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MINERAL PROPERTY EVALUATION REPORT  
(ASSESSMENT REPORT)

BECKER HAMMER DRILLING GEOLOGICAL PROJECT  
(SEPTEMBER-OCTOBER 1984)  
ROYCE JOHNSON GOLD PLACER CLAIM GROUP  
(PL9174, PL9008, PL9504, PL11377, PL11220, PL12049, PL11250)

LOWER MCKEE CREEK  
EAST SHORE OF ATLIN LAKE

NTS 104 N 5E

NORTHWESTERN BRITISH COLUMBIA

CANADA

FOR MINEREX RESOURCES LTD.  
1500-1176 WEST GEORGIA ST.  
VANCOUVER B.C.

AND

ROYCE JOHNSON  
PO BOX 753  
SOOKE B.C.

VOSINO

BY

M.D. Kierans P. Eng.

059 25' North Latitude  
132 30' West Longitude

December 22, 1984  
**GEOLOGICAL BRANCH**  
**ASSESSMENT REPORT** MDK

13,307

McKee:

Johnson:Atlin:

Dec. 22, /84: MDK:

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JOHNSON GOLD PLACER CLAIM GROUP, (PL9174, PL9008, PL9504,  
PL11377, PL11220, PL12049, PL12050), LOWER MCKEE CREEK,  
ATLIN MINING DIVISION, NORTHWESTERN BRITISH COLUMBIA,  
(ASSESSMENT REPORT)

M.D. Kierans P.Eng.

Dec, 22, '84

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## SUMMARY

-i-

The Johnson Group of seven contiguous placer leases is located about 13 km south of Atlin B.C. in the Atlin Mining Division of Northwestern British Columbia. There is an application pending for an additional claim contiguous to and north of the Johnson group. When and if this claim is granted then the seven claims and the additional claim will be part and parcel of an option agreement signed on September 7, 1984 by which Royce Johnson, of Sooke and Atlin B.C. granted Minerex Resources Ltd. the right to explore and eventually buy and exploit placer deposits on the Johnson Claim Group.

Yellow pay gravels were discovered upstream from the present bridge in 1898. The Creek has seen almost continuous mining activity over a length of about 2 placer mining leases. Most of the mining has been by hydraulicking systems with considerable drifting into the north bank and some adits into the south bank. The writer estimates, in part from official records, that about 55,000 fine ounces have been mined to date in the creek.

From field work on the claims, government reports and by analogy with Otter Creek, a creek in the Surprise Lake area of Atlin Camp, the writer postulated that the old pay channel persists under glacial overburden across the Johnson Group in a southwestward direction.

To test the concept a Becker Hammer Drilling project was approved by Minerex and supervised in the field by the writer. The project cost well in excess of \$70,000. Fifteen holes were drilled at ten different drill sites on Drill Line #1. A total footage of 1,146' was drilled in the project. Sites were spaced about 100' apart in a line planned to transect the presumed southwestward trending channel.

Results are given in this report in section and logs. It is recommended that every effort be made to acquire mineral rights to the new claim (PL13128), that certain holes be sampled and that the option agreement with Johnson be renegotiated. If this is done then a line of holes, further to the northeast, should be drilled in 1985.



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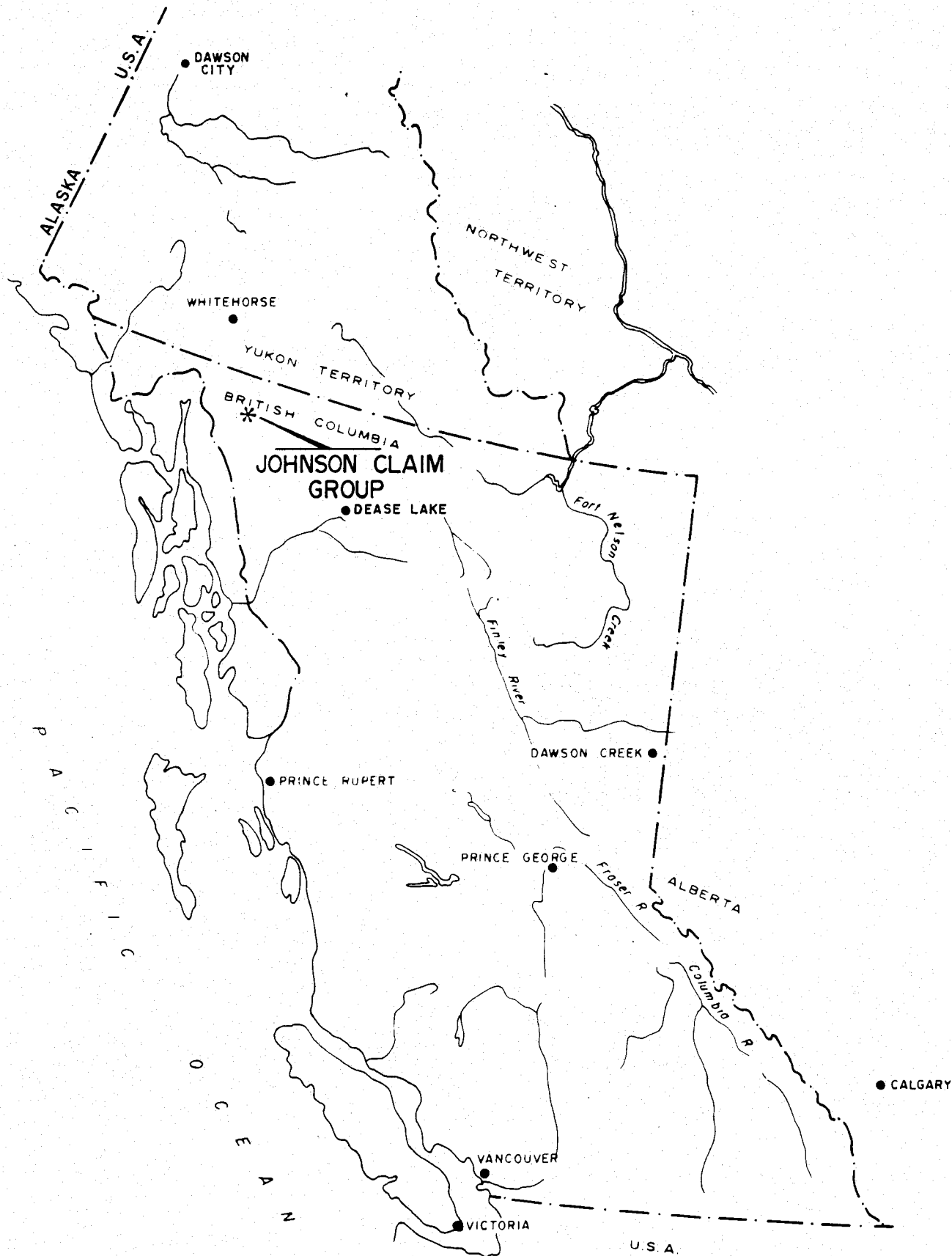
Dec. 22, 1984

### INTRODUCTION

During the last week of August of this year, I spent about 4 days on a Brunton and tape survey of the northeastern part of the Johnson Claim Group of seven placer leases. The claim group is to the south of the present course of McKee Creek in its lower reaches. The purpose of the survey was to check the location of claim posts and claim boundaries in the area and to correlate the outcrop pattern with certain geological concepts. These concepts are related to the general idea that the productive old channel continues in a southwestern direction, across the Johnson claims, under heavy glacial till and overburden.

In addition to the field work I studied in the office old reports, topographic maps, air photos and remote sensing images, assessment reports and other data on the area. As a result of working in other parts of Atlin Camp I have developed some geological concepts relating to the course of old pay placer channels. The concepts, as applied to McKee Creek, if tested by a line of Becker Hammer Drill holes across the presumed trend of the old channel on the Johnson claims, could be of considerable economic importance. A report on the field work was prepared. Minerex Resources Ltd., of Vancouver, decided on the basis of data presented in that report to option the Johnson Claim Group and drill the recommended Becker Hammer Drill holes. Drilling began on September 19th and was terminated on October 7th.

The purpose of this report is present placer geology concepts; to offer a discussion of the drilling procedures and the results; to present conclusions based on these results, and to suggest formal recommendations for continued exploration work at the Johnson Group. A Cost Statement is also included. One additional claim was staked in August. This claim was staked over ground believed by the writer to be open ground. Rights to that claim when and if granted, have been formally transferred to Royce Johnson.



### LOCATION MAP

SCALE: 1" = 140 MILES APPROX

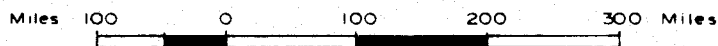
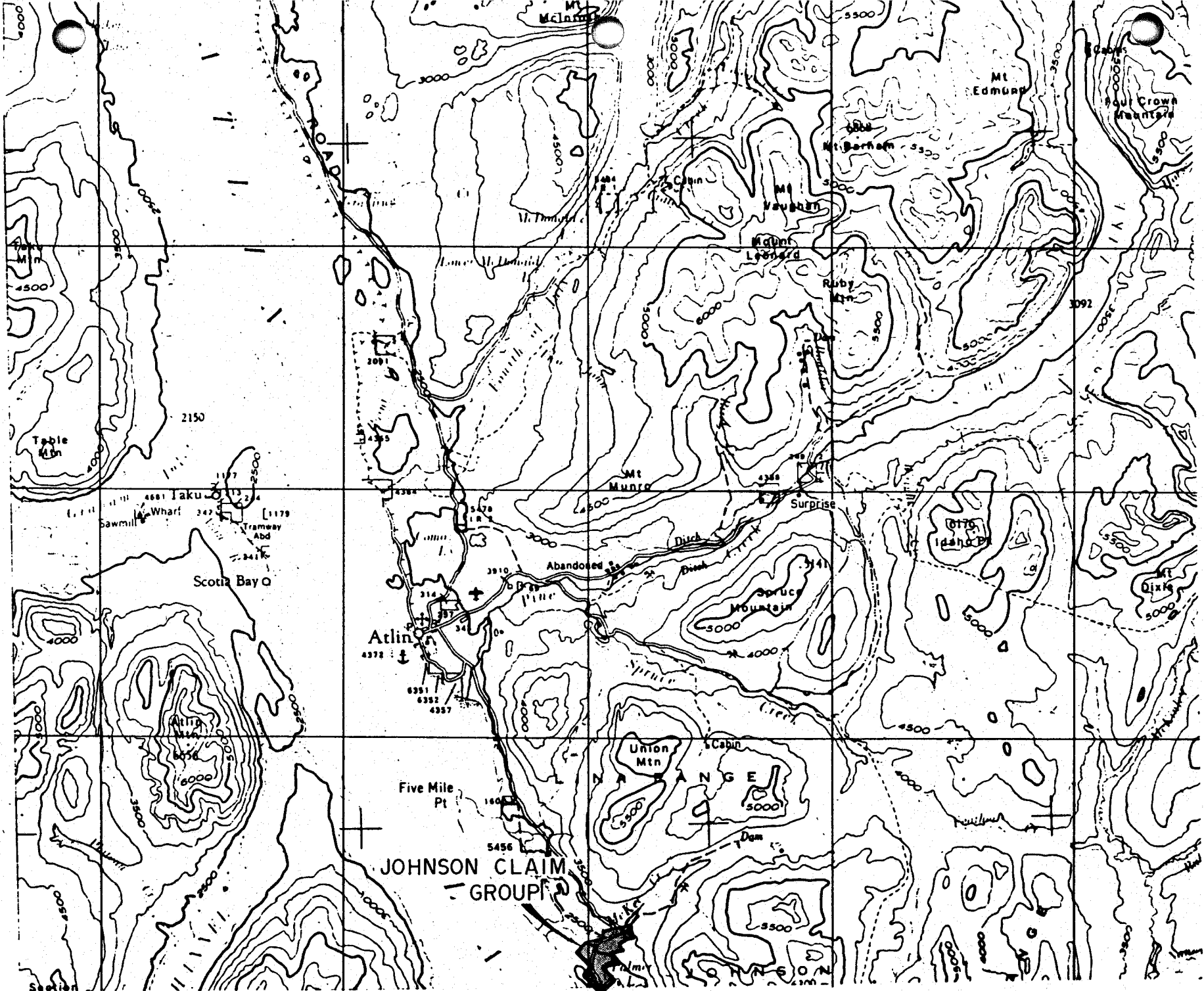


FIGURE 1



TOPO MAP, ATLIN AREA  
SCALE 1:250,000

FIGURE 2

## LOCATION, ACCESS AND CLIMATE

The northern boundary of the seven claim Johnson Group is within a few hundred meters of McKee Creek bridge on the Warm Bay road. The bridge is about 13 km (8 mi) south of Atlin B.C. on the all-weather Warm Bay road. This road is serviced by the B.C. government in winter and summer. It happens, by chance, to provide excellent access to the north and west side of the claim group. The rest of the claims can be reached by rough bush roads and on foot. Road building is easy and rapid in this generally open, lightly wooded and gently sloping ground. Please see Figures 2 and 3 for location of the Johnson Claim Group.

The McKee Creek area is part of the Teslin Plateau, which is a dissected upland surface. The Teslin Plateau is itself the southern part of the Yukon Plateau. The creek drops from an elevation of about 4000 feet in its headwaters to about 2200' elevation where it enters the waters of Atlin Lake. It is about 12 km (7mi) long and is quite straight with only one important tributary, Eldorado Creek, which enters McKee Creek valley from the south, about 2.5 km east of the bridge. Almost all of the Johnson Claim Group is below the 2600' contour. This is an advantage because the lower elevation moderates the northern climate somewhat and can extend the sluicing season significantly. On the average there are, normally, about 200 frost free days at Atlin Camp. The sluicing season varies from year to year but is normally from about May 15 to October 1.

Of the eight major gold producing creeks, or parts of creeks, of Atlin Camp, McKee Creek is the only one to flow away from the Pine Creek-Surprise Lake drainage basin. All the others drain either northerly or southerly into the Pine Creek-Surprise Lake valley.

## OWNERSHIP AND PROPERTY

For a listing of the placer leases that make up the Johnson Placer Lease Group please see Appendix A. The mineral property consists of seven contiguous placer leases and fractions. In addition to the seven Johnson claims PL13128 was staked by the writer in late August of this year. This claim overstakes PL1461 and is contiguous with the Johnson Group. Please see Figures 3 and 5. In the writer's opinion, PL1461 was incorrectly staked and the ground in question was open ground at the time of my staking. I have signed documents, Appendix C, turning over 100% interest in the mineral rights of PL13128, if and when the matter is settled in the Courts of the Province, to



Royce Johnson, of Sooke and Atlin B.C. Because of the very great importance of PL13128, with the verbal approval over the phone of the Secretary-Treasurer of Minerex, given on September 24, I requested John Mathews BCLS to carry out a location post survey of the two claims in dispute. On September 26, 27 and 28 John Mathews of McElhanney Associates of Vancouver carried out a transit and EDM survey of the location posts of the two claims. He also searched for posts for another claim which is, or was, involved in the dispute. It is my intention as nominal holder of the application for PL13128 to pursue the matter in the Courts, if necessary. The importance of ground covered by PL1461 and PL 13128 will be discussed below in the section "Placer Geology of McKee Creek and Royce Johnson Group". The Mathews letter to the Mineral Titles Branch in Victoria is appended to this report as Appendix C.

On September 7 of this year a Memorandum of Agreement was signed between Minerex Resources Ltd. of Vancouver and Royce Johnson of Atlin and Sooke B.C. granting Minerex an option to explore, develop and mine on the Johnson Group. The option agreement includes PL13128. Before I began field work in August of this year I had a verbal commitment from Royce Johnson that he would buy my 20% interest in his group (acquired by me in March of 1984) which would make him sole owner of 100% interest in the Johnson Group. Monies were put in trust with a legal firm in Vancouver to guarantee the purchase. I therefore felt it was in order to proceed with the field examination of the subject claims at McKee Creek as an independent consultant. The purchase of my 20% interest was finalized on September 7 when I received the purchase price agreed upon pursuant to our verbal agreement of early August of this year. I have no beneficial interest in the mineral rights of the property nor to I expect any.

#### HISTORY OF MCKEE CREEK

The following brief account of the history of placer mining activities on McKee Creek is based mainly on the reports listed in the Bibliographic References. Unfortunately, I was not able to talk to some of the previous operators on the creek regarding details of past history and details of more recent activity on the creek.

Yellow gravel was discovered on this creek in 1898 and for the next few years hand mining was carried on in the shallow gravels. The shallow gravel was soon mined out and starting about 1903, hydraulicking and underground mining

in the auriferous pay gravels was carried on beneath about 100 feet of sand, gravel and till. Production, mostly from hydraulicking, at the rate of about 2000 oz. (average) per year continued until about 1918. After that year production dropped off markedly to about 500 ounces per year until about 1941. Between 1941 and 1946 production rose to about 1000 oz. per year. Possibly some unrecorded drifting was carried on in these years. Becker Hammer drilling by Dupont in 1977 indicated that possibly there was adit mining to the northeast of the McKee-Eldorado confluence zone on the north bank.

Recorded production in fine ounces, according to Black (2) to the year 1946 totaled about 47,000 ounces. McKee Creek has been noted for the coarseness of gold produced there. As recently as a few years ago a 33 oz. nugget was recovered on one of the Harvey claims (about 2 or 3 claim lengths above the Johnson Group). Average fineness is recorded as about 830.

According to Black the upper end of the pit was reached about 1918. This could explain the drop-off in production that year. Black (2) states that the upper end of the pit was on glaciated bedrock. I have seen bedrock exposures in the McKee Creek mined area and could not see evidence of glacial action. Carmichael and Moore writing about 1930 (19) believed that the pay channel went under the north bank. They wrote: "Approximately 1 1/2 mile of the creek was worked by drifting and hydraulicking in the first days of the camp, and in so doing it was found that about 3/4 of a mile above the bridge on the main road the gold values in the bed of the creek suddenly became much less than they had below. This raised the speculation that the present creek bed from this point did not follow the old Channel." Black (2) commented that an effort to find the old channel above the pit was made about the year 1927. Hydraulicking was attempted above the mouth of Eldorado Creek but was not continued. Hydraulicking continued to, at least, the year 1964, with rather low production grade. It is not clear from the records when production stopped. Harvey took over the claims on the creek about the year 1972 or 1973. He operated every year until last year. His production is not known to the writer. I have seen color photos of clean-ups and there is no doubt that the gold was coarse with numerous large quartzose nuggets.

In 1977 a joint Harvey-Dupont Becker Drilling Project was carried out. This was reported on in Assessment Report 6324. This will be discussed in the section on Placer Geology of McKee Creek. Additional historical points

mentioned in the Black (2) report and the Proudlock's 1976 report (9) will be discussed under the section on Placer Geology of Atlin Camp.

#### PLACER GEOLOGY OF ATLIN CAMP

Government geologists, writing on the timing of deposition of the Atlin placers, do not agree. Black (2) believes that the channels within which the pay gravels occur are ancient Tertiary channels. Aitken (1) believes that they are of more recent origin and timing. The channels may have been formed during an interglacial period. Most of the writer's time at Atlin has been spent at Otter Creek. From this limited viewpoint I am somewhat inclined to accept the Aitken thesis. The Proudlocks (9) quote a glaciologist as putting the age of the two lower auriferous strata on the Harvey claims as greater than 60,000 years Before Present. Elsewhere it has been noted that dating of some of the Otter Creek auriferous horizons in the channel indicates an age greater than one million years B.P.

Channel pay gravels of Atlin Camp are normally unusually high grade for placer deposits. For instance, reserve grade for the Noland underground mine on Spruce Creek was put at 0.70 oz/C.Y. for 27,000 cubic yards. It would seem that such high grade could possibly result from erosion of primary sources of unusually high gold content, for example, auriferous quartzose shear zones. Also a relatively extended period of general and steady uplift would be needed to concentrate gold at the bottom of local stream gravels. At Otter Creek there is evidence of a period of rapid Recent or Pleistocene uplift of about one hundred feet. In the Klondike government geologists have postulated a similarly timed uplift but of greater dimensions, in the order of about 300-400 feet. As part of the gold concentration process then one could assume re-concentration of already rich local gravels during down-cutting in the last uplift period. This last uplift coincided with a period, or periods, of very high water flow in the valley streams.

From drill profiles at Otter Creek, near Surprise Lake, in Atlin Camp and from mining to bedrock on the Drain Lease of Otter Creek it is known that rich pay gravels occur within and slightly over the sides of bedrock channels. The rimrock may slope from about 90 degrees to about 30 degrees. It is more than likely that timing and channel formation at McKee Creek followed the same general physiographic processes as at Otter Creek and resulted in similar channels.



In the writer's opinion the single most important guide for placer exploration at Atlin Camp is the following: rich pay gravel horizons occur within narrow (30m to 80m) U-shaped bedrock channels. Conversely, as possibly, at McKee Creek, if a channel is not clearly identified as having this U-shape then it is possible, and quite likely, that the channel has not been fully explored or exploited. Search for the complete channel must be made by means of drifting, trenching and, much preferably, by drilling from surface. A most important principle for placer exploration at the camp is that present stream valleys do not necessarily follow old channels. The Otter Creek channel certainly did not. And because of the vagaries of glacial deposition, present topography is not a guide to paleotopography.

Despite uncertainties about timing and broad physiographic controls for placer deposition in Atlin Camp, there are a number of geological factors useful in the assessment of the potential of any creek, or part of any creek in the camp, including McKee Creek.

1. Almost all of the productive creeks of the camp are underlain by bedrock of the "Gold Series". The Gold Series is an assemblage of rocks of the Cache Creek Group of Pennsylvanian Age. They have been intruded by, usually serpentinitized sills, dikes and irregular masses of ultrabasic composition. The Gold Series include chert, argillite, chert-pebble conglomerate and derived quartzite and schist and some limestone. The greenstone schists, volcanic greywacke and derived amphibolite of the Gold Series are considered, by the writer, to be the main primary sources rocks for the placer gold mineralization of Atlin Camp.

2. Shear zones, with attendant quartz-gold mineralization, were, in part, the source of the primary mineralization concentrated in the stream gravels. Also, because they were zones of physiographic weakness, were preferred directions in the geomorphologic development of the area. In a sense, these tectonic elements were paleohydrographic controls for the paleotopography of the district.

3. Other primary sources were pyritized and argillized alteration zones. Some very talcose and gougy zones are known to be near gold concentration in pay gravel.

4. At Otter Creek and at McKee Creek the pay horizons within the U-shaped channels are multiple. That is, up to four horizons, usually of cobble-pebble-clay till, can occur within the pay channel. At McKee Creek three horizons have

been recognized. At Otter Creek three horizons have been mined with an irregular fourth zone in places. At both creeks these horizons include a very rich bedrock or regolith layer. At the Drain Lease three horizons have been mined with an irregular fourth zone in places. At both creeks these horizons include a very rich bedrock or regolith layer. At the Drain Lease pit at Otter Creek the entire 80' pay gravel section is sluiced. By placer standards the overall grade is very high.

5. Overlying the pay channel at Otter Creek is a forty foot layer of very roughly sorted cobble-pebble till which, in turn, overlays a forty foot thick fluvioglacial horizon with very high clay content. It is not certain from descriptions by the Pollocks (9) but it does appear that there is a strong possibility of equivalent gravel sections at McKee Creek. It is hazardous to generalize from even two creeks but this may be common cover for pay channel at Atlin Camp. More data is needed but certainly such a sequence should be watched for.

6. These gravel sections over the pay channels may contain non-commercial amounts of fine, or even coarse gold, distributed in pockets throughout the section. The depth of overburden can exceed 300' in the camp. At Otter Creek it averages about 100'. At McKee Creek my observations and those of other geologists and old reports indicated about 100' of till overburden on the Johnson claims.

7. In general, the coarseness and shape of the gold particles in Atlin Camp indicate relatively short transport from primary sources.

8. From both personal observation and notes in the geological literature on the camp, it is clear that the rimrock and the channel floor bedrock contain important placer gold values. This rock is almost always weathered and argillized. It is also often finely fractured. Fine gold and coarse gold is found in these rock as long as it is associated with the main channel. This effect is independent of rock type. One miner told me that he has mined bedrock to a depth of 10 feet. Depth of weathering is variable and careful control of mining at this stage is most important.

9. The pay channels of the camp, whether they coincide with present stream channels or not, are most often aligned along obvious tectonic features, such as faults. In fact, it may be possible to select parts of creeks which are more likely to contain gold placer deposits than others by noting intersections of faults and present or old stream valleys.

10. Finally, because of the heavy glaciation to which the camp has been subjected the prediction of the course of old channels is anything but clear and simple. Possible multiple glaciation has obscured the old placer channels, to such a degree that the unraveling of old channel courses will be a difficult and complex process. This process may be expensive and will require constant attention to geological features and may require revision of some of the ideas presented above.

#### PLACER GEOLOGY OF MCKEE CREEK AND ROYCE JOHNSON GROUP

In what follows the above general principles of placer geology of Atlin Camp will be applied to McKee Creek and, in particular, to the Johnson Group. The order of discussion will not necessarily be in the order of sequence of ideas presented above.

1. From brief visual observations at mined parts of McKee Creek and from published data on the creek one is not able to infer a U-shaped channel as the source of pay gravels at McKee Creek. This does not mean that the U-shaped channel does not exist on the two mined claims of the creek. In my opinion, this may simply mean that it has not been found, followed nor fully exploited.

2. It may well be that the part of the creek that has been mined hydraulically and mechanically in the past, did not follow the bedrock channel because it could not be reached. This happened at Otter Creek when the main method of moving overburden was the monitor. The same could have happened at McKee Creek. Despite the effort made between 1927 and 1930 to uncover the bedrock channel by hydraulicking there is the definite possibility that additional channel discoveries may be made upstream from the Eldorado confluence zone. This is so particularly in light of my interpretation of the Dupont Becker Hammer Drilling Report. Please see the interpretation of the channel location shown in Figure 4. This map is an enlargement of part of the 1:50,000 scale NTS topo map of the McKee Creek area.

3. At Otter Creek the old channel is displaced many hundreds of feet to the east of the present Otter Creek stream valley. There is evidence that the old channel followed a N-S fault and crossed Surprise Lake and is the tectonic control of the Boulder Creek placer run. My interpretation of the Lower McKee Creek placer geology is that there is a northeast trending fault zone, or in more general terms, a tectonic lineament which controlsthe

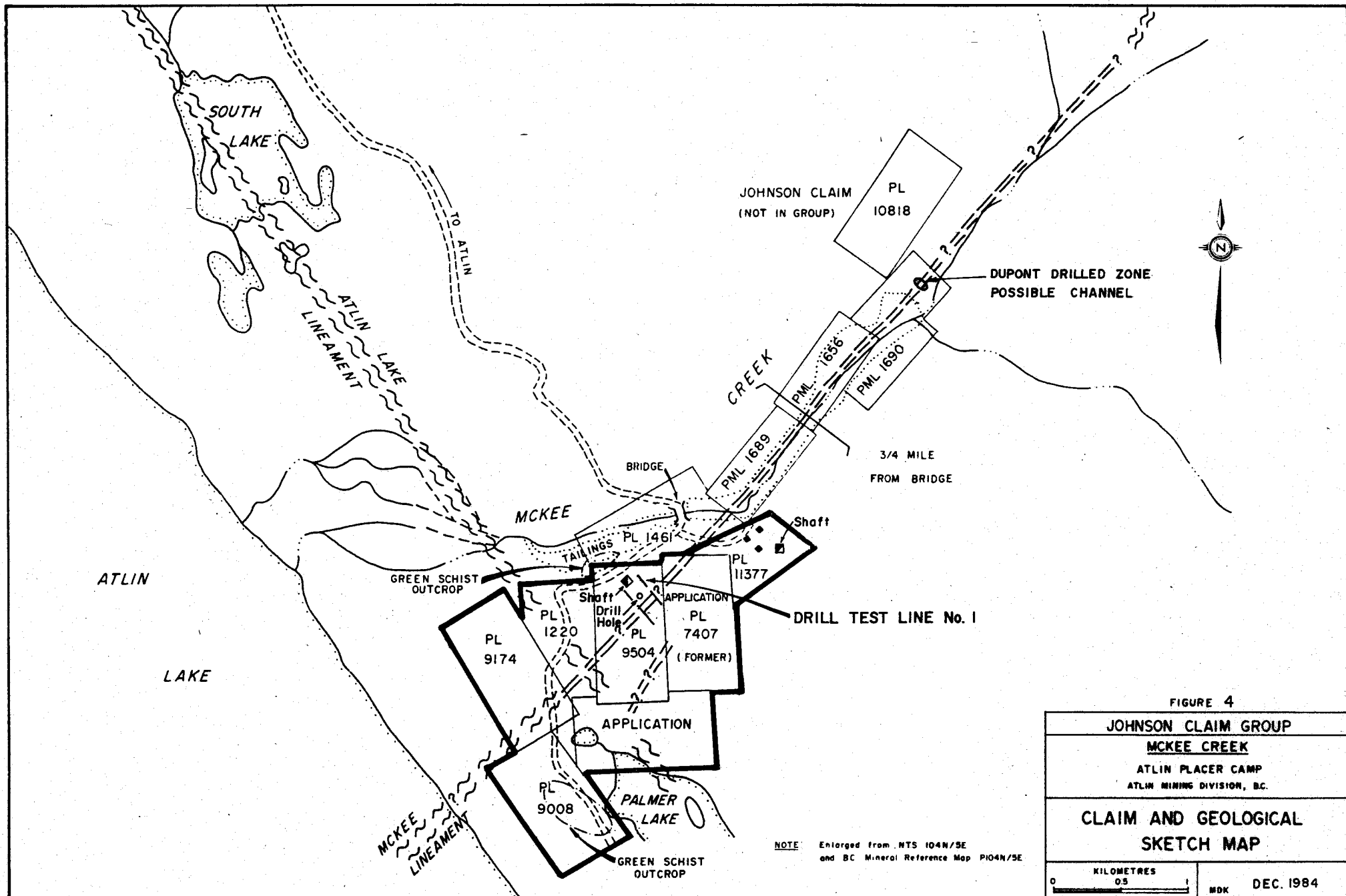


FIGURE 4

JOHNSON CLAIM GROUP

MCKEE CREEK

ATLIN PLACER CAMP  
ATLIN MINING DIVISION, B.C.

CLAIM AND GEOLOGICAL  
SKETCH MAP

0 0.5 KILOMETRES

MDK DEC. 1984

NOTE: Enlarged from NTS 104N/5E and BC Mineral Reference Map P104N/5E

location of the creek itself. This interpretation is based on air photo and satellite imagery. It is also based on study of Aitken's geological map of the area (G.S.C. Map 1023A.

4. Study of Assessment Report 6324 (see Appendix D) indicates to the writer that the Becker Drilling of 1977 did locate, at least, part of the old channel. Please see Figure 5 for my interpretation of the drill-located section of the old channel. Profiles of the drill results and also the logs the holes indicate a shallow channel. The logs report a yellow-orange gravel at about 35' depth in one hole. This was not sampled. This material can be diagnostic of pay material. Also reported presence of wood chips in the return noted by Dupont geologists, could, in my opinion indicated that old underground workings were cut by the drill hole. These workings would be the continuation of adit openings noted on Dupont maps to the southwest of the drill site. One suspects they followed pay channel.

5. The account of mining by underground methods in the north bank of McKee Creek on PML 1689 (and exploratory adits on the south bank on the same claim) do not exclude the possibility that the NE shear zone, which may have controlled the old channel location, ignores the present creek orientation and continues southwestward on the Johnson claims under till and fluvioglacial cover.

6. There is certainly precedent for such an interpretation at McKee Creek. The Otter Creek example cited above may be duplicated, not only at McKee, but at other creeks of Atlin Camp.

7. Presumably the NE trending shear zone, controlling the location of the old channel, cuts across the northeast trending lineament that controls the location of Atlin Lake itself. Please see Figure 4. That the NE lineament (called the McKee lineament) is an important trend is indicated by the shape of the shore immediately across from McKee Creek and by study of satellite remote sensing imagery. My interpretation of the location of the east side of the Atlin Lake lineament is shown in Figure 4.

8. There are other examples of the importance of NE structures in controlling mineralization in the camp. In any case, it would be strange if such an important direction suddenly made a turn to the north for no apparent structural reason. On the other hand glacial debris could have formed an obstruction and diverted lower McKee Creek to the north to forge a new post-glacial stream, as happened at Otter Creek.

9. The exposures, as mapped by Aitken (1) of the "Gold Series", especially the greenstone and greenschist members, along McKee Creek, in the writer's opinion, are better than along any other creek in the camp--with one important exception. It would appear that weathering and erosion along the presumably mineralized McKee Creek lineament is the main source for gold placer values at McKee Creek. Transport of gold was presumably short. Mapping by Aitken indicates that the best rocks of the "Gold Series" underlay most of the Johnson Group. The importance of this exploration guide cannot be overstated. It is expected that, if the McKee lineament does cross Johnson ground, then grade of the channel would more than likely remain high because gold movement was more vertical than lateral in these already, presumably, well mineralized sheared rocks.

10. Pay gravels of both Otter and McKee Creeks are usually semi-indurated and are, in places, completely indurated. The drilling of these horizons at Otter Creek was difficult with the Becker Drill.

11. Black (2) has stated that the glacier that moved north in Atlin Lake Valley glaciated McKee Creek to bedrock "below the mouth of the canyon". (2). But if we accept the Aitken thesis that the channels were formed during interglacial times then the Atlin Lake east shoreline could have been as low, or lower than it is now--we are now, after all, in an interglacial period. If that is so, then the incised bedrock channel, which I believe is the paleo-McKee Creek, could have continued on its former course across the Johnson Group. As a matter of fact, even if the pay channels of the camp are pre-glacial in origin (and they may be), it is not a necessary corollary that the Atlin Lake glacier will have scoured the presumed Johnson Group channel. I have examined the readily seen outcrops near the Johnson Group and saw no evidence of grooving or smoothing of these exposures by glacial action. At Otter Creek old drilling results indicate that the scouring action of the Pine Creek glacier was much less than formerly thought.

The purpose of the 4 day mapping program was to plot outcrops upstream from the Johnson Group, to locate and survey, in a preliminary way, claim posts and claim boundaries, to locate known shafts and old drill holes on the claims and to assess from this data the possibility of continuation of the McKee Creek placer channel across the Johnson Group to the southwest. Finally, the intent was to locate possible drill lines for testing the basic hypothesis outlined in this report.

The results of the Brunton-on-tripod and tape survey are shown in Figure 5. Originally this figure was plotted at 1:1200 scale. It has been reduced for this report. Some checks on the accuracy of the plot were made and the plot is considered accurate enough for the purposes stated.

The outcrop pattern (no particular attempt, due to time restrictions was made to identify rock types) indicates that the south rim of the channel is exposed as individual rock knobs and as steeply inclined rimrock. It is clear that there is a possibility that the shallow U-shaped channel may go under overburden between the bridge and the buildings on the property. There is also the possibility that a small secondary channel may exist southeast of the main one.

By projecting the assumed controlling NE structure onto the Johnson claims it is clear that the old shaft on the west side of the claims was to the north of the projected possible channel. The old drill hole was also north of the possible channel. One is tempted to surmise that these old exploration efforts (about which I have been unable to find any reports) were following identical concepts put forward here. Perhaps if the shaft had been put down southeast of the old hole it might have been a successful exploration effort. The other old shaft in the area of the buildings is well to the south of any possible channel. The western shaft, judging by the size of the waste dump must have gone to considerable depth.

Figure 5 shows the location of the two drill lines cut out. Also an access road and "turnaround" area were prepared with a bulldozer. Drill sites were 100 feet apart on Drill Line 1. Drilling equipment used had the capability of holes well in excess of 160 feet. As it turned out Drill line 2 was not used. Please see sections below for discussion of the Drill program.

#### EXPLORATION POTENTIAL OF JOHNSON CLAIM GROUP

The production record of McKee Creek from government records to 1946 is about 47,000 ounces of fine gold. Between 1946 and 1964 production continued at the creek. BCDM Annual Reports for these years indicate an average production of about 150 ounces per year. One can only guess at production for the years after 1964. It is known that in 1976 the Harvey operation was the largest in Atlin Camp. It is conservative to estimate about 5,000 ounces for production from 1964 to 1983. Much of the production included spectacular coarse gold with high nugget factor.

The length of creek from which the above production was obtained is somewhat difficult to estimate. From Figures 4 and 5 I estimated that the length of channel exploited for this production was about 1200m. The length of possible channel on the Johnson Group is estimated at about 1000m. If one includes PL13128 then the possible channel length is increased to about 1500m. If production from the assumed channel is at the same rate as the upper part of the creek then one could assign a potential of about 50,000 ounces to the Johnson Group. If one included PL13128 then this is increased to about 70,000 ounces. With today's prices and using modern mining and recovery systems the potential in dollars is about twenty million.

#### 1984 BECKER HAMMER DRILLING PROJECT ON JOHNSON GROUP

Between September 12 and September 19 I supervised the construction of the access road and Drill line roads. I also supervised the preparation of the sampling site near the old buildings and installation of the processing equipment for the drill samples. We were also obliged to spend time on clearing the roads of fallen and leaning trees by hand to satisfy Forestry regulations.

Ten drill stations were occupied on Drill Line 1. Please see Figure 5 for location of the drill sites. In all 15 holes were collared. Holes were numbered MR (for Minerex Resources) and 84 (for the year) and 1 to 10 for the drill Site. If two or more holes were collared at the same site then the suffix A, B, C, etc. were added to the hole name. For example, MR84-4A refers to the second hole drilled at site 4. Extra holes were usually drilled about 5 feet from the first hole because the first hole hit a boulder. The logs give the details of reasons for drilling extra holes.

In all 1,146 feet of 6 5/8" Becker Hammer drill hole were put down. Please see Appendix E for description of the Becker drilling system. An additional 23.5' of 3 1/2' jack hammer or percussion drill hole tests were made. About 252' or about 22% of the drilled footage was ineffective for determining bedrock profile. Much of this 22% could have been useful in grade determination if it had been sampled. This percentage of ineffective footage is more or less normal for Becker hammer drilling. This wasted footage was due mainly to boulders. Rate of drilling was 71' per ten hour shift or working shift. Rate of drilling per ten hour shift for the whole period of the drill program was about 60 feet per shift. This happens to be about the same rate as



drilling progress during the Otter Creek work at Otter Creek in 1983.

Percussion or jack hammer drilling was done inside the inner pipe of the Becker drill pipe. It is most useful in diagnosis of hidden obstructions in the holes or deciding on whether or not bedrock has been reached and rock type. Percussion samples are not useful for grade determinations.

Samples were collected every two feet in the hole from discharge of the cyclone. The gravel penetrated was lifted by air pressure upward and after being slowed in velocity by the cyclone fell into large rubber tubs. The geologist at the drill is responsible for noting gravel return type, penetration rate, sample recovery and moisture, and from minute to minute is in charge of direction of the drill project based on his interpretation of the drill results.

Samples were bagged from the large rubber tubs and weighed about 60 pounds per bag or 30 lbs of gravel per foot of drill advance. This average figure varied widely. The standard deviation is very high. The samples were put in large, strong fiberglass bags which were marked on the outside with felt marking pencil showing hole number and footage in the hole. These were also wired shut for security with baling wire.

They were loaded on a truck and taken to the sampling site. Of the 348 samples collected in the drill project only 17 were processed. These were weighed and sluiced in a pulsating riffle clean-up box. The samples were usually run together to form a "run" of six feet. This amount of gravel usually filled the riffles. The gravel was classified with an integral classifying shaking screen to minus 1/4" size before being sluiced. The concentrate (usually about 25 pounds of "heavies") was then processed in an 18" Morfee mechanical spiral panner or "wheel". This product, usually only a few ounces, was then carefully hand panned in a gold pan to gold. If gold was found it was then dried and put in vials. Of the 17 samples processed in this way only one fine colour was found in MR84-1A in clay. After the project was terminated the samples were returned to the Drill line #1 area and stored in order near drill site 10.

I prepared field logs of the drill advances in the field at the drill. These logs were then rewritten by me on clean forms and are appended here as appendix F. Table I is a summary of the drilling timetable, depths, etc. Elevations of the drill sites were determined using a transit as level and a stadia rod. I used the elevation of

TABLE 1

Hole No.	Depth (feet)	No of Samples	Started	Finished.	J. H. feet	Depth	REMARKS
1	23	12	Sept 19	Sept 19	—	—	ABANDONED: HARD CL
1A	102	47	Sept 20	Sept 22	—	—	STOPPED IN BEDROCK
2	102	45	Sept 23	Sept 23	—	—	STOPPED IN BEDROCK
3	31	11	Sept 24	Sept 24	—	—	BOULDER ABANDONED
3A	79	21	Sept 24	Sept 24	—	—	ABANDONED BOULDER
3B	82.5	5	Oct 2	Oct 3	6	88.5	STOPPED IN BEDROCK
4	47	19	Sept 25	Sept 25			ABANDONED BOULDER
4A	97	26	Sept 25	Sept 25			BEDROCK ?
5	97	44	Sept 26	Sept 27			STOPPED IN BEDROCK
6	106	43	Sept 27	Sept 28			STOPPED IN BEDROCK
7	100.5	44	Sept 28	Sept 30			STOPPED IN BEDROCK
8	72	33	Sept 30	Oct 1	7	79	STOPPED IN BEDROCK
9	69	4	Oct 4	Oct 5	6	75	ABANDONED BOULDER
9A	79	5	Oct 5	Oct 6	1.5	80.5	STOPPED IN BEDROCK
10	59	1	Oct 6	Oct 7	3	62	STOPPED IN BEDROCK
<u>15</u>	<u>1146</u>	<u>348</u>			<u>23.5</u>		

10 sta's.

Sept 21 to Sept 21. 'Spider' repairs  
 Sept 30 Driller helper sick  
 Oct 1 & 2 Additional Drill site preparation

drill site #1 as base at 2600'. The elevations are shown in the logs. Figure 6 shows the surface profile of the drill line and the drill results as interpreted from the logs. Samples were not processed, despite recommendations that parts of certain holes be so tested by the writer, on telephoned instructions from management officials of Minerex in Vancouver. This is unfortunate as this could have helped enormously in interpretation of drill results. Please see figure 6.

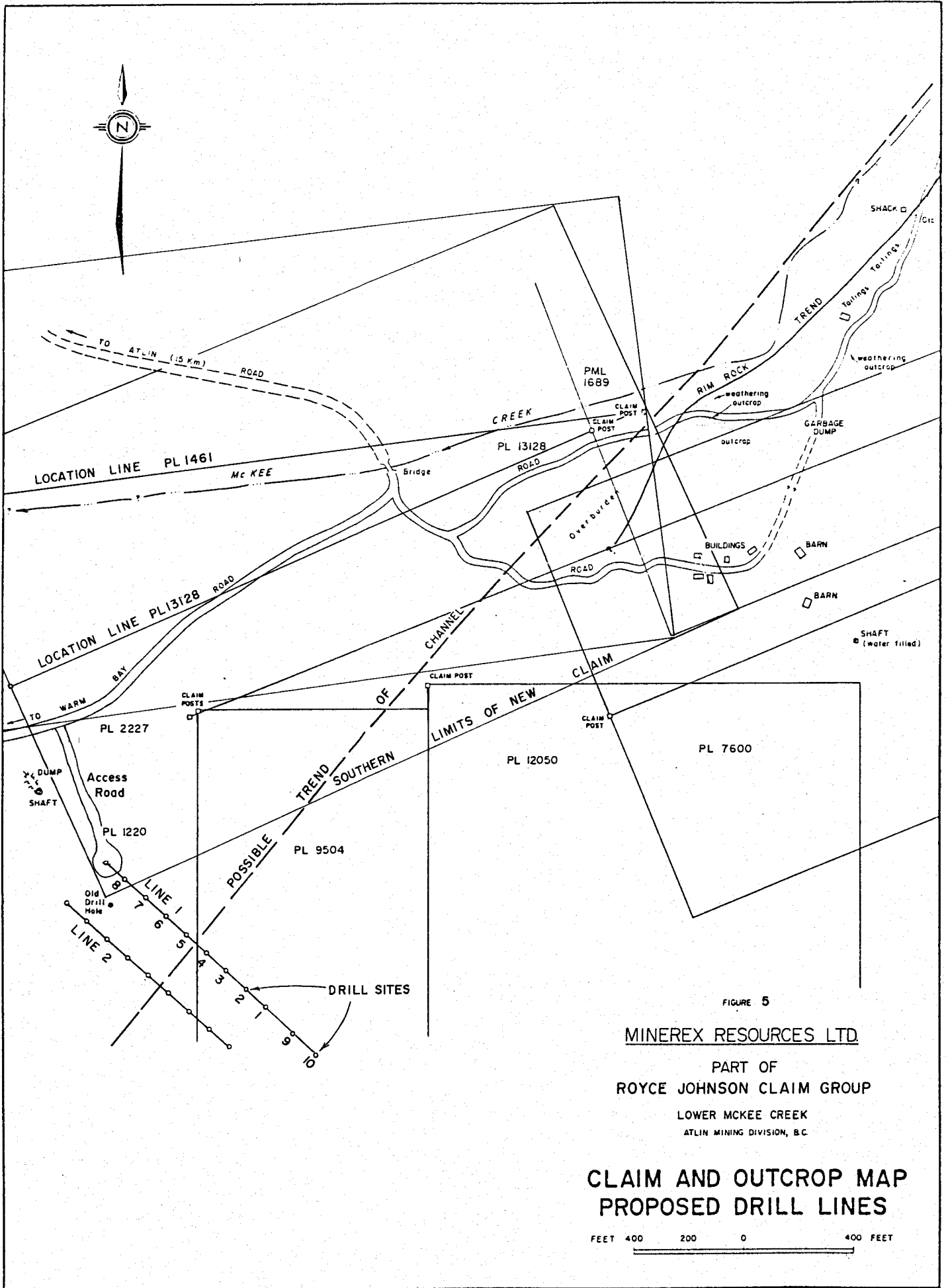
#### DISCUSSION OF DRILLING RESULTS

Spacing of the drill holes on Drill line #1 was set at one hundred feet. Holes at sites 9 and 10 were spaced at slightly more than 100 feet.

We used an auxiliary compressor, which was wheel mounted, when hole depth exceeded about 75 feet. Because of difficulties with moving this equipment I decided to drill the first hole about 400 feet to the east of the expected location, by projection, of the channel near drill site # 4. The drill was advanced progressively northwestward on the bearing of Drill Line #1 (133 degrees Azimuth) at 100' intervals.

For details of the drill results please see the logs of Appendix F. The following account is a summary of the section through the glacial material on PL 11220 and PL 9504 of the Johnson Group as determined by the Becker Drill.

We found, to about a depth of 30 feet a rather uniform layer of sandy till. This sandy layer was subdivided into two distinct and recognizable varieties. The upper layer, immediately below the humus and overburden zone was about 15' thick and was almost invariably coarse brown sand with very few pebbles. The lower sand layer was almost always black to very dark grey in colour but the composition was about the same as the upper layer. Only the colour was different. Below this to bedrock was a predominantly clay zone. This zone was usually 50-70 feet thick. This heavy clay zone was further broken down into two quite distinct layers or horizons. The upper zone was a pebbly and sandy clay zone. It had about 40% clay content. It may have been stratified or varved. This could not be determined from the drill return. Below this was a zone of much higher clay content and limited pebble content. In places clay minerals formed a sort of "plasticene-like" material of 100% clay. This material was quite distinctive but was not found in every hole. However, the two types of clay horizons were found in almost every hole.



The second or lower clay horizon was very easily recognized by heavy clay balls, more or less, baseball-sized in the return. I have called this the C.B. or clay ball horizon. The only break noted in the C. B. horizon was near the hole at site #5. This may be significant. Please note that there was a significantly different gravel type in hole MR84-5. Also in MR84-4A below the C.B. horizon and above the bedrock of greenschist was an interesting zone that should have been sampled. Both hole MR84-4A and MR84-5 should be sampled from top to bottom.

Aside from rock type there is a chance that there is a narrow channel, as indicated with question marks in Figure 6, in the bedrock profile. There is some small doubt that bedrock was reached in MR84-4A. There is a very small possibility that the drill hole was stopped on a boulder. If this is so then the channel could be wider. This possibility should be given considerable consideration in view of the proximity to the projected location of the channel to the extension of the McKee Creek lineament.

The purpose of the rather extended preamble to the discussion of drill results above, in the Placer Geology sections, is to provide a framework within which the possibility of a channel, near site #4, on, more or less, theoretical grounds can be assessed. When that data is taken with the drill results then clearly it is not possible to say that the results of the drill program were discouraging and were negative. On the other hand they were not positive. In my opinion, given these results and as I stated verbally to Minerex officials, the possibility of renegotiation of the Johnson contract should be investigated. I have discussed this possibility with Johnson and he is not averse to the idea.

An aquifer was cut in MR84-7. Water flow was very high. Water was cut about 30 feet below surface at the base of the black sandy layer. If this is related to an underground flow of water from the McKee Creek watershed then it is an additional favorable result.

After completing hole MR84-8 I recommended verbally that holes to the southeast of site #1 be drilled. At the time I thought that it was not advisable to drill an intermediate hole between #4 and #5. The reason for this will be set out below. Southeast of site #1 is a depression with stream. I felt that this should be investigated. The drill results here were disappointing. We are then left with the possibility of a channel near the projected location of the McKee Creek lineament as indicated by drill results near drill site # 4.

At this point the main concern is a property problem. If a channel were to be discovered at or near drill site #4 we may be simply discovering valuable material for others at without them risking one cent for exploration costs.

Admittedly, Figure 5 is not a simple diagram because of intricacies of ownership boundaries and claims. But the famous "bottom line" is that ground covered by PL 13128 or PL 1461 is essential to drill testing of the McKee Creek lineament concept. There are two reasons for this. One is noted above. There is little point in finding pay placer channels for others. Secondly, it is always best to look for extensions of known mineralization as close as possible to the last known exposure. This means that it would be wise to test for the McKee Creek extension as close as possible to the last mined placer location. Please see Figure 5 for a recommended line of drill holes if PL 1461 or PL13128 are acquired by Minerex or Johnson.

In the meantime, sampling of MR84-4A and MR84-5 is recommended as soon as possible. Attempts at renegotiation of the Johnson contract should be initiated. Sampling of the two holes can be done even in winter. It may even be a little cheaper because labor costs may be lower during the slack time at Atlin.

#### CONCLUSIONS

1. "Theoretical" or tectonic analysis of the geological concept of the McKee Creek Lineament and old channel extension onto Johnson Group Claims was not disproved by the Becker Hammer Drilling program of Sept-Oct this year.
2. There is a possibility from the results obtained that a deep channel may exist near Drill site # 4.
3. Negotiations with the owner of the optioned claim group should begin as soon as possible before expiry of the option period i.e. December 31, 1984. Terms of payment extension or alteration of option terms are non-geological items best left to discretion of management.
4. Any additional drill testing of the ground covered by PL 1461 and PL 13128 should be done near the suggested drill line shown in Figure 5.

RECOMMENDATIONS

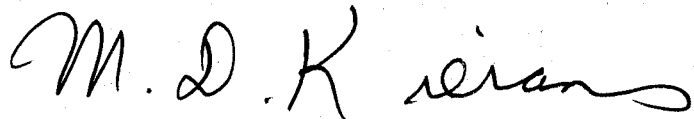
1. Negotiations with Johnson should begin as soon as possible to either extend the term of the option payment or reduce it.
2. Legal steps be initiated to settle the ownership problem of the placer mineral right of PL 1461 and PL 13128.
- 3 This report be used to as an assessment report to extend ownership of the subject claims three more years according to mineral title regulations of the province and the terms of the option agreement.

COST STATEMENT

Below is a statement of the major costs of the program. Approximations are used for most items but are within about 10% of actuarial accounts.

SDS Drilling Contract.....	\$40,000
(See Daily Work Report SDS Drilling Appendix G)	
Field Supervision Fee M.D. Kierans P.Eng. (30 field days @ \$300/diem	\$ 9,000
Bulldozer Road and Drill Line work.....	\$ 2,500
4X4 Truck rentals.....	\$ 2,000
Field Samplers Wages	
Lance Shaw 20 days @ 100/day (approx).....	\$ 2,000
Wade Jackson 20 days @ 100/day (approx).....	\$ 2,000
Diana Johnson 20 days @ 100/day (approx)..... (\$100/day includes fringe benefits)	\$ 2,000
Fuel for drill (approx).....	\$ 2,500
Purchase of sampling and other field equipment	\$ 2,500
Total.....	\$64,500

Respectfully submitted



M. D. Kierans P.Eng.

CERTIFICATE

I, Martin D. Kierans, of 1503-1616 Pendrell Street, Vancouver, B.C. do hereby declare that:

1. I am a Geological Engineer.
2. I am a Resident Member of the Association of Professional Engineers of the Province of British Columbia.
3. I am a graduate in Geological Sciences of the University of British Columbia (M.A. 1952) and McGill University (B.Sc.1949).
4. I have practiced my profession of Geological Engineer and Mine and Exploration Geologist for 32 years.
5. My knowledge of the property discussed in this report is based on a 4 day field location post survey and limited mapping northeast of the Johnson Claims. My general knowledge of Atlin placer deposits is based on one full field season of Becker Hammer Drilling at Otter Creek. My knowledge of the subject claims and the camp is also based on study of airphotos, earth artificial satellite imagery, government maps and reports, and on private reports on these and other similar creeks of the camp. It is also based on verbal communications with placer operators of Atlin Camp.
6. My knowledge of the subsurface of the claims is based on a Becker Hammer Drilling Project carried out in September and October of 1984 for Minerex Resources Ltd.
7. I have no beneficial interest, direct or indirect in the securities or shares of Minerex Resources Ltd. nor do I expect any. Also I have no interest in the claims of Royce Johnson at Lower McKee Creek. Nor do I expect any.

DATED December 22, 1984 at Vancouver, British Columbia.



M. D. Kierans P.Eng.



### BIBLIOGRAPHIC REFERENCES

Below is a partial list of the government and other references consulted for this report by the writer.

- (1) Aitken, J.D. (1956). "Atlin Map-Area, British Columbia." G.S.C. Mem. 307.
- (2) Black, J.M. (1953). "Report on the Atlin Placer Camp." Province of B.C. Ministry of Mines and Petroleum Resources.
- (3) Bostock, H.S. (1957). "Selected Field Reports of G.S.C." Geol. Surv. of Canada Memoir 284.
- (4) Boyle, R.W. (1979). "Geochemistry of Gold and its Deposits." G.S.C. Bull. 280.
- (5) B.C. and Yukon Chamber of Mines. (1981). "Textbook of 1981 Placer Mining School." Consists of extracts from various papers on Placer Mining, Geology, Evaluation, etc.
- (6) BCDM Annual Report (1936). pp B 39-55.
- (7) Dailly, A.F. (1946). "Report on Otter Creek, Atlin Mining Division, B.C. for Atlin Placers Ltd. (N.P.L.)" Placer Mining consultant of Oakland, California.
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- (9) Proudlock, P.J. and W.M. (1976). "Stratigraphy of

the Placers in the Atlin Placer Mining Camp, British Columbia." B.C. Ministry of Mines and Petroleum Resources.

- (10) Wright, G. (1982). "Empire Gold Ltd. Proposed Placer Mining Operation at Otter Creek, Atlin, B.C." Cypress Consulting Services Inc.
- (11) B.C. Ministry of Energy, Mines, and Petroleum Resources (1980). "Notes on Placer Mining in British Columbia." Bulletin 21.
- (12) Sharp, W.S. (1974). "Interim Report, Field Investigations, Atlin, B.C. Properties, June 4-12, 1974."
- (13) Sharp, W.S. (1974). Letter to Rutherford Day, Pres. Surprise Resources Ltd. (N.P.L.) on Otter Creek Placer Reserves.
- (14) Cochrane, D.R. (1979). "A Brief Sampling Program on Otter Creek Placer Leases, Atlin M.D. B.C." Assessment Report.
- (15) Kierans, M.D. (1982). "Interim Report--Otter Creek Placer Proposal."
- (16) Sharp W. (1974). "Report on Preliminary Surveys and Geological Examinations of Placer and Lode Mining Properties near Atlin, B.C. for Surprise Resources Ltd."
- (17) Manning L.J. (1972) "Report for Gethyn Mining Ltd. on the Noland Mine Property Atlin B.C. July 12, 1972."
- (18) Kierans, M.D. (1983). "Otter Creek Gold Placer Prospect, Dan Group, Surprise Lake Area."

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(19) Carmichael H. and Moore C.W. (1930) "Placer Mining in British Columbia, With Special Reports on Atlin, Queen Charlotte, Cariboo, Quesnel, and Omineca Mining Divisions" Bulletin No. 2. B.C. Department of Mines.

(20) Hoyle, Fred. (1981). "Ice, The Ultimate Human Catastrophe". The Continuum Publishing Company, 575 Lexington Avenue, New York N.Y. 190 pp.

APPENDIX A

LIST OF PLACER LEASES      JOHNSON GROUP

Lease No.		Expiry Date
PL 9174	} GROUPED SEPT 1984	Dec 31/84
PL 9008		Dec 31/84
PL 9504		Dec 31/84
PL 11377		Dec 30/84
PL 11220		Dec 30/84
PL 12049		Jul 13/85
PL 12050		Jul 13/85

Grouping Notice for PL 9174 and PL 9008

PL 13128      Application Pending      Not Applicable

ADDENDUM TO THIS REPORT ON MCKEE CREEK  
BASED ON DUPONT ASSESSMENT REPORT 6324  
APPENDIX B

1. The Becker drilling program on McKee Creek carried out in April of 1977, was concentrated in the part of the creek to the northeast of the mouth of Eldorado Creek. All the work done by Dupont was well to the northeast of the Johnson Group.

2. Apparently, within the mined pit, bedrock exposures showed north trending shear zones. Some of these were as much as 25m wide. Yet the overall zone of shearing, as interpreted from the drilling results, would have to be, at least, 700m long in a northeast direction. One possible explanation is that gold mineralization in the north shears, and the derived placer deposits, were the result of intersection of elements of the Atlin Lake lineament with the McKee Creek lineament. That is, NW and N fractures, parallel to the Atlin Lake lineament, intersected the NE fractures of the McKee structure. This means that the resulting channel could have a sinusoidal shape. The Otter Creek channel is, certainly in the Drain Lease Pit, sinusoidal in pattern. This could also explain the difficulty in following the old channel during mining.

3. The seismic report, accompanying the geological report, indicates the difficulty of following a buried channel under heavy clay horizons in the overburden and also the problems associated with interpreting bedrock depth when the channel is a deeply incised and a narrow one.

4. Finally, I do not agree with the interpretation of the Becker drilling results. There is a strong possibility that Hole 1 cut the pay channel and that the hole was stopped in cemented pay of the first pay horizon. In fact, in my opinion, the gravel cut below the base of the clay horizon should have been sampled. There is a good possibility that it would have shown gold values. Redrilling of the area of the Dupont drilling is warranted. As a matter of fact, deep trenching may be warranted here.

APPENDIX C

**McElhanney Associates**  
Professional Land Surveyors

200 - 1166 Alberni Street, Vancouver, B.C.  
Canada V6E 1A5 (604) 683-8521  
Telex 04-51474 Cable SURVENG



04 October 1984

Our File: 33392-0

Mr. Denis Lieutard  
Manager of Operations  
MINISTRY OF ENERGY MINES & PETROLEUM RESOURCES  
Parliament Buildings  
Victoria, B.C.  
V8W 2Y9

Dear Sir;

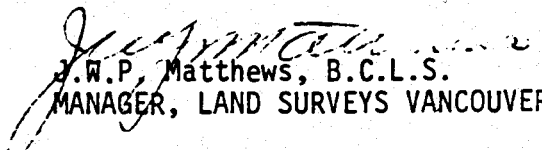
RE: P.L. 1461, Tag P 43646, Tag P40681  
Atlin Mining Division

Enclosed please find:

1. Plan showing location posts found
2. Notations found on location posts
3. Polaroid pictures of location posts
4. My report
5. Xerox copies of the applications for a Placer Lease for 3 leases.

for your information.

Yours sincerely,  
McELHANNEY ASSOCIATES

  
J.W.P. Matthews, B.C.L.S.  
MANAGER, LAND SURVEYS VANCOUVER

Encl.

cc: M. Kierans

JWPM:ct



Our File: 33392-0

03 October 1984

Report of Searching for Location Posts for:

P.L. 1461 - Tag P2051

Tag P. 43646

Tag P 40681

All in the Atlin Mining Division

---

26 Sept.

10:00 a.m. - M. Kierans showed me initial posts for P 43646 and P 2051 which are on the left bank and - 10 metres from McKee Creek and approx. 300 metres upstream from the McKee Creek Bridge. I left a B.C.L.S. iron post and survey tag No. 2501 at these posts. (see enclosed for data on the claim tags)

10:30 a.m. - M. Kierans showed me the final post for P 43646 which is on the left bank and approx. 200 metres from McKee creek and approx. 500 metres downstream from the McKee Creek Bridge. I left a B.C.L.S. iron post and survey tag No. 2505 at this location post. (see enclosed for data on this claim tag).

Evidence of location line for P 43646 was readily visible and easy to follow.

12:30 p.m. - I found the final post of Tag P 2051 and initial post P 6681 which are on the right bank and approx. 80 metres from McKee Creek. I left a B.C.L.S. iron post and survey tag No. 2503 at these posts (see enclosed for data on these claim tags).

Evidence of location line for P 2051 was noted at my traverse station 2504 and close to my traverse station 2507.

I spent the rest of the day cutting line for the survey traverse of these 3 sets of location posts and looking for the location line and location posts of Tag P 40681.

27 Sept.

I obtained a man from M. Kierans and surveyed the location posts of Tags P 43646 and P 2051. (see enclosed plan) The two of us spent an hour on the right bank of McKee Creek searching for the location line and final post of P 40681.

Cont. Page 2../



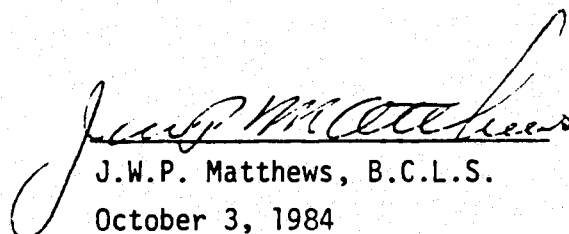


28 Sept.

Extended my search for location line and initial post of P 40681 (downstream and north of final post P 2051) for two hours.

CONCLUSION

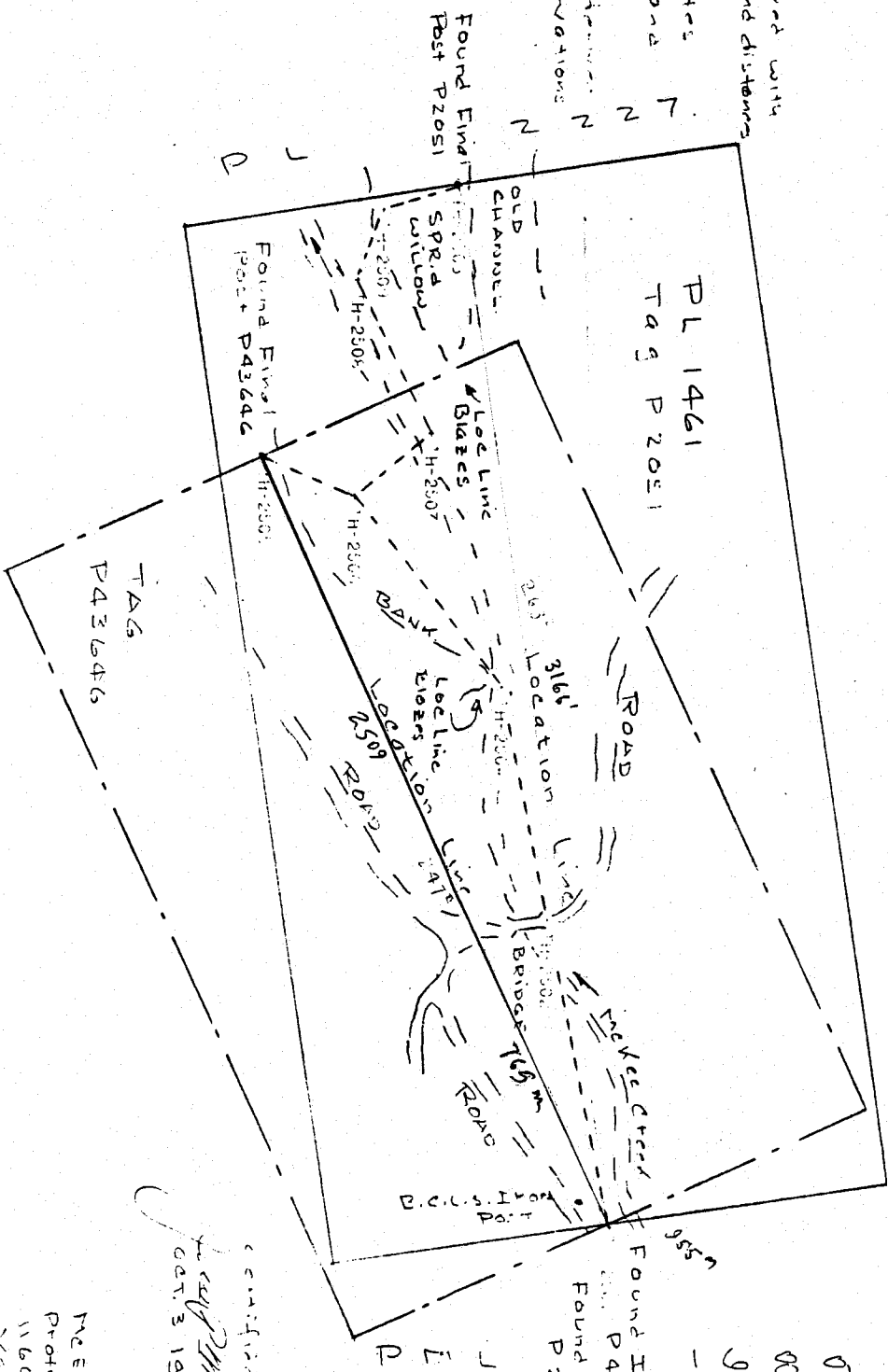
- A) The initial and final posts as well as the location line of P 43646 are in place and readily visible.
- B) The initial and final posts of P 2051 are in place and evidence of the location line (blazes and flagging) are visible.
- C) Following the locators sketch (which is over P.L. 1461) no sign of the location line and location posts or any part of the staking was found of P 40681 in this area.

  
J.W.P. Matthews, B.C.L.S.  
October 3, 1984

JWPM:ct

PLAN OF LOCATION LINE SURVEY OF  
 LOCATION POSTS FOR PL1461 (P2051)  
 AND P43646 ATLIN DISTRICT  
 Scale 1:5000

Angles observed with  
 a theodolite and distances  
 with E.D.M.  
 TH 2504 Enotes  
 Traverse hub and  
 plastic tags  
 Bearings and distances  
 by solar observations  
 at TH 2562



certified correct  
 by *[Signature]*  
 OCT 3 1984  
 McElhannon  
 Professional Land Surveyor  
 1166 Albatross  
 Reno, NV 89502  
 3539210

SUBJECT	CHECK DATE	JOB NO.	PAGE
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*R* B.C.L.S. IRON POST  
AND SURVEY TAG. 2503

*C2503  
DLO 1987*

TAG NO. P2051

PLACER - FINAL POST

STAKED BY J. P. HARVEY  
AS AGENT FOR \_\_\_\_\_

DISTANCE FROM  
INTERMEDIATE POST  
OR 1000m.  
INITIAL POST

DATE COMPLETED OCT. 20/78

TIME COMPLETED 3:00 PM.

*P2503  
DLO 1987*

TAG NO. P6681

PLACER - INITIAL POST

STAKED BY AL DE ANGELIS  
AS AGENT FOR \_\_\_\_\_  
DATE AUGUST 31 1979

DIRECTION TO -  
INTERMEDIATE POST  
OR 240° MAG  
FINAL POST

METRES TO RIGHT 250

METRES TO LEFT 250.

*Jym.*

SUBJECT	CHECK DATE	JOB NO.	PAGE
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OCT. 3/84

B.C.L.S. IRON POST  
AND SURVEY TAG 2501

e 2501

TAG NO. P43646

PLACER-INITIAL POST

(NEW POST)

STAKED BY MARTIN KIERANS  
AS AGENT FOR SELF  
DATE AUGUST 29 1984

DIRECTION TO —  
INTERMEDIATE POST —  
OR 250° S.W.  
FINAL POST

METRES TO RIGHT 250  
METRES TO LEFT 250

e 2501

TAG NO. P2051

PLACER-INITIAL POST

(OLD BR.)

STAKED BY J.R. HARVEY  
AS AGENT FOR \_\_\_\_\_  
DATE OCTOBER 20/78

DIRECTION TO —  
INTERMEDIATE POST —  
OR EAST  
FINAL POST

METRES TO RIGHT 250  
METRES TO LEFT 250

*[Handwritten signature]*

SUBJECT	CHECK DATE	JOB NO.	PAGE
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0 ET. 3/84

R B.C.L.S. IRON POST  
AND SURVEY TAG 2505

(2505  
NEW POST)

TAG NO. P43646

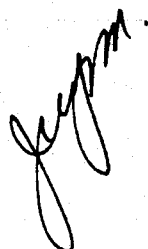
PLACER - FINAL POST

STAKED BY MARTIN KIERANE  
AS AGENT FOR SELF

DISTANCE FROM  
INTERMEDIATE POST  
OR 1000m  
INITIAL POST

DATE COMPLETED AUG. 29/84

TIME COMPLETED 4:00 PM



APPENDIX D

DATED: September 7, 1984

BETWEEN:

MARTIN D. KIERANS

AND:

MINEREX RESOURCES LTD.

---

A G R E E M E N T

---

**SIKULA, WERBES & BROWN**

BARRISTERS & SOLICITORS

SUITE #901 - 1199 WEST PENDER STREET

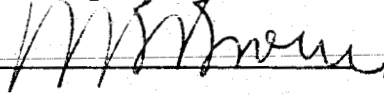
VANCOUVER, CANADA

V6E 2R1

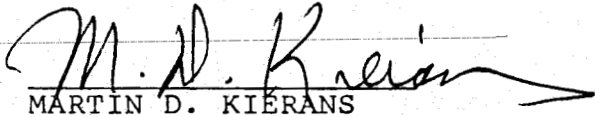
3. If and when Kierans obtains beneficial ownership free and clear of encumbrances of claim PL13128, he hereby undertakes and agrees to transfer this beneficial ownership for the total consideration of ONE DOLLAR (\$1.00) to Royce Johnson of Box 261, Pearl Street, Atlin, British Columbia, free and clear of all encumbrances.
4. Kierans hereby irrevocably authorizes Minerex to take such actions as may be necessary after consultation with Kierans to perfect the title of Kierans in claim PL13128 in order that Kierans may be able thereafter to transfer claim PL13128 to Royce Johnson.
5. The parties hereto hereby agree to execute all such further documents as may be required in order to give full effect to this Agreement and to the transfer of claim PL13128 to Royce Johnson.
6. Minerex hereby confirms and agrees that Kierans shall be under no obligation to Minerex should title to claim PL13128 not be perfected by him after all reasonable efforts have been undertaken by Kierans in order to perfect the title provided he has acted in good faith at all material times.

IN WITNESS WHEREOF the parties hereto have hereunto affixed their respective hands and corporate seals, as of the day and year first above written.

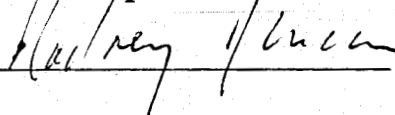
SIGNED, SEALED and )  
 DELIVERED by )  
 MARTIN D. KIERANS )  
 in the presence of: )



**MAYNARD E. BROWN** )  
 Barrister & Solicitor )  
 901 - 1100 WEST PENDER STREET )  
 VANCOUVER, B.C. )

  
 MARTIN D. KIERANS

THE CORPORATE SEAL of )  
 MINEREX RESOURCES LTD. )  
 was hereunto affixed )  
 in the presence of: )





THIS AGREEMENT made this 7th day of  
September, 1984.

BETWEEN:

MARTIN D. KIERANS, Geological Engineer, of  
1503 - 1616 Pendrell Street, in the City of  
Vancouver, in the Province of British  
Columbia;

(hereinafter called "Kierans")

OF THE FIRST PART

AND:

MINEREX RESOURCES LTD., a body corporate  
duly incorporated under the laws of the  
Province of British Columbia and having an  
office situate at Suite 1500 - 1176 West  
Georgia Street, in the City of Vancouver,  
in the Province of British Columbia;

(hereinafter called "Minerex")

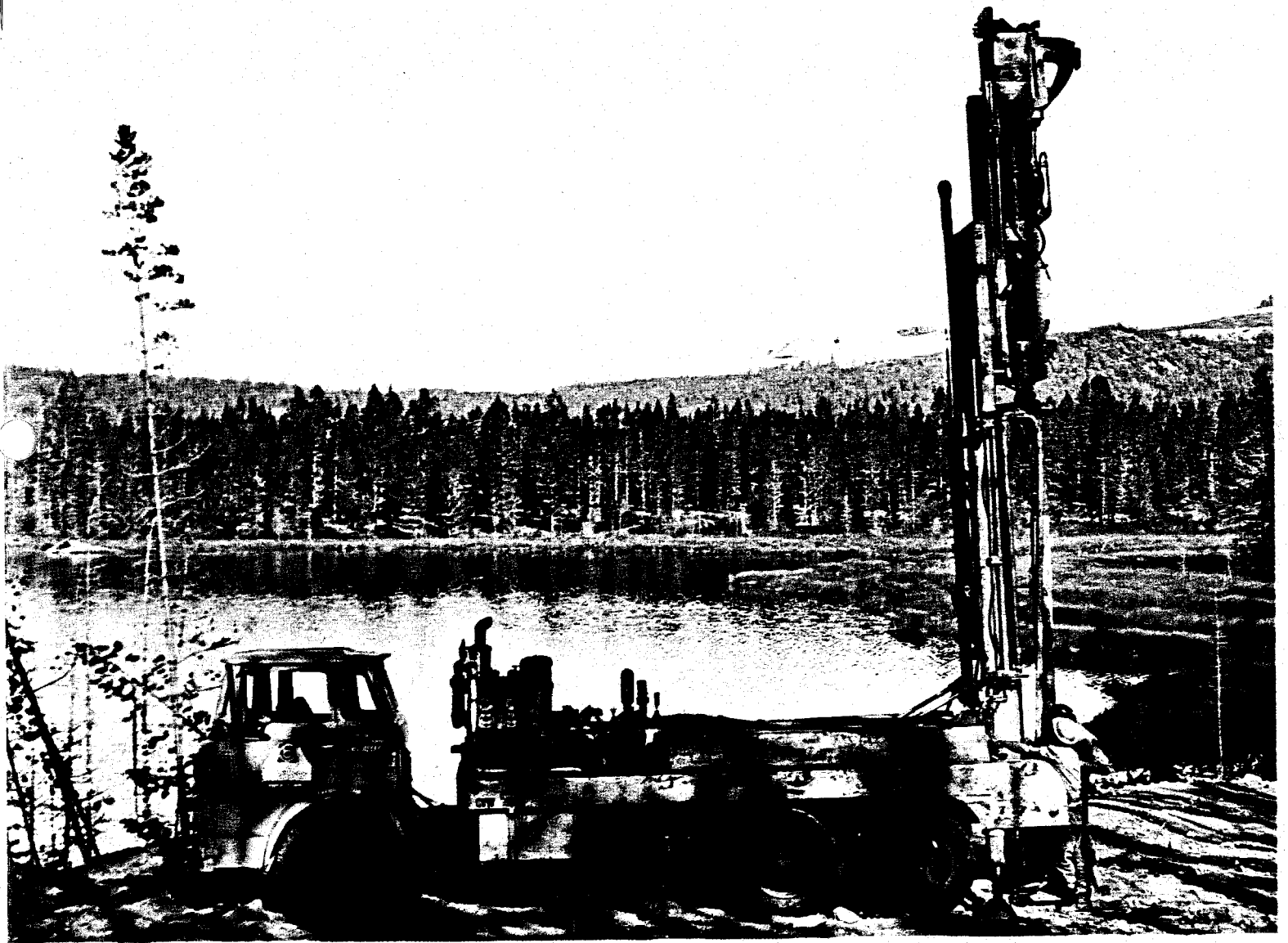
OF THE SECOND PART

NOW THEREFORE THIS AGREEMENT WITNESSETH  
that for and in consideration of the sum of ONE  
DOLLAR (\$1.00) now paid by Minerex to Kierans, the  
receipt and sufficiency of which sum is hereby  
acknowledged. The parties hereto hereby agree as  
follows:

1. Kierans represents and warrants that he has overstaked PL1461 with PL13128 and has filed pursuant to the Mining (Placer) Act an application for acceptance of his staking of PL13128 which has yet to be received and that PL13128 is situate in the Atlin Mining Division of the Province of British Columbia, which property is hereinafter called "claim PL13128".
2. Kierans further represents and warrants that he has caused and will continue to cause all reasonable efforts to be made in order to obtain title to claim PL13128 in his name beneficially, free and clear of all encumbrances.

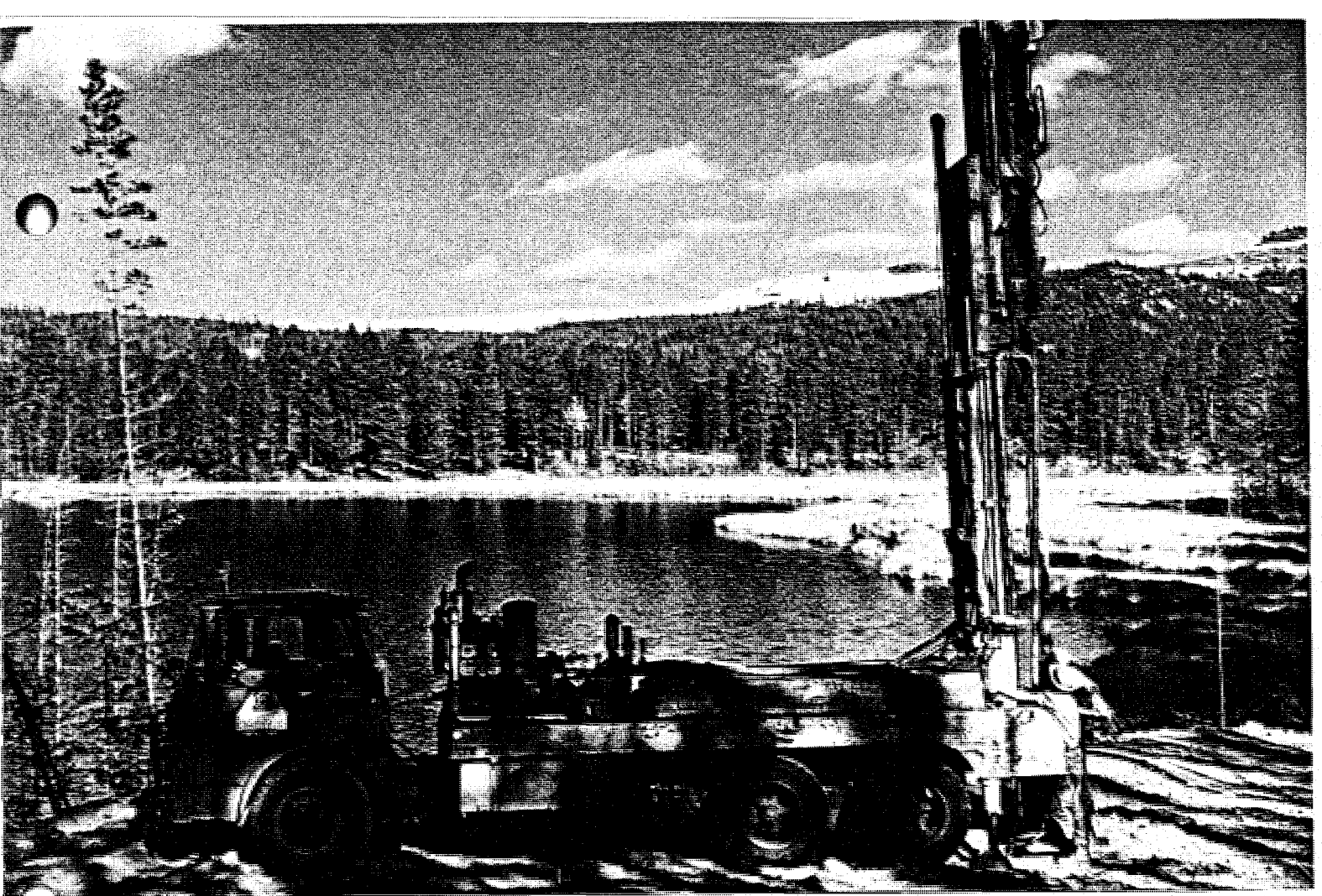
APPENDIX E

# Western Miner



## **NEW METHOD OF OVERBURDEN DRILLING**

*(Reprinted from Western Miner, November, 1968.)*



By **LARS G. ANDERSON**  
**Becker Drilling Ltd.**  
**Vancouver, B.C.**

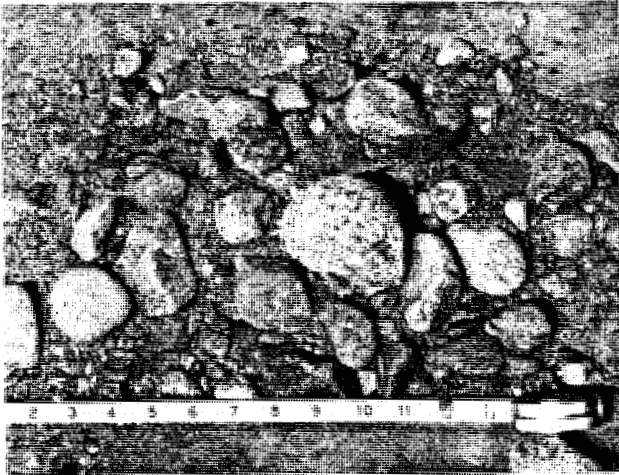
## A MODERN APPROACH to OVERBURDEN DRILLING

The present exploration activity in the Highland Valley has spotlighted a recent Canadian invention, the Becker Hammer Drill, a rig developed specifically to handle difficult overburden drilling. The recent copper discovery on Valley Copper and Bethlehem properties in the Highland Valley is covered by an overburden mantle which in some cases has a thickness of over 200 feet. This cover consists partly of a dense bouldery glacial till and partly of a sand-gravel and boulder formation. These formations proved very difficult to handle with conventional drills so a Becker Hammer Drill was brought in to speed up operations. The Becker Hammer Drill is an all-Canadian patented development born out of the difficulties encountered when attempting to drill seismic shotholes in open gravel formations. From this origin these rigs are now applied to a variety of applications throughout the world.



Lars Anderson

The author graduated from Gothenburg Institute of Technology in mechanical engineering in 1949. He then joined the Swedish Geotechnical Institute in Stockholm, where he worked on development of drilling and soil-sampling equipment. Since 1952, Mr. Anderson has been engaged in the drilling and soil-exploration field in British Columbia, first with Boyles Bros. Drilling Company and later with the consulting firm of Ripley, Klohn & Leonoff. He joined Becker Drilling Ltd. as manager of the Vancouver office in January 1966.



Becker sample of sand-gravel formation.

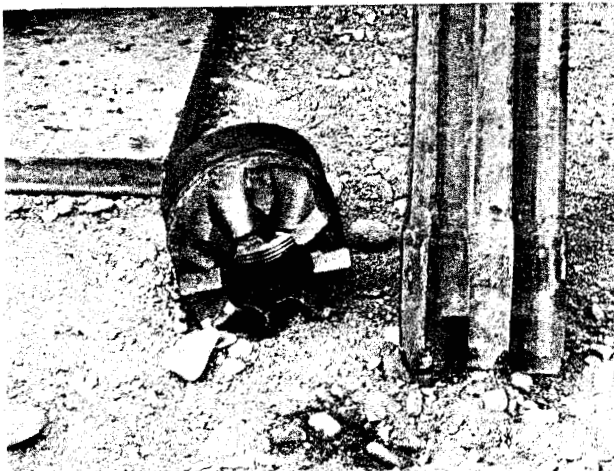
## BECKER HAMMER METHOD

The Becker method uses an airlift to remove material up the inside of the casing, simultaneous to driving the casing.

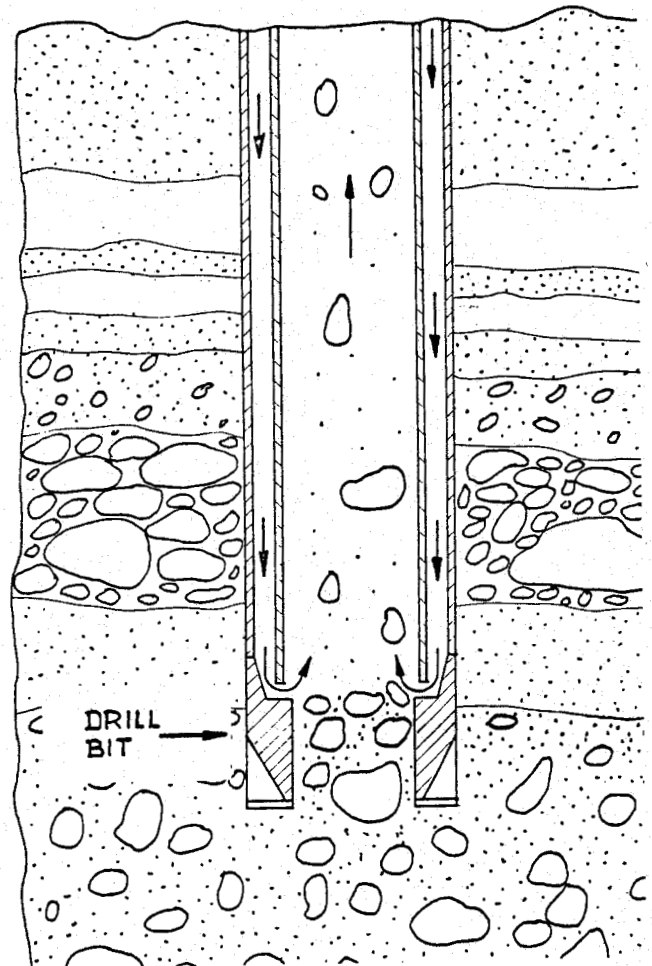
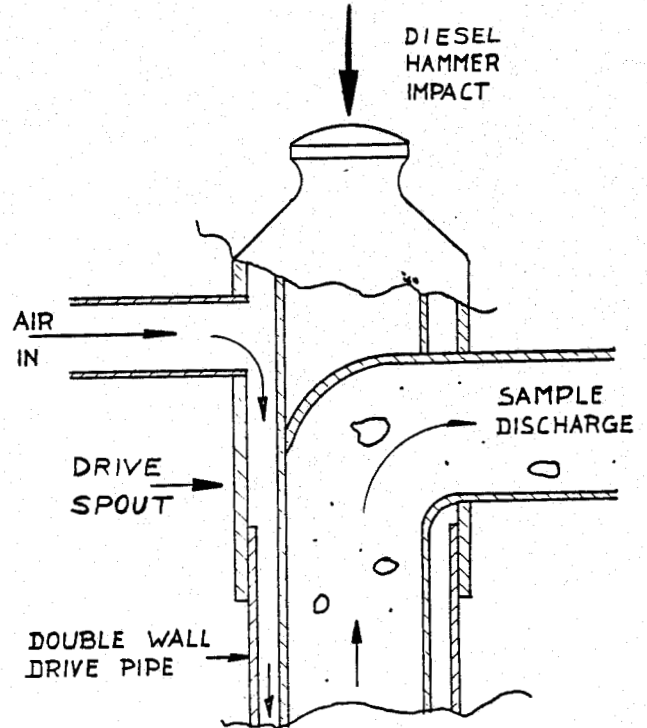
The casing is of double-wall construction, and is advanced by driving with a diesel-powered hammer. During driving, compressed air is continuously forced down the annulus between the walls and returns up the center of the casing, instantly lifting the soil as it enters through the annular bit. The significant features of the Becker method are:

- a. The highly efficient method of driving the casing with a diesel pile hammer.
- b. The double walled casing with a large hollow center. Due to this large center opening, material up to three-inch size can enter the bit, where it is airlifted instantly and effortlessly. The conventional process of grinding the stones down to dust size is eliminated.
- c. Drilling the hole and casing it is one and the same operation. There is no duplication of efforts by first drilling the hole, then casing it, then cleaning out the casing.

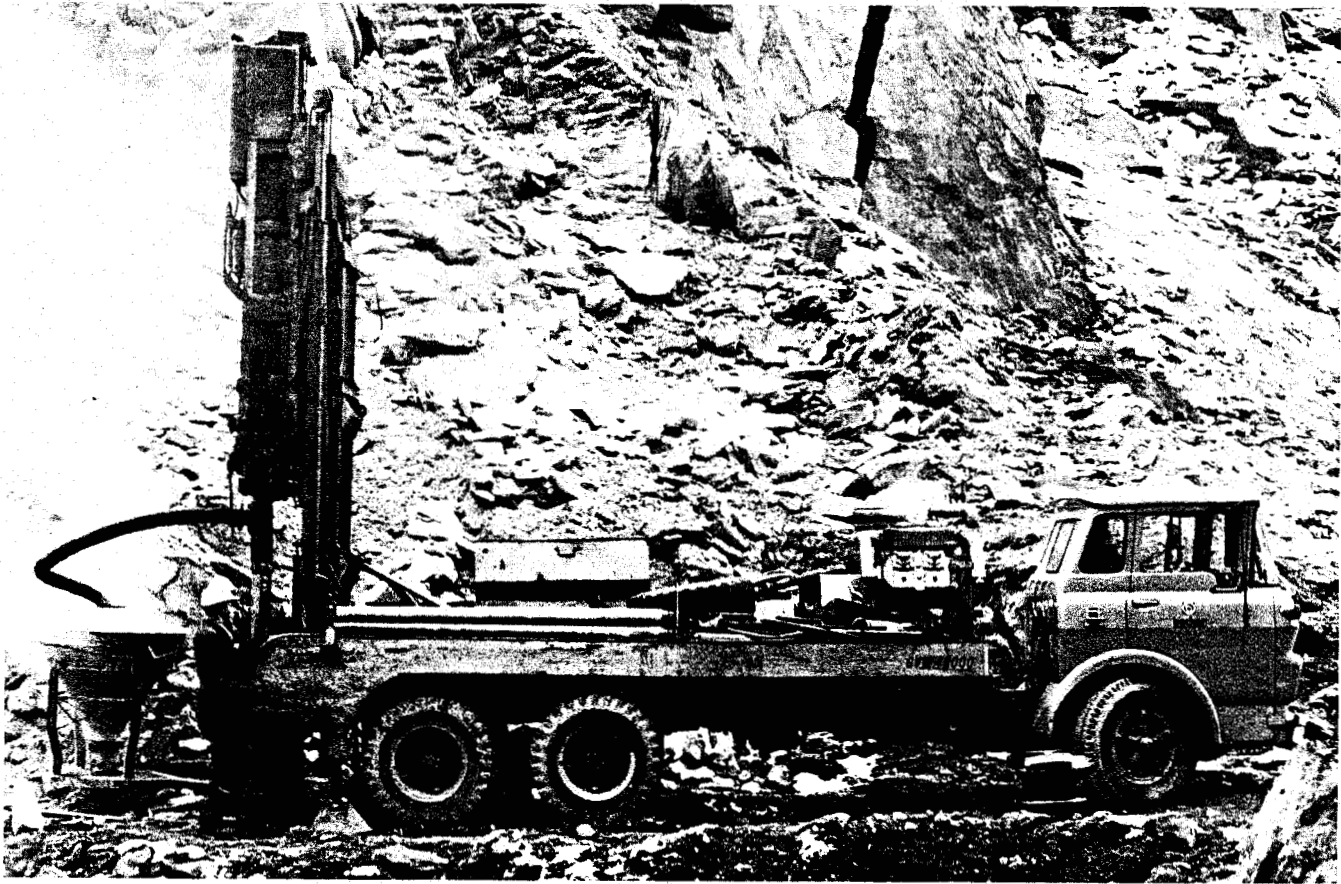
These features result in the characteristic for which the Becker Drill is best known: Extremely rapid penetration of sand-gravel and cobble formation.



Drill bits.



Principle of the Becker Hammer Method.



Drilling of talus formation at the Britannia mine.

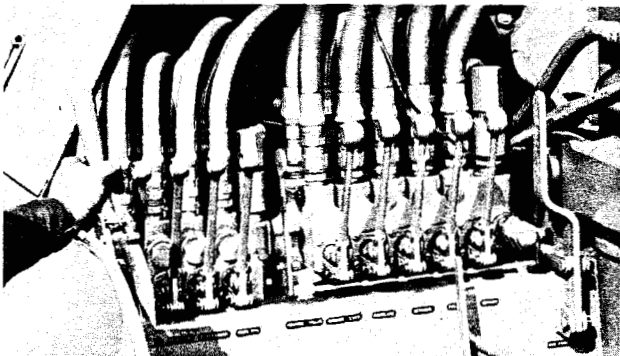
## THE HAMMER DRILL

The Becker drill is a self-contained unit, with all required components mounted on a tandem axle truck. The diesel hammer, delivering 95 blows per minute at 8,000 foot-pounds per blow, is mounted on a telescoping mast. A 400-CFM compressor and a 130-GPM pump are driven by the truck engine via V-belts off the drive shaft. A power take-off drives a hydraulic system which operates all functions such as: levelling truck, raising mast, lowering and raising of hammer, handling casing, etc.

On completion of a hole, the casing is withdrawn by a puller system comprising two 50-ton hydraulic cylinders operating tapered slips that grip the casing.

One hundred and twenty feet of casing and all required bits and accessories are carried on the rig.

The Becker double-wall casing is a complex product, fabricated from two heavy-duty pipes, plus one male and one female tool joint. The two pipes are welded together concentrically via four reinforcing straps; the tool joints



All operations are controlled hydraulically.

with tapered API threads are welded one to each end. Prior to welding, the tool joints are pre-drilled with a system of holes that allows free passage of air from one length of casing to the other without interfering with the thread. O-ring seals at each joint prevent air losses.

With the welded-unit construction, the double-wall casing handles as one piece of pipe, and adding a length of casing is rapid due to the tapered, coarse thread. The standard size casing is 5½ in. OD, 3¼ in. ID, but larger sizes are available. The size presently used at Highland Valley for example is 6⅝ in. OD with an inside diameter of 4⅞ in.

The bit is of tempered cast-steel, and long research has gone into the development of a special steel tough enough to stand up to the continuous impact. The bits come in various designs to suit different formations encountered. Depending on conditions, bit life varies from 300 to 1,500 feet.

The in-going air and the air return are distributed to their proper places by the drive spout, which hangs underneath the diesel hammer and which also transfers the impact from the hammer to the casing. The drill, complete with casing, bits, and other accessories weighs 21 tons.

## OPERATION

Being truck-mounted, the rig is highly mobile and travels the highway at 50 MPH. On sites accessible to trucks the rig can drive in, level up, raise the mast, and be drilling in less than ten minutes. Many drill sites are of course not directly accessible and in such cases it becomes necessary to prepare roads with a bulldozer; in some cases the bulldozer is also required for towing assistance.

To drill, the bit is threaded to the casing, the spout lowered over the casing, and the mast plumbed. The ram



inside the diesel hammer is now lifted (hydraulically), then dropped. The ram compresses the air-diesel-fuel mixture, an explosion takes place, driving the casing into the ground and lifting the ram for the next stroke. As long as fuel is injected, the cycle automatically repeats itself at the rate of 95 blows per minute. The fact that the diesel hammer will run a ten-hour shift on three gallons of diesel oil indicates the efficiency of this method of driving.

At the start of the drilling, the compressor is activated. The air is forced down the annulus by a pressure varying between 20 and 80 PSI, depending on hole depth. Immediately above the bit, ports direct the air to the inside where it returns up the center of the pipe, carrying with it all material that enters through the bit. As the center pipe forms an unrestricted three-inch opening to atmospheric pressure, the downward air pressure at the bit is negligible. Lifting of the material is the result of airspeed (approx. 5,000 FPM) rather than pressure.

The Becker drill provides automatically, as part of the drilling process, a continuous accurate sample of the penetrated formation. As the drilling fluid is air rather than water, the sample is basically unchanged and the formation can accurately be identified and changes readily pinpointed. To reduce dust loss the sample is, where desired, collected in a cyclone incorporated with the rig.

The Becker Hammer Method is one of two methods selected by the U.S. Bureau of Mines for a two-year trial of ocean sediment sampling (placer sampling) from an anchored ship. The appointment by a U.S. Government agency is of considerable honor for a Canadian company. Detailed reports will be available from the Bureau upon completion of this programme.

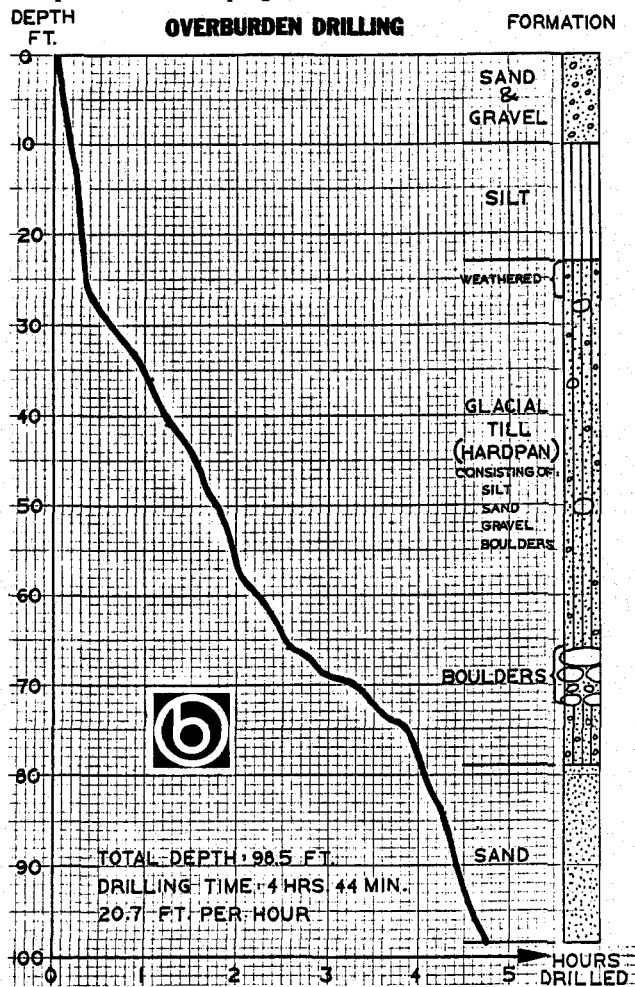


Diagram shows rate of progress in various formations of a hole drilled with 5 1/2-in. casing in the Vancouver area.

The Becker drill is capable of drilling angle holes to as much as 45 degrees off vertical. Angle drilling is however somewhat slower than vertical drilling, due to difficult handling of the casing and less efficiency of the pile hammer. Drilling of formations below the water table is normally no problem with the airlift. However in certain cases, such as artesian conditions or heavily water-bearing sands, it becomes necessary to use water for drilling fluid instead of air. For this reason the drill is equipped with a pump.

On most contract work a service truck accompanies the crew. It is used for transport of crew, and for hauling of gas, oil, extra casing, water, etc. For larger holes and for very deep holes the truck-mounted compressor does not meet the air requirement. In such cases an extra portable compressor is supplied.

The drill is equipped with a detachable, hydraulic, rotary drive. This unit conveniently attaches under the pile hammer and in ten minutes converts the rig into a rotary drill. Large boulders can thus be triconed, or bedrock can be cored using regular NXF core barrel. Extensive diamond drilling with the Becker drill is not recommended; but for reason of determining the nature of bedrock overlain by heavy overburden, coring is likely to be economical for about 50 ft. Beyond this length of coring, it is normally more economical to case the overburden with thin wall tubing and bring in a diamond drill to do the coring.

## PERFORMANCE

The Becker Hammer Method can penetrate any type of overburden, but will penetrate bedrock only for a few feet. Highly fractured and oxidized bedrock zones might be penetrated to greater depth.

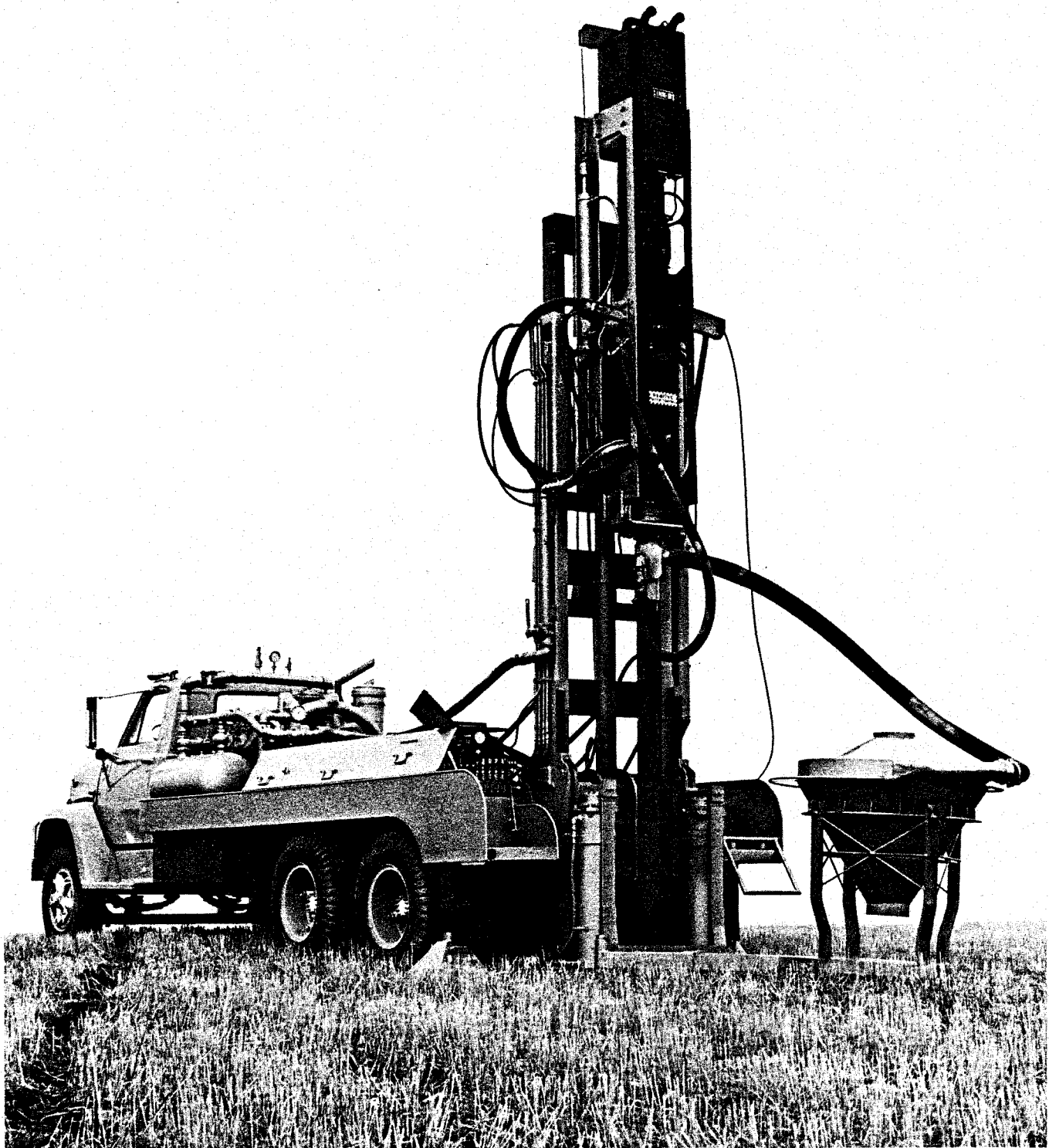
The speed of drilling varies considerably with the type of overburden. The fastest drilling takes place in loose water-bearing gravel formations (including cobbles). In such formations the drilling speed will sometimes average 50 feet per hour, and depths beyond 300 feet can easily be reached. With an increase in formation density, the drilling slows down in direct relation to the density. Probably the densest formation drilled so far is the basal type of glacial till, typical to British Columbia and commonly referred to as "hardpan." In this formation the rate of penetration is down to approximately 10 feet per hour and the hole depth probably limited to approximately 150 feet.

The above examples are extremes; most drilling falls somewhere between these cases. Boulders can if they are large and hard become a problem, sometimes requiring blasting. In most cases however, the bit and the hammer action will break the boulders and bring them up in the shape of minus-one-inch crushed rock.

## APPLICATION

The Becker Hammer Drill has been applied to a wide variety of overburden drilling, for example: Tin placer exploration off-shore in Thailand; seismic shot holes in Alberta and Yukon; diatomite exploration in Arizona; nickel laterite in New Caledonia; placer exploration off-shore at Nome, Alaska; gravel exploration for Mica Dam and Peace River Dam; sampling ore waste dumps in Montana, etc. Rigs are presently being shipped to Pakistan to drill grout holes for the world's largest dam at the Tarbela Dam site.

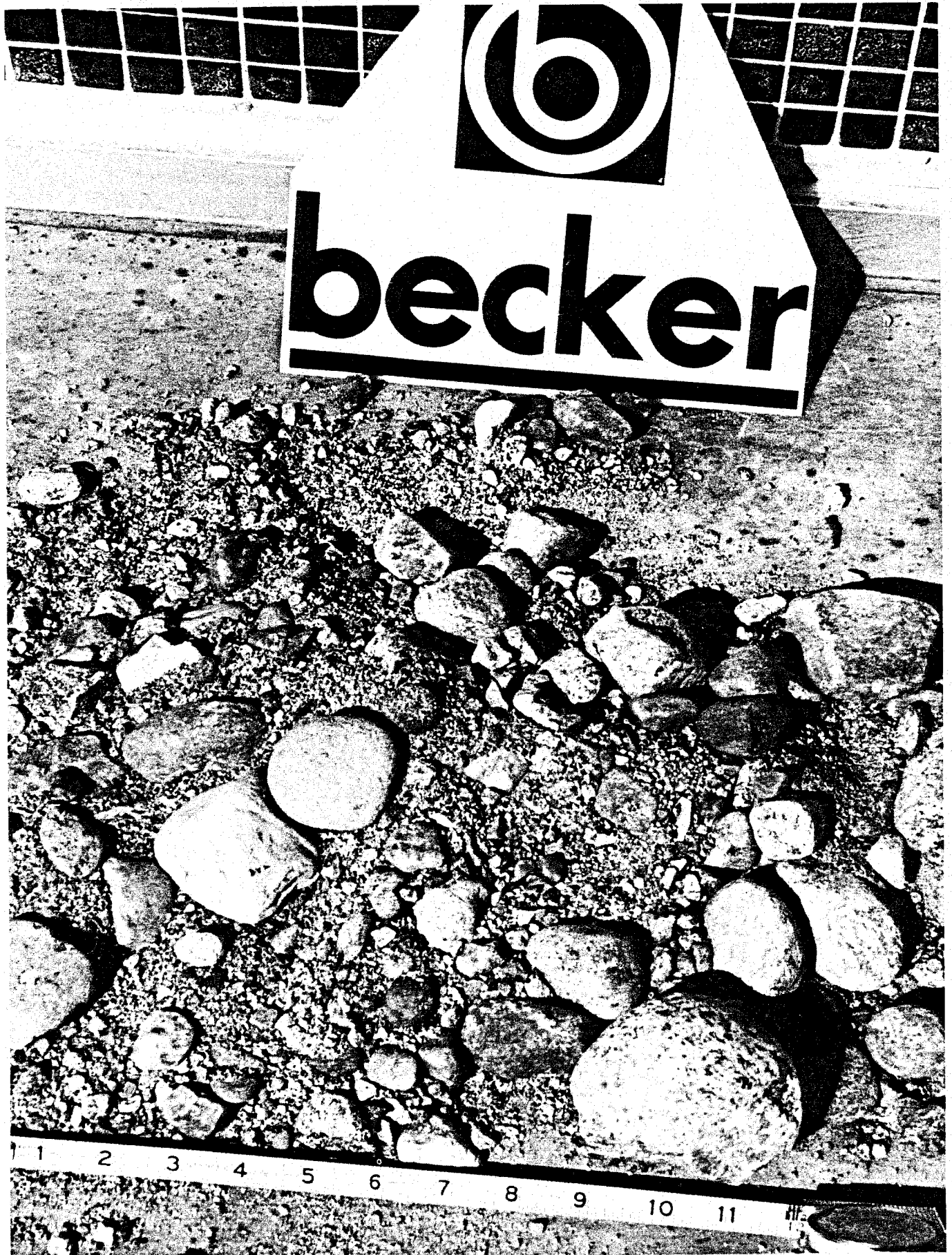
The present work in the Highland Valley involves setting inexpensive thin-wall tubing (4 1/8 in. OD by 3 7/8 in. ID) through the overburden. The diamond-drilling contractor can then freely run his NX casing through the tubing, and concentrate his efforts on the specialty of the diamond drill, that of coring bedrock.



Becker Rig in drilling position showing:

- Telescoping Mast
- Diesel hammer
- Casing advanced into ground
- Hydraulic puller system
- Outriggers for levelling
- Compressor with storage tank
- Cyclone for sampling





Becker Sample of Sand-Gravel formation

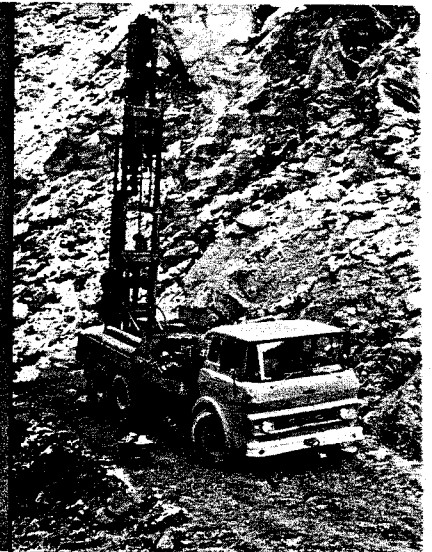
CALGARY

VANCOUVER



TORONTO

DEWID



Why  
becker  
drilling

Why  
not  
let  
us  
handle  
it?

BECKER DRILLING LTD

1000-2100

VANCOUVER B.C. V3K 1T2



**becker**

APPENDIX F

(LOGS)









North 100 N of MR 84-1  
 East LINE 7  
 Elevation 2594.2  
 Azimuth Vertical  
 Dip "  
 Logged by MLK

BECKER HAMMER DRILL LOG  
 MCKEE CREEK DRILLING PROJECT

Note Number MR 84-2  
 Commenced Sept 23 / 84  
 Finished Sept 23 / 84 3:25 pm  
 Purpose \_\_\_\_\_  
 Page 1 of 1

FROM (Feet)	TO (Feet)	DESCRIPTION	SAMPLE RECORD				SAMPLE RECORD				TIME AND PENETRATION RATE					
			FROM Feet	TO Feet	REL. REC. %	SAMPLE MOISTURE	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	TIME	FEET				
0	12	OVERBURDEN and Brown Sandy	0	12	5	DRY	60	62	76	WET	8:20	0	12:13	67		
		Coarse sand 50% Pebbles 50% Till.	12	14	5	DRY	62	64	70	"	8:45	12	12:24	66		
12	14	Dk grey sand WATER 14'	14	16	30	WET	64	66	60	"	8:55	14	12:30	68		
14	22	Pea gravel 60% Some clayey sand. Some red pebbles. WATER	16	18	30	WET	66	68	50	"	9:00	22	12:38	70		
		ENDS @ 22'	18	20	50	WET	68	70	60	"	9:08	24	12:45	72		
			20	22	5	DRY	70	72	70	"	9:20	26	12:50	74		
22	32	Harder Drilling. Some clay in grey sandy gravel. Clay To 19% Coarser pebbles and grey sandy-silty clay at 24-26. Grey dust. Increase of clay	22	24	30	DRY	72	74	70	"	9:36	28	12:58	76		
		Very hard cemented pebble Till	24	26	60	DRY	74	76	20	"	9:50	30	1:12	78		
			26	28	75	WET	76	78	80	"	10:05	32	1:23	80		
			30	32	40	"	78	80	80	"	10:10	34	1:40	82		
			32	34	40	"	80	82	60	"	10:18	36	1:45	84		
32	43	Fewer pebbles more clay. To 30% fine and silt. Some red pebbles. Clay & silt	34	36	40	"	82	84	70	"	10:42	38	2:00	88		
		50% Grey colour. Clay pebble Till rounded pebbles.	36	38	40	"	84	86	80	"	10:50	40	AT 9' AIR COMPRESS			
			38	40	40	"	86	88	100	"	10:54	42	2:20	92		
			40	42	40	"	88	90	100	"	10:58	44	2:38	94		
43	94	As Above. but with clay balls & pea gravel	42	44	40	"	90	92	100	"	11:07	46	2:45	96		
		Red pebbles @ 45'. C.B's. 47-48, 48-50	44	46	50	"	92	94	100	"	11:12	48	2:58	98		
		Clay balls to 93'	46	48	50	"	94	96	100	"	11:26	50	3:07	100		
94	95	Chips of hard dark rock + gravel. Less clay	48	50	65	"	96	98	100	"	11:31	52	3:25	102		
		Start of Bedrock? But at 95' back in C.B's	50	52	50	"	98	100	100	"	11:41	54		END		
95	98	Red pebbles less clay. 40% More Red pebbles	52	54	60	"	100	102	100	"	11:50	56				
98	101	As above	54	56	50	"			END		12:00	58				
101	102	White qtz veined in green schist. Dark	56	58	50	"	45				12:01	60				
		END green schist BEDROCK AT 101'	58	60	60	"					12:13	62				





North 300' NORTH of MR84-1  
 East LINE 4  
 Elevation 2593.6  
 Azimuth Vertical  
 Dip Vertical  
 Logged by CHURCH

BECKER HAMMER DRILL LOG  
 MCKEE CREEK DRILLING PROJECT

Hole Number MR 84-3A  
 Commenced Sept 24 / 84  
 Finished Sept 24 / 84  
 Purpose \_\_\_\_\_  
 Page 1 of 1

FROM (Feet)	TO (Feet)	DESCRIPTION	SAMPLE RECORD				SAMPLE RECORD				TIME AND PENETRATION RATE						
			FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	TIME	FEET					
0	31	See MR84-3	0	32	NOT	SAMPLED						10:30	15'				
31	33	Silty clayey pebble till. Dry grey	32	34	50	WET						10:45	30				
		WET clayey muddy Soap.	34	36	60	"						11:00	32				
33	49	As Above Some clay Balls	36	38	70	"						11:05	34				
		More pebbles rounded. Somewhat	38	40	40	"						11:15	36				
		more silty than other holes in this	40	42	50	"						11:25	38				
		section. Passed thru a boulder at	42	44	60	"						11:35	42				
		about 47'. Some composition as	44	46	60	"						11:40	44				
		boulder in MR84-3. Pro gravel	46	48	50	"						11:50	46				
		Harder Drilling to 48'	48	50	50	DAMP						12:10	48				
48	51	Clay Balls & pea gravel. Clay at	50	52	60	WET						12:21	50				
		higher than 50%. Bronze Thru	52	54	50	"						12:30	52				
		boulder at 49'	54	56	50	"						12:45	54				
51	73	Hard cemented clayey gravel.	56	58	100	"						12:55	56				
		Grey hard drilling Clay Balls	58	60	100	"						1:05	58				
		56-60. No clay balls 64-68.	60	62	70	"						1:15	60				
		Heavy C.B.'s 66-72. Clay balls	62	64	100	"						1:40	62				
		80% and pea gravel.	64	66	100	"						1:45	64				
73	79	Boulder: Jacks hammered 1' purple	66	68	100	"						1:50	66				
		hard dark. Fine grained rock. Felsite	68	70	80	DAMP						1:55	68				
		END dark rock. Possibly Boulder or Bedrock	70	72	100	WET						2:06	70				
		Knob. STOPPED HOLE.	72	73	-	DAMP						2:09	72				
		ABANDONED HOLE.	END	21								2:40	Percepsion drilled 6" I.D.				
												4:10	78				

North 200 N of MR84-1  
 East LINE 1  
 Elevation 2593.6  
 Azimuth Vertical  
 Dip Vertical  
 Logged by m.k.

BECKER HAMMER DRILL LOG  
 MCKEE CREEK DRILLING PROJECT

Hole Number MR84-3B  
 Commenced October 2/84  
 Finished October 3/84  
 Purpose \_\_\_\_\_  
 Page 1 of 1

			SAMPLE RECORD				SAMPLE RECORD				TIME AND PENETRATION RATE					
FROM (Feet)	TO (Feet)	DESCRIPTION	FROM Feet	TO Feet	REL. REC. %	SAMPLE MOISTURE	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	TIME	FEET				
0	72	Sec MR84-3A	0	72	NOT	SAMPLED					8:10	0				
72	78	Large clay balls with pea gravel	78	80	100	WET					9:10	36				
		in the clay balls - 75% Best is clay mud	80	82	75	"					10:10	51				
76	82.5	Fewer clay balls only 10%. More	82	83	100	"					11:50	70				
		Free pea gravel not in muddy clay	82	82.5	SPECIAL	DRY					12:10	74				
		less clay. Change in section	82	82.5	is a special						12:30	76				
		Round vari-colored pebbles			sample of pebbles from						12:45	78				
82.5	83.0	Sudden change to chips of			upper part of hole						1:00	80				
		dark fine massive basic rock -									1:10	82				
		peridotite (?) No Advance	5								1:30	83	START	PREP	OF	J.H.
		AT 4:20 PM (Oct 2) FINISHED									2:00		J.H.	START		
		PULLING PIPE, PULLED PIPE BECAUSE														
		WITH JACK COULD NOT DRILL WITH JACK														
		HAMMER, FOUND ONE TANG OF									3:00		PULLED	RODS	CROSS	
		HAMMER BIT BENT INWARD.														
		THIS WAS REASON CROSS BIT														
		COULD NOT ADVANCE. TOO NARROW														
		AN OPENING. CHANGED BIT AND														
		STARTED BACK DOWN HOLE AT 4:30														
		PM. ON OCTOBER 3 STARTED AT 8:00														
		AM. AT 9:00 AM HIT BOULDER. With														
		J.H. drilled 10' of chert cobble then									9:05	001	3	STARTED	J.H.	
		4' of silicified shale and 1' of green schist									10:30	STOPPED	AT	82.5'		

















North 145° S of MR84-1  
 East LINE 1  
 Elevation 2588+  
 Azimuth Vertical  
 Dip Vertical  
 Logged by mbk

BECKER HAMMER DRILL LOG  
 MCKEE CREEK DRILLING PROJECT

Hole Number MR84-3  
 Commenced Started Oct 4 (Thurs) #1  
 Finished October 5/84  
 Purpose \_\_\_\_\_  
 Page 1 of 1

		SAMPLE RECORD				SAMPLE RECORD				TIME AND PENETRATION RATE					
FROM (Feet)	TO (Feet)	DESCRIPTION	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	TIME	FEET			
		0-60' NOT SAMPLED. HOLE STARTED IN A BULLDOZER TRENCH 6' DEEP OF BROWN CLAY & SILT													
0	7	OVERBURDEN Brown silty sandy clayey Till	60	62	100	WET					3:15	0			
			62	64	100	"					3:20	7			
7	12	Grey silty sandy clayey horizon.	64	66	100	"					3:45	19			
12	14	"Plasticent" Muddy, silty clayey till of grey to black Colour.	66	68	100	"					3:55	22			
				69							4:03	25			
14	18	Black pea gravel & pebbles 90% some clay. Rounded to angular pebbles.			END						4:10	28			
			4								4:12	30			
											4:20	32			
18	30	Gradually increasing clay content some clay balls (small 1") Grey till with up to 30% clay									4:25	34			
											4:26	36			
											4:30	38			
30	63	More clay balls. Somewhat coarser pebbles. Clay 50%. Some rounded and colored red buff pebbles for a few feet. AT 63' HIT BOULDER OF GRANITE. DRILLING SLOWED. BROKE THRU AT 64'. BACK TO ABOVE FORMATION. BUT MORE AND BIGGER CLAY BALLS.									4:35	40			
											4:38	43			
											4:43	45			
63	68	AT 63' HIT BOULDER OF GRANITE. DRILLING SLOWED. BROKE THRU AT 64'. BACK TO ABOVE FORMATION. BUT MORE AND BIGGER CLAY BALLS.									8:21	49	OCTOBER	5	
											8:34	54			
											8:45	59			
											9:15	62			
											9:41	64			
63	69	At 67' Possible start of CB layer									9:45	66			
J.H.	75'	Pass. Boulder @ 69'. JACK HAMMER									9:51	68			
		END PREPARATION @ 10:15 am. 3'-4' Boulder of shale (grey). Drilled 6'. About 1' gravel 4' boulder and about 1' gravel. ABANDONED HOLE									10:15	69	JACK HAMMERED		
													END 6' FEET		
													ABANDONED HOLE		
													DIFFICULT DRILLING		



North 110° S of MR 84-9  
 East LINE 1  
 Elevation 2584.2  
 Azimuth Vertical  
 Dip Vertical  
 Logged by MOR

BECKER HAMMER DRILL LOG  
 MCKEE CREEK DRILLING PROJECT

Well Number MR 84-10  
 Commenced Oct 6/84  
 Finished Oct 7/84  
 Purpose \_\_\_\_\_  
 Page 1 of 1

SETUP ABOUT 50' N OF STREAM IN VALLEY

FROM (Feet)	TO (Feet)	DESCRIPTION	SAMPLE RECORD				SAMPLE RECORD				TIME AND PENETRATION RATE					
			FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	FROM (Feet)	TO (Feet)	REL. REC. %	SAMPLE MOISTURE	TIME	FEET				
0	7	OVERBURDEN Peal, Moss muskeg & Fill Very poor Recovery	28	30	100	WET						2:30	0			
7	14	As Above	1									2:33	7			
14	20	Brown Sandy clayey silty grey Sandy & silty clay. "Elastocene" layer is missing. Turned to clay, pea gravel & pebble & clay ball horizon. Clay 10% Pebbles are vari-colored.										2:43	13			
												2:55	20			
												3:00	21			
												3:10	22			
												3:22	24			
												3:35	30			
20	40	Start of low clay ball content horizon. Green schist pebbles & pea gravel & 20% C. Balls. Relatively slow drilling in tight clay till. Quite a variety of colored pebbles. Less clay than previous 1 <sup>st</sup> C. B. horizon										4:00	38			
												4:05	40			
												4:15	45			
												4:25	49			
												4:38	53			
40	57	START OF 2 <sup>nd</sup> C. Ball horizon Large C. B's 40%. Slightly faster drilling										4:40	54			
												4:56	57			
												1:55	57			
57	59	Possible Boulder Drilled 1' into										OCTOBER 7/84				
JH	62	Drilled hard dark massive felsite										8:20	57			
		END JACK HAMMERED 3' INTO alternating dark & light green chert BEDROCK FROM 59'										8:50	58			
												9:05	59			
												9:15	J.H. PREPARATION			
												9:45	START J.H.			
												10:15	END JH			

APPENDIX            G  
(Daily Work Report)





































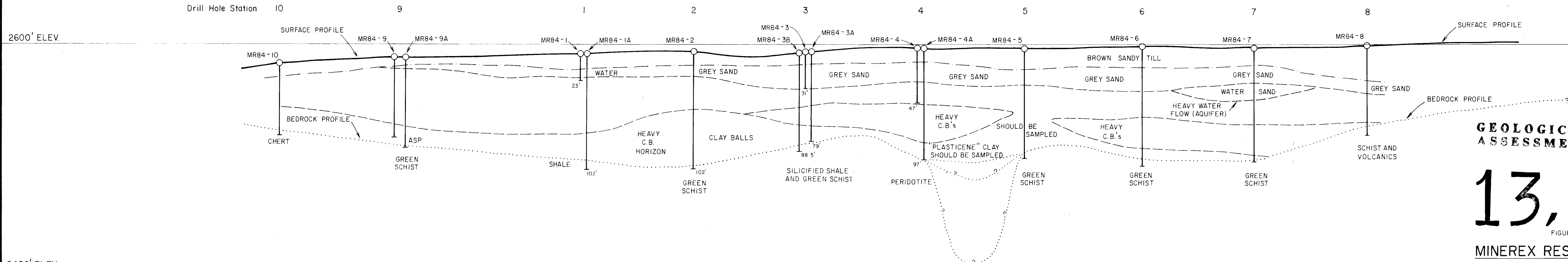








Bearing of Drill Line I - 133° Az. True



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**13,307**

FIGURE 6  
**MINEREX RESOURCES LTD.**

ROYCE JOHNSON OPTION  
LOWER MCKEE CREEK  
ATLIN MINING DIVISION, B.C.

**HAMMER DRILL HOLE SECTION  
LINE I  
LOOKING S.W.**



M.D.K.

HORIZ. 1" = 50', 1:600  
VERT. 1" = 50', 1:600

DECEMBER, 1984