436

REPORT ON THE SINBAD-ROC GROUP

McLENNAN MOUNTAIN,

NORTH THOMPSON RIVER AREA,

Kamloops M.D.

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by

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82M/12W

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REPORT ON THE SINBAD-ROC GROUP

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GENERAL

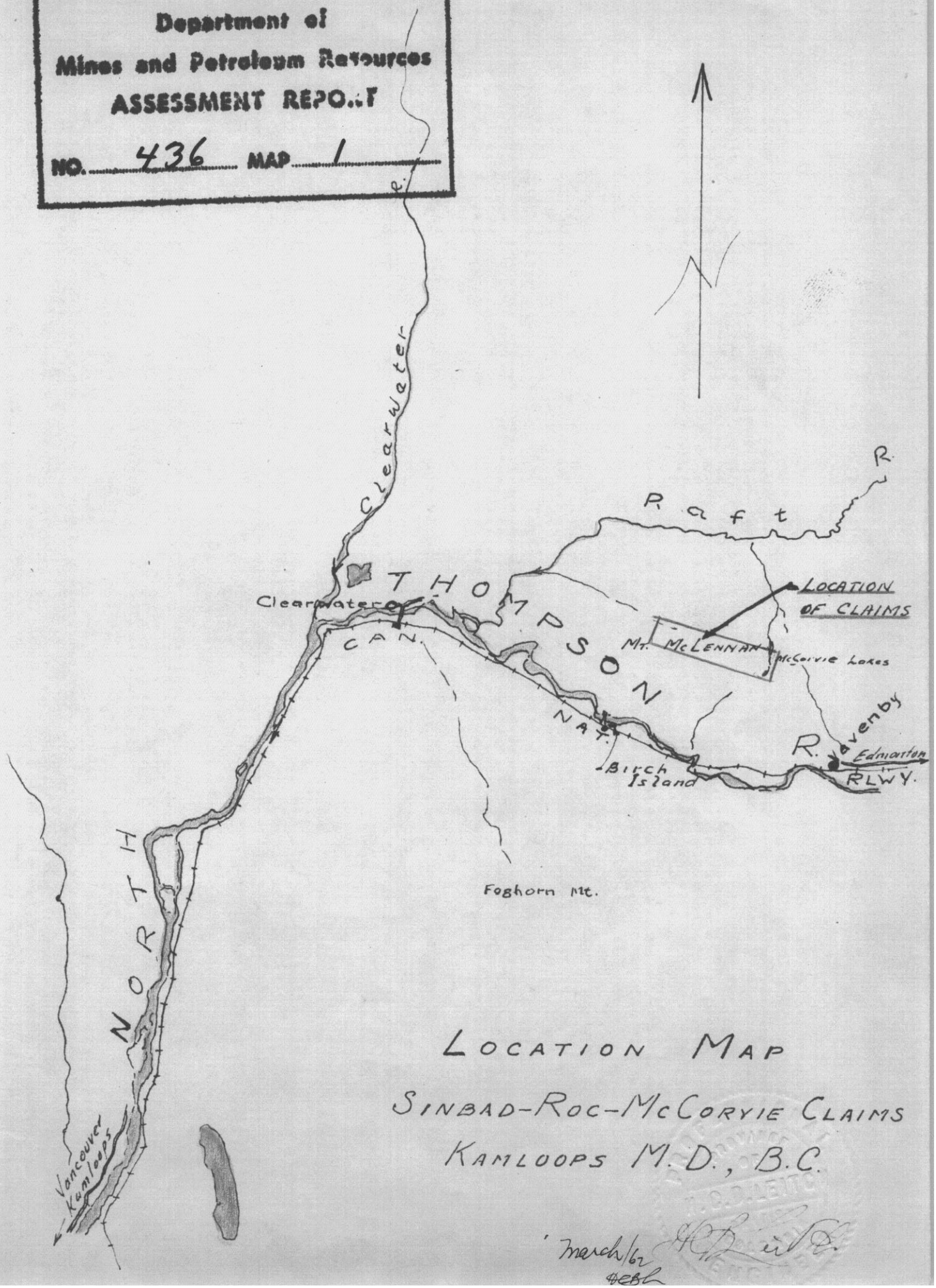
The investigation of the Sinbad-Roc block of claims with the mineralized workings enclosed within them was carried out at the request of the partners, Messrs. B. Herslev, of Blackpool area, and A. Humphrey, of Meadow Creek area, Kamloops district. The investigation covered a total of 11 to 12 days during the late summer and fall of 1960. Much time was lost during the investigation owing to the base of operations being distant from the property and to the fact that considerable time was spent in reconnaissance of surrounding ground.

LOCATION AND ACCESS

The Sinbad-Roc property containing 52 claims is located just south of an east-west ridge forming the summit of McLennan Mountain. McLennan Mountain is situated 4½ miles northwest of Birch Island, a settlement on the North Thompson River approximately 80 miles north of Kamloops. Access to the property is by way of the McCorvie Lake road which turns off to the north of the Kamloops-Edmonton Highway at a point near Vavenby. The property is reached after approximately 4½ miles of gravel road which switch backs to an elevation of 4700' from the valley level of 1500'. From this point, a bulldozed road suitable for jeep travel crosses south to north and then east to west through most of the claims. An old forestry trail also crosses the claims to McLennan Mountain lookout tower. There are many other old mining trails within the claims but these are scarcely detectable in many places. The McCorvie Lake Road is an old timber road which has been gravelled. At the time of the examination, the McCorvie Lake Road was in moderately good condition and grades would permit most cars of average clearance to reach an elevation of 4700' near the mountain top with reasonable ease. The mountain rises within the claims an additional 900' to the tower.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 436 MAP 1



LOCATION MAP

SINBAD-ROC-McCORVIE CLAIMS

KAMLOOPS M.D., B.C.

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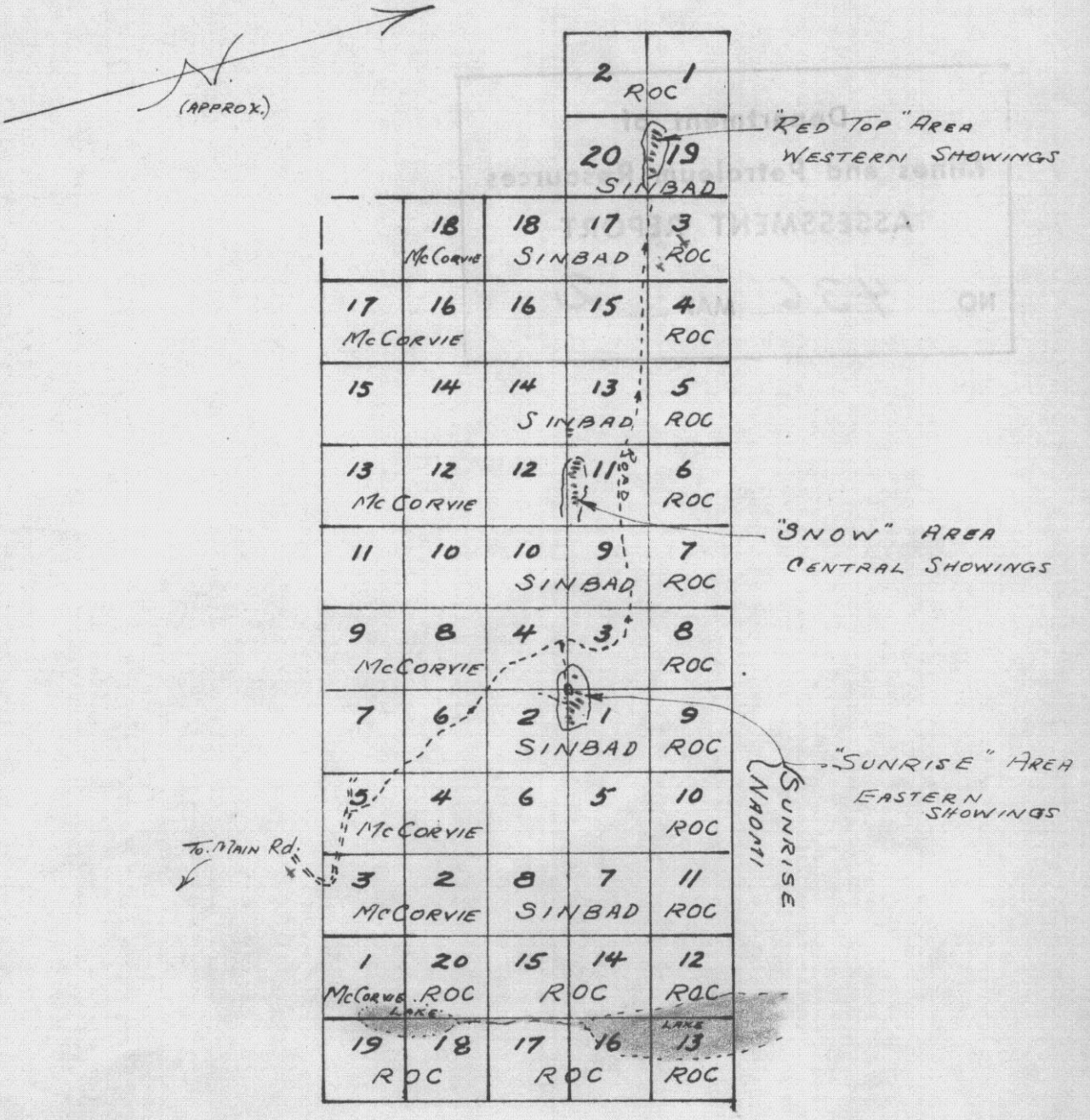

Scale: 1" = 3000'

SINBAD-ROC-McCORVIE GROUP McLENNAN MT.

