

013.188

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Tableau d'assemblage du Système de Référence Cartographique National

CARMACKS
115-I
EDITION 1

LODE OCCURRENCES

Granite Mountain

NTS 115 I 2

#1 March Group (Canex Aerial Exploration Limited) (62°12'N, 136°58')
(Copper-Molybdenum)

Reference: Green (1966, pp. 33-34)

1966
Canex Aerial Exploration Limited continued surface exploration during 1966 on its 92-claim March group on Granite Mountain, about 28 miles northwest of Carmacks. The property includes an old showing investigated briefly by Conwest Exploration Company Limited in 1959. Access is by means of an 11-mile tote road that leaves the Carmacks-Laforma road near mile 33.

During 1966 a two-hole, 900-foot churn drilling program was carried out to follow up geochemical surveys completed in 1965. Up to 10 men were employed in the operation. The property was not visited.

Granite Mountain

NTS 115 I 2

(Copper)

#1 # March Group (Canex Aerial Exploration Limited) (62°19'N, 136°58'W)
1965

The company holds the March group of 44 claims covering old copper showings on Granite Mountain. The showings, on the flank of Granite Mountain at an elevation of about 4,000 feet, occur in granitic rocks (unit 10, Eastock, 1936a) that have been intruded by minor quartz porphyry and felsite.

During the summer of 1965, the company built a road to the property from near Mile 33 on the Freegold road and carried out a geochemical survey of a portion of the group. The property was not visited.

#2, 3, 4 Mount Nansen Mines Limited
Brown McDade Mines Limited (about 62°03'N, 137°07'W to 137°10'W)
 (Silver-Gold)

1966

References: Bostock (1936a); Green and Godwin (1963, pp. 23-24; 1964, pp. 26-28); Green (1965, pp. 32-34; 1966, pp. 34-36); Campbell (1965; 1966).

Mount Nansen Mines Limited and adjacent Brown-McDade Mines Limited hold 299 and 70 claims respectively covering gold-silver properties in the Mount Nansen area, about 30 miles west of Carmacks. Access to the properties is by a 19-mile gravel road that leaves the Carmacks-Laforma road near mile 32. Both properties are controlled by Peso Silver Mines Limited, which holds 66 per cent of Mount Nansen Mines Limited, and 49.2 per cent of Brown-McDade Mines Limited. Peso Silver Mines Limited is, in turn, jointly controlled (54.3 per cent) by Moneta Porcupine Mines Limited and Charter Oil Company Limited.

During 1966, Mount Nansen Mines Limited carried out about 2,500 feet of drifting as well as considerable underground drilling on its holdings, and on the adjacent Brown-McDade property. Up to 40 men were employed in the operation. Total underground exploration work since commencement of operations in December, 1964 is 6,192 feet of drifting, cross-cutting and raising, and 7,300 feet of drilling (Peso Silver Mines Limited, Annual Report for 1966). Operations at the properties were suspended in the spring of 1966, and subsequent efforts have been directed toward financing arrangements for production plans based on a 200-ton-per-day mill. Total ore reserves are estimated at 173,315 tons averaging 0.484 ounces per ton gold and 19.49 ounces per ton silver for the Mount Nansen properties, and 110,000 tons averaging 0.61 ounces per ton gold and 5.4 ounces per ton silver for the Brown-McDade property (op.cit.).

The Mount Nansen Mines Limited holdings comprise the Webber and Heustis properties. They contain sulphide-bearing quartz veins, lenses, and stockworks cutting highly altered quartz-feldspar porphyry (unit 13, Bostock, 1936a) and quartz-biotite schists and gneisses, probably members of the Yukon Group assemblage (unit 1, op. cit.). The vein structures range

from broken, altered zones up to several feet wide containing irregular discontinuous lenses and stringers of dark grey quartz with fine sulphides, to more competent zones carrying thin quartz veins up to 3 to 4 inches thick. The principal metallic minerals are arsenopyrite, pyrite, galena and sphalerite. Various silver-bearing minerals, including freieslebenite, acanthite, native silver, andosite, and argentiferous tetrahedrite have been identified in the ores (Green, 1966, p. 36).

#2 On the Webber property (62°03½'N, 137°10'W), the two principal veins, No. 1 and No. 2, have been explored by drifting from an adit collared in the valley of Webber Creek at an elevation of 4,280 feet, and by drilling from the adit level. The No. 1 vein strikes about N 35° W, and the No. 2 vein about N 60° W. Both dip steeply southwest. The No. 1 vein has been drifted for a strike length of about 830 feet, the No. 2 vein for 825 feet, and the combined vein beyond their junction points for an additional 320 feet. Work during 1966 consisted of about 400 feet of drifting, mainly along the No. 2 vein, as well as some test drilling. As of 1 December, 1966, ore reserves of the Webber property were estimated to total 85,280 tons proven and probable ore, with an average grade of 0.40 ounces per ton gold and 21.5 ounces per ton silver (Peso Silver Mines Limited, Annual Report for 1966).

1966

#3

On the Heustis property (62°03'N, 137°09'W) underground exploration has been concentrated on the No. 12 and No. 13 veins, striking north to N 45°W and about N 35° W respectively, and dipping 60 to 70 degrees east. The veins have been followed from an adit collared at an elevation of 4,295 feet, with about 1,350 feet of drifting completed on the No. 12 vein and about 600 feet on the No. 13 vein, as well as considerable drilling from the drift level. One deep hole intersected good ore in the No. 12 vein at a depth of 360 feet below the adit level (Campbell, 1966). Proven, probable and possible (drill-indicated) ore reserves of the Heustis property are 88,035 tons averaging 0.63 ounces per ton gold and 15.88 ounces per ton silver (op. cit.).

#4

X 4

The Brown-McDade property (62°03'N, 137°07'W) contains a strong shear zone trending about N 20° W and dipping 50 to 70 degrees west cutting granodiorite (unit 10, Bostock, 1936a). Gold and silver values occur in irregular grey quartz lenses containing variable amounts of pyrite and arsenopyrite (Green, 1966, p. 38). Old workings completed in 1946 and 1947 consisted of a 680-foot crosscut and a total of 1,150 feet of drifting along the shear zone to the north and south of the crosscut-shear intersection. During 1966, the present company drilled 40 short holes from the adit level to test the lateral extensions of mineralization (Campbell, 1966). Proven and probable ore reserves of this property are 32,190 tons averaging 0.61 ounces per ton gold and 5.4 ounces per ton silver, with an additional indicated (drill) tonnage of 77,945 tons (Green, 1966, p. 38).

(Silver-Gold)

2, 3, 4 -

Mount Nansen Mines Limited and Brown-McDade Mines Limited
(about 62°03'N-137°07'W to 137°10'W)References: Eastock (1936a); Green and Godwin (1963, pp. 23-24; 1964, pp. 26-28); Green (1965, pp. 32-34); Campbell (1965).

1965

During 1965 and early 1966, underground exploration was carried out on the Webber and Huestis properties of Mount Nansen Mines Limited and the nearby Brown-McDade property. As of 31 July 1965, Paso Silver Mines Limited held 53.2 per cent of the shares of Mount Nansen Mines Limited and 48.7 per cent of Brown-McDade Mines Limited. Late in 1965, Mount Nansen Mines Limited held 2 blocks totalling 269 claims and Brown-McDade Mines Limited a block of 70 claims (Paso Silver Mines Limited, Annual Report for year ended 31 July 1965). Other subsidiary companies hold additional claims in the area.

The main camp for the operation is located on a tributary of Webber Creek at an elevation of about 4,100 feet, close to the Webber portal. The Huestis portal is located about 5,400 feet SE of the Webber portal and the Brown-McDade portal about 5,000 feet ENE of the Huestis. During the winter months the camp may be reached by a winter road, 41 miles in length, leading from Carmacks and following the flank of Miller's Ridge above Rawlinson Creek for 20 miles, the chain of lakes to Victoria Lake, from whence it climbs the ridge between Victoria and Nansen Creek to the old Brown-McDade camp and the new camp in the valley of Webber Creek. During the summer months, a route, about 19 miles long, suitable for tracked vehicles leaves the Freegold road about mile 32 crossing Mount McDade to join the other road just east of the Brown-McDade camp. Victoria Lake is suitable for float-equipped aircraft but the airstrip nearby is soft and unusable during the summer months.

Up to 40 men were employed in the operation.

#2

Webber Property (62°03½'N, 137°10'W)

The property was discovered by Whitehorse prospector, G.F. Dickson, in 1962 and surface stripping, diamond drilling, and overburden drilling were done on the showing in the summer of 1963 and 1964. Late in 1964, an adit was collared in the valley of Webber Creek, at an elevation of 4,280 feet and up to 200 feet below the surface exposures, and an extensive underground exploration program carried out through 1965 and early 1966.

Two principal veins are present, No. 1, trending about N 35°W, and No. 2, about N 60°W. Both dip steeply SW. When visited in late March 1966, No. 1 had been drifted for a strike length of about 830 feet, No. 2 for 825 feet and the combined vein beyond the junction for about 320 feet. In addition, extensive diamond drilling had been done both in the horizontal plane of the workings and beneath.

Country rock of the showing is mainly gneissic rocks of the Yukon group (unit 1, Bostock 1936a) but much of the rock is too highly altered and manganese- and iron-stained to identify with certainty. A band of younger quartz feldspar porphyry (unit 13, Bostock 1936a) varying from buff to light grey in color, and containing phenocrysts of quartz and feldspar to about 3 mm was cut about 560 feet from the portal and extends about 100 feet.

The vein zones vary from broken zones to 8 feet in width carrying thin lenses of dark grey quartz to single dark grey quartz veins a few inches in width. The quartz is darkened by sulphide minerals, commonly too fine grained to identify and occurs in two forms, a dense, fine grained, cherty-appearing rock and a rock composed of tiny needles of crystalline quartz. Considerable arsenopyrite is present and green scorodite staining is prevalent in the portions of the veins that have undergone some alteration. Other sulphide minerals identified visually include pyrite, galena, and sphalerite. Silver-bearing minerals reported from the property include: freieslebenite*, acanthite**, native silver*, andorite**, and argentiferous tetrahedrite**.

The veins have been cut by a number of cross-faults with broken zones from a few inches to 20 feet in width. The faults strike about N 75°E and dip steeply. Vein material is commonly dragged into the fault zones and in most relatively minor horizontal displacement of the vein has resulted.

Proven and probable reserves of the Webber property as of 10 November 1965 were estimated at 73,450 tons containing 0.39 ounces of gold and 22.3 ounces of silver per ton and with an average width of 4 feet (Campbell, 1965, p. 16).

#3

Huestis Property (62°03'N, 137°07'W)

The area was first staked by H.H. Huestis in 1947 and some stripping was done at that time. Later between 1962 and 1964 extensive surface stripping was done on the showing by the Mount Nansen Exploration Syndicate and its successor Mount Nansen Mines Limited. In March 1965, an adit was collared at an elevation of 4,295 feet, about 200 feet beneath the surface outcrops, and an

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- * Identified by Mineral Sciences Division, Mines Branch, Department of Mines and Technical Surveys.
 - ** Identified by X-Ray Diffraction Laboratory, Geological Survey of Canada.

underground exploration program carried out through 1965 and early 1966.

Two narrow veins systems, the No. 12 and 13, up to about 250 feet apart have been explored. The adit cut the No. 12 vein about 270 feet from the portal at which point it strikes about north swinging to N 45° W about 280 feet to the north of the intersection. The vein has been drifted for about 1,370 feet along strike. The No. 13 vein, about 250 feet west trends about N 35° W and has been drifted for 600 feet along strike. Both veins dip about 60 to 70 degrees east.

Country rock of the showing is mainly gneissic rock of the Yukon group (unit 1, Bostock, 1936a). These are unaltered throughout much of the workings but locally have undergone a clay alteration. In addition, a small area of feldspar porphyry was cut by the workings on the 12 vein between about 595 feet and 740 feet southeast of the main cross-cut. This rock is light buff in colour and crowded with fine feldspar phenocrysts to about 3 mm.

The No. 12 zone is up to 5 feet in width and often contains one or more bands of quartz with sulphide minerals up to 6 inches in thickness. The quartz is dark grey, colored by fine sulphide minerals, and varies from a mass of small quartz crystals to a dense cherty-appearing rock. Sulphide minerals identified visually include arsenopyrite, pyrite, galena, sphalerite, and stibnite. The vein has been cut by a number of northeast trending, steeply dipping, minor faults with limited displacement. Vein material is commonly dragged into these faults and, in some, fragments are found in gouge. The No. 13 zone is essentially similar.

Proven, probable and drill indicated reserves of the Huestis property as of 10 November 1965 (prior to drifting on the No. 13 vein) are estimated as 46,615 tons containing 0.46 ounces of gold, 16.0 ounces of silver per ton and with an average width of 3.4 feet (Campbell, 1965, p.21).

#4 Brown-McDade Property (62°03'N, 137°07'W)

The property, originally discovered by A. Brown and G. McDade was purchased by Brown-McDade Mines Limited in 1946. Surface exploration and underground work was done in 1946 and 1947. With the exception of some surface work in 1950, the property remained inactive until 1964 when surface trenches were re-opened and extended. The underground workings were re-mapped early in 1965 and later in the year an underground diamond drilling program of 37 holes with a total length of 1,811 feet completed.

The Brown-McDade showing consists of a wide shear zone, trending about N 20° W and dipping about 50° - 70° W, cutting granodiorite (unit 10, Postock, 1936a) and carrying values in gold and minor amounts of silver. Earlier underground exploration consisted of a cross cut, 680 feet in length, to the altered zone and about 500 feet of drifting in the zone to the north and 650 feet to the south.

The alteration zone is up to 100 feet horizontally and within it the granitic rocks have undergone a pervasive clay alteration. Much iron staining is also present. Gold values occur in irregular grey quartz lenses containing variable amounts of pyrite and arsenopyrite. In general, better values occur near the footwall of the altered zone.

Proven and probable reserves of the Brown-McDade property as of 10 November 1965 are estimated as 32,190 tons containing 0.61 ounces of gold and 5.4 ounces of silver per ton and with an average width of 6.7 feet (Campbell, 1965, p. 25). In addition, there is an indicated tonnage of 77,945 tons (op. cit.)

(Silver-Gold)

#2, 3, 4,

Mount Nansen Mines Limited (62°03 1/2'N, 137°10 1/2'W)

References: Bostock (1936a); Green and Godwin (1963, pp. 23-24; 1964, pp. 26-28).

1964

Mount Nansen Mines Limited, presently controlled by Peso Silver Mines Limited, was originally formed in 1963 by members of the former Mount Nansen Exploration Syndicate to explore the Webber silver-gold showing discovered by G.F. Dickson for the Syndicate in 1962. The Webber showing is located on the ridge between Nansen and Victoria Creeks, about 15 miles south of the Laforma property and 30 miles west of Carmacks. Other similar showings on the property include the Cabin vein, about 2,000 feet west of the Webber vein, and the Heustis vein, about 3,000 feet southeast on the head of Dome Creek, a tributary of Victoria Creek. At year-end Mount Nansen Mines Limited held 269 claims in the area.

During the year, Peso Silver Mines also acquired control of Brown-McDade Mines Limited, which holds 30 claims covering the nearby Brown-McDade gold property, about 2 miles southeast of the Webber showing on a tributary of Victoria Creek.

Late in 1964, Mount Nansen Mines Limited completed a winter road to the property. The road, about 41 miles in length, follows the flank of Miller's Ridge above Rowlinson Creek for 20 miles and then the chain of lakes to Victoria Lake, from where it climbs the ridge between Victoria and Nansen Creeks to the Brown-McDade camp and the new camp in the valley of Webber Creek. An alternate road, 12 miles in length and with grades suitable for heavy hauling, leaves the first road at the abandoned airport on Victoria Creek and follows the valleys of Nisling River and Nansen and Webber Creeks to the new camp. Previous to the construction of these roads supplies were hauled to the property over winter roads leading from the road to the Laforma property or from the Aishihik airport road. During the summer months, access to the property is provided by a rough road, 7 miles in length, from Victoria Lake, which is suitable for float-equipped aircraft. The airstrip near Victoria Lake is soft and unusable during the summer.

The Webber showing was discovered by Whitehorse prospector, G.F. Dickson, in 1962. Work done during that year consisted of bulldozer stripping and preliminary sampling. During 1963, exploration work done by Mount Nansen Mines Limited, under the supervision of Newmont Mining Corporation of Canada Limited, consisted of extensive bulldozer stripping

on both the Webber vein and other showings, geochemical surveys, and a limited amount of diamond drilling on the Webber vein.

During the summer of 1964, Dickson with a crew of 6 men carried out a bulldozer-stripping program on the Webber, Heustis, Cabin, and Brown-McDade veins. The program was successful in extending both the Webber and Brown-McDade veins. Late in the summer a drilling program using an Atlas Copco overburden type drill was carried out and 131 holes with a total length of 10,557 feet were drilled on the Webber and Heustis veins. Late in 1964, a winter road was completed to the property, portal sites established for underground work on the Webber and Heustis veins, and a new camp established in the valley of Webber Creek. When visited early in 1965, the adit of the Webber vein had been driven for 250 feet. The adit is at an elevation of 4,265 feet and is up to 250 feet below the surface trenches. At this time, a crew of about 20 men was employed.

Outcrop is poor near the veins, but scattered outcrops suggest that much of the area may be underlain by metamorphic rocks of the Yukon Group (unit 1, Bostock, 1936a). These rocks range from fine-grained gneisses to augen gneisses with a variable content of mafic minerals. On the ridge to the north of the showing, the Mount Nansen Group (unit 7) consists of volcanic conglomerate with well-rounded cobbles, chiefly of volcanic rock, but including a few of gneiss, in a tuffaceous matrix. On the ridge to the east of the showing, rhyolite or quartz porphyry (unit 13) is fine grained and contains scattered quartz and feldspar phenocrysts to about 3 mm in size. Granitic rocks (unit 10) occur about 9,000 feet east-southeast of the Webber Creek vein near the Brown-McDade camp.

By late 1964, the Webber vein zone had been stripped and sampled for a length of about 1,300 feet. Values for the new sampling have not been announced, but are understood to be comparable to those obtained in 1963 (Green and Godwin, 1964, p. 28). The latter work outlined three zones: (i) 34.0 feet in length with an average width of 3.8 feet and an average grade of 56.58 ounces of silver and 0.44 ounces of gold per ton; (ii) 70.0 feet in length with an average width of 4.5 feet and an average grade of 60.92 ounces of silver and 0.65 ounces of gold per ton; and (iii) 81.0 feet in length with an average width of 4.2 feet and an average grade of 19.68 ounces of silver and 0.47 ounces of gold per ton. Rather than a single vein as suggested in the 1963 work, the Webber vein appears to consist of a zone of subparallel veins, which may be spaced over an interval of up to 50 feet across the strike. The general trend of the zone is N35°W, but the zone has a number of sharp kinks. A zone about 450 feet in length striking about N45°W joins the main zone about 300 feet from the south end of the sampled area. In most of the trenches country rock adjacent to the vein cannot be identified as it is decomposed and highly stained by secondary oxides while the vein material stands out as a brown-

green-stained, quartz-rich rib. Frequently the quartz is dark grey from contained fine-grained sulphide minerals.

In the underground workings, both gneissic rocks of the Yukon group and rhyolite (units 1 and 13 of Bostock, 1936a, respectively) appear to be present. In general, rocks believed to be altered rhyolite contrast to the gneiss in having (i) a fine-grained to aphanitic groundmass with or without phenocrysts, (ii) a distinctive pale brown to straw yellow colour, and (iii) a porous or punky texture. Viewed in index oils, powders of rhyolite frequently show a fine intergrowth, probably originally quartz and feldspar, in marked contrast to the altered remnants of the larger orthoclase feldspar grains still visible in the gneissic rocks. A short crosscut about 200 feet from the portal exposes altered quartz-orthoclase gneiss with grains to 5 mm. As this is traced towards the vein it becomes heavily iron- and manganese-stained and individual grains can no longer be distinguished. The vein material itself consists of: fine-grained quartz; an intergrowth, very fine grained and probably originally quartz and feldspar; scorodite (a hydrous ferric arsenate); and minor amounts of finely crystalline sulphide minerals. Often sufficient scorodite is present to colour the vein material pale green. In the author's opinion, this vein material may be composed of secondary quartz developed in a sheared and altered rhyolite. Near the crosscut, the opposite wall of the vein is a pale brown rock composed essentially of a fine-grained intergrowth and is believed to be an altered rhyolite.

Sulphide minerals observed in the vein both on surface and underground are characteristically finely crystalline and include: pyrite, arsenopyrite, galena, and a number of silver-bearing minerals. Of the latter group, andorite* and acanthite* were identified in specimens collected from the surface and argentiferous tetrahedrite* from the underground workings. Alteration of galena to anglesite* was observed in material from the surface cuts.

#2. Mount Nansen Mines Limited (62°04'N, 137°10'W)

References: Bostock (1936a); Green and Godwin (1963, pp. 23-24).

1963

Early in 1963 Mount Nansen Mines Limited was formed by members of Mount Nansen Exploration Syndicate, namely: Conwest Exploration Company Limited and Central Patricia Gold Mines Limited, Faraday Uranium Mines Limited, Kerr-Addison Gold Mines Limited, Newmont Mining Corporation of Canada Limited, Noranda Mines Limited, J. Rankin, and Rio Tinto Canadian Exploration Limited, to explore a gold-silver property about 14 miles south of the Laforma property and about 40 miles west of Carmacks. Field work was supervised by Newmont Mining Corporation of Canada Limited.

About 269 claims, most of which are on the crest or along the westerly facing slope of the ridge extending south from Victoria Mountain, are held by the company. The main or Webber showing is near the head of Webber Creek (a left limit tributary of Nansen Creek) at an elevation of about 4,500 feet, and is about 5 miles south-southwest of Victoria Mountain. Topography in the area is well rounded and unglaciated. The property may be reached by a 20-mile winter road, which crosses over Victoria Mountain and starts at the Carmacks - Laforma road about 32 miles from Carmacks. Access to the property is also provided by a 7-mile tractor road from Victoria Lake, which is suitable for float-equipped aircraft. The airstrip near Victoria Lake is soft and unusable during the summer.

In mid-April the company moved a trailer camp and equipment to the property. From late May to the end of August work included: about 450 feet of longitudinal stripping, detailed sampling, and mapping of the Webber Creek vein; 3 (mainly BX core) diamond-drill holes totalling 1,075 feet in the Webber Creek vein; about 30,000 feet of shallow bulldozer trenches and geochemical sampling of same; about 850 feet of longitudinal stripping, detailed sampling, and mapping of the Cabin Creek vein, which was discovered in 1963 by the geochemical-trench survey. Up to 15 men were employed. The camp and equipment were removed from the property in mid-November.

Outcrop is poor near the veins, but scattered outcrops suggest that much of the area may be underlain by metamorphic rocks of the Yukon Group (unit 1, Bostock, 1936a). These rocks range from fine grained to augen gneisses with a variable content of mafic minerals. On the ridge to the north of the showing, the Mount Nansen Group (unit 7) consists of volcanic conglomerate with well rounded cobbles, chiefly of volcanic rock, but including a few of gneiss, in a tuffaceous matrix. On the ridge to the east of the showing, quartz porphyry (unit 13) is fine grained and contains scattered quartz and feldspar phenocrysts to about 3 mm in size. Granitic rocks (unit 10) occur about 9,000 feet east-southeast of the Webber Creek vein near the Brown McDade camp.

When visited by the writers in late June, the Webber Creek vein had been trenched and sampled for a length of about 450 feet. The vein strikes about N 35°W and dips steeply. The vein material appears to consist of a hard core of silicified material to a few feet thickness bounded by soft rusty weathering zones. Mineralization consists

few pods of galena and dark quartz containing finely disseminated sulphides. Green scorodite staining is common. Much of the wall rock is heavily altered, probably to clay minerals. It is believed to include both gneiss of the Yukon Group (unit 1) and younger intrusive rocks (unit 13) ranging from rhyolite to quartz porphyry.

The company reports that surface sampling of the vein outlined three sections of interest:

- (1) length 34.0 feet; average width 3.8 feet; average grade: 0.44 ounces of gold per ton, and 56.58 ounces of silver per ton.
- (2) length 70.0 feet; average width 3.8 feet; average grade: 0.65 ounces of gold per ton, and 60.92 ounces of silver per ton.
- (3) length 81.0 feet, average width 4.2 feet; average grade: 0.47 ounces of gold per ton, and 19.68 ounces of silver per ton.

No significant intersections were found in diamond drilling the vein. Core recovery in the deeply weathered and altered rocks was good because face-ejection bits, swivel-tube core barrels, and drilling mud were used.

Later in the season, the company carried out an extensive geochemical program. Sampling was done in bulldozer trenches dug to a depth of 2 feet beneath the volcanic ash layer that in this area lies immediately beneath the vegetation and is up to a foot thick. Samples, taken at 15-foot intervals, were generally assayed for zinc and antimony.

The Cabin Creek vein, about 2,000 feet south of the Webber vein, was found by this program. The vein strikes about N45°W and dips steeply. The vein was stripped for 850 feet and exposed for 550 feet (a 300-foot section in the centre was not stripped to bedrock). Sampling indicated one interesting section 110 feet in length.

#2,3, Mount Nansen Exploration Syndicate (62°04'N, 137°11'W)

References: Bostock (1936a); Northern Miner (Oct. 11, 1962); Canadian Mining and Metallurgical Bulletin (Nov. 1962, p. 830); Western Miner and Oil Review (Nov. 1962, p. 36).

1962

Whitehorse prospector G. Dickson formed the Mount Nansen Exploration Syndicate in April 1962 to explore a gold-silver prospect about 14 miles south of the Laforma property and about 40 miles west of Carmacks. Backers of the Syndicate are Newmont Mining Corporation of Canada Limited, Noranda Mines Limited, Kerr-Addison Gold Mines Limited, Conwest Exploration Company Limited, Faraday Uranium Mines Limited, Rio Tinto Canadian Exploration Limited, Joseph J. Rankin, Canadian Exploration Limited, and Central Patricia Gold Mines Limited. About 269 claims blanket the area. The main or Webber showing is on what was known as the Carlson group of 1944-48. It is near the head of Webber Creek (a right limit tributary of Nansen Creek) at an altitude of about 4,500 feet and is about 5 miles south-southwest of Victoria Mountain. The property may be reached by a 17-mile tractor road, which crosses over Victoria Mountain and starts at the Carmacks-Laforma road about 33 miles from Carmacks. Access to the property is also provided by a 7-mile tractor road from Victoria Lake, which is suitable for float-equipped aircraft. During 1962, the airstrip near Victoria Lake was unusable.

Topography in the area is well rounded and unglaciated. By early September 1962, 20 large open-cuts on the Webber showing had been excavated to a depth of about 6 feet in the permanently frozen residual overburden. During the season, one diamond-drill hole using BX type core was completed, with a total length of 362 feet and a core recovery of 96 per cent. In addition to this, trenches on the old Heustis showing, some three-quarters of a mile to the southeast, were deepened and extended. Base camp was at the Brown McDade mine, about 9,000 feet east-southeast of the Webber showing. Up to 12 men were working on the property.

The Webber and Heustis showings are underlain by Yukon Group gneiss and schist (unit 1 Bostock, 1936a). Tertiary(?) quartz porphyry dykes (?) cut the above unit. Immediately east of the Webber showing and north of the Heustis showing is a prominent, well-rounded hill called the Dome, which is composed mainly of quartz porphyry (unit 13 - Bostock, 1936a). On the Brown McDade property are extensive exposures of granitic rocks (unit 10 - Bostock, 1936a), and Mount Nansen Group volcanic rocks (unit 7 Bostock, 1936a) are common in the area surrounding the showings.

Mineralization on the Webber showing appears to occur along a fairly continuous fault, and in discontinuous subparallel side fractures both of which trend about 155 degrees azimuth; some mineralized fractures crossing the above are present. The vein material is generally green scorodite-stained clay-like gouge or scorodite-stained quartz with finely disseminated sulphides. Galena occurs as minor pods, and is strongly replaced along the cleavage with a soft metallic black mineral. A white clay alteration in the wall-rock and vein is common. The Western Miner and Oil Review (November, 1962, p. 36) reported that the vein has "an average grade of 0.98 oz. gold and 20.06 oz. silver per ton over a three-foot width for a length of 700 feet ". The character of the Heustis mineralization is similar.

Freegold Mountain

- #5 Laforma Property (Discovery Mines Limited) (61°16'N, 137°06'W)
(Gold)

Reference: Green (1966, pp. 29-31).

Operations at Discovery Mines Limited Laforma mine, located on the south slope of Freegold Mountain about 30 miles west of Carmacks, were terminated February 28, 1966. The mine commenced production, in June, 1965 and during its operating period about 1,610 ounces of fine gold and 570 ounces of silver were produced (Green, 1966, p. 30). Reasons for closure were increasing operating costs, poor recovery of gold from the ores, and lower grades than originally calculated.

NTS 115 I 6

- #5 Laforma Property (Discovery Mines Limited) (62°16'N, 137°06'W)

References: Eastock (1936a, pp. 52-56; 1941, pp. 22-26); Johnston (1937); Skinner (1961, pp. 33-35; 1962, p. 34); Green and Godwin (1963, pp. 20-23; 1964, pp. 25-26); Green (1965, pp. 28-31).

1965

Discovery Mines Limited, formed by amalgamation of Consolidated Discovery Yellowknife Mines Limited and Ormsby Mines Limited on 5 March 1964, holds 32 leased claims covering the Laforma property on Freegold Mountain. Access to the property is via a 41-mile road from Carmacks, Yukon.

Ormsby Mines Limited purchased the property in 1960 from W.J. Langham, G. Fairclough, and the late E. Forrest. A number of showings are known on the property, but most of the underground work has been done on the G-3 zone, which strikes N25°E and dips steeply northwest and a small amount on the Pal vein, which strikes northeast and dips steeply. The gold occurs in lenses of quartz along the veins and the country rock is mainly quartz monzonite to granodiorite although some quartz porphyry and andesite porphyry are present. At the time of purchase, the underground development comprised 3 adits, No. 1, a short adit at an elevation of about 3,900 feet, No. 2, at about 3,625 feet, and No. 3 at about 3,545 feet. A small mill built near the portal of the 2nd level was operated in 1939 and 1940 by T.C. Richards of Whitehorse, Yukon. During this period, about 1,414 tons of ore were milled with a production of about 1,437 ounces of gold, exclusive of that contained in 52 tons of concentrate shipped in 1940 (Eastock, 1941, p. 25 and private report by A.P. Beavan, 1951).

Between 1961 and 1965, the company re-opened the road to the property, drove the 4th level, elevation 3,350 feet to the junction of the G-3 zone and the Pal vein and followed the former for a distance of about 1,420 feet, drove raises between the 4th and 2nd levels, rehabilitated the 2nd and 3rd levels and extended the former to a total length of about 1,200 feet along the G-3 zone, and prepared the property for mining.

Early in 1965, the company announced that the LaForma property would be brought into production by 30 June 1965 in order to qualify for federal government assistance under the Emergency Gold Mining Assistance Act. Proven and probable ore reserves above the 4th level at this time were 86,000 tons averaging 0.76 ounces of gold per ton after allowing for dilution in mining (J. C. Byrne, address to shareholders, 20 April 1965). Mill and camp construction were rushed and the company was able to meet the 30 June deadline. The initial milling utilized an amalgamation and flotation process treating 35 tons per day due to temporary limited water supply from underground, although later addition of a cyanide plant capable of treating 125 tons per day was planned. A number of difficulties were encountered, including rising labour costs, initial milling problems and very poor percentage recovery of gold in the ore, and a lower grade of ore than originally estimated, and operations were suspended at the end of February 1966. The camp has subsequently been closed. Production for the period of operation was about 1,610 ounces fine gold and 570 ounces of silver. Exclusive of construction crews, up to 49 men were employed in the operation.

The G-3 zone consists of a highly sheared band, often up to 8 feet in width, containing some vein quartz and marked by an extensive clay alteration. The zone is strong throughout most of its length and can generally be followed without difficulty in the underground workings. It has now been followed for about 1,200 feet on the 2nd level and 1,420 feet on the 4th level, as well as in raises and sublevels between those two. Near the junction with the Pal vein,

the hanging wall of the G-3 zone is dense white quartz porphyry, but elsewhere with the exception of small areas of andesite porphyry, both walls are in altered granitic rocks, chiefly quartz monzonite and granodiorite. Some of the richer portions of the zone contain up to 4 feet of broken, brownish stained, vein quartz. Much of this quartz is crystalline, and drusy cavities are common. Much of the brown stain appears to be caused by iron-stained clay minerals associated with the quartz. Grey quartz, darkened by the fine pyrite and arsenopyrite, is present along parts of the vein. Scattered specks of very fine free gold occur in the brownish quartz and to a lesser extent in the grey quartz. The vein quartz is bounded by sheared and altered granitic rocks, frequently containing fine crushed fragments of quartz similar to the vein quartz. An extensive clay alteration, chiefly illite, is present along the G-3 zone and to a lesser extent elsewhere in the granitic rocks.

Mining was undertaken in 4 stopes, the 407 on the South Zone and centered about 220 feet from the intersection of the adit with the G-3 zone, the 306 on a sublevel above it, the 411 on the North Zone centered about 650 feet from the adit, and the 212 on a sublevel above it. At the same time a series of raises were driven from the 4th level to test the G-3 zone. Erratic values were obtained in the work (Annual Report, 1965, p.17) and operations were consequently suspended.

Freegold Mountain

NTS 115 I 6

(Gold)

#5 Laforma Property (Discovery Mines Limited) (62°16'N, 137°06'W)

References: Bostock (1936a, pp. 52-56; 1941, pp. 22-26); Johnston (1937); Skinner (1961, pp. 33-35; 1962, p. 34); Green and Godwin (1963, pp. 20-23; 1964, pp. 25-26).

1964:

Discovery Mines Limited, formed by amalgamation of Consolidated Discovery Yellowknife Mines Limited and Ormsby Mines Limited on 5 March 1964, holds 32 leased claims covering the Laforma property on Freegold Mountain. Access to the property is via a 41-mile road from Carmacks, Yukon.

Ormsby Mines Limited purchased the property in 1960 from W.J. Langham, G. Fairclough, and the late E. Forrest. A number of showings are known on the property, but most of the underground work has been done on the G-3 zone, a gold-bearing shear, which strikes N25°E and dips steeply northwest, and a small amount on the Pal vein, which strikes northeast and dips steeply. At the time of the purchase, the underground development comprised 3 adits, No. 1, a short adit at an elevation of about 3,900 feet, No. 2, at about 3,625 feet, and No. 3 at about 3,545 feet. A small mill built near the portal of the 2nd level was operated in 1939 and 1940 by T.C. Richards of Whitehorse, Yukon. During this period, about 1,414 tons of ore were milled with a production of about 1,437 ounces of gold, exclusive of that contained in 52 tons of concentrate shipped in 1940 (Bostock, 1941, p. 25 and private report by A.P. Beavan, 1951).

During the field seasons from 1961 to 1963, Ormsby Mines Limited re-opened the road to the property, drove the 4th level, elevation 3,350 feet, to the junction of the G-3 zone and Pal vein and followed the former for a distance of about 1,000 feet, carried out diamond drilling on both surface and underground, and did a limited amount of surface exploration. The camp was not equipped for winter operation and closed in mid-December, 1963.

The camp was re-opened in April 1964 and operations continued for the remainder of the year. Underground work during the year consisted of extending the 4th level to 1,120 feet along the G-3 zone, a raise between the 4th and 2nd levels, two raises to sublevels driven below the 3rd level at an elevation of about 3,500 feet, and re-opening and extending the 2nd level along the G-3 zone. This underground work involved a total of 1,254.5 feet of drifting, 614.0 feet of crosscutting, and 952.5 feet of raising. Underground diamond drilling comprised 17 holes with a total length of 3,186 feet. In addition to the underground program, a large trailer-type camp was set up and a number of permanent buildings including a combined warehouse and office, steam-heating plant, carpenter shop, and crusher building, were erected. Major improvements were made on the road to the property. Up to 48 men were employed. Early in 1965, the company announced (The Northern Miner, 28 January 1965, p. 7) that the ore estimate for the G-3 zone above the 4th level was 77,000 tons, proven and probable, averaging 0.71 ounces of gold per ton, all taken over a 4-foot mining width. Most of the ore is above an oreshoot cut on the 4th level, centered about 800 feet north of the G-3-Pal intersection, that assayed 1.29 ounces of gold per ton

over a length of 372 feet and a width of 4.0 feet. Below this oreshoot, six diamond drill holes covering a vertical range of 380 feet averaged 0.90 ounces of gold per ton over an average true thickness of 4.4 feet.

The G-3 zone consists of a highly sheared band, often up to 8 feet in width, containing some vein quartz and marked by an extensive clay alteration. The zone is strong throughout most of its length and can generally be followed without difficulty in the underground workings. It has now been followed for about 1,160 feet on the 2nd level and 1,120 feet on the 4th level, as well as in raises and sublevels between these two. Near the junction with the Pal vein, the hanging wall of the G-3 zone is dense white quartz porphyry, but elsewhere with the exception of small areas of andesite porphyry, both walls are in altered granitic rocks, chiefly quartz monzonite and granodiorite. Some of the richer portions of the zone contain up to 4 feet of broken, brownish stained, vein quartz. Much of this quartz is crystalline, and drusy cavities are common. Much of the brown stain appears to be caused by iron-stained clay minerals associated with the quartz. Grey quartz, darkened by fine pyrite and arsenopyrite, is present along parts of the vein. Scattered specks of very fine free gold occur in the brownish quartz and to a lesser extent in the grey quartz. The vein quartz is bounded by sheared and altered granitic rocks, frequently containing fine crushed fragments of quartz similar to the vein quartz. An extensive clay alteration is present along the G-3 zone and to a lesser extent elsewhere in the granitic rocks.

Five specimens showing a clay alteration were examined by the Petrological Sciences Division of the Geological Survey of Canada:

Specimen

GC62-142III

Location: 4th level, G-3 zone, 34 feet from intersection with Pal vein.
Lithology: Waxy altered rock originally granitic?
Clay Mineralogy: Illite, with kaolinite and small amounts of chlorite and montmorillonite.

GC62-142IV

Location: 4th level, G-3 zone, 34 feet from intersection with Pal vein.
Lithology: Altered quartz-porphyry.
Clay Mineralogy: Illite, with kaolinite and a trace of chlorite.

GC62-142XII

Location: 4th level adit, country rock, 125 feet from junction of G-3 zone and Pal vein.

Lithology: Altered granitic rock with both feldspars and mafic minerals altered to secondary minerals.

Clay Mineralogy: Illite, with chlorite and small amounts of kaolinite and montmorillonite.

GC62-142XXV

Location: 4th level adit, country rock, 1,090 feet from junction of G-3 zone and Pal vein.

Lithology: Altered pale greenish granitic rock, mafic minerals altered to fine chlorite.

Clay Mineralogy: Illite with chlorite.

GC63-429III

Location: 4th level, Footwall vein about 20 feet in footwall from G-3 zone.

Lithology: Altered, granitic rock on footwall of vein, feldspars and mafic minerals completely altered to secondary minerals.

Clay Mineralogy: Illite with kaolinite and small amounts of chlorite and montmorillonite.

While the clay alteration is most pronounced along the G-3 zone there appears to be no essential difference between clay minerals present in the zone and those exposed in altered portions of the 4th level adit at some distance from the zone. The clay alteration may postdate the mineralization. Possible supporting evidence for this was observed on the face of the 301 sublevel, north of the 412 raise, where a clay mineral, probably allophane (refractive index about 1.470), appears to be depositing at the present time on altered granitic rocks of the G-3 zone.

Throughout most of the workings only one vein is present in the G-3 zone, but in the earlier workings on the 2nd level, near the junction of the Pal vein, as many as three veins were encountered. On the 4th level, the Footwall vein, parallel to the G-3 and about 20 feet in the footwall, was drifted for about 120 feet in 1963. During 1964, this vein was traced by a raise for 40 feet, at which point it thinned and disappeared. It may join the main G-3 zone below the 4th level.

1964

* 5

ORMSBY MINES LIMITED
LAFORMA PROPERTY

LOCATION AND SIZE

The LaForma property is situated at 3500 to 4000 feet above sea level on the southwest slope of Mount Freegold, latitude 62° 20 min. north, longitude 37° 00 min. west, 40 miles west of Carmacks, Yukon Territory. The property is composed of the original 19 claim LaForma group and the 14 claim Fairclough group.

GENERAL GEOLOGY

Mt. Freegold is an easterly outlier of the Dawson Range, a northwest-trending upland rising above the general level of the Yukon Plateau, and consisting largely of intrusive rocks of Coast Range and later age, flanked by intruded rocks of Precambrian to Tertiary age. Both geological reconnaissance and limited prospecting along the range indicate that it is a belt of widespread mineralization. The geology and mineral deposits of Mt. Freegold area are described in the following reports of the Geological Survey of Canada.

Carmacks District, Yukon, Memoir 189
 by H. S. Bostock, 1936 (Map 340A, Carmacks
 Sheet, 1 inch = 4 miles).

Geology and Mineral Deposits of Freegold Mt.,
 Carmacks District, Yukon. Memoir 214
 by J. R. Johnston, 1937. (Map 450A, Freegold
 Mt. Area, 1 inch = 1000 ft.).

As Map 450A shows, country rock in the mine area is medium to coarse grained grey granodiorite cut by dikes of andesite porphyry and of rhyolite or quartz porphyry. These dikes have irregular major northwest and minor northeast trends, and dips of 40 degrees to 90 degrees northeast and northwest respectively. Exploration at the property shows many smaller dikes in addition to those on the map. The rhyolite dikes cut the andesite porphyry and both types commonly show chilled borders and follow curving courses.

Later than all the rocks are shear zones, fractures, quartz veins and faults which, like the dikes, fall into two major sets striking north 20° to 50° east (Dip steep N.W.) and north 40° to 80° west (Dip N.E.) These structures include the gold bearing veins and shears.

DESCRIPTION OF VEINS

At least 9 separate veins have been recognized on the property and are quartz veins in shear zones of varying width and intensity, from veins occupying fracture planes between hard, competent wall rocks, to those in or adjacent to zones of soft pale-grey gouge and highly altered wall rocks. The main exploration effort to date has been carried out on the G-3 and Pal veins, and minor exploration completed on the Alpha and Rambler veins. To date, the northeasterly striking veins appear to contain the economic gold deposits.

MINERALIZATION

The quartz veins and gougy shears contain the metallic minerals pyrite, chalcopyrite, arsenopyrite, sphalerite, galena and native gold, with quartz tourmaline and altered wall rock or gouge as gangue. In the quartz, which is dull white to grey-blue in color, sulfides (predominantly pyrite) occur in fine grained streaks and seams. In the gouge zones, seams of solid friable pyrite up to 15 inches wide are seen. These show irregular to contorted shapes, obviously a result of crushing and movement on the gouge zones. Free gold was seen only in quartz, but sampling indicates that pyrite in both quartz and gouge zones is rich in gold. The gold-silver ratio is approximately 2 to 1.

Although abundant pyrite appears to be a prerequisite for high gold content, pyrite alone, as in the Pal zone, has not been productive in many locations. Highest assays have been obtained from portions of quartz veins carrying abundant pyrite. Arsenopyrite-tourmaline mineralization is probably not a prerequisite for ore, but rather an indication of strong hydrothermal activity in the mesothermal range.

WALL ROCK ALTERATION

Study of thin sections of granodiorite, quartz porphyry and andesite shows that all rocks are strongly altered, but that in most sections the original texture of the rock is preserved and not intensely sheared or brecciated. This confirms that the structure is a fissure system in which failure occurred on a number of discrete slips and fractures, rather than a shear zone in which schistosity or foliation was developed. This type of vein structure is consistent with the idea that the structure mineralization formed at shallow to medium depth and medium pressure.

The principal alteration product seen in thin section is probably sericite, with minor carbonate. Some of the widespread alteration may consist of a clay mineral such as kaolin and it is certain that clay minerals are developed in the form of fault gouge.

Oxidation of the veins and wall rocks is strongest where gouge seams, vein fractures or simply joining are most strongly developed in the granodiorite. It is likely that the oxidation or staining is largely an effect of downward percolating ground water, rather than evidence of actual strong oxidation at depth. Rusty zones intersected in drilling may therefore give a clue to the position of vein or fracture zones.

HISTORY AND DEVELOPMENT

The property was staked in 1930 and developed under options by N. A. Timmins Corporation in 1934-35, Yukon Consolidated Gold Corporation in 1935-36 and T. C. Richards of Whitehorse in 1939-40. From May 1940 to June 1962 work on the property was limited to yearly assessment requirements on surface only.

The above optioners carried out 1,650 feet of drifting and cross-cutting and 250 feet of raising on the G-3 and Pal veins, principally on the 2nd and 3rd levels to about 300 feet vertically below surface. During the Richards operation, 1,418 tons of ore were mined from 7 small stopes on the 2nd level, producing a reported 1,414 ounces of gold. Mill capacity was 10 tons per day and heads averaged 1.5 ounces per ton.

A 221 foot crosscut adit was driven beneath the Alpha vein, but results did not clearly indicate that the vein had been reached. Surface trenching in varying amounts has exposed at least 6 other veins.

Ormsby operations commenced in June 1962 and the 4th adit level was established 190 feet vertically below the 3rd level. The G-3 - Pal vein junction was reached after driving the adit 1,175 feet. The G-3 has been explored by drifting, crosscutting and diamond drilling for a length of 1,000 feet, of which 444 feet of drift were in ore. The Pal vein has been drifted for 85 feet with only low gold values obtained.

The ore shoots on the G-3 vein on the 4th level are as follows.

<u>Length Ft.</u>	<u>Width Ft.</u>	<u>Assay Oz Gold/Ton</u>
42	4.0	1.06
30	6.2	0.48
372	4.0	1.29

There is an additional length of 87 feet in two shoots averaging 0.27 and 0.38 ounces per ton over a width of 4.2 feet, which may make ore above or below the 4th level.

A 600 foot length of the Rambler vein has been explored by 10 surface diamond drill holes to a depth of 100 feet below surface. Total footage drilling was 2,077 feet. No ore was encountered but surface trenching to the north indicates continued strong vein structure.

METALLURGY

Mill tests on a small batch of ore by the Mines Branch, Ottawa, in 1951, showed that there are no particular problems in ore recovery. Over 75 per cent of the gold is free milling and a flow sheet including cyanidation should result in a minimum recovery of 95 per cent gold and 85 per cent silver.

FUTURE DEVELOPMENT

A greatly expanded development program is planned to commence in April 1964, which will include continued drifting north on the 4th level and extending drifts on the upper levels to reach and explore the main ore shoot. When work was suspended in December, the main 372 foot ore shoot had not been delimited, and the last drift face, more than 100 feet north of development on the upper levels, was in ounce ore over a width of 3.5 feet. Raising and diamond drilling will be carried out between the 4th level and surface. It is anticipated that results from this work will lead to the driving of a new low level production adit at an elevation 500 feet below the 4th level, where an excellent plant and camp site adjacent to a year round water supply on Seymour Creek has already been located.

GENERAL

The above information is from reports by Dr. A. P. Beavan and W. E. Clarke.


Walter E. Clarke, B. Sc., P. Eng.

Toronto, Ontario
February 6, 1964

CARMACKS AREA

Freegold Mountain#5 Ormsby Mines Limited (Laforma Property, 62°16'N, 137°06'W)

References: Bostock (1936a, pp. 52-56; 1941, pp. 22-26);
Johnston (1937); Skinner (1961, pp. 33-35; 1962, p. 34);
Green and Godwin (1963, pp. 20-23).

1963

Ormsby Mines Limited, controlled by Consolidated Discovery Yellowknife Mines Limited, holds 32 leased claims that include the original Laforma Group covering gold showings in the vicinity of Freegold Mountain. The company purchased the property in 1960 from W.J. Langham, G. Fairclough, and the late E. Forrest. Access to the property is via a 42-mile truck road from Carmacks, Yukon.

During 1961 and 1962 Ormsby Mines Limited improved the access road, constructed a camp, and collared and drove the No. 4 level, elevation 3,350 feet, a total of 1,364 feet.

From 2 June to 10 December 1963, drifting on the No. 4 level was extended 1,397 feet and 18 BX diamond drill holes totalling 2,031 feet were drilled from underground stations to explore the extension of both the Pal vein and the stronger G-3 vein. J.C. Byrne, President and Managing Director of Ormsby Mines Limited, in a letter to the shareholders (16 December 1963) summarized development as follows:

"The main ore shoot in the G-3 zone which lies north of any work on upper levels has been drifted for a length of 372 feet. Average grade is 1.29 ounces per ton over a width of 4 feet and the last drift face is still in ounce ore over a width of 3.5 feet. The G-3 zone on this level has now been drifted for a length of 1,000 feet of which 444 feet has been in ore which should mine out at \$38.45 per ton over a width of 5 feet after allowing for dilution. This is 185 tons per vertical foot . . ."

The G-3 zone strikes about N25°E and dips steeply north-west. In addition to the above work on the No. 4 level, the Rambler vein was mapped, and 10 AX holes totalling 2,077 feet were diamond drilled from the surface. Work on the property was facilitated by an assay laboratory in the camp.

Byrne (letter to shareholders, 16 December 1963) has announced an extended development program in 1964 that will include: further drifting on the No. 4 level, extending the drifts on the upper levels, and raising and diamond drilling from the No. 4 level to the surface and to 300 feet below the No. 4 level. Good values found by the above would result in the driving of a low-level production adit, 500 feet below the No. 4 level, and the establishment of a permanent plant in the valley of Seymour Creek.

The G-3 zone is continuous and marked by faulting and clay-like alterations. The zone, in part, follows a quartz porphyry - granite contact, but generally is within granodiorite. When visited by Godwin at the beginning of August the following was exposed on one face in the G-3 on the No. 4 level.

- (1) The hanging wall was altered granodiorite that contained minor pyrite stringers and one set of tourmalinized joint surfaces.
- (2) A 4 1/2-foot wide zone (G-3) striking N20°E and dipping 80° northwest comprised: (i) a 1-foot width, hanging-wall side, that contained pyrite and arsenopyrite, and was distinctly banded with soft, black tourmaline and broken pieces of vein quartz; (ii) a 3 1/2-foot width, footwall side, that contained abundant light brown clayey gouge and pods of graphite, but notably contained only minor vein quartz.
- (3) The footwall was slightly altered granodiorite.

When visited by the writers at the beginning of November an 8-inch wide quartz vein that paralleled the Pal vein and was about 10 feet from it in the hanging wall had been drifted along for 40 feet, but the vein appeared to be discontinuous. Seventy feet of drifting has also been done along the Pal zone.

#5 Freegold Mountain

1960

Ormsby Mines Limited in 1960 purchased the Laforma gold mine on Freegold Mountain, 28 miles west of Carmacks, from W. J. Langham and the late E. Forrest, and the adjoining property from G. Fairclough. The properties, consisting of nineteen and nine claims respectively, are on the south side of Freegold Mountain at an elevation of between 3,500 and 4,000 feet. Access is by a 42-mile truck road from Carmacks.

Lode gold was discovered on Freegold Mountain in 1930 by P. E. Guder, but the most important discovery was the northeasterly striking G-3 zone on the Goose claim of the Laforma property. The showing was discovered and staked by W. J. Langham in April 1931. Another promising showing—called the 'Pal' vein—which strikes northwesterly and may join the G-3 zone, was discovered and staked by Langham in June 1931. Still another important vein—the Rambler—which parallels the G-3 zone and lies about 2,300 feet southeast of it,

was staked in 1945. Two other northwesterly striking veins—the Alpha and Tourmaline—were staked in 1945.

In 1934, N. A. Timmins Corporation optioned the property, constructed a winter road to it and drove No. 2 level adit, 645 feet of drift, and three short crosscuts. In the summer of 1935 the Timmins Corporation option was relinquished and Yukon Consolidated Gold Corporation took an option on the property. The latter company advanced the drift 400 feet, drove five short crosscuts on the No. 2 level and 165 feet of raise from the No. 2 level to the surface, as well as a 220-foot adit, driven to reach the Alpha vein. The option was dropped in May 1936. During the winter of 1936-37 the owners and associates of the Fairclough property erected a 10-ton mill and carried out development on their property for a short period only.

Late in 1938, T. C. Richards of Whitehorse optioned the Laforma property and moved the 10-ton mill from the Fairclough property to the No. 2 adit. One hundred and twenty-five feet of cross-cutting and seven stopes were started on the No. 2 level. The No. 3 level adit was driven 365 feet to the G-3 zone and 350 feet of drifting along the zone was completed, as well as an 85-foot raise to the No. 2 level. During the summer of 1939 a truck road was built from the old Dawson-Whitehorse Road up Crossing Creek to the millsite, a distance of 25 miles. Richards terminated the option in June 1940 because of wartime shortages of supplies and labour. Between January 1939 and June 1940, Richards produced 1,418 tons of ore averaging 1.46 ounces of gold to the ton; however, he recovered only 1,414 ounces of gold because of improper mill equipment and shortage of water.

Laforma mine was held under option from 1951 to 1953 inclusive by Garskic Gold Mines Limited who performed \$20,000 worth of exploratory assessment work (mainly trenching) on the claims.

Ormsby Mines Limited planned to explore the property in 1960 by driving about 3,000 feet of adit and drifts to test the main ore zone about 650 feet below the surface. At the same time the company intended to do surface stripping, sampling, and detailed geological mapping. But because of the poor condition of the access road, the company did not go ahead with its program.

The mine has three adits. No. 1 is at an elevation of 3,900 feet, is 65 feet long, and follows a 10-foot-wide quartz vein in a northeasterly direction in the centre of the main shear zone. No. 2 adit—the main level—is at an elevation of 3,625 feet. The adit goes in a northerly direction for 170 feet where it intersects the main shear zone. There a 160-foot drift extends westerly and the main drift extends northeasterly along the shear zone for 820 feet. Short crosscuts every 100 feet along the drifts extend east and west into the hanging-wall and foot-wall of the shear zone. Three main veins up to 2 feet thick and

within the shear zone have been mined in seven small stopes. No. 3 adit, at an elevation of 3,545 feet, goes northward for 365 feet to the shear zone. There a 50-foot drift extends to the west and the main drift follows the shear zone to the northeast for 300 feet.

A description of the geology is given by Bostock (1936a, p. 54; 1941, p. 24) and Johnston (1937, p. 14). Consulting geologists A. P. Beaven and L. F. Gauvreau examined the property in 1951 and 1953 respectively for Garskie Gold Mines Limited, and some of the following information is taken from their reports.

The property is underlain by grey, medium- to coarse-grained granodiorite, intruded by dykes of andesite porphyry, quartz-feldspar porphyry and rhyolite. The granodiorite is cut by two sets of fracture systems and shear zones: one strikes northeasterly and dips steeply northwest; the other strikes northwest and dips steeply northeast. The important veins appear to be in the northeasterly trending system and include the G-3 or main zone on the Goose claim and the Rambler zone on the Connie and Donalds No. 4 claims. Those of the northwest-trending system include the Pal vein on the Pal claim, the Alpha vein on the Yukonia No. 1 claim, and the Tourmaline vein on the Yukonia No. 3 claim.

The G-3 zone is a 10- to 40-foot-wide shear zone that strikes N22°E and dips 70 to 80°W. The south end of the zone swings to the west and may join the northwest-striking Pal vein. The G-3 zone contains gouge seams from a few inches to 10 feet thick, bands of crushed and altered granodiorite, and quartz veins. The quartz veins are up to 10 feet wide in No. 1 adit, but in No. 2 and No. 3 levels they do not appear to be more than 2 feet wide. Between the adit and the 400-west crosscut on No. 2 level, three parallel veins—referred to as 'Foot-wall', 'Centre', and 'Hanging-wall' veins—are present. The gold is present with pyrite, chalcopyrite, arsenopyrite, sphalerite, and galena in both the quartz veins and the gouge.

CARMACKS AREA

Freegold Mountain

#5 Laforma Property

NTS 115 I 6

References: Bostock (1932*, pp. 7A-13A; 1933*, pp. 8All-14All; 1934*, pp. 5A-8A; 1935, pp. 8-9; 1936a, pp. 52-56; 1936b, pp. 9-12; 1937, pp. 7-11; 1938, pp. 11-12; 1939, pp. 15-16; 1941, pp. 22-26); Johnston (1937); Skinner (1961, pp. 33-35).

1961

Ormsby Mines Limited in 1960 purchased the Laforma Gold Mine on Freegold Mountain, 28 miles west of Carmacks, from W.J. Langham and the late E. Forrest, and the adjoining property from G. Fairclough. The properties, consisting of nineteen and nine claims respectively, are on the south side of Freegold Mountain at an altitude of between 3,500 and 4,000 feet.

In 1961 Ormsby Mines Limited improved the 42-mile access road and hauled 50 tons of equipment to the property from Yellowknife. In 1962 it plans to haul 75 tons consisting mainly of plant equipment and portable steel buildings to the property, to erect the buildings, install the equipment, drive a low-level adit, and do surface stripping, sampling, and detailed geological mapping. The 1,100-foot adit is intended to cut the veins 650 feet below the surface (180 feet below the old adit). About 2,000 feet of drifts and crosscuts will also be driven.

Details of the history of mining operations and the geology of the Freegold Mountain deposits are given in the Mineral Industry of Yukon report for 1960 (Skinner, 1961, pp. 33-35).

*Reprinted in GSC Mem. 284 (Bostock, 1957).

WHITEHORSE MINING DISTRICT

CARMACKS AREA

Freegold Mountain

NTS 115 I 6

#5 Ormsby Mines Limited (Laforma Property, 62°16'N, 137°06'W)

References: Bostock (1936a, pp. 52-56; 1941, pp. 22-26);
Johnston (1937); Skinner (1961, pp. 33-35; 1962, p. 34).

* Reprinted in Geological Survey of Canada, Memoir 284 (Bostock,
1957, pp. 576-578). 1962

Ormsby Mines Limited; controlled by Consolidated Discovery Yellowknife Mines Limited, holds 32 claims that include the original Laforma Group covering gold showings in the Freegold Mountain area. The property is reached by a 40-mile truck road from Carmacks, Yukon.

During 1962, the company built a camp at an elevation of 3,350 feet and drove the No. 4 level at the same elevation to test the mineralized structure at depth. The level was collared on August 5 and underground work discontinued on November 19, as the camp was not equipped for winter operation. A total of 1,364 feet of development work was completed. Up to 17 men were employed.

The original showing on the Laforma Group was staked by W.J. Langham in 1931 and development work has been done intermittently since. A number of showings are known, but most of the underground work has been done on a single zone, referred to as the G-3. Prior to 1962, underground work on this showing was done from adits at three levels: No. 1 at an elevation of about 3,900 feet, No. 2 at about 3,625 feet, and No. 3 at about 3,545 feet. The original owners put in the No. 1 level and commenced the No. 2. Both the N.A. Timmins Corporation, who optioned the property from August 1934 to June 1935, and the Yukon Consolidated Gold Corporation, who optioned the property from June 1935 to May 1936, did considerable work on the No. 2 level. T.C. Richards of Whitehorse, Yukon, optioned the property late in 1938, drove the 3rd level, and built a small mill at the portal of the No. 2 level. Mining commenced in January 1939 and continued until June 1940 when the option was dropped. Total production during this period was about 1,437* ounces of gold (Bostock, 1941). Garskie Gold Mines Limited held an option on the Laforma property from 1951 to 1955. Some of the following information, particularly on the 2nd level, which is now inaccessible, is taken from a report prepared for the Company by consulting geologist, A.P. Beavan. Ormsby Mines Limited optioned the claims in 1957 and has subsequently purchased them.

The property lies west of the limit of the last glaciation, bedrock is deeply weathered, and exposures are poor. Most of the area near the workings is underlain by granitic rocks (Johnston, 1937). On both surface and underground, all gradations occur between fresh granitic rocks and highly altered ones in which only the quartz remains, both the feldspar and the mafic minerals having been replaced by fine-grained secondary minerals. Drusy cavities lined with fine quartz crystals occur in some of the altered rocks. Most of the granitic rocks are believed to be either quartz monzonite or granodiorite. The granitic rocks have been intruded by both quartz-feldspar porphyry and andesite porphyry. The quartz-feldspar porphyry is white and contains phenocrysts of quartz and feldspar to several millimeters in a fine-grained

* Does not include return from 52 tons of concentrate shipped during 1940.

matrix. This rock has also undergone alteration and both the feldspar phenocrysts and the groundmass are commonly replaced by minor calcite and fine unidentified material, probably mainly sericite. The andesite porphyry is grey-green and contains phenocrysts of feldspar. It has undergone a similar alteration.

The gold in the G-3 zone occurs in lenses of quartz and pyrite developed in a zone of shearing in the granitic rocks. None of the quartz veins below the No. 1 level exceeds 2 feet in thickness. The zone is adjacent to a contact between granitic rocks and quartz-feldspar porphyry for much of its length.

Most development work has been done on the 2nd level, now inaccessible, where the G-3 zone has been traced 800 feet trending 025 degrees azimuth and dipping steeply northwest. There, three gold-bearing veins occur within the zone, but insufficient development work has been done to recognize these three veins on the other levels (if they are present). Near the main crosscut on the 2nd level, the zone appears to swing to a northwest trend; this part may be continuous with a northwest-trending surface showing referred to as the Pal vein. A similar swing also occurs on the 3rd level and possibly on the 4th, although insufficient development work has been done to be certain of the latter.

The 4th level was driven at a bearing of 26 degrees azimuth for 1,062 feet, after which it was diverted slightly to the east, intersecting the projection of the G-3 zone 1,206 feet from the portal. The zone was then followed for 158 feet. Where intersected the zone trended east, but after a short distance it swung to a trend of 25 degrees azimuth, parallel to that on the 2nd and 3rd levels. The company reports (personal communication) that the average of face sample assays indicates two sections of low grade: 0.27 ounce of gold per ton over a width of 4.3 feet for a length of 52 feet, and 0.38 ounce of gold per ton over a width of 4.3 feet for a length of 17 feet.

When L. Green visited the property early in November, the above workings had just entered the G-3 zone, at which point the structure trended east and dipped vertically. Massive-appearing quartz-feldspar porphyry was exposed on the north wall and appeared to have an intrusive contact with altered granitic rocks. Within the zone, two irregular faults, which appeared to join at the point where they entered the workings, could be traced about 40 feet in the back to the face where they were about 5 feet apart. The space between them was filled with what appeared to be sheared and altered quartz-feldspar porphyry. Both breaks were irregular zones to a few inches in width and contained pods of both grey, greasy-appearing quartz, and fine pyrite. All rocks exposed within the G-3 zone are soft and appear to have been altered to sericite, carbonate, and possibly clay minerals. Those rocks away from the faults retain much of their original texture, but those close to them have been altered to a clay-like gouge in which little of the original texture remains. The intense alteration of the rock to clay-like material was observed only in the mineralized zone, but

less intense alteration of the feldspars to fine-grained secondary minerals was observed both on surface and underground.

The results of the 1962 operation indicate that the G-3 zone can be traced for a vertical distance of about 600 feet and that it is accompanied by intense shearing and the presence of a clay-like alteration throughout this distance. Gold within the zone is believed to occur in both irregular quartz veins or lenses and in irregular streaks and pods of fine-grained pyrite. Quartz-feldspar porphyry contacts appear to parallel the zone for over half the developed length.

46

Dickson Yukon Prospecting Syndicate (approximately: 62°00'N to
62°15'N, 137°15'W to 138°00'W)

1963

The Dickson Yukon Prospecting Syndicate, under the direction of prospector G. Dickson, Whitehorse, Y.T., holds 40 claims

near the Revenue Copper property (62°19'N, 137°16'W), 24 claims on the east end of Freegold Mountain (62°16'N, 137°03'W), and 200 claims in the Vangorda Creek area (centre approximately 62°15'N, 133°15'W). The syndicate, formed in April 1963, includes: Faraday Uranium Mines Limited, Homestake Mining Company Limited, Union Carbide Corporation Limited, United States Smelting, Refining and Mining Company Limited, Violamac Mines Limited, and T. Lindsley interests. Other individuals and companies have also invested in the syndicate.

During 1963, prospecting was done mainly in the area west of Mount Nansen to the Klaza River. In the field, Dickson supervised the operation of 8 men and one D-7 bulldozer. Nothing of particular interest was found and no claims were staked on the basis of the prospecting in the above area.

No Map Reference

#7 Tinta Hill

Conwest Exploration Company Limited in 1959 and 1960 explored a large sulphide vein on Tinta Hill, 4 miles east of Freegold Mountain. According to Bostock (1936a, p. 55; 1941, p. 26), this vein was discovered in 1930 and explored until 1932 by trenches and shallow shafts. In 1939 or 1940 the vein was restaked and other large veins were discovered in the vicinity. Several trenches were dug, two shafts were sunk to 50 and 35 feet, and a 52-foot adit was driven into a 22-foot vein.

In 1959, Conwest Exploration Company Limited staked 18 claims over the original discovery and exposed the vein for 3,000 feet. In 1960 the company staked 27 more claims around the showing and drilled five diamond-drill holes, totalling 1,345 feet, to test the vein at depth. The drilling along 1,200 feet of the zone up to a depth of 350 feet showed that a persistent galena-sphalerite vein up to 2 1/2 feet wide lies along a shear zone about 100 feet wide. Chalcopyrite and pyrite are disseminated on either side of the vein and in places the mineralized zone is up to 10 feet wide. Silver values are good at the surface, but poor at depth. Lead, zinc, and copper values are good at depth, but the mineralized zone is too narrow to be of economic value at the present time.

The following geological description is taken from Bostock (1936a, p. 55). The vein varies between 3 and 6 feet in width and contains pyrite, galena, sphalerite, chalcopyrite, tetrahedrite, and minor amounts of silver and gold. It occurs in granite, strikes N61°W, dips nearly vertically, and is traceable for more than 4,000 feet.

(Copper)

#8 Revenue Copper (62°20'N, 137°16'W)References: Postock (1936a).

1964

Late in 1964, Canex Aerial Exploration Limited optioned 15 claims covering the showing from F. Guder of Carmacks, Yukon and staked an additional number claims in the area. The property, located at an elevation of about 3,000 feet lies near Revenue Creek, the local name for a small tributary of Big Creek. It may be reached by a bulldozer trail, about 8 miles in length, leading from the Laforma property. Early in 1965, the company moved a drill to the property and drilled 3 holes with a total length of 542 feet in an area where a geochemical survey indicated a high copper content. Only minor mineralization was encountered and the option was subsequently dropped. The area drilled, about 1,500 feet west of the original showing, is covered by overburden and deep cuts put in by Guder using ground-eluvicing did not reach bedrock. The property was visited in August 1964, prior to the recent work.

The original showing, found by Guder while placer mining on the creek, is on the east bank of the east fork of Revenue Creek about a mile from the mouth. Workings consist of a cut and prospect adit, now caved, both about 30 feet above the creek and a small cut about 200 feet up the slope. Material on the dump consists of a buff-weathering "breccia" with coarse crystals of pyrite and traces of chalcopyrite. The showing was tested by geophysical surveys in 1954 and in 1955, Teck Exploration Company Limited drilled 5 diamond drill holes with a length of 1,401 feet beneath the showing. The holes contained only minor amounts of pyrite and chalcopyrite. At the same time, the company drilled two holes with a total length of 341 feet on the Forrest Ridge showing, located some 6,500 feet to the SE, and one hole, No. 2, cut a small amount of galena and sphalerite.

On the main showing, specimens of country rock from both surface exposure and diamond drill core are so highly altered that the original lithology can not be determined. Examined microscopically, the rock is pale buff and shows considerable variation in texture including:

1151

1151

a rock with apparent uniform grain size of about 2 mm, a porphyritic rock with ghosts of altered feldspar crystals to 5 mm, and a breccia composed of fragments to about 25 mm. Exposed surfaces of the rock are soon flecked with rusty spots through the oxidation of contained iron-bearing carbonate. Examined microscopically in index oils, the rock consists of: fine quartz, much of which is probably of secondary origin; fine muscovite, (replacing feldspar?); irregular grains of carbonate; and tiny pyrite cubes. The carbonate has a refractive index N_o between 1.71 and 1.73 and is probably a ferroan dolomite or ankerite although it may be an iron-bearing magnesite. In addition to the previous minerals, a specimen from the upper cut contained partially altered crystals of orthoclase feldspar. In the author's opinion, the country rock of the showing may have originated through the extensive alteration of a porphyritic rhyolite breccia (unit 13, Bostock, 1936a), although others who have worked on the property have suggested that the rock is an altered arkose.

The recent drilling by Canex is reported (personal communication) to have cut altered augite-biotite quartz diorite. The rock contained minor pyrite and chalcopyrite associated with the ferromagnesian minerals. Core from the Forrest Ridge showing is much as that from the main showing although dark green, banded, chlorite-rich rocks are also present. One specimen of core contained partially altered orthoclase feldspar.

Williams Creek

(Copper)

9 Bonanza King Property (62°23'N, 136°38'W)References: Cairnes (1903, p. 10*; 1910, pp. 57-60)*;
Eostock (1936a, p. 56).

1965

The Bonanza King group of 4 crown-granted mineral claims is held by C. F. G. Goulter of Carnacks, