.5 to 1.0% pyrite in this wisps parallel to the banding. A minor amount of disseminated pyrite is common throughout the formation.

Below the Lyell Formation on the east side of C-4 Creek are zones of thinly laminated dark grey to brown, calcareous shales lying within typical mottly-banded Sullivan Formation strata. Below this is a zone containing interbeds of thin dolomitic limestones and dolostones that preserve the mottly-banded appearance of the typical Sullivan Formation rock. These occur above and lateral to fine grained, sucrosic, white dolostones. Dolomitization of Sullivan Formation strata is erratic, not very extensive and these horizons can be traced laterally into argillaceous limestones. No dolomitization of Sullivan Formation strata was noted on the west side of Shag Ridge.

The contact with the overlying Lyell Formation is a gradational change from thin-banded argillaceous limestones to thick-bedded, massive dolostones and limestones.

Lyell Formation

The Lyell Formation is a thick (up to 200 metres), cliff forming unit consisting almost entirely of massive, thick-bedded dolostones, but includes some limestones. The formation is light to medium grey, generally micritic with some coarser units. The formation is irregular, blocky ("chainsaw type"), yellow-grey to yellow-brown weathering. The bedding surfaces are undulating and become the preferential exposed weathering surfaces. These beds are characteristic of repeated emergent depositional cycles, many containing algal laminated and oncolite zones above coarser-grained carbonates. Soft sediment deformation, bioturbation and the development of styolites within these carbonates is common.

The base of the Lyell Formation, just above its contact with the Sullivan Formation along Shag Ridge, contains a zone of oncolites within burrowed dark grey limestone that has been partly dolomitized, leaving a discordant dolostone front along the north end of Shag Ridge Peak. Another black, thin-bedded, argillaceous limestone interbed occurs about halfway up the Lyell Formation section on the south wall of No Name Creek valley. Other lighter coloured limestones and dolomitic limestones occur at the same stratigraphic level along the east side of C-4 creek valley.

Small scale folding and faulting with the development of brecciation is common within the formation. These zones are usually marked by an increase in quartz-carbonate and dolomite veining along fracture surfaces. Jointing is well developed near the change to Chancellor facies strata.

The upper Lyell Formation rock, directly below the red shale unit of the McKay Formation, is usually a very coarsely crystalline, vuggy white dolostone. The change to McKay Formation shales is very sharp and easily recognized because of a red shale marker horizon at the base of this formation.

Chancellor Formation

The Chancellor Formation is the western facies equivalent of all the eastern facies Cambrian Formations below the Lyell Formation. In a broad way, carbonate formations in the eastern facies are represented in the Chancellor by thin-bedded argillaceous carbonates interbedded with slate, whereas shale formations in the east are represented by thick slate units in the west. The Lyell Formation persists as a discrete carbonate unit across the facies boundary, and its equivalent strata in the western facies is named the Ottertail Formation. The Ottertail Formation and upper part of the Chancellor Formation are not exposed in the Shag Claims area.

Within the Shag Claims, the Chancellor Formation is a thick unit of monotonous green-grey slates and cleaved argillaceous limestones. These can be difficult to distinguish from argillaceous limestones of the upper part of the Sullivan Formation. However, the facies boundary is placed along a line that separates the more strongly deformed and cleaved strata of the Chancellor from more gently dipping, less tectonically deformed units of the eastern facies. Within Chancellor Formation strata, bedding is usually hardly discernible, steeply dipping and slightly oblique to the shaly cleavage. Within the eastern facies strata, bedding is still quite discernible, relatively flat lying and generally at 90° to the pervasive fracturing. Cleavage and fracturing is generally subparallel to the NWN trace of the facies boundary and steeply dipping. The Chancellor Formation strata are yellow-brown weathering.

McKay Formation

Overlying the carbonate Ottertail Formation in the western facies are interbedded shales and limestones of the McKay Formation. This unit is correlated with the Bison Creek, Mistaya and Survey Peak Formations as well as some younger rocks to the east. Leech (1980), places this facies change further to the east of the Chancellor facies front, thus placing McKay Formation strata over the Lyell Formation in the Shag claims area.

The McKay strata, above the Lyell Formation, in the Shag claims appear similar to Bison Creek Formation strata (Aitken and Gregg, 1967) in the east. The basal member is a recessive, 5 to 10 metre thick, red, fissile, rusty weathering shale containing a few 10 cm thick interbeds of resistant, grey-tan weathering pelmatozoan biocalcarenites. In these beds, the crinoid stems are well rounded and sorted. Above this are red to green-grey weathering shales containing thicker (0.5 to 1 metre) and more numerous biocalcarenite interbeds. This whole lower McKay Formation package contains an abundance of quartz-carbonate pods and veins.

2.3 MINERALIZATION ON THE SHAG CLAIMS (Figure 2B)

Rio Tinto (Bending, 1979a & 1979b; Whiting, 1979) initiated work that led to the discovery of fourteen small lead-zinc showings in the Shag claims area. Twelve of these occur on the Shag claims in association with two main stratigraphic horizons. These have been named the "B.M." and "C-4" type mineralized horizons.

The B.M. horizon contains the B.M., B.M. Extension (float), B.M. Fractures and Galena (float) showings. These occur in dolostones at the top of the Eldon Formation near the contact with Pika-Arctomys limestones. The mineralization occurs in discontinuous zones as spotty disseminations or replacements, and in somewhat more concentrated veinlets along thin fracture surfaces. The mineralization consists of small (1 to 5 mm) grains of amber or red coloured sphalerite. No galena was observed in the outcrop sections of the B.M. horizon mineralized zones. However, a minor amount of galena was reported in float by Rio Tinto geologists at the Galena showing. The sphalerite at the B.M. showing is contained in a zone that has a stratigraphic thickness of approximately 3 meters. This mineralization is seen in a number of discontinuous outcrops along a length of about 90 meters. The mineralization is very low grade, with visual estimates suggesting less than 1 or 2% sphalerite across any mineralized section (1 to 3 meters). The other showings along the B.M. horizon are smaller occurrences.

The C-4 mineralized horizon contains the Christmas, Rush, Crackle, Red Bed, Pieces (float), Pad, C-4 and Stripes (float) showings. These occur within dolostones of the Waterfowl Formation, either at the contact with the overlying limestones of the Sullivan Formation, or in contact with dolomitic limestones contained within the upper Waterfowl Formation.

The Christmas, Rush, Crackle, Red Bed and Pieces showings all occur within light coloured Waterfowl dolostones at the contact with the overlying Sullivan limestones. They consist of small (10-80 cm thick, and 1 to 3 meters long) discontinuous zones of lead-zinc mineralization. They occur as bands of small (1 to 2 mm), equant, disseminated, reddish sphalerite together with some coarser grained pods also containing galena, or as fracture fillings and disseminations of fine to coarse grained sphalerite and galena associated with sparry white dolomite in breccia or pseudo-breccia pods within darker grey dolostones. The disseminated sphalerite occurs in variably concentrated lenses or bands, sometimes separated by non-mineralized horizons. At the Red Bed showing, a trench shows mineralized dolostone to be very hard and tight, while a thin (10 cm) section of sandy, softer dolostone occurring between the mineralized horizons remains unmineralized. The sphalerite and galena pods and bands at these showings all pinch out quickly along exposed strike lengths. Mineralization at these showings is higher in grade than that of the B.M. horizon, containing small pods (10 to 30 cm thick, and 1 to 3 metres long) with up to 30% galena and sphalerite.

The Stripes, C-4 and Pad showings consist of fine to coarse grained, reddish-orange sphalerite and coarser galena in disseminated replacement bands, or fracture fillings in small breccia pods. At the Pad showing, the sphalerite and galena occur as fine to coarse grained disseminations in the sparry, white dolomite matrix of a small breccia zone within a darker grey dolostone. The C-4 showing is the best mineralized occurrence on the Shag claims, having exposures on both sides of C-4 creek showing parts of a number of mineralized pods and lenses. These mineralized zones contain abundant, small (1 to 2 mm), equant, pale yellow, orange and red sphalerite in disseminated bands that contain some coarser grained (5 to 20 mm) anhedral galena. Veinlets and 1 to 2 centimetre replacements of galena also occur within the dolostones at this showing. Mineralized zones contain from 5 to 20% sphalerite and galena over a width of 0.5 to 1 metre. The C-4 showing also contains banded, coarsely recrystallized, yellow to green sphalerite in 20 to 30 cm thick slabs of float. These pieces of float contain 50 to 80% sphalerite and appear to be pieces of dislodged sphalerite veins. Some of the outcrop pods contain material similar to these pieces of float, but these are in very small, lower grade pockets. However, the float pieces appear to have been locally derived. The mineralization at the C-4 showing shows a pronounced lateral as well as vertical variation.

The mineralized pods are seen to abut against laterally barren dolostones. The host dolostone is creamy grey, sucrosic, finely crystalline and generally contains some pyrite in the area surrounding the C-4 showing. The C-4, Stripes and Pad showings occur within the Waterfowl Formation dolostones, but their positions relative to the contact with the overlying Sullivan limestones is not known. At the C-4 showing, light grey and brown weathering mottled dolomitic limestone overlie the mineralized zones which are then again overlain by light grey dolostones. Lack of outcrop in the area surrounding these showings prohibits identification of their precise stratigraphic location, but it appears that these showings occur within upper Waterfowl dolostones somewhat below the contact with the Sullivan Formation.

2.4 DISCUSSION

Lead-zinc mineralization within the Shag claims occurs within an environment in which there is some potential of economic concentrations. The mineralization occurs in at least two different Middle Cambrian stratigraphic horizons (the B.M. & C-4 mineralized horizons) within the upper part of dolomitized carbonates that are overlain by limestone units. The package of carbonate host rock consists of a number of units of thick-bedded, supratidal to intertidal dolomitized carbonates, separated by thin-bedded, subtidal argillaceous limestones that lie within two kilometres of laterally equivalent shale facies strata.

The mineralization consists mainly of fine to coarse grained sphalerite and galena, though some showings suggest the occurrence of an associated peripheral pyrite zone. Sphalerite is much more abundant than galena, particularly along the lower B.M. mineralized horizon. The mineralization occurs as disseminations and veinlets in a sucrosic, variably crystalline, vuggy, light coloured dolostone, and in association with the sparry, white dolomitic matrix of brecciated darker grey dolostones. The largest showings consist of a number of thin, elongate, irregular and discontinuous lenses or zones of mineralization that form along dolostone-limestone contacts. These lenses die out rapidly along strike into similar, but barren dolostones. Nowhere within the claims group do the mineralized showings approach ore grade over a mineable thickness.

The mineralization seems to have accumulated in dolomitized and early brecciated portions of a shoal complex, on the outer edge of a shallow-water carbonate platform, adjacent to a shale basin. This environment is basically similar to that of many Mississippi Valley type deposits.

Evidence for shallow-water deposition within the carbonate bank succession includes strata that contain algal laminations, oncolites, oolites and well sorted calcarinites, as well as units that contain intermittently emergent solution-etched tops of dolostone beds.

Dolomitization within the carbonates is pervasive. The thicker bedded supratidal to intertidal carbonate beds are mostly dolomitized and some dolomitization is also present within the intervening, thinner bedded, more argillaceous limestone beds. Much of the dolostone occurs as massive, homogeneous, sucrosic, light coloured units that have variable grain size and some open vugginess. Some of these occur in bands that cross bedding at steep angles and produce sharp dolomitization fronts. Dolomitization of the carbonates probably began very early (penecontemporaneous), and has continued intermittently throughout their diagenesis and lithofication.

Brecciation within the dolostones began early and has occurred a number of times, but no real understanding of the timing of these events has been determined. However, the zones of brecciation within the Shag claims are small and have been caused by events or processes that have both preceeded and followed the emplacement of mineralization. Tectonic activity associated with the latest mountain building events have produced the latest structures which are completely unmineralized.

Ore control is related to the transition zones between limestones and diagenetic dolostones. Dolomitizing fluids have probably played a part in both the introduction and localization of the lead-zinc mineralization into their present locations along a few specific stratigraphic horizons. However, there are numerous megascopically similar limestone-dolostone contacts within the surrounding rock that remain unmineralized. The location of the small zones of mineralization has likely been determined by a complex interplay between the timing and availability of metals, dolomitizing fluids and pathways, and brecciation events within the host rock. While the dominant control over mineralization and dolomitization is stratigraphic, the importance of structural features such as the No Name Fault zone remains to be determined.

3. GEOCHEMISTRY

Stream sediments are characterized more by their variability in composition, grain size and sorting than by uniformity in any of these features. This variability is mainly a function of the lithology, climate, topography, vegetation and water chemistry of the catchment area sampled by a stream, and provides the essential ingredient for a viable stream sediment survey. The purpose of a geochemical survey is to isolate that portion of the variability which reflects the presence of mineralization.

During a preliminary investigation of the Shag claims in June of 1981, a number of streams were noted draining into Shag Creek from both sides of Shag Valley. These streams are small and swifty flowing, draining steep sloped ridges and cliffs. A number of them follow courses along exposed outcrop in avalanche slopes. The sediment within the streams is generally very coarse but sand-sized particles can be obtained near the mouth of many of them, in the area where the grade of the streams becomes gentler, just prior to entering Shag Creek.

The prevalence of strong mechanical weathering, and the knowledge that many of these streams would be draining the contact horizons containing coarse grained sphalerite and galena, suggested that a stream sediment survey, analyzing the heavy mineral concentrates of the coarser fraction of collected samples for lead and zinc, should enable the identification of known lead-zinc occurrences as well as any continuation of these zones should they exist. Together with these heavy mineral analyses, the convential stream sediment silts of each collected sample would be analyzed for their lead and zinc content.

3.1 STREAM SEDIMENT SURVEY

A total of 68 sediment samples were obtained from 65 locations along creeks and streams within the claims area. The locations of these sample sites can be found on Figure 6. The distribution of sample sites is more a function of available streams than systematic coverage. The sample density along Shag Creek and of streams draining into this creek in the upper half of Shag Valley proved sufficient. However, the lower or north end of Shag Creek, which is contained within very steep slopes that have poor drainage, and the west side of Shag Ridge along the Albert River, yielded very few streams that could be sampled.

At each of the sample sites, the silt to gravel sized sediment from the active part of stream channels was shovelled into 9" diameter, 20 mesh screens with fitted collecting pans, that had been obtained from Min-En Laboratories. The collected sample was sieved underwater until all the -20 mesh sediment had collected in the pan. This sieved fraction was transferred into a 4" x 7" kraft envelope, and the left-over coarser material in the screen discarded. This process was repeated until enough sieved sediment had been collected to fill the kraft envelope (approximately 0.5 kg of sediment). Generally, 5 to 20 kg of stream sediment had to be sieved to collect enough fine material to fill the envelope. In a few cases, only a partial kraft bag of -20 mesh sediment could be collected.

Samples were not panned at the collection site to obtain a quantity of heavy minerals for analysis, since the "degree of panning" from site to site would make it more difficult to compare analytical results (i.e. a little extra panning would enhance an analysis).

The stream sediment samples were obtained in the middle of July, during a time when an abnormally high amount of precipitation was inflicted upon the Shag claims and surrounding areas. Rain fell almost every day and every stream and creek was at or near its high water mark. This produced swift moving water in all the streams and creeks, and provided for good sediment accumulations behind obstructions, and within wider sections of the stream channels. Only the very steep streams that drained into Shag Creek did not contain readily collectible sediments. However, these would not provide a sample at any time because of the lack of suitable sediment deposition sites.

Information regarding the stream size, sediment size and amount of sediment collected at each sample site is given in Appendix II.

The collected sediment samples were sent to Min-En Laboratories Ltd. of Vancouver, B.C. where the -20 to +100 mesh fraction of each sample was obtained for a heavy mineral separation and subsequent analysis, and the remaining -100 mesh fraction used for a stream silt sample analysis.

3.1.1 HEAVY MINERAL ANALYSIS RESULTS

For each of the collected sediments, the heavy mineral separate of the -20 to +100 mesh fraction was obtained by floation and analyzed for both lead and zinc. These analysis results, together with the percent of heavy minerals obtained from each of the collected samples are included in Appendix III. These values have been shown in relation to their relative locations on Figure 7.

A histogram of the lead values obtained for the heavy mineral analyses is presented in Figure 8. This graph shows background values of less than 500 ppm for this sampling population. Compared to other carbonate environments within the Rocky Mountain front ranges, these are quite high background values. The grouping of values between 500 and 750 ppm is considered to contain probably anomalous amounts of lead, and two analyses yielding values of 1240 and 1450 ppm lead are considered anomalous.

A histogram of the zinc values obtained for the heavy mineral analyses is presented in Figure 9. Background values are considered to be those below 500 ppm zinc. A possibly anomalous range, with values between 500 and 750 ppm zinc, has been separated out as 3 of these 5 values come from samples with corresponding probably anomalous lead values. Probably anomalous zinc values are those between 750 and 1300 ppm, and those values above 1300 ppm zinc are considered anomalous.

FIGURE 8. HISTOGRAM OF LEAD CONTENT OF THE HEAVY MINERAL FRACTION OF STREAM SEDIMENTS

-20 TO +100 MESH SIZE FRACTION

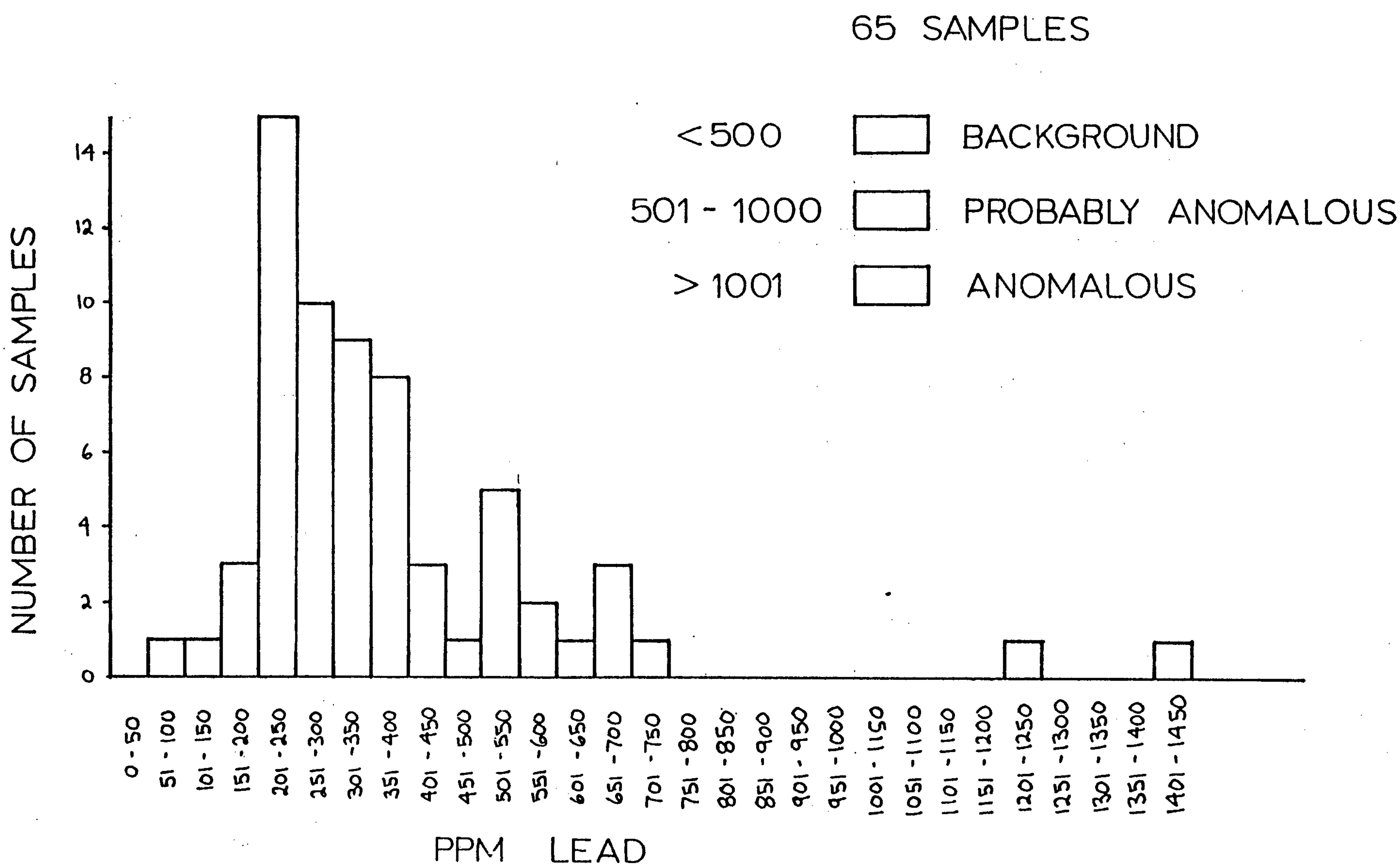
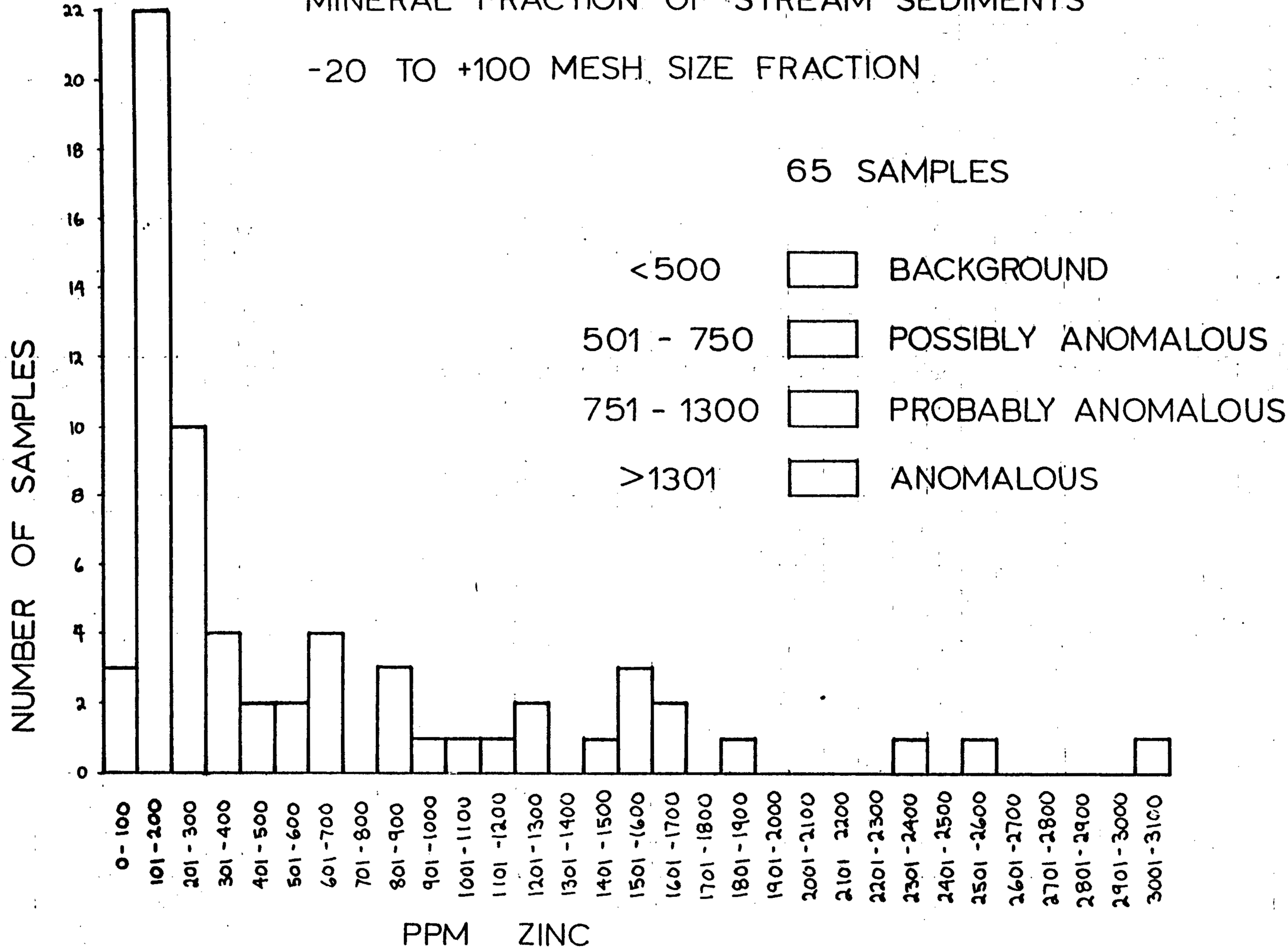


FIGURE 9. HISTOGRAM OF ZINC CONTENT OF THE HEAVY MINERAL FRACTION OF STREAM SEDIMENTS



Samples 1001A, 1001B and 1001C were obtained at the same sample location site at different times. The similarity in the analytical values obtained for each of these samples suggests that an excellent degree of repeatability has been achieved in the sampling procedure. These three samples have been treated as a single sample in the construction of the histograms. Samples 1010A and 1010B were collected from two different mouths of a branching stream and are treated as separate samples.

Figure 7 shows that most of the anomalous heavy mineral analyses, in this sampled population, are from sediments collected from within Shag Creek. In fact, every sample obtained from Shag Creek below the main C-4 showing contains at least a probably anomalous value in either lead or zinc. Most of the samples obtained below the B.M. showing yield anomalous values in either lead or zinc.

No values above background were obtained from samples collected upstream of the C-4 showing. The only anomalous values obtained from streams draining into C-4 Creek are those of two streams draining the Stripes showing area (Samples 1030 and 1031).

Along Upper Shag Creek, the two streams draining the Pad showing area (Samples 1020 and 1021) are probably anomalous in either lead or zonc. Three other separate probably anomalous lead values, in streams draining into Upper Shag Creek, are not associated with any known mineralization (Samples 1023, 1028 and 1029).

A number of streams draining into Shag Creek are probably anomalous in either lead or zinc, or both. Four of these occur together in streams draining the west side of Shag Creek just above the B.M. mineralized horizon (Samples 1010A, 1010B, 1011, 1013). This area is within a zone containing previously discovered zinc and lead soil anomalies, but has not yielded visible mineralization. Another single probably anomalous lead value was obtained from a stream draining an area just north of the Pieces float showing (Sample 1044).

No anomalous values were obtained from the samples collected along No Name Creek, or the two samples from streams draining the area just southeast of the large lead soil anomaly (Samples 1052 and 1056). This large lead anomaly has not yet been associated with any mineralization.

The four streams draining the west side of Shag Ridge (Samples 1002, 1003, 1061 and 1062) were not anomalous in lead or zinc.

A single probably anomalous zinc value was obtained from a creek (Sample 1059) flowing from the west into the Albert River.

These results show that the heavy mineral separate analyses have been effective in outlining the areas of known mineralization. The complete length of the Shag Creek below the C-4 showing is anomalous in lead and zinc, as are the streams draining the Pad, Pieces and Stripes showing areas. Since the values of the heavy mineral fraction remain anomalous in lead and zinc along the entire length of Shag Creek, geochemical surveys focusing on particulate dispersion may also prove useful in reconnaissance lead-zinc exploration in areas with a similar carbonate environment. A limitation to this geochemical survey is the lack of regularly spaced streams to provide systematic and complete sampling coverage. Thus, a number of the known mineralized showings have not been detected because no streams draining these areas were sampled.

No new areas with significant lead or zinc values have been discovered, but two areas warrant follow-up investigation. One of these is the area drained by a small grouping of three streams, containing possibly anomalous zinc values, just southwest of the main B.M. showing. The other is the area above the three streams, containing possibly anomalous lead values, draining into Upper Shag Creek. The latter could be caused by a mineralized extension of the C-4 horizon. The creek within Shag Claim 7, which drains into the Albert River and contains a probably anomalous zinc value, also warrants a short prospecting traverse.

Though there are relatively few streams draining the north end of Shag Creek and the west side of Shag Ridge that have been sampled, none of those that were sampled yielded any values worth follow-up investigations.

3.1.2 SILT SAMPLE ANALYSIS RESULTS

The -100 silt fraction of each of the collected stream sediments was analyzed for their lead and zinc content. These results are included in Appendix III.

Values obtained for lead analyses show little contrast, ranging from 16 to 48 ppm, while values obtained for zinc analyses show three that are anomalous (120, 260 and 263 ppm) over a background range of 15 to 85 ppm. These three anomalous values are from sediment samples that also contain a possibly and two probably anomalous heavy mineral separate zinc analysis values.

The silt sample analyses do not show as much of a contrast between anomalous and background lead-zinc values as do the heavy mineral analyses, and would not be as useful in locating specific mineralized areas within the claim group.

4. CONCLUSIONS

Mineralization within the Shag claims is hosted within dolostones along two stratigraphic horizons, in association with overlying limestone units.

The known occurrences are small, low grade, discontinuous lenses and pods that die out rapidly along strike into similar, but barren dolostone host rock. Nowhere within the claims group do the mineralized occurrences approach ore grade over a mineable thickness. There are numerous similar dolostone-limestone horizons within the claims group that are not mineralized. The reason for the development of the mineralized occurrences along only two stratigraphic horizons is not completely understood. The mineralized zones appear to be related to dolomitization within early brecciated portions of a carbonate bank.

The spotty, discontinuous nature of the sphalerite occurrences associated with the B.M. mineralized horizon indicates that this zone is unlikely to yield significant mineralization.

The discontinuous, lensoid nature of the C-4 mineralized horizon suggests that this zone is unlikely to yield significant tonnages. However, the geology around both the C-4, Pad and Stripes showings, and east of the C-4 mineralized horizon (along the east side of Shag Valley), is poorly known due to the lack of outcrop. The west side of Shag Ridge does not contain the dolomitized carbonates that host the mineralized zones, indicating that this area has little potential for increased mineralization.

The persistent nature and number of showings along two similar stratigraphic horizons suggest there is some potential that they are an expression of a "completely" blind ore body. Adequate testing of the mineralized C-4 horizon could require 1500 metres of drilling in ten to fifteen holes. However, presently available data does not warrant such a large scale programme.

The stream sediment survey, involving geochemical analyses of heavy mineral separates, has proved effective in outlining areas of known mineralization. It has also yielded two new areas that warrant follow-up investigation. However, due to the lack of available streams that could be sampled, coverage over the claim group is not complete enough to preclude the possibility of additional mineralization.

5. RECOMMENDATIONS

A drilling program comprising approximately 200 metres of diamond drilling in two or three holes along the C-4 mineralized horizon on the east side of Shag Valley is warranted. These holes should help in evaluating the nature and continuity of these occurrences in an area that has not been previously drilled. At least one of these holes should be drilled behind the Red Rock showing.

In addition to the drilling, follow-up investigations should be conducted along the few streams that have yielded anomalous lead or zinc values in the heavy mineral separates of their sediment samples. In particular, the streams with anomalous values along Upper Shag Creek and just southwest of the main B.M. showing should be investigated. The cause of the anomalous values from the streams draining into Upper Shag Creek may be mineralization along a continuation of the C-4 horizon.

The spotting of the diamond drill holes should follow both the geochemical follow-up work, and a short investigation of the C-4 contact horizon in the area to be drilled.

If this proposed work provides any encouragement, then 1:1,000 scale geological mapping and a continuation of a drilling programme may be warranted. Additional mapping is particularly necessary to clarify facies and contact relationships in the area surrounding the C-4, Pad and Stripes showings, and in the area to the northwest of the B.M. mineralized horizon.

Martin Lenters

Martin Lenters

October 6, 1981

Date

6. REFERENCES

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APPENDIX I

Statement of Expenditures

SHAG CLAIMS

GEOLOGY & GEOCHEMISTRY

STATEMENT OF EXPLORATION EXPENDITURES

1. PERSONNEL: Salaries including benefits (June 6 - August 4, 1981)			
Martin Lenters (geologist) - 30 days @ $165/day			4,950.00
Robert Thomson (geologist) - 30 days @ $110/day			3,300.00
Zia Hasan (geologist/supervisor) - 3 days @ $250/day			750.00
			9,000.00
2. ACCOMMODATION: June 6 - August 3, 1981			
Rocky Mountain Bungalows, Fairmont, B.C. 1 room cabin - 29 days @ $38.16/day =		1,106.64	
Fairmont Lodge (June 25/26/27, 1971) 3 days @ $54.00 =		162.00	1,268.64
3. FOOD:			
60 man days @ $17.50/day =			1,050.00
4. SUPPLIES & ESSO EQUIPMENT:			
60 man days @ $15.00/day =			900.00
5. HELICOPTER: Shirley 206B based at Fairmont, B.C.			
Rental:	17.9 hours @ $425.00/hour	7,607.50	
Fuel & Oil:	17.9 hours @ $ 35.71/hour	639.21	8,246.71
6. TRANSPORTATION: 4-wheel drive Toyota Land Cruiser			
Rental:	1 month @ $500.00/month =	500.00	
Gasoline:	651 litres @ .40/litre =	260.40	760.40
7. SHIPPING: Via Greyhound Bus Lines			
Esso Equipment:	Calgary/Fairmont Return	50.90	
Geochemical Samples:	Fairmont/Vancouver	24.85	75.75
8. ANALYSES: Min-En Laboratories, Vancouver, B.C.			
67 Heavy Mineral Pb-Zn	@ $22.90	1,534.30	
68 Silt (-100 mesh) Pb-Zn	@ 2.90	197.20	1,731.50
9. REPORT PREPARATION:			
Martin Lenters:	5 days @ $165/day =	825.00	
Robert Thomson:	1 day @ $110/day =	110.00	
Typing, drafting & reproduction:		520.00	1,455.00
			$ 24,488.00

10/08/81

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

MINERAL ACT

STATEMENT OF EXPLORATION AND DEVELOPMENT

I, MARTIN H. LENTERS (Name) Agent for CHRIS GRAF (Name)

#506 - 720 - Fifteenth Avenue S.W., (Address) — #1015 - 837 West Hastings Street, (Address)

CALGARY, Alberta. T2R 0R6 — Vancouver, B.C. V6C 1C4.

Valid subsisting F.M.C. No. 238311 — Valid subsisting F.M.C. No. ....

STATE THAT

1. I have done, or caused to be done, work on the SHAG GROUP 636 consisting of the SHAG 1, SHAG 2, SHAG 4, SHAG 7 and SHAG 8. Claim(s)

Record No.(s) 158, 159, 161, 164, 165.

Situate at Albert River in the Golden Mining Division,

to the value of at least $14,847.06 dollars. Work was done from the 7th day of July 19 81, to the 4th day of August 19 81.

2. The following work was done in the 12 months in which such work is required to be done:

(COMPLETE APPROPRIATE SECTION(S) A, B, C, D, FOLLOWING)

A. PHYSICAL

(Trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails)

(Give details as required by section 13 of regulations.)

	COST
TOTAL PHYSICAL	

I wish to apply $ .... of physical work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

B. PROSPECTING

(Details in report submitted as per section 9 of regulations.)
(The itemized cost statement must be part of the report.)

COST

I wish to apply $ .... of this prospecting work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

(For C and D sections, please turn over.)

C. DRILLING (Details in report submitted as per section 8 of regulations.) (The itemized cost statement must be part of the report.)	COST
D. GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL (Details in report submitted as per section 5, 6, or 7 of regulations.) (The itemized cost statement must be part of the report.) (State type of work in space below.)	
Geological Mapping & Geochemical Sampling	$14,847.06
TOTAL OF C AND D	$14,847.06

Who was the operator (provided the financing)?

Name: Esso Resources Canada Ltd.,

Address: 237 - 4th Avenue S.W., CALGARY, Alberta. T2P 0H6.

Portable Assessment Credits (PAC) Withdrawal Request	AMOUNT
Amount to be withdrawn from owner(s) account(s):	
Name of Owner	
(May be no more than 30 per cent of value of the approved work submitted as assessment work in C and (or) D.) 1. Chris Graf	$ 552.94
2.	
3.	
4.	
TOTAL WITHDRAWAL	$ 552.94
TOTAL OF C AND (OR) D PLUS PAC WITHDRAWAL	$15,400.00

I wish to apply $ 15,400.00 of this work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

SHAG 1 (20 units) Record #158 (Recorded August, 1977)

SHAG 2 (12 units) Record #159 (Recorded August, 1977)

SHAG 4 (20 units) Record #161 (Recorded August, 1977)

SHAG 7 (15 units) Record #164 (Recorded August, 1977)

SHAG 8 (10 units) Record #165 (Recorded August, 1977)

Apply one (1) year's assessment towards each of these claims in SHAG GROUP 636 - (Recorded April 16, 1980).

Value of work to be credited to portable assessment credit (PAC) account(s).

(May only be credited from the approved value of C and (or) D not applied to claims.)

	Name	AMOUNT
In owner(s) name.	1.	
	2.	
	3.	
In operator(s) name (party providing the financing).	1.	
	2.	
	3.	

Martin Lenters

(Signature of Applicant)

Martin Lenters - Project Geologist

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

MINERAL ACT

STATEMENT OF EXPLORATION AND DEVELOPMENT

I, MARTIN H. LENTERS (Name) Agent for Chris Graf (Name)

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Valid subsisting F.M.C. No. 238311 — Valid subsisting F.M.C. No. ....

STATE THAT

1. I have done, or caused to be done, work on the SHAG GROUP 637 consisting of the SHAG 3, SHAG 5 and SHAG 6 Claim(s)

Record No.(s) 160, 162, 163

Situate at Albert River in the Golden Mining Division,

to the value of at least $9,640.94 dollars. Work was done from the 7th day of July 19 81, to the 4th day of August 19 81.

2. The following work was done in the 12 months in which such work is required to be done:

(COMPLETE APPROPRIATE SECTION(S) A, B, C, D, FOLLOWING)

A. PHYSICAL

(Trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails)

(Give details as required by section 13 of regulations.)

	COST
TOTAL PHYSICAL	

I wish to apply $ .... of physical work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

B. PROSPECTING

(Details in report submitted as per section 9 of regulations.)
(The itemized cost statement must be part of the report.)

COST

I wish to apply $ .... of this prospecting work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

(For C and D sections, please turn over.)

C. DRILLING (Details in report submitted as per section 8 of regulations.) (The itemized cost statement must be part of the report.)

	COST

D. GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL

(Details in report submitted as per section 5, 6, or 7 of regulations.)
(The itemized cost statement must be part of the report.)
(State type of work in space below.)

	COST
Geological Mapping & Geochemical Sampling	$ 9,640.94
TOTAL OF C AND D	$ 9,640.94

Who was the operator (provided the financing)?

Name: Esso Resources Canada Limited
Address: 237 - 4th Avenue S.W.
Calgary, Alberta T2P 0H6

Portable Assessment Credits (PAC) Withdrawal Request

Amount to be withdrawn from owner(s) account(s):

(May be no more than 30 per cent of value of the approved work submitted as assessment work in C and (or) D.)

	Name of Owner	AMOUNT
1.	Chris Graf	$ 359.06
2.		
3.		
4.		
	TOTAL WITHDRAWAL	$ 359.06
	TOTAL OF C AND (OR) D PLUS PAC WITHDRAWAL	$ 10,000.00

I wish to apply $ 10,000.00 of this work to the claims listed below.

(State number of years to be applied to each claim, its month of record, and identify each claim by name and record no.)

SHAG 3 (20 units) Record #160 (Recorded August, 1977)
SHAG 5 (12 units) Record #162 (Recorded August, 1977)
SHAG 6 (18 units) Record #163 (Recorded August, 1977)

Apply one (1) year's assessment towards each of
these claims in SHAG GROUP 637 (Recorded April 16, 1980)

Value of work to be credited to portable assessment credit (PAC) account(s).

(May only be credited from the approved value of C and (or) D not applied to claims.)

		Name	AMOUNT
In owner(s) name.	1.		
	2.		
	3.		
In operator(s) name (party providing the financing).	1.		
	2.		
	3.		

Martin Lenters
(Signature of Applicant)
Martin Lenters - Project Geologist

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

MINERAL ACT

FORM I

NOTICE TO GROUP - SUPPLEMENT

Mining Division .... Golden .... Location .... 40 km northeast of Fairmont, B.C.

Name of group .... SHAG 636 .... Map No. 82-J-11 & 12

We, the undersigned owners* of the following adjoining claims, desire to group them according to the provisions of the *Mineral Act*:—

NAME OF CLAIM	No. of Units	Record No.	Month of Record	SIGNATURE OF OWNER*	Free Miner Certificate No.
SHAG 1	20	158	8/77	Martin Lenters	238311
SHAG 4	20	161	8/77	Martin Lenters	238311
SHAG 2	12	159	8/77	Martin Lenters	238311
SHAG 7	15	164	8/77	Martin Lenters	238311
SHAG 8	10	165	8/77	Martin Lenters	238311

This NOTICE TO GROUP SUPPLEMENT adds claims SHAG 2, SHAG 7 and SHAG 8 to the SHAG 636 GROUP previously consisting of claims SHAG 1 and SHAG 4.

August 11, 1981
DATE

Martin Lenters
MARTIN LENTERS - Agent for:
Chris Graf

* May be signed by agent on behalf of owner.

SHAG CLAIMS

SERVICE COMPANIES & GOVERNMENT OFFICES

SERVICE COMPANIES:

SHIRLEY HELICOPTERS
Fairmont Hot Springs Resort Ltd.,
Fairmont Hot Springs, B.C.

Telephone: (604) 345-6410

Contact: Jeff Brown (pilot)
Telephone: (604) 345-6369

ROCKY MOUNTAIN BUNGALOWS
Box 100,
Fairmont Hot Springs, B.C. VOB 1LO

Telephone: (604) 345-6365

Contact: Betty

GOVERNMENT OFFICES:

DISTRICT INSPECTOR OF MINES
Mineral Resources Branch,
310 Ward Street,
Nelson, British Columbia.

Telephone: (604) 352-2211

Contact: Bruce Lang

MINING RECORDER
Golden Mining Division

Telephone: (604) 344-5221

Contact: Kay

FOREST SERVICE - DISTRICT OFFICE
406 - 7th Avenue,
Invermere, British Columbia.

Telephone: (604) 342-9257

APPENDIX II

Description of Stream Sediment Samples

SHAG Pb-Zn PROSPECT

HEAVY MINERAL STREAM SEDIMENT SAMPLING

Sample Number	Location	(1) Stream Size	(2) Sediment Size	(3) Amount Collected	(4) Collector	Remarks
1001A	Creek draining from west into Albert River	2	3	1	1	These three samples taken from the same location
1001B	Creek draining from west into Albert River	2	3	1	1	
1001C	Creek draining from west into Albert River	2	3	1	1	
1002	Stream draining from east into Albert River	3	5	1	1	Chancellor grains predominate
1003	Stream draining from east into Albert River	3	4	1	1	Chancellor outcrop in stream
1004	SHAG Creek on east side	1	5	1	1	
1005	Stream draining from east into SHAG Creek	4	4	1	2	
1006	Stream draining from west into Shag Creek	4	1	1	3	
1007	SHAG Creek on east side	1	1	1	2	Poor location for sample; not sieved
1008	Stream from west into Shag Creek	4	3	1	1	Small stream from underground (possibly Shag Ck. return overflo
1009	Stream from west into Shag Creek	4	3	1	1	Small stream from underground
1010A	Creek from west into Shag Creek	2	4	1	1	
1010B	Creek from west into Shag Creek	2	5	2/3	2	Sample not sieved; taken from different mouth of same creek as 1010A
1011	Stream from west into Shag Creek	4	1	1/2	1	
1012	Shag Creek on east side	1	4	1	1	
1013	Stream from west into Shag Creek	3	4	1	1	
1014	Stream from west into Shag Creek	3	4	1	1	
1015	Stream from west into Shag Creek	2	4	1	1	Some overbank material as active material in steep gradient hard to obtain. Pyrite in float in boulders.
1016	Shag Creek northeast side	1	4	1	1	
1017	Shag Creek southwest side	1	4	1	1	

(1)

Stream Size

1 - Shag Creek
2 - Fast Flowing Creek
3 - Fast Flowing Stream
4 - Poor Flowing Stream

(2)

Sediment Size

1 - silt to fine sand
2 - silt to med. sand
3 - fine to med. sand
4 - fine to coarse sand
5 - med. to coarse sand

(3)

Amount Collected

1 - full bag
2/3 - two-thirds bag
1/2 - half bag

(4)

Collector

1 - Both
2 - Lenters
3 - Thomson

Sample Number	Location	(1) Stream Size	(2) Sediment Size	(3) Amount Collected	(4) Collector	Remarks
1018	SHAG Creek southeast side	1	4	1	1	
1019	SHAG Creek	1	3	1	1	
1020	Stream from south into Shag Creek	4	3	2/3	2	
1021	Stream from south into Shag	3	4	1/2	1	Good brecciation zone
1022	Stream from north into Shag Creek	4	4	1	1	Possibly Shag Creek overflow in with this sample
1023	Creek from north into Shag Creek	2	3	1	3	
1024	Stream from south into Shag Creek	3	3	1	2	
1025	Shag Creek on south side	1	3	1	2	
1026	Stream from north into Shag Creek	3	4	1	3	
1027	Stream from south into Shag Creek	3	4	1	2	
1028	Stream from south into Shag Creek	4	3	1	3	
1029	Stream from north into Shag Creek	3	4	1	1	Stream goes underground into talus; sampled at creek's end
1030	Stream from west into Shag Creek	4	4	3/4	1	Some material from Shag Creek as well
1031	Stream from west into Shag Creek	3	1	1	1	
1032	Stream from west into Shag Creek	2	1	1	1	
1033	Shag Creek on west side	1	4	1	1	
1034	Creek from west into Shag Creek	2	2	1	1	
1035	Shag Creek on west side	1	3	1	3	
1036	Stream from east into Shag Creek	4	3	1	2	Good sample for small stream
1037	Shag Creek on west side	1	4	1	1	
1038	Creek from west into Shag Creek	2	4	1	1	
1039	Creek from south into Shag Creek	2	3	1	1	
1040	Stream from east into Shag Creek	2	3	1	3	
1041	Creek from south into Shag Creek	2	2	1	2	
1042	Creek from south; source of Shag Creek	1	3	1	2	
1043	Shag Creek on west side	1	4	1	1	
1044	Stream from east into Shag Creek	3	4	1	1	Mouth of dry creek - sampled sediment from dry mouth; could have some Shag Creek sediment
1045	Shag Creek on west side	1	4	1	3	

Sample Number	Location	(1) Stream Size	(2) Sediment Size	(3) Amount Collected	(4) Collector	Remarks
1046	Shag Creek on west side	1	4	1	2	
1047	Shag Creek on east side	1	4	1	3	Just downstream from small strea with no collectable sediment; should contain sediment from this stream
1048	Stream from west into Shag Creek	4	4	1	2	
1049	Stream from west into Shag Creek	4	2	1/3	2	
1050	Shag Creek on east side	1	4	1	3	
1051	Stream from west into Shag Creek	4	4	1	2	From underground but could be Shag Creek overflow
1052	Creek from west into Shag Creek	2	5	1	2	
1053	No Name Creek from east into Shag Creek	2	4	1	3	
1054	Stream from east into Shag Creek	4	4	1	1	
1055	Shag Creek on east side	1	5	1	1	
1056	Stream from west into Shag Creek	3	5	1	1	Some side material; fines from higher water level
1057	Shag Creek on east side	1	4	1	1	
1058	Shag Creek on east side	1	4	1	1	
1059	Creek from west into Albert River	2	4	1	1	
1060	Creek from west into Albert River	2	4	1	1	
1061	Creek from east into Albert River	2	5	1	1	
1062	Creek from east into Albert River	3	3	1	1	
1063	Spring from Shag Ridge Mtn.	4	1	1	1	
1064	No Name Creek on north side	1	4	1	1	
1065	No Name Creek in centre	1	5	1	1	

APPENDIX III

Geochemical Anaylses

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project: Shag
Date of report: July 29/81.
File No.: 1-559
Date samples received: July 24/81.
Samples submitted by: M. Lenters
Company: Esso Minerals
Report on: 44 (-100 mesh) 43 HM Geochem samples

Assay samples

Copies sent to:

1. Esso Minerals, Calgary, Alta.
2.
3.

Samples: Sieved to mesh -100
Ground to mesh HM -20 Mesh

Prepared samples stored ☒ discarded ☐

rejects stored ☐ discarded ☐

Methods of analysis: Specific gravity flotation and routine geochem analysis.

Remarks:

SPECIALISTS IN MINERAL ENVIRONMENTS

COMPANY: Esso Minerals

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

FILE No. 1-559

PROJECT No.: Shag

-20 Mesh
Heavy Mineral

DATE: July 29 1981.

ATTENTION: M. Lenters

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	HM %		
HM1001A			368	560									0.73		
01B			362	584									0.72		
01C			374	586									0.73		
02			144	144									0.06		
03			308	254									0.15		
04			nes	nes									nes		
05			320	226									0.17		
06			365	700									0.20		
07			275	270									0.09		
08			234	212									0.21		
09			700	644									0.22		
10A			358	1270									0.25		
10B			536	484									0.13		
11			364	888									0.32		
12			660	620									0.11		
13			534	918									0.37		
14			244	296									0.28		
15			224	316									0.32		
16			324	1660									0.17		
17			264	1300									0.29		
18			346	1580									0.18		
19			476	196									0.12		
20			402	892									0.59		
21			510	92									0.27		
22			340	214									0.22		
23			520	104									0.16		
24			304	92									0.17		
25			368	170									0.14		
26			282	154									0.12		
HM1027			186	150									0.22		

*Sample HM1004 spilled in shipment.

COMPANY: Esso Minerals

PROJECT No.: Shag

ATTENTION: M. Lenters

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-20 Mesh
Heavy Mineral

FILE No. 1-559

DATE: July 29 1981.

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	HM %		
HM1028			620	132									0.14		
29			540	204									0.05		
30			1450	1620									0.37		
31			306	1050									0.17		
32			220	164									0.12		
33			1240	668									0.41		
34			244	184									0.14		
35			220	156									0.23		
36			216	172									0.15		
37			212	154									0.18		
38			216	152									0.92		
39			250	200									0.30		
40			178	166									0.82		
HM1041			228	156									0.34		

COMPANY: Esso Minerals

PROJECT No.: Shag

ATTENTION: M. Lenters

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

-100 Mesh

No. 1-559

DATE: July 29 1981.

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb			
HM1001A			48	33											
01B			43	31											
01C			43	32											
02			24	39											
03			31	53											
04			34	37											
05			21	49											
06			33	260											
07			31	45											
08			24	41											
09			39	47											
10A			42	45											
10B			40	38											
11			35	120											
12			29	38											
13			41	56											
14			35	34											
15			40	38											
16			28	39											
17			32	45											
18			29	49											
19			29	34											
20			39	27											
21			32	22											
22			36	33											
23			23	66											
24			30	48											
25			24	37											
26			20	44											
HM1027			25	58											

COMPANY: Esso Minerals

PROJECT No.: Shag

ATTENTION: M. Lenters

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

FILE No. 1-559

DATE: July 29 1981.

-100 Mesh

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb			
HM1028			24	37											
29			16	61											
30			26	84											
31			40	263											
32			25	79											
33			30	90											
34			18	73											
35			21	75											
36			27	68											
37			28	63											
38			28	85											
39			25	75											
40			29	61											
HM1041			23	66											

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

MINERAL ACT

FORM I

NOTICE TO GROUP - SUPPLEMENT

Mining Division ...... Golden ...... Location .. 40 km northeast of Fairmont, B.C.

Name of group ...... SHAG 637 ...... Map No. .. 82-J-11 & 12

We, the undersigned owners* of the following adjoining claims, desire to group them according to the provisions of the *Mineral Act*:—

NAME OF CLAIM	No. of Units	Record No.	Month of Record	SIGNATURE OF OWNER*	Free Miner Certificate No.
SHAG 3	20	160	8/77	Martin Lenters	238311
SHAG 5	12	162	8/77	Martin Lenters	238311
SHAG 6	18	163	8/77	Martin Lenters	238311

This NOTICE TO GROUP SUPPLEMENT adds claim SHAG 6 to the SHAG 637 GROUP previously consisting of claims SHAG 3 and SHAG 5.

August 11, 1981
DATE

Martin Lenters
MARTIN LENTERS - Agent for:
Chris Graf

* May be signed by agent on behalf of owner.

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project: Shag — Date of report: Aug.4/81.

File No. 1-593 — Date samples received: July 30/81.

Samples submitted by: M. Lenters

Company: Esso Minerals

Report on: 24 (-100) 24 HM (-20) Geochem samples

Assay samples

Copies sent to:

1. Esso Minerals, Calgary, Alta.
2.
3.

Samples: Sieved to mesh — Ground to mesh

Prepared samples stored ☒ discarded ☐

rejects stored ☐ discarded ☐

Methods of analysis: Specific gravity flotation and routine geochem analysis.

Remarks:

SPECIALISTS IN MINERAL ENVIRONMENTS

COMPANY: Esso Minerals

PROJECT No.: Shag

ATTENTION: M. Lenters

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2

PHONE (604) 980-5814

-20 Mesh

Heavy Mineral

No. 1-593

DATE: Aug. 4, 1981.

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	HM %		
HM1042			218	124									0.16		
43			236	128									0.27		
44			578	590									0.08		
45			695	1415									0.07		
46			580	2520									0.12		
47			664	2400									0.14		
48			228	366									0.39		
49			324	174									0.41		
50			422	1860									0.35		
51			266	3060									0.47		
52			168	252									0.34		
53			236	192									0.33		
54			430	390									0.26		
55			292	1520									0.31		
56			268	360									0.35		
57			260	1120									0.28		
58			308	1560									0.24		
59			326	820									0.22		
60			384	428									0.13		
61			322	256									0.28		
62			300	260									0.30		
63			94	70									0.70		
64			260	130									0.39		
HM1065			260	102									0.86		

CERTIFIED BY

COMPANY: Esso Minerals

PROJECT No.: Shag

ATTENTION: M. Lenters

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.

705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

FILE No. 1-593

DATE: Aug. 4, 1981.

-100 Mesh

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb			
HM1042			31	47											
43			29	57											
44			35	41											
45			32	46											
46			33	53											
47			36	46											
48			43	77											
49			45	24											
50			43	54											
51			38	55											
52			47	17											
53			39	40											
54			28	45											
55			35	53											
56			48	24											
57			41	37											
58			46	41											
59			43	58											
60			39	70											
61			46	34											
62			37	38											
63			45	15											
64			35	39											
HM1065			39	34											

APPENDIX IV

Shag Claims Information

APPENDIX V

Statement of Qualifications

CERTIFICATION

I, Martin H. Lenters of Unit 506 - 720 Fifteenth Avenue S.W., Calgary, Alberta, do hereby certify and declare that:

1. I am a graduate of the University of Toronto (1976) with a B.Sc. (Honours) in Geology, and that I have taken three years of Graduate Studies at the University of Toronto.

2. Since 1976, I have worked as a geologist in Nova Scotia, New Brunswick, Ontario, Saskatchewan, British Columbia, and the Northwest Territories, and that I have been employed by Esso Resources Canada Ltd. in their Minerals Exploration department since April, 1979.

3. The information included in this report is based on literature research, field mapping, geological prospecting and geological sampling.

4. I hold no direct or indirect interest in the property reported herein, nor do I expect to receive any.

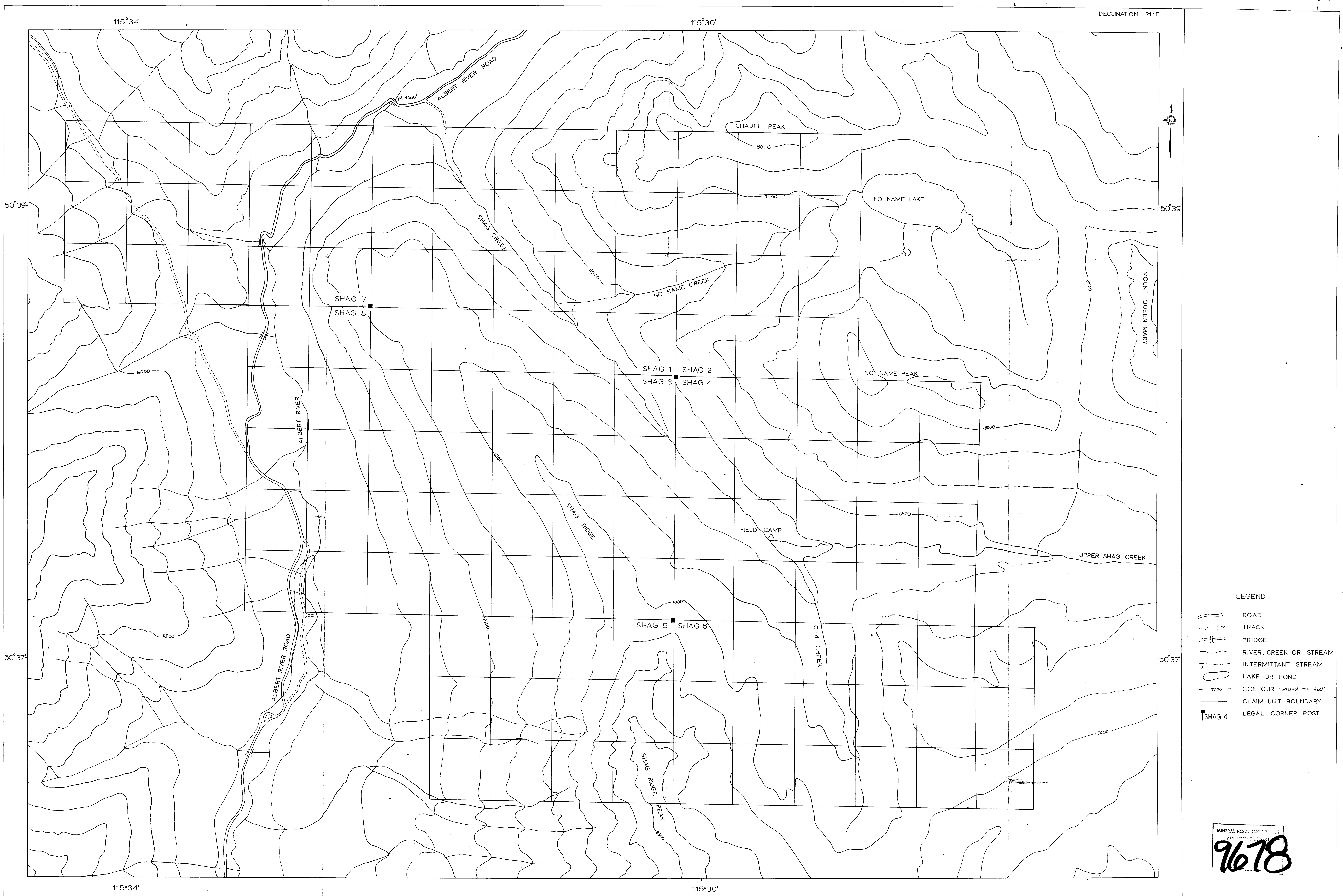
Martin Lenters

Martin H. Lenters

October 6, 1981

Date

MHL/gf
10/08/80



ESSO MINERALS CANADA

A DIVISION OF ESSO RESOURCES CANADA LIMITED

SHAG CLAIMS I-8
LOCATION MAP

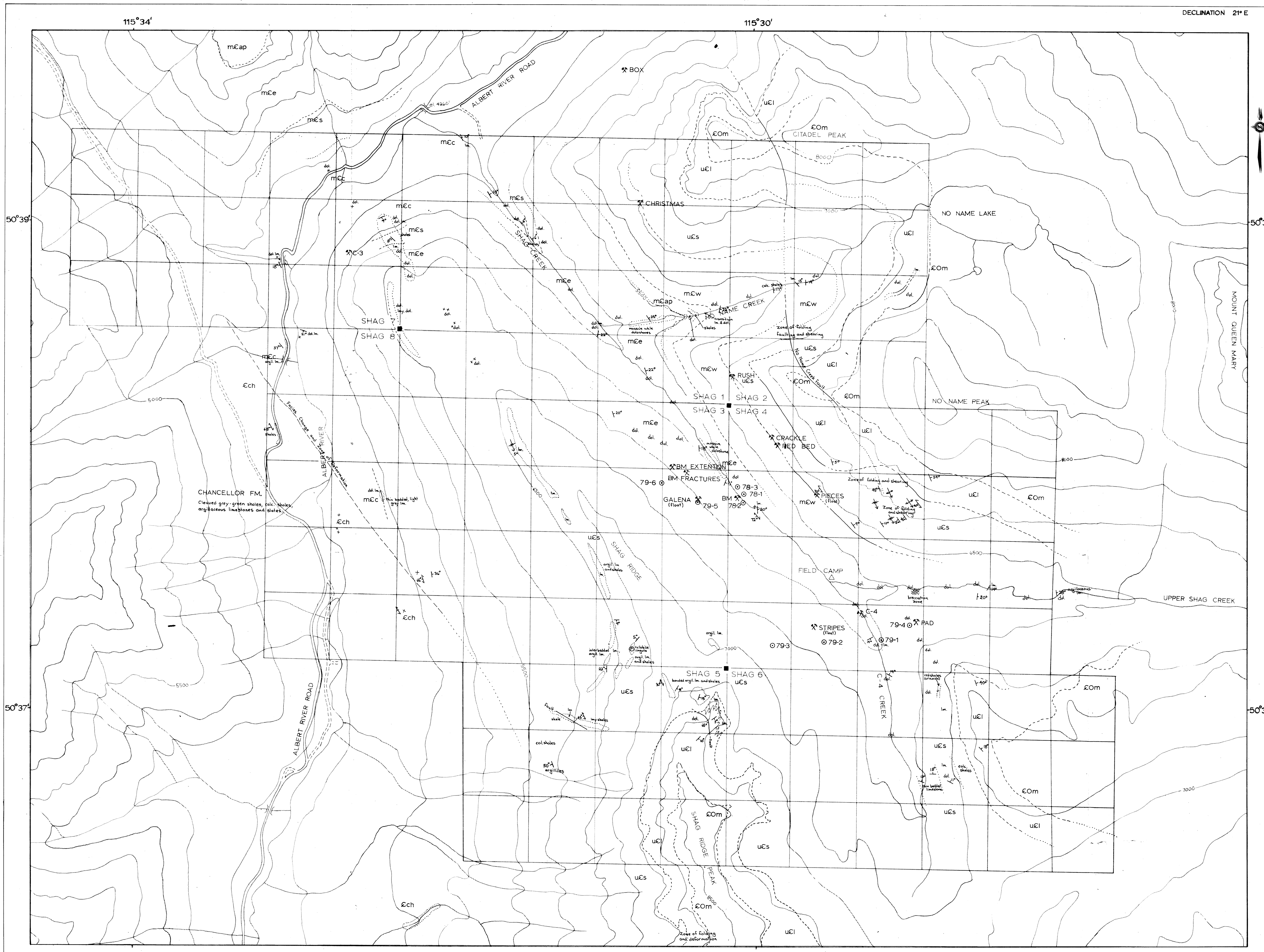
Project No. SHAG Mining Division GOLDEN

Latitude 50°38' Longitude 115°30'

NTS 82 J 11,12 0 500 metres Scale 1:10,000

To Accompany A Report By M. LENTERS

Dated AUG. 1981 Map No. 2A



GEOLOGY LEGEND

EASTERN FACIES

LOWER ORDIVICIAN AND UPPER CAMBRIAN

- **£Om** MCKAY FORMATION — Red-green shales, thin interbedded limestones

UPPER CAMBRIAN

- **u£l** LYELL FORMATION — Dolostones and limestones
- **u£s** SULLIVAN FORMATION — Argillaceous limestones, calcareous shales, limestones

MIDDLE CAMBRIAN

- **m£w** WATERFOWL FORMATION — Dolostones and limestone; minor argillaceous limestone.
- **m£ap** ARCTOMYS - PIKA FORMATION — Calcareous and dolomitic shale, siltstones, argillaceous limestone, thin bedded dolostones.
- **m£e** ELDON FORMATION — Massive dolostones, limestones, argillaceous limestones.
- **m£s** STEPHEN FORMATION — Thin bedded; argillaceous limestones and shales
- **m£c** CATHEDRAL FORMATION — Massive dolostones, dolomitic limestones, limestones

WESTERN FACIES

UPPER AND MIDDLE CAMBRIAN

- **£ch** CHANCELLOR FORMATION — Cleaved argillaceous limestone, calcareous shales, slates

GEOLOGICAL SYMBOLS

- GEOLOGICAL BOUNDARY (defined, approximate, assumed)
- OUTCROP BOUNDARY (some isolated outcrops delineated but many of the streams and sections are almost continual exposure)
- BEDDING (inclined)
- CLEAVAGE (inclined, vertical)
- FAULT (defined, approximate, assumed)
- ANTICLINE (showing direction of plunge)
- SYNCLINE (showing direction of plunge)
- FACIES BOUNDARY
- PAD — LEAD - ZINC OCCURRENCE
- 79-1 — DIAMOND DRILL HOLE (year and hole number)
- FOSSIL LOCALITY

LEGEND

- ROAD
- TRACK
- BRIDGE
- RIVER, CREEK OR STREAM
- INTERMITTANT STREAM
- LAKE OR POND
- 7000 — CONTOUR (interval 500 feet)
- CLAIM UNIT BOUNDARY
- SHAG 4 — LEGAL CORNER POST

9678

ESSO MINERALS CANADA

A DIVISION OF ESSO RESOURCES CANADA LIMITED

SHAG CLAIMS 1-8

GEOLOGY MAP

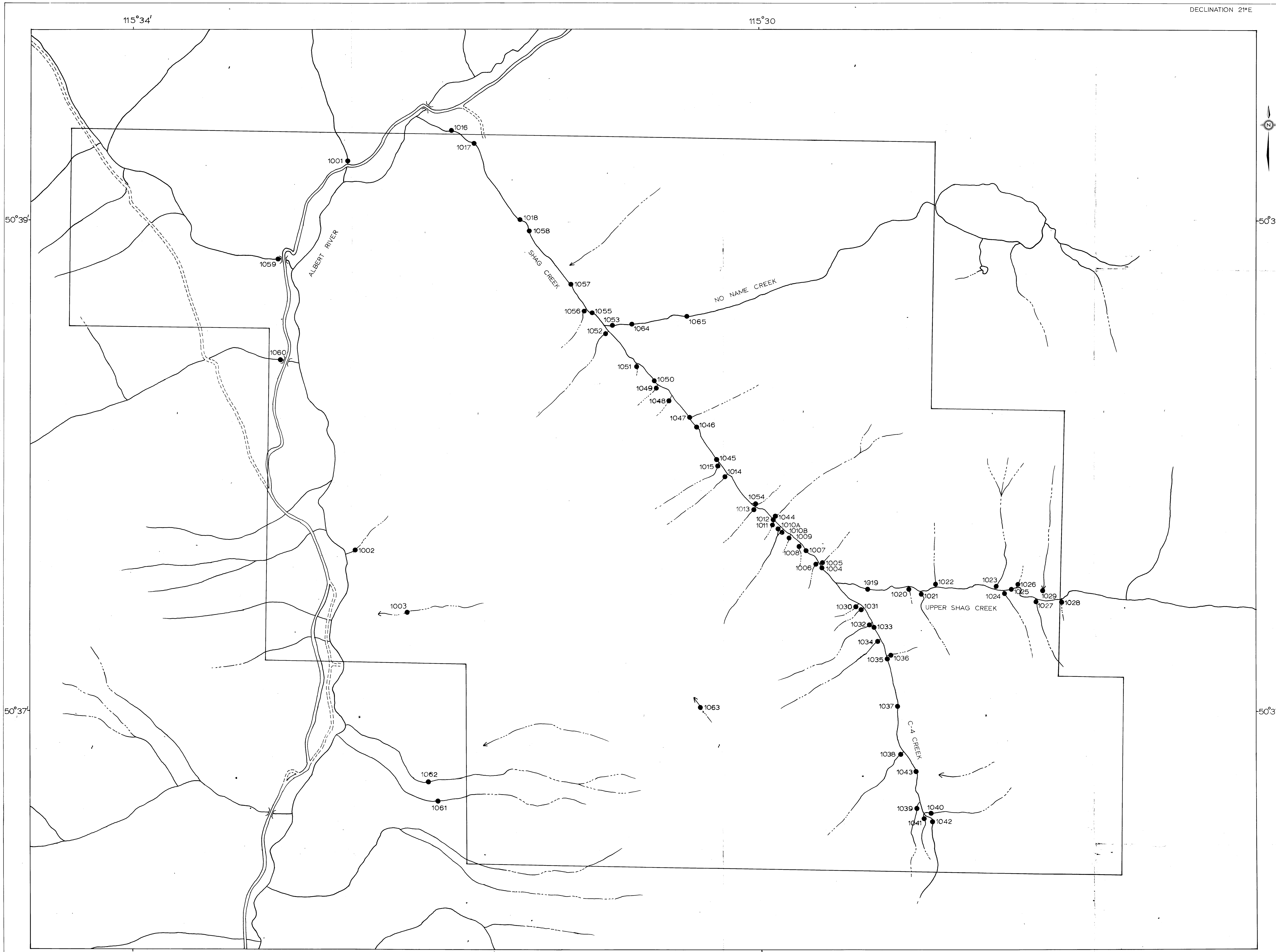
Project No. SHAG Mining Division GOLDEN

Latitude 50°38' Longitude 115°30'

NTS 82 J 11,12 — 0 – 500 metres, Scale 1:10,000

To Accompany A Report By M. LENTERS

Dated AUG. 1981 Map No. 5



LEGEND

- ROAD
- TRACK
- BRIDGE
- RIVER CREEK OR STREAM
- INTERMITTANT STREAM
- LAKE OR POND
- CLAIM GROUP BOUNDARY

SEDIMENT SAMPLE LOCATION (1040)

9678

ESSO MINERALS CANADA

A DIVISION OF ESSO RESOURCES CANADA LIMITED

SHAG CLAIMS 1-8

GEOCHEMICAL SAMPLE LOCATION MAP

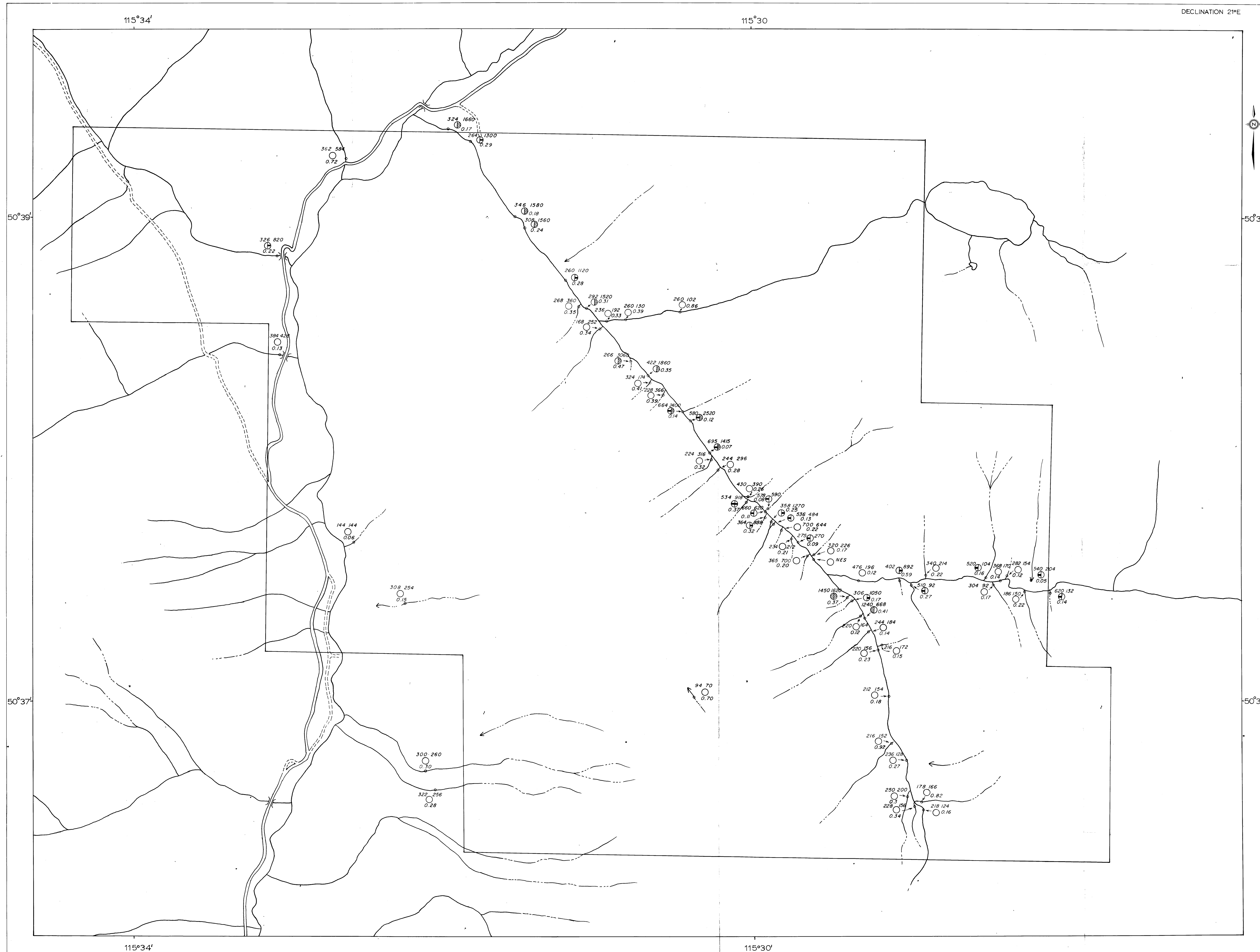
Project No. SHAG Mining Division GOLDEN

Latitude 50°38' Longitude 115°30'

NTS 82J-11,12 0 500 metres Scale 1:10,000

To Accompany A Report By M.H. LENTERS

Dated AUG. 81 Map No. 6



LEGEND

- ROAD
- TRACK
- BRIDGE
- RIVER, CREEK OR STREAM
- INTERMITTANT STREAM
- LAKE OR POND
- CLAIM GROUP BOUNDARY
- SEDIMENT SAMPLE LOCATION

9678

HEAVY MINERAL SEPARATE ANALYSES

Lead Value ↘ 215 ○ 237 ↙ Zinc Value
0.32 ↑ Heavy Mineral Percent

LEAD-ZINC VALUES

	Pb (ppm)		Zn (ppm)	
○	≤500	BACKGROUND	≤500	○
		POSSIBLY ANOMALOUS	501-750	○
◐	501-1000	PROBABLY ANOMALOUS	751-1300	◑
◍	≥1000	ANOMALOUS	≥1301	◍

ESSO MINERALS CANADA

A DIVISION OF ESSO RESOURCES CANADA LIMITED

SHAG CLAIMS 1-8

HEAVY MINERAL STREAM SEDIMENT SURVEY

LEAD-ZINC VALUES (PPM)

Project No. ________ Mining Division GOLDEN

Latitude 50°38' Longitude 115°30'

NTS 82J 11,12 Scale 1:10,000 (0 — 500 metres)

To Accompany A Report By M. LENTERS

Dated AUG. 1981 Map No. 7