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The C. N. R. continental mainline station at Vavenby is approximately 1 mile southeast from the junction of McCorvie Lake Road and the main road, making a total distance to railhead from the eastern end of the claims roughly six miles. From the western end of the claims, the distance would be roughly 9 miles to Vavenby. Freight trains move daily in both directions between Edmonton and Vancouver.

A logging road beginning at a point just east of the main road bridge across the Raft River ascends to an old logging camp 3½ to 4 miles from the western showings. The total distance from the western end of the showings to Clearwater C.N.R. station by road would be something like 9 miles. More than half of this route is usable at the present time. It is possible to go from the eastern to western showings quite rapidly because of the new bulldozed road.

Provincial Highway #5 from Kamloops to Edmonton is a paved highway from Clearwater to Kamloops, except for a 14-mile section near Little Fort. It is expected that the remainder of the route will be paved as far as Vavenby and beyond, within the next 2 years.

PROPERTY

The property consists of 58 claims staked over two years in the name of B. Herslev. The property is held in the joint partnership of B. Herslev and A. Humphrey. The claims extend roughly east-west, which orientation was dictated by geological structures. At the time of writing, a list of the claims was as follows:-

	Mineral Claim Nos.	Staking Date	Record No.	Record Date
Sinbad	1-4	July 12/60	33843-46	July 18/60
Sinbad	5-13	July 15/60	33847-55	"
Sinbad	14-20	July 16/60	33856-62	"
Roc	1, 2	July 16/60	33863-64	"
Roc	3-20	1961	---	---
McCorvie	1-18	1961	---	---

TOPOGRAPHY AND ELEVATION

The site of the claims is McLennan Mountain, an elongated, dome-like mountain with a peak reaching an elevation of 5560' at the location of the lookout tower. The mountain trends east and west and forms a long ridge reaching from the Raft River as far east as the gap formed by the valley of the McCorvie Lakes. South of the tower, a sharp drop of about 400' takes place to a sloping terrace which drops a further 400' in 1 mile to a flat. From this area, the north wall of the North Thompson River valley descends steeply 3000' in 2 miles. The terrace area is approximately 1 mile wide and 3 miles long, and contains a number of low ridges and cross spurs. There are several small areas of swampy ground containing beaver meadows and ponds within the area of the terrace. These form the headwaters of such creeks as Peavine, Crossing (Galena), Noblequartz, and other minor unknown creeks flowing to the Raft and N. Thompson Rivers.

The mineral claims cover the area of the terrace and the high ground to the north. The elevations of the area of the claims would appear to range from 4500' to 5500' but the average elevation of the sulphide zone is about 5000'.

TIMBER, WATER AND POWER

Ample timber for mining purposes exists within the claims.

Water is available at most points throughout the claims from springs, workings, small ponds or flowing streams.

Power lines formerly reaching as far as Clearwater have been carried, in 1960, to Vavenby. A powersite is projected for the Clearwater River in the near future.

HISTORY

The claims contain three original prospect areas which were established apparently in the 1920's or earlier. These prospects are named as follows: Last Chance, Sunrise Group or Naomi, the Snow group and the Red Top group. In addition to these groups, other areas had been staked in the immediate vicinity and work done on them. The areas held under the above names are very roughly indicated on old claim maps.

As far as can be ascertained, prospecting on McLennan Mt. started well before 1922, possibly as early as 1910. Annual Reports of the Minister of Mines first mention the Sunrise and Naomi in the 1922 report. The other groups are mentioned in either the 1922 or 1923 reports.

The Naomi claim appears to have been the oldest prospect of the Mc. McLennan area with the possible exception of some activity on Galena or Crossing Creek. This ground covers the eastern workings of the present Sinbad-Roc-McCorvie property. The Last Chance property apparently lies still farther east and south but has not been discovered or worked on by the present operators.

The Snow group, located in the central portion of the northern half of the present claims is mentioned in 1923 Minister of Mines report. Similarly, the Red Top group is referred to in the 1923 report.

All the above old properties are described to some degree in the G.S.C. Summary Report, 1930, Part A, by Dr. J. F. Walker in the section on "Clearwater River and Foghorn Creek Map Area, Kamloops District, B.C." Some details are given by Dr. Walker of the various workings and some results of earlier assays from the Sunrise. Mention will be made later in this report under "Showings" of earlier assays and related data.

GENERAL GEOLOGY OF THE AREA

The rocks of the area stretching from the Clearwater River to Hole-in-the-Wall Pass consist of sediments, intrusives and volcanics. The sediments include argillites, limestones, ?quartzites, quartz-sericitic schists, calc-chlorite schists, and some black graphitic schist. The intrusives are chiefly of a granite-granodiorite-diorite nature but pegmatitic border phases of these main intrusives and pegmatite dikes have been noted along the intrusive contact zone and within 1 to 2 miles of the contact. Late Tertiary volcanic flows, vesicular basalts, cover portions of the area, chiefly to the east, but occasional outliers or pockets of these can be noted in the central portion of the area. Interbedded with the older sediments are rocks generally dubbed greenstones, which appear to have been volcanics originally.

The sedimentary rocks are largely metamorphosed, to a greater or lesser degree. Metamorphism is more marked where bands of greenstone are included. Only the limestone bands and the argillites are easily identified sediments retaining their bedding characteristics in places. The argillites are prominent in the sector extending from the

Clearwater River to the Raft River and south of Sands Creek and School Creek. In this sector, they are dark grey to black, somewhat purplish and quite siliceous generally. In many places, they are distinctly silicified (light grey) with notable amounts of contained pyrite. In the sector mentioned, they normally have an east-west strike and dip chiefly to the south at angles of 20° to near vertical. They have been observed outcropping along the Raft River canyon and appear to cross to the east side of Raft River there. Argillites are again encountered on the west end of McLennan Mt. at elevations of 5200'-5300'. These outcrops show less metamorphism than those to the east but they are somewhat purplish in colour, the same as those found to the east at some points. They are distinctly slabby, even shaly, and dip northwards at low angles of 10°-20°.

Limestones appear very prominently in the upper portions of Mt. McLennan. They have been found underlying the argillites there conformably and traced through from the west end to the larger McCorvie Lake in such a way as to suggest a continuous horizon at least 200'-400' thick. These limestones are white and crystalline, showing a fair degree of bedding. Shallow dips to the north prevail along the scarp forming the 5100' to 5400' levels of McLennan Mt.

At lower levels, outcrops of rock (below 5100' elevation) give the appearance of being silicified argillite, quartz-sericite schists chiefly derived ? from quartzites or limestone, silicified limestone, silicified schistose ?limestone, sericitic paper schists, bands of green limy rocks, and greenstones. This sequence of metamorphic rocks has apparently been produced largely from original limestones and/or limy rocks mixed with greenstones and siliceous beds akin to quartzite which had apparently in many places undergone silicification before being stressed and sheared by movement under considerable pressure. Recrystallization of the purer limestones to something akin to a marble has resulted from movement, pressure and possibly heat. Crossing the formations at right angles and towards the south, the impression is that there is a predominantly limy assemblage present from 5100' down to 1550'. This entire section is outstanding for the siliceous and metamorphosed nature of the rocks. Bed after bed of limy schistose rock is crossed with a great variety of dips in all directions, indicative of an arched structure rolling and broken on its south side. On appearance alone, this sequence of rocks would seem to fit into the Barriere formation and it is not unlikely that the Tshinakin limestone is represented somewhere within the area. The south slope of McLennan Mountain is also noted for iron staining of the rocks, for the presence of quartz gash fillings, mineralized seams, chiefly pyrrhotite, pyrite and lead-zinc. At the west end of the mountain where there is

a deep cut made by a descending stream, the impression is that the rocks are predominantly green and greenstones derived from greenish limy rocks and green volcanics. This area has been only glanced at in passing through by car. A large percentage of float in this area was of an intrusive nature.

The limestones observed near the crest of Mt. McLennan as a scarp show clearly on aerial photographs and are traceable for at least 3 miles. They have been reported by others at Big McCorvie Lake and aerial photographs reveal another elongated whitish area suggestive of a scarp farther east of this lake. This is interpreted on the map as possible limestone. Thus, if this is so, this limestone is traceable over something like 5 miles and reveals a definite structural break.

As shown in the right-hand corner of the geological map, a massive light and dark grey limestone appears near the Thompson River on both sides. In appearance, this limestone is very similar to another large outcrop of limestone just north of Little Fort on Lemieux Creek. This latter limestone is placed as Carboniferous. Both occurrences have the appearance of Carboniferous limestones seen in other parts of the country and world. The suggested attitude of the limestone is northwest-southeast and dipping northeast, but this attitude combined with a carboniferous age would be difficult to fit into the general picture of Paleozoic to Pre-Cambrian Barriere formation. The limestone, from observations made from the road and on aerial photographs, appears to trace upwards and eastwards towards the faulted zone. The grey massive limestone does not appear on the west side of the fault zone. Graphitic schists are noted at one or two points, but these are developed at points and along lines where stress is apparent and brecciation, shearing, displacement all suggest cross faulting.

The intrusives of the area have been studied only casually. They include a biotite-granite which is pinkish in tone, located near the Clearwater River, greyish to whitish coloured granodiorites, minor bodies of diorite (?sills), and a variety of dikes, chiefly of aplitic and pegmatitic types but including some smaller fine-grained trap dikes. Quartz bodies appear to occur in most places as discontinuous lenses within the bedding planes, in ladder fashion, as erratic siliceous swellings in which a large proportion of the material has been produced by replacement of original rock and apparently as zonal arrangements which follow intrusive contacts or breaks related to an intrusive contact.

The grey granodiorite (so-called) has been noted on the north side of McLennan Mountain (north wall of Raft R.). It has been observed as a distinct type at Contact Lake -

(see map) and is believed to follow the north flank of the mountain and cross the Raft River in the area where that river turns sharply southwards into a canyon near its mouth. C. J. Walker has indicated on his preliminary geological map of the area (1931) that this is possibly a post-Triassic intrusive. The granodiorite, where observed, is, normally, medium to coarse-grained in texture and light to medium dark grey in colour. The intrusive rocks found north of McLennan Peak appear to be composed chiefly of plagioclase feldspars, quartz and evenly distributed ferromagnesians. The plagioclase feldspars appear to be chiefly aroundthe andesine range and the ferromagnesians to consist chiefly of biotite and hornblende, though in places there is also a suggestion of pyroxene.

A "truer" granite occurs within the general area under study. This granite outcrops on the east side of the Clearwater River about 1 mile north of Dutch Lake and is on the same general contact line. Its outline on aerial photographs suggests that it is a circular mass, but this is by no means certain. In the hand specimen, it is found to be coarser-grained and much pinker, even reddish in tone, than the granodiorite. There appears to be a high percentage of orthoclase present along with a notable amount of quartz and some plagioclase. Biotite is well developed throughout the unaltered granite. Mineralization by molybdenite and copper is prevalent in the vicinity of this intrusive. It is possibly a phase of the granodiorite. On the other hand, it may have been emplaced much later than the granodiorite along the contact area of the granodiorite and the sediments.

Another small body of granite or granodiorite has been observed on the south flank of McLennan Mountain. This body outcrops in a small shoulder on the west side of Crossing or Galena Creek, something over ½ mile north of the main road. It has only been given a glance in passing, but it has the appearance of being a small stock, possibly several hundred feet across. The composition was not noted specifically but there are border sections of darker rock (assimilation?) and some pinkish toned sections away from the border. Sections of rock within 100' to 300' of the intrusive contact were noted to be mineralized.

Structurally, the general area extending from the Clearwater River to the Hole-in-the-Wall-Pass is an interesting one. There is considerable evidence to suggest that granitic intrusives could be traced west to east across the country in an irregular line, starting well to the west of the Clearwater River, passing to the north of McLennan Mt., and quite probably continuing at least as far as Hole-in-the-Wall Pass. From bits of evidence collected from the aerial photographs and field investigations, most of this intrusive mass appears to have a southern contact that dips to the north. There is a possibility that the greyer granodiorite mass occurring north of the McLennan Mountain tower may be in the form of a very

large sill or dike separate from the main mass of granitic intrusive. Granitic rocks are known, however, to spread northwards out of the Raft River valley up the Raft Peak and to extend westward and northeastward out of the Raft River. In the sector covering the north side of McLennan Peak, the granodiorite appears to cut across the dip of the metamorphosed sediments which strike approximately south of east 5°-17° and seems to dip into the intrusive at 15°-30°. The granodiorite seems to have a steeper northerly dip (35°-45° estimated).

Just south of McLennan Peak, a prominent scarp shows outcrops of metamorphosed sediments largely made up of crystalline limestones, some argillite, ?quartzites and limy green rocks, all of which in general dip to the north at angles less than 25° but in places can be tilted more steeply. Still farther to the south of the McLennan Peak but at lower elevations, beginning roughly at the 5100' level, limestone, altered limy rocks, siliceous and in many places schistose rocks are encountered. These rocks, still distinctly bedded, are generally flat-lying or show rolling attitudes. Small local folds and warps are found in a number of places and as one traverses southwards over what is in effect a sloping terrace, a greater number of localized dips varying from 3° up to 10° to the south are noted in an otherwise northerly dipping or generally flat structure. Overburden blankets the terrace almost entirely beyond points lying 600' south of the base of the scarp. What little evidence can be obtained in the central and southern sections of the terrace suggests a continuation of the rolling structure observed to the north. Low ridges, perhaps no more than 3' to 15' high, but covered with overburden, have been noted in passing through the southern half of the terrace. Rock outcrops begin to show again around the 4600' contour line, chiefly at points where the access road cuts through the bank. From this line southwards down the slope to the base of the mountain, rock is found to dip in every direction. Attitudes are such that, in general, strikes vary between northwest at the west end of the mountain through east-west in the centre, to northeasterly at the east end of the mountain. On this flank of the mountain, as many southerly dips as northerly dips are found, and it would appear from the amount of schistosity developed that a good deal of movement essentially parallel to bedding planes has taken place. Low angle breakage across the beds is observed in places. At the west end of the mountain near the Raft R. canyon, the strike of the rock appears to be almost north-south with easterly dips. This is so much at variance with attitudes on the west side of the Raft River that faulting or large scale drag folding are required to explain the discordance.

The data gathered from around McLennan Mountain suggests that the mountain may be essentially a large roughly east-west or northwesterly-southeasterly oriented structure. The north slope of the mountain appears to contain the north limb, the terrace to represent a broad, rather flat axial crown, and the south slope of the mountain to contain a much disturbed and broken south limb. The whole structure may be somewhat bowed.

The greatest difficulty in establishing that an overall anticlinal structure does in fact control the topographic form of Mt. McLennan arises from the erratic rock attitudes found along the south slope. It seems certain, however, that the crumpling, rolling and general inconsistency found there are, at least in part, caused by applied forces (thrust?) from the north, producing a form of imbrication and slight overriding in the strata of the south limb, after some buckling of the strata had first come about. Whatever the reason for the broken nature of the rock on this side of the mountain, it appears that the south limb of the structure was unable to develop normally. A great deal more reconnaissance geological work is needed to obtain sufficient evidence in order to fully establish that the mountain is based on an anticlinal structure. An anticlinal structure or domed structure should be more favourable, insofar as concentrations of the metallic sulphides by replacement of limy horizons are concerned, if other favourable geological factors are present.

Although actual displacement has not been worked out, faulting and shearing along northeasterly trends seems fairly definite. The most prominent fault with this orientation is that found running through the McCorvie Lakes and it has been named by the writer the McCorvie Lakes Fault. This fault is suggested by the trough-like linear feature revealed by a study of aerial photographs, which passes through the lengths of Big and Little McCorvie Lakes. The prolongation southward of the McCorvie Lakes Fault is also based on study of aerial photographs. The fact that a line of breakage accompanied by graphitic schists has been noted where the projection of the fault passes through the road cuts strengthens the case for a fault. Attitudes of the sedimentary rocks appear to be disturbed and to differ on the two sides of the fault. The canyon section of the Raft River at the west end of McLennan Mt. may also represent the line of northeasterly fault movement.

There are minor indications of northwesterly oriented breaks on the summit of Mt. McLennan and some linear features at the base of the mountain suggest breakage along this trend. There are no clear indications that any type of metallic mineralization is directly associated with the fault movements, but it would seem, from observations in the general neighbourhood, that disseminated pyrrhotite and possibly some gold and pyrite could be related to the northeasterly breaks.

DESCRIPTION OF SHOWINGS AND WORKINGS

In the Sinbad-Roc claims, there are three main areas in which metallic mineralization has been found. These are, from east to west,

1. The Eastern workings, located in claims Sinbad #1, #2, #3 and #4.
2. The Central workings, located in Sinbad claims #11, #12, #13 and #14.
3. The Western workings, located in Sinbad claim #19 and Roc claim #1, near a location line.

In addition, there are other workings and occurrences of metallic mineralization as yet relatively uninvestigated. Some old workings lie north of the middle Sinbad #11 showings in the steep scarp wall leading up to the true summit area with the Forestry lookout tower. East of the Sinbad #19-Roc #1 workings, metallic mineralization has been observed over narrow widths in a covered bank. This mineralization probably lies within Roc #3. The writer has walked over lead-zinc mineralization to the northeast of the Sinbad #19 workings during an early traverse, but has not since been able to relocate this mineralization.

Still other mineralized sections and/or workings are reported to the south of the western half of the claims. Some of these have been visited only in passing. Others lie outside the claim boundaries and have not been examined. Some mineralized occurrences appear to be lost or improperly located in references on old maps. Old trails lead through the southern half of the claims and down the southern slope to the Vavenby and Birch Island areas and apparently were the main means of access for many years.

EASTERN AREA

Occurrences and Workings of the Sinbad Claims #1, #2, #3 and #4

Metallic mineralization is displayed in a series of trenches and pits extending for over 600' in a rough east-west line from the #1 posts of mineral claims Sinbad #1, #2, #3 and #4. The accompanying map shows the relative positions of a shaft, trenches, pits and one short tunnel or adit. The number 1 posts of these claims are bunched approximately 600' east from the main trail to the McLennan Mt. forestry tower which is now the line of the new bulldozed road. A side road leads to the workings from the new road. The elevation of the workings should be about 4800'-4900'. Remnants of an old trail lead off to the south and to an old camp from an adit. There are remains of an old cabin and, presumably, a blacksmith shop near the shaft.

It appears certain that these workings represent the results of exploration carried out on the old Sunrise Group and on the Naomi claim before that time. The activity in this sector dates apparently from some time prior to 1922, possibly earlier than 1917. Mention is made of Naomi claim in the 1922, 1923 and 1924 Minister of Mines reports. The Sunrise group is mentioned briefly in the 1923 and 1924 Minister of Mines reports and also in the G.S.C. Summary Report, 1930, Part A, under the section "Clearwater R. and Foghorn Creek Map Area, Kamloops District, B.C.", by J. F. Walker.

Quotations from this report which pertain to the old workings are as follows: "The workings . . . . consist of 3 large open-cuts, a shaft, and two adits all in quartzites. Massive pyrrhotite and pyrite occur in the form of a large lenticular sheet or mass dipping slightly more steeply to the north than the almost flat-lying sediments".

And a requote from the Minister of Mines Annual Reports for 1922 and 1924:-

"The ore is siliceous, irony material lying in streaks conforming with the schist . . . . .

"The following samples were taken from open-cuts 150' above tunnel,

(1) Upper 4.5 feet: Au = tr. Ag. = 1 oz.

(2) Lower 5 feet: Au = tr. Ag. = 2.4 ozs.

(3) Picked sample from same cut showing streaks of black material: Au = 2.9 ozs. Ag. = 2 ozs.

(4) Along outcrops 600 feet east of tunnel, Au = trace Ag = 15 ozs.

"At the camp and near where the main workings are located, a high grade streak is exposed carrying grey copper, from which good values can be obtained. A sample taken last summer assayed: 4.6 ozs. Au and 2.2 ozs. silver to the ton. This streak is small and erratic; but following up and tracing it would appear to be the best method of developing the property."

J. F. Walker reports that he did not find the high grade streak referred to in the above report. The writer was also unable to locate it. No doubt it is buried by slumped material.

Study of the workings as a whole indicates that there is a fair degree of metallic mineralization occurring generally as replacement of bands of schistose ?quartzite (possibly sheared silicified limestone) and limy material along an east-west strike. There are definite indications

of replacement along more than one horizon or layer. The layers of replaced rock vary in thickness, but 3'-4'-5' would appear to be the maximum for any single unit. Quartz lenses and veins intervene between the more massive replacements, with minor or no replacement in the enclosing rock. Replacement is not uniform. At one point, the rock can be seen entirely replaced by massive sulphides and then to taper into a number of thin streaks or layers of intermediate replacement accompanied by some disseminated mineralization. Sizeable "blows" of metallics can be seen in places slightly off the main zone of pyrrhotite mineralization.

The overall structure in the immediate area of these workings is either that of a part of a rather openly folded anticline or that of a large drag fold enclosing many minor rolls and crumples. The dip of the mineralized rock and the beds shelves off distinctly to the north. Outcrops in that direction can be found with dips of 10°-15° showing, but dips do not steepen much in excess of this until well away from the mineralization. There are signs that additional rolls may be present to the north. It is known that the rocks dip fairly consistently and generally to the north at apparently relatively low angles from the sector containing the metallic mineralization up to and beyond the area of the forestry tower. To the north of the tower they appear to steepen.

There is a general indication of the presence of a fold, probably something in the nature of an elongated drag-fold, plunging to the east and controlling, somewhat, the deposition of the metallic sulphides. Replacement of rock by sulphides is apparently much more intense at the eastern end from 0+400' to 0+600' East, than at the western end where the mineralization splays into several bands. A small structural nose (drag) seems to be just visible at the eastern end of the workings. However, there is little evidence to indicate what happens to the south of the drag nose. Most of the ground to the south side of the workings is eroded away somewhat and drops off into overburden. Some beds in the centre and southern ends of the trenches appear to dip east and south at very low angles, i.e., 2°-4°, but they are vague and appear to swing around once more when small isolated outcrops are viewed a little farther south. The impression is that the strata at least flatten for a considerable distance to the south, but bulldozing would have to be done well to the south to obtain evidence of a possible southward dipping limb.

The metallic sulphides present in these workings are, in order of descending concentration, pyrrhotite, pyrite, galena-sphalerite, possibly tetrahedrite or some silver-bearing mineral, and chalcopyrite. Some silver values and from traces to small amounts of gold are always reported in assays. Massive pyrrhotite is found chiefly at the eastern

end of the workings where one pit exposes a 4' cross-section of it interlaced with sphalerite and chalcopyrite with a little galena. At the western end of the workings, pyrite, galena and sphalerite are more prevalent. The old shaft, which is in a bad state of repair, did not receive much attention from the writer. It appears to be full of water which begins at about 15' below the surface. A considerable thickness of pyrites appears to be present below the water. A nearby dump contains large blocks of pyrite and possibly some marcasite. Most of the massive mineralization in the western end of the workings shows on the northern ends of the trenches, in some places only in the bottom of trenches or shallow round pits.

As shown in the map of the workings, pits and trenches along the main mineralization zone generally extend only 100' or under from a median line, but one pit (an old working) is located 225' north of point 0+600' E. Around this pit, well mineralized slabs of crystalline limestone were found. The metallic mineralization is in the form of sulphides galena, chalcopyrite and sphalerite, and is of a higher than usual grade. Copper was also present in a larger percentage than usual. The pit was cleaned but material like that found on the side could not be found in place nor is there any direct evidence that the metallics had been derived from that point. The rock in the pit was bedded, platy and appeared to be an impure limestone. It is probable that the mineralized specimens came from a point close at hand as there are substantial thicknesses of crystalline limestone in the vicinity.

Sampling and Assay Results

A number of rough samples were taken during the first visit. Although an attempt was made to channel sample the massive sulphides in the proper manner, only partial success was achieved. The sulphides were found to be so massive and smooth in many places that the moil could not be driven into them properly, with the unhappy result that the samples were uneven and light in metallics.

A sample, #1, was taken across 6' of massive sulphides and interbanded quartz-sericite schist at the north end (east side) of Trench #3. The metallic sulphides were pyrrhotite, pyrite, galena, sphalerite and some minor chalcopyrite.

Results were as follows:

	Au	Ag	Pb	Zn	Cu
8526B	0.01 oz.	2.15 oz.	0.20%	1.35%	0.05%

This is not a fair and representative sample.

Sample #2 was taken over 5'6" of quartz sericite schist and quartz veins in sidewall (east) of Trench #3. The channel crossed through a 2'6" and 10" width of quartz. One or two thin, 1/32" wide, sulphide replacement bands were noted along bedding planes. Chief purpose of the sample was to learn if quartz veins contained any appreciable amount of gold.

Results:-

	Au	Ag	Pb	Zn	Cu
8525B	Tr.	1.15 ozs.	0.10	Tr.	Tr.

A rough, irregular sample of quartz and sulphide material in wall and bottom of trench #5 (0' + 480' E.) over 3'-4' yielded the following:-

	Au	Ag	Pb	Zn	Cu
8527B	0.01 ozs.	0.65 ozs.	0.05%	Tr.	0.07%

A poor sample of massive sulphide material, chiefly pyrrhotite, but containing some copper mineralization, some magnetite and seemingly rich in sphalerite in places, was taken over $2\frac{1}{2}$'-3' in the wall of pit #4, yielded the following:-

	Au	Ag	Pb	Zn	Cu
8528B	0.005 ozs.	1.35 ozs.	0.65%	2.05%	0.15%

A representative sample could not be obtained across the oxide sulphide portion of the rock.

A sample taken of slabby material found alongside the pit located 225' north of point 0+600' on the base line which contained chalcopyrite, galena and sphalerite in crystalline limestone assayed as follows:-

Au	Ag	Pb	Zn	Cu
0.005 ozs.	0.95 oz.	2.40%	3.75%	0.70%

The results in general must be taken only as indicative; the writer feels they do not properly represent values in the massive sulphides except possibly for gold. It is probable that gold values will decrease somewhat away from the shaft area where the high assay result was obtained in former years. Gold is apparently not directly associated with the quartz lenses or gash veins but may be associated somewhat with pyrite. It will be necessary to blast or use a pneumatic hammer to obtain a reasonable representative sample through the massive sulphides.

Work done by the present owners in this eastern zone consists chiefly of clearing the bush and trees, location work, cleaning some pits, reconnaissance prospecting and reconnaissance geophysical testing with the dip needle. The writer, on his part, during the investigation has mapped the workings, sampled them to some extent, made geological reconnaissance out from the workings and done some geophysical testing with a rather insensitive dip needle on pre-cut lines.

CENTRAL AREA

Occurrences and Workings of Sinbad Claims 11, 12, 13 and 14

The workings found in these claims are known generally as the Central workings, because they are located about midway between the other two main areas containing metallic minerals and workings. They lie largely within mineral claim #11 and should represent most of the work done on the old Snow Group which has been mentioned in J. F. Walker's report of 1930, and in earlier Minister of Mines Reports.

The workings are extensive east-west. Pits have been traced outwards for about 1100' to the east of the main trench (see detailed map). Aside from the three main trenches, most of the work previously done seems to be in the nature of small prospect pits strung along the line of the hoped-for strike of mineralization. Nearly all the pits viewed by the writer to the east of mapped areas were filled with slumped earth. Very little outcrop was noted in any of them. These pits were only viewed quickly in passing by on the way to the main trench and it is quite possible that some favourable occurrences still await rediscovery. Important showings were turned up on the western extension from the main pit by Mr. A. Humphrey.

In the area mapped, the long trench shown contains most of the mineralization. From observations made on attitudes of the rock revealed by the long trench, the rock structure is found to be generally flattish, particularly on the south side of the workings, with a number of open warps or rolls, but an overall northerly dip. On the northern side of the workings, the warps sharpen to small tight folds and dips steepen in general. The warping appears to be effective across a width of 400' or better.

The rocks encountered in the cuts are largely quartz-sericite schists, limestone and lime-silicate skarn rocks. The quartz-sericite schists are assumed to have developed from silicified impure limy horizons and with possibly some inter-bedded quartzite, whereas the skarn rocks are produced by

alteration and the addition of iron and silica into purer limestones. The rock sequence is essentially the same as at the eastern workings. A more or less distinct lime belt lies to the north of the predominantly quartz-sericite belt, although there are indications that the rock at the south end of the longest trench is increasing in rocks of an altered limestone character.

Metallic mineralization in this area is predominantly pyrite with galena and sphalerite, but chalcopyrite is also present and much more prominent than in the eastern workings. There appears to be a little pyrrhotite at one or two points. A fine-grained, poorly formed replacement type of magnetic material, essentially magnetite, is prominently displayed in one or two pits or trenches. Sphalerite is noted with the magnetite.

The main occurrence of metallic sulphides is in the long No. 1 trench where the rock has been penetrated to some depth, perhaps 10' to disclose massive sulphides of sphalerite-galena and chalcopyrite beneath a gossan capping. The sulphides and goassan dip away to the north under a cap of thin bedded quartz-sericite schist. The thickness of the massive sulphides cannot be established since water fills the small winze sunk on the mineralization. The thickness may be in excess of 4'. The appearance of the "ore" thrown up at the side of the trench is encouraging.

Three other distinct mineralized bands containing lead-zinc-copper show in the section crosscut. They are 1'-2' thick in limy bands and associated with a general increase in pyrite. The introduction of pyrite and silica is fairly general within the mineralized zone. It would appear that the metallic mineralization in places dips more steeply to the north than the rock horizons.

No sampling has been carried out in this sector as time did not permit and the best section is under water. However, on a much later visit, the owners showed the writer a cut they had located to the east from which, after cleaning and cutting down, they collected material in the form of a sample across roughly 2 feet and passed it on for assaying. This material, assayed by J. R. Williams & Son, returned:-

Cu	Pb	Zn
1.70%	8.25%	2.57%

Observations on the spot showed that the mineralization is derived from a banded replacement of what probably was a limestone. The rock now visible is intensely altered and siliceous, resembling a diorite somewhat in appearance. The

widest distinct band observed was perhaps 9"-1' wide. Most of sample material had been derived from the wall at the base of the pit and water had risen to cover some of the mineralized rock. The mineralization and ?bedding dips shallowly, 7°-10° to the north and east. This horizon would pass beneath the mineralization in the main trenches to the east.

Still other pits were found to the east of this last working. At one point about 15' east, the extension of sampled mineralization can be observed on surface. Pits to the east of this show only altered and stained cap rock, mostly limy and sericitic schists, in the slumped material on the sides. There are some indications of mineralization.

Short excursions to the east of the main trench show that the mineralization probably extends in that direction for at least 200'. Only stained cap rock can be detected in one or two slumped pits. Pitting extends with gaps well to the east and beyond the above, but there has been no opportunity to obtain any useful data here as all pits are slumped and in general the rock is felt to be covered with several feet of overburden.

Surface exploration in this area is hampered somewhat by the lack of rapid drainage. Underlying ridges of rock hold up the water movement and force the drainage through long detours parallel to the ridges. The whole area is relatively low, with ridges of rock and overburden arising only a matter of few feet over muskeg and swamp. Unless drainage channels can be cleared or cut across the ridges, exploration will have to be done by shallow drilling.

WESTERN AREA

Occurrences and Workings in Claims Sinbad 19, Roc 1 & 3

This area contains the known workings located chiefly in mineral claims Sinbad #19 and Roc #1. The workings occur as a line of trenches and pits with a compass orientation of 105° true. They represent the exploration work presumably done under the Red Top group. As shown on the accompanying detail map, the trenches and pits are not far from and roughly parallel to the location line separating the offset group of 4 mineral claims Roc 1 and 2 and Sinbad 19 and 20.

The workings are found east and west of the No. 1 post of Sinbad 19. The westernmost group of workings consists of two long trenches, 1 short trench and 2 small pits. The short trench, indicated as Trench #6, shows platy and replaced limestone with 1 or 2 fine seamlets of galena-sphalerite along

bedding planes. The north end of the trench shows silicified rock.

The easternmost group of workings consists of three trenches or pits in a rough line oriented on an azimuth of 105° along a belt of crystalline limestone, silicified altered limestones and some rather siliceous quartz-sericite schists. Pit #1 is short with the southernmost portions slumped. The northern end exposes a $2\frac{1}{2}$' massive layer of replaced limy rock showing thin 1/16" - 1/4" seams of galena-sphalerite as well as dispersed flakes of galena. Pyrite is abundant in upper layers. There appears to be 2-5% sulphides in the layer. The rock is probably recrystallized, silicified and replaced limestone. The strike of the bedding appears to be roughly 105° and the dip is northerly at 30°.

Pit #2 exposes silicified limy rock sparsely mineralized with pyrite, galena and sphalerite. The strike is indicated 117° and dip 39° northeasterly. An adjacent rough pit shows a replaced limestone containing visible pyrite galena and sphalerite along bedding planes. A silver-bearing mineral may also be present.

Pit or Trench #3 shows banded crystalline or silicified limestone chiefly, with 1'-2' thick quartz lenses which contain galena. Lead-zinc mineralization is in small "blows" or in seams. In the midsection of the trench, abundant pyrite and some galena-sphalerite seams are observed in silicified limestone.

Number 4 workings, pit or trench, contain crystalline limestone and silicified rock in which massive sulphide mineralization occurs amongst thin bands of disseminated sulphides. The sulphides consist chiefly of pyrite, galena-sphalerite, but chalcopyrite shows at a number of points. Replacement of material along bands of silicified rock (originally limestone or limy horizons) is the prevalent manner of occurrence. Some crosscutting features are evident in the trench, chiefly in the form of quartz veins and stringers. Pyrite is well disseminated throughout the silicified limestone at the south end of the trench.

The central section of the working has been cut downwards a depth of 10' over the more strongly mineralized section. Two samples were taken from here for assay. Their positions are shown on the accompanying detail map. The results from a sample cut across 5' true width of the better mineralized section were as follows:-

	Au	Ag	Cu	Pb	Zn
#8531-B	.005 ozs. /ton	0.55 ozs. /ton	0.08	2.75%	3.15%

The other sample was taken just south of the above and was a very rough chip sample over 5'6" mineralization, chiefly of pyrite. The results were:-

Au	Au	Cu	Pb	Zn
tr.	0.55 ozs. /ton	0.05%	0.55%	0.12%

The sampling indicates that the low values probably exist throughout the silicified rock even though little or no metallic mineralization other than pyrite is visible. The richer sections are in the forms of replacement zones which tend to follow strike and dip of bedding. Silver values appear to remain steady throughout most of the rock.

Working #5, a long trench, shows rock only along side walls in small patches and the rest of the trench filled with earth except where one or two ribs rise through the earth. Lead-zinc mineralization is observed along the east wall in the southern half of the trench. Most of the rock seen is of a silicified nature but some crystalline and some platy limestone is visible. A small olive-green trap dike crosses the trench on an east-west line but it could not be established if this intrusive is later than the metallic mineralization.

Working #6, a short narrow trench which has slumped, lies about 70' west of #5 working. Some platy limestone and siliceous limy rock are present. A little lead-zinc mineralization can be observed at the south end of the working.

All the workings and mineralization of this area are located along an abrupt rise or ridge with the steep side to the south. Attitudes of the rocks are illustrated on the detailed map. It is apparent that a general strike for the length of the workings would be about 118° and that in general the dip is to the north or northeasterly at 30°-40°. In detail, the attitudes suggest a slight arching of the strata with small shears and drags appearing in places. Movement has taken place both east-west and north-south, but the main force must have been applied from a northerly quarter. The rocks in general appear more silicified than in the other two areas. Silicification extends across the beds to cover some thickness of rock but it is suspected that crystalline or platy limestone will increase to the north.

It will be noted that dips are, generally speaking, substantially steeper than in mineralized areas farther east. This is believed to be due to the area lying well to the north of the flat-lying, apparently axial zone of the other mineralized areas. In effect, if there is no pronounced faulting, these workings may be representative of another metallically mineralized zone.

Some additional metallic mineralization does, in fact, appear in places to the east not far off the line of extension of the workings. These occurrences are not located but they seem to lie a little to the north of the line of extension. One occurrence was encountered during the early reconnaissance of this sector. The writer, in attempting to find the western occurrences, passed by them to the east and crossed through an area covering their eastward extension before running on to an open slope facing out to the Raft River and the north. Siliceous rock dipping at about 20°-25° to the north or northwest was observed to contain a fair amount of pyrite and small ½" to 1" bands of galena-sphalerite. Only a few fragments were picked up and hurriedly scanned before moving onwards. It has not been possible, so far, to relocate this metallic occurrence.

The second occurrence was found by Mr. A. Humphrey. It has been seen in passing by the writer and apparently lies some 600' north of the new bulldozed road on a low scarp well to the east of the western area and possibly 1/3 of the way to the central occurrences. Replacement in the form of galena and sphalerite lenticles are observed over 6' along ?bedding planes in a place where moss and scree had been removed. The only work done here is by pick across two sections a few feet wide.

OTHER METALLIC MINERAL OCCURRENCES ON MT. MCLENNAN

In the western area there is evidence to suggest that claims were held to the south and probably to the east of the western workings. The writer, in passing through this area - a rather low, boggy stretch with numerous ridges - has found numerous old trails. None of these have been explored with the object of tracing them to old workings. Farther south and at lower levels, there are several known metallic occurrences.

The first of these lies on the south slope of McLennan Mt. at an elevation of roughly 3500'. A fair amount of pyrrhotite is reported by Mr. B. Herslev as present at this location. He obtained a spread of substantially higher dip needle readings in the vicinity of the pyrrhotite, according to his report. This occurrence has not been visited by the writer and is reported only as a matter of general interest. Mr. Herslev says that there are claims held by others in the vicinity of this mineralization and he plans to study the area when time becomes available.

Another occurrence of metallic mineralization outside the Sinbad-Roc-McCorvie claims groups is found around the contact areas of a small granitic plug which outcrops at an elevation of 2500' to the west of Galena or Crossing Creek.

In a very brief reconnaissance of this area, the writer has observed galena, sphalerite and chalcopyrite in altered rocks (chiefly silicified) within 100' to 300' of the apparent contact. Chalcopyrite is noted to be closely associated with quartz blows and vein material. At a point approximately 200' down the slope from the above mineralization, an elongated magnetite dike about 4'-6' wide can be seen. Copper staining occurs in the vicinity of this body and copper values can be obtained from the magnetite. These occurrences have been claimed by B. Herslev.

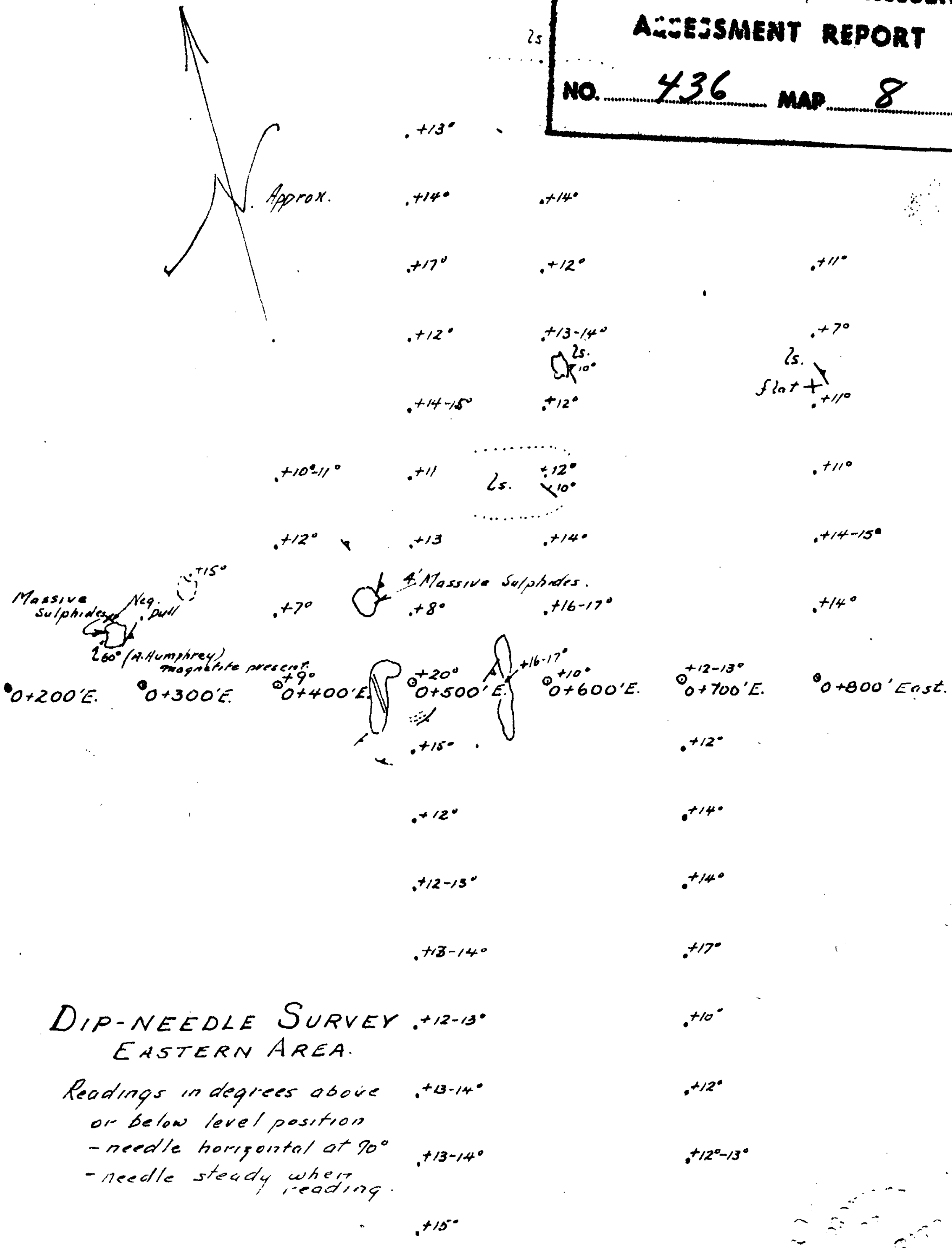
Old workings are known to exist at the base of the mountain near the main road. One working, a tunnel, seen by the writer, contains massive pyrite in a highly silicified rock. The workings are supposed to be part of an old effort (?1917-23) in search of gold.

Another set of workings has been shown the writer at about 4200' elevation just south of one of the last switches on the road up Mt. McLennan. Aside from random pits and trenches, a short shaft, perhaps 10' deep, leads into a somewhat caved tunnel. The latter is thought to be the location of the so-called Morrison shaft. It is reported that a channel across the quartz lenses and altered rock yielded something in the order of 0.4 ozs./ton of gold. It is reported also that the assay was carried out by the Dept. of Mines, Victoria. The gold does not appear to be contained so much in the quartz as in the alteration wall rock which shows some ?mariposite.

GEOPHYSICAL WORK

Random reconnaissance geophysical work was done by A. Humphrey, one of the holders of the claims, with a Sharpe dip-needle in several areas of the claims. Some of the work was done during the time the writer was at the scene making his investigation. In particular, the eastern area of workings was checked over by A. Humphrey. Although he did not record his readings, it was quite apparent that he did obtain many reasonably high ones. Many of the higher readings were obtained over the actual workings and to the north and east of them. The highest recording obtained by him was approximately +60° dip, or a reading of 150° from the horizontal position of the needle at 90°. These readings represent the needle in a position of rest. Numerous other readings were found in this area to range from +17° to +35°. However, it was observed that there were rapid fluctuations with the needle moving above the horizontal to the 90° position in a few places only a short distance from a strong pull.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 436 MAP 8



Scale: 1" = 100'

Mr. Humphrey also did some reconnaissance dip-needle work in the vicinity of the Central Area workings and obtained some noteworthy readings.

The writer made a grid survey with a Chicago made dip needle loaned to him by B. Herslev, at the east end of the workings in the eastern area of the claims. The dip needle used, however, was rather an insensitive one and the readings have to be viewed in the light of the knowledge that the Sharpe instrument appears to give about double the readings of the Chicago instrument in places.

The grid lines were lines cut roughly across the surveyed base line (location line) with stations at intervals of a hundred feet north or south. The pattern of lines is not regular as the chief objective was to cover as much area as possible in a short time and thereby obtain some general pattern of the magnetic changes within this area. In spite of the insensitivity of the dip needle used, it is believed that the readings are sufficiently high to indicate a generally anomalous zone oriented roughly along the base line and to confirm the presence of a metallically mineralized structure. The readings have been taken only at the east end of the mineralized area and the lines have been projected to the east, north and south of the base line into overburden areas. The instrument used was zeroed in the North Thompson River Valley above an overburden area, i.e., the needle was set at 90° or level reading where there appeared to be no strong attraction. In the area surrounding the workings, where there appeared to be rocks of normal or average type (crystalline limestone), the background is generally elevated and readings of 94 to 96° or of 4°-5° dip (needle at rest) can be fairly generally obtained. Thus a reading of 95° might have to be considered normal or background for the gridded area. Readings above 100° (or a 10° dip) are considered definitely anomalous. Some arbitrary figures in the range of 750 to 1000 gammas per degree can be used for converting the degree readings to gammas. Although pyrrhotite is the chief magnetic mineral noted in this area, some magnetite has also been observed intermixed with pyrrhotite and sphalerite in Pit #4 and the high readings obtained there are attributed to this fact.

From the work done by the writer, it is concluded that there is a spread of anomalous readings, that the higher readings lead more towards the south and east, and that the anomalous area is open in the last two directions at least.

It is reiterated that the dip-needle used was insensitive and therefore the readings obtained would be considerably enhanced and the differences magnified somewhat if it had been possible to use a magnetometer or a Sharpe dip-needle during the grid work. The spread of higher values could signify that a body containing pyrrhotite of some substantial extent exists beneath the overburden and cap rock,

controlled in its emplacement by broad and open structural features. The structural features most probably would be a series of drag folds directly related and controlled in their positioning by the location of the axis of the major anticlinal fold. Some indications of such structures have been obtained from geological work.

Geophysical investigations should continue, even if only with a Sharpe dip-needle. Determination of magnetic changes within the eastern and central areas can be obtained with the dip needle and magnetometer. Magnetimetric measurements offer a good method to assist in locating economic mineral deposits in these two areas and within the claims generally because of the general association of massive and even disseminated pyrrhotite, and in places, magnetite, with chalcopyrite and sphalerite. Although galena is observed in most places as a straight replacement of limestone or limy horizons, it is also found in masses of pyrrhotite or other sulphides.

Other methods of geophysical investigation can be used on Mt. McLennan also. Self-Potential methods, although capable of tracing sulphide leads, are not particularly recommended but checks made by E. M. methods on magnetic anomalies are recommended. Induced Polarization can be considered if sufficient encouragement is obtained by the first two methods, but only on the understanding that it will be for locating disseminated metallic mineralization in association with massive mineralization.

SUMMARY AND CONCLUSIONS

The Sinbad-Roc-McCorvie group of claims, located on Mt. McLennan near Birch Island in the Kamloops Mining District, contains several important areas of metallic mineralization. Three main areas of mineralization have been identified by old workings. At least two of these areas are apparently linked structurally and represent one general structural zone while the third may represent either an offset or a second structural zone. Metallic mineralization consists of concentrations of pyrrhotite, magnetite, pyrite, chalcopyrite, sphalerite and galena, with some values in gold and silver also being indicated, contained in a series chiefly made up of limestones, quartz-sericite rocks and other predominantly limy rocks. The three working areas containing the metallics each average about 600' or better in length but indications of mineralization extend far beyond the workings. The deposits are chiefly of the replacement type, replacement taking place mainly in limy horizons or in altered limy rocks. Concentrations of massive sulphides do occur, largely of pyrite, pyrrhotite, magnetite and sphalerite. Thicknesses of 4' of solid sulphide can be observed in the pits of the Eastern workings.

Structural features exert control on the emplacement of metallic mineralization. The overall structural feature is probably a large anticline or anticlinal form with one limb (the south limb) badly broken. The main mineralization located so far is situated near the crown of the anticlinal structure in strata with flat to shallow dips to the north. The axial zone of the anticlinal structure appears to carry for several miles along the crest of Mt. McLennan in the topographic form of a terrace. The south limb of the proposed structure has not been defined well ~~but~~ only in an indirect way can the anticlinal structure be inferred to occupy the mountain. Most evidence supports this impression. Metallic mineralization occurs at many other points than those mentioned and high gold values have been reported by earlier investigators at some of the workings. The mineralization so far located is in the nature of strong surface leads and there is a good possibility that economic concentrations of copper-lead-zinc minerals can be found because of the structural aspects of the area.

Values of channel samples taken are not felt to be truly representative and better results might be obtained by means of bulk samples.

Geophysical reconnaissance work with the dip needle indicates anomalous conditions beyond the present workings of the eastern area such that a broad area may contain magnetic minerals with associated ore metallics to some depth. Replacement otherwise may yield a banded type of deposit.

RECOMMENDATIONS

Additional prospecting should be planned and carried out carefully to cover the claims in block-like sections.

Geological investigations in company with the prospecting should be continued.

Geophysical investigations are of paramount importance since the area at the eastern end of the eastern workings shows fair indications with the dip needle. A magnetometer preferably should be used in carrying out confirmatory work over the area already gridded and in carrying out further gridding in all directions. Barring the use of a magnetometer, a good dip needle like the large Sharpe instrument could be used.

Electromagnetic apparatus should be considered in this sector at a later stage to section broad anomalous areas outlined by magnetimetric work. E. M. work would seek to establish concentrations of metallics within limited depths.

Resistivity investigations might also be useful here, subject to the earlier steps mentioned above being taken first. Results of this work might be erratic in the light of the somewhat banded nature of the replacement deposits and because of general silicification of the rocks in the sectors containing metallic mineralization.

Induced Polarization need only be considered for use if, after concentrations of sulphide are established, it becomes desirable to obtain evidence of disseminations of sulphide around these concentrations and to obtain indications of depth of sulphide bodies. This method would only be used here in an advanced stage.

The above steps are recommended for consideration specifically in the area of the eastern workings.

For the central area, it is recommended that the magnetometer or dip needle be used as an initial step to obtain indications of extensions of metallic mineralization easterly and westerly from the present workings. The magnetite observed in the workings should trace out a northwesterly - southeasterly trend and be usable as a general indicator of mineralized rock. However, some of the more important metallic mineralization is in silicified altered rock which does not appear to contain appreciable amounts of the magnetic minerals. For thistype of mineralization, self-potential investigations should be useful, except that it is feared the low-lying swampy terrain will cause very erratic and possibly erroneous results.

Bulldozing of cross trenches should be carried out in this area, particularly to the east along the line of the ridge containing the mineralization. The purpose of this would be to show that the mineralization continues towards the eastern sector of mineralization and possibly even extends almost to it. It should be realized, however, that the mineralization is controlled by strike of the beds as well as minor flexures in them and as one goes eastward it appears that the known bands of mineralization in the central area will swing more southeasterly then southerly over the flat crown of the supposed broad anticlinal structure. Other bands of mineralization are expected to appear between the central and eastern areas. Some bulldozing must be carried across the strike of the ridges well to the south to permit checking of a spread of mineralization in that direction. Cap rock is expected to obscure the presence of metallic mineralization and blasting followed by pick and shovel work will be needed to clean the bulldozer trenches.

For the western area, thorough prospecting and geological mapping are recommended only at this time. It is hoped to be able to establish that a connection exists

between the metallic mineralization of the western workings and those mineral indications that are found several hundred feet, say 1500', farther east. Thorough prospecting must be carried out to the west and to the south of these workings.

Drilling: Drilling is not specifically recommended at this time, but certainly will be required later after additional geophysical data is obtained. Drilling can be carried out, preferably with "A" Core drilling equipment at the eastern and central areas of mineralization. X-ray drilling equipment would be satisfactory for initial drilling work. A vertical hole to a depth of 100'-150' or better is recommended at some chosen point at the eastern end of the eastern showings, the position to be decided by study of anomalous magnetic indications obtained from a more detailed survey. It would be of particular interest to the writer to have a hole drilled in a spot near the supposed axial line of the anticlinal structure if the magnetic data indicated anomalous conditions in the vicinity. The noses of subsidiary drag structures also offer good possibilities for drilling in this area. Some short vertical holes, 30' to 50' in depth, are recommended at sites where mineralization is concentrated. In particular, a short hole should be drilled to intersect the pyrite mineralization observed in the shaft. If encouragement is obtained at these shallow depths, the holes should be continued to greater depth.

Costs involved in carrying out a full program would be something of the following order:

	Min.	Max.
Geophysical investigations	$5000	$10,000
Prospecting, blasting, bulldozing, transportation	3000	6,000
Geological investigations	2000	3,000
Drilling (including cost of purchase of x-ray equipment)	6400	10,000
Supervision of exploration, Engineering fees	4000	6,000
	$20,400	$35,000

In round figures, it should be possible to carry out the minimum program for a cost between $15,000 and $20,000, as a first step. An expanded program would be something of the order of $35,000 or better and would only be undertaken if strong indications were obtained during the minimum

program.

All exploration data would require proper documentation and recording. Drill cores and drill records should be carefully maintained.

H. C. B. Leitch
P. Eng.,
Consulting Geologist.

West Vancouver, B.C.,
March 30, 1962.

APPENDIX

Costs of Engineering Surveys

1. The following costs were incurred during geological investigations:

Professional engineering fees	
on property, 19 days @ $100	$1900.00
" " 2 days @ $100	200.00
Assistant, chaining, sampling, line cutting	
2 men, 2 days @ $20/diem/man	80.00
1 man, 5 days @ $20/diem	100.00
Transportation	
Mileage, Kamloops-Clearwater, return 4 x 140 miles @ 10¢/mile	56.00
Mileage, Clearwater-claims, 12 x 37 miles @ 10¢/mile	44.40
Airfare, Vancouver-Kamloops, 3 return trips @ $34/return	102.00
Sampling and Assaying	47.00
Accommodation (Engineer) 7 nights Hotel	37.50
Meals (Engineer)	52.00
Sundries, telegrams, etc.	5.00
	$2623.90

2. The following costs were incurred during geophysical investigations:

Engineering fees $1\frac{1}{2}$ days @ $100/diem	150.00
Assistant, line cutting and chaining $1\frac{1}{2}$ days @ $20/diem	30.00
Expenses:	
Transportation, 80 miles @ 10¢/mile	8.00
Meals, 2 men	12.00
Accommodation, 2 nights, 1 man	10.00
	$210.00
TOTAL EXPENSES	$2833.90

GEOLOGY OF McLENNAN MT.
NORTH THOMPSON R.

Scale 1 : 50,000

N

RAFT RIVER

Reported

Granite

Kamloops

Old Camp

Pyrrhotite

2000'

2500'

3000'

3500'

4500'

5000'

5100'

Ag Pb Zn

Argillite

TOWER

Cu Pb Zn

Au Cu Pb Zn

Noble quartz

Galena Cr.

Ls + schist

Diorite

McCORVIE

Peavine Cr.

Bl. schist

Black graphitic schist

Cu in magnetite

C. N. R.

NORTH BIRCH ISLAND STA.

THOMPSON RIVER

VAVENBY STA.

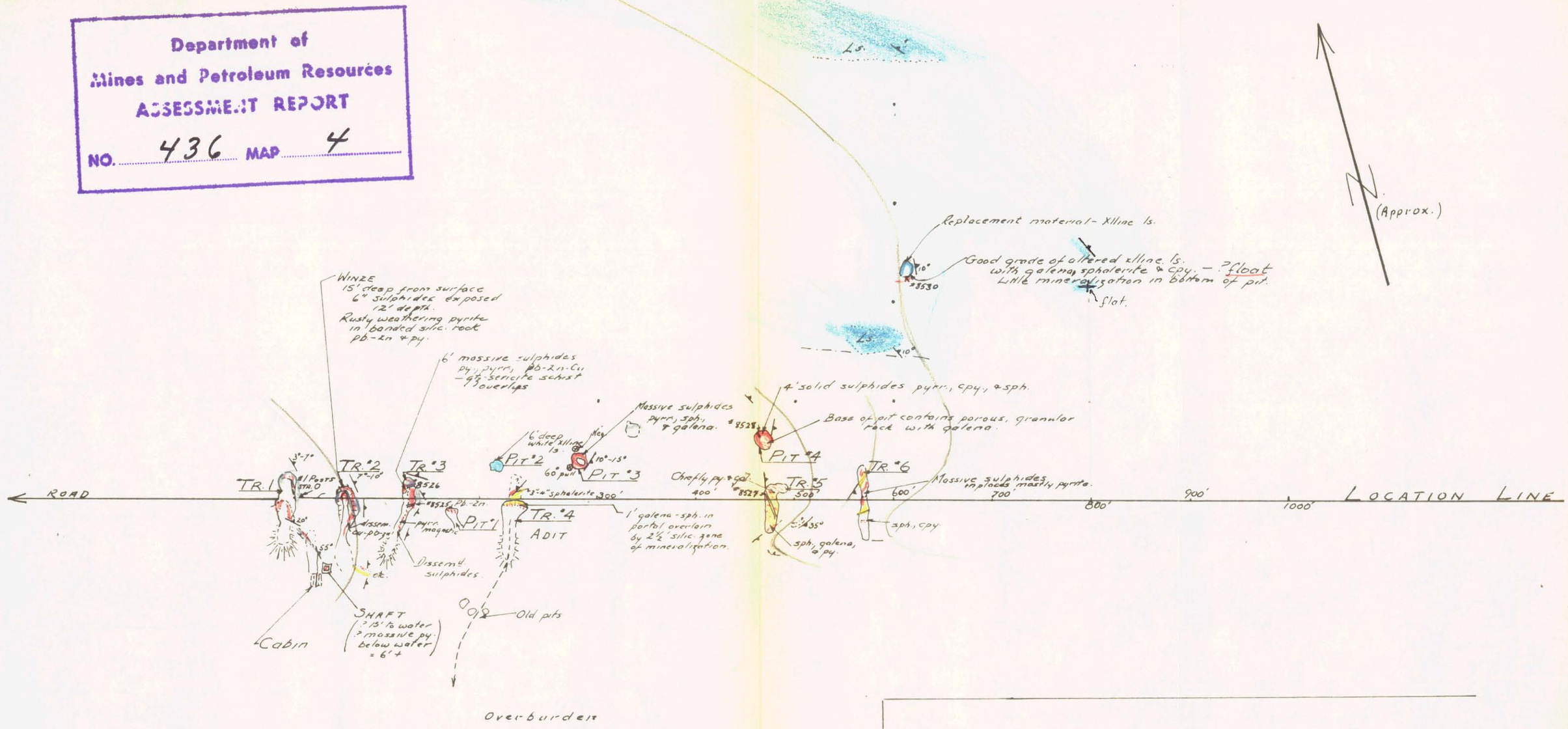
Edmonton

436

- Metallic mineral
- Granitic intrusive
- Diorite
- 3 - Limestones
- 2 - Qtz.-sericite
- 1 - Greenstone
- Fault

map 3

ls.



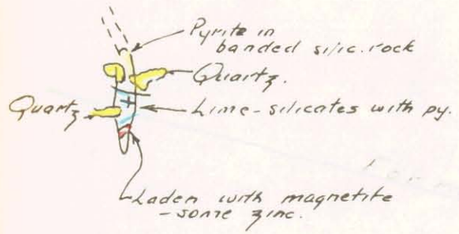
(SUNRISE (NAOMI) 82M-46)

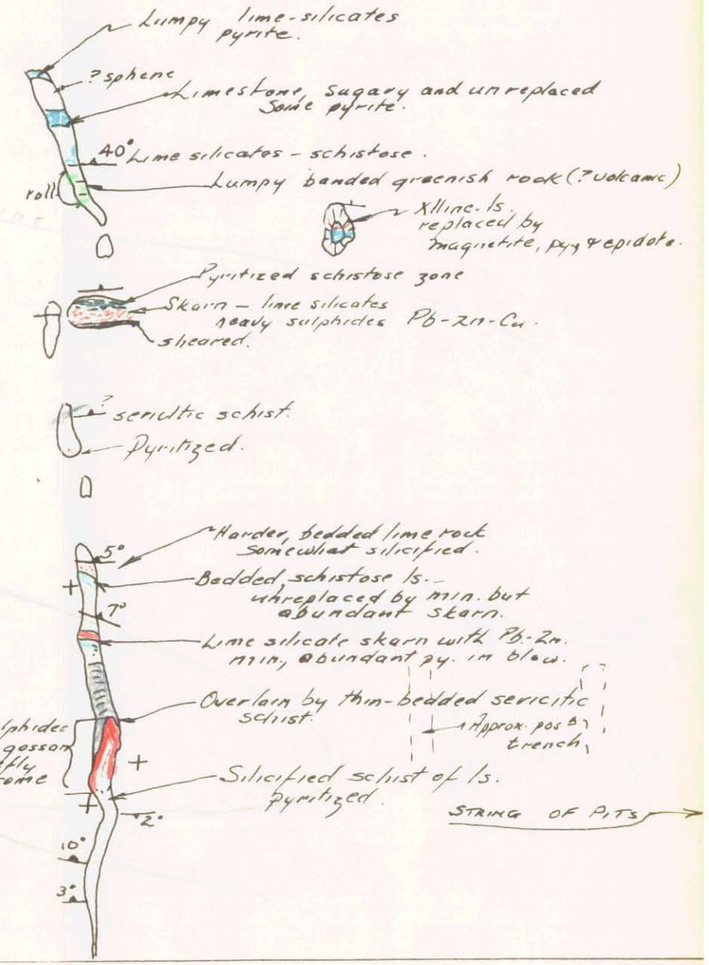
EASTERN WORKINGS
SINBAD-ROC-McCORVIE GROUP

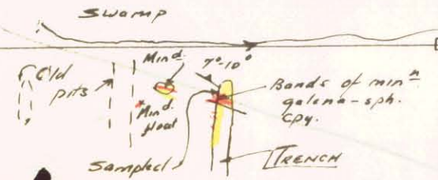
436

Scale: 1" = 100'

R.B. Leitch
March 1962







#13

SINBAD #11

#12

#14

(Snow) 82M-45

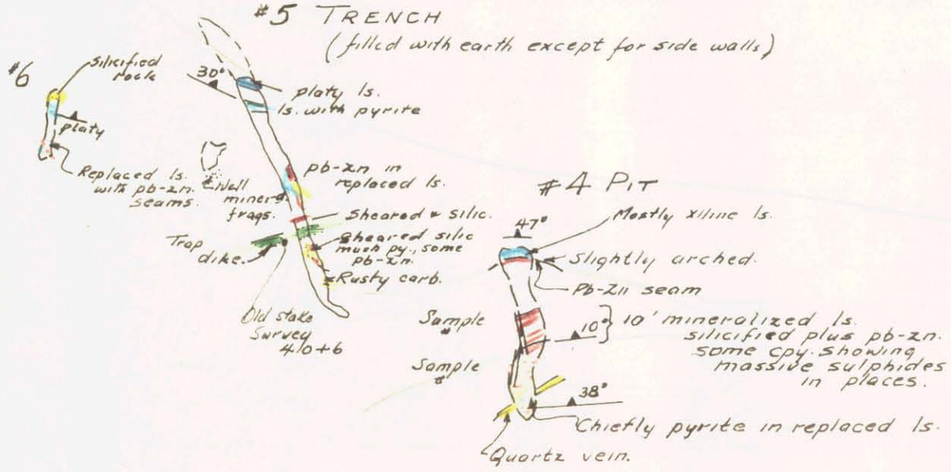
CENTRAL WORKINGS

SINBAD - ROC - McCORVIE GROUP.

Scale: 1" = 50'

March '62

436



ROC #1

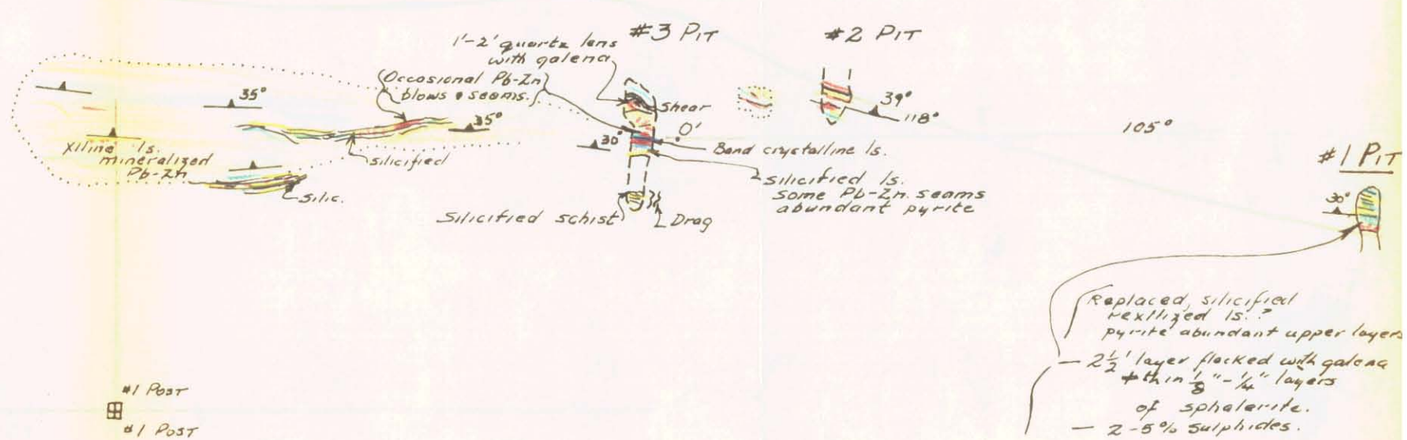
(Red Top 82M-44)

WESTERN SHOWINGS
SINBAD—ROC CLAIMS

Scale = 1":50'

Sept/61 H.B. Leitch

SINBAD #19



436

SINBAD #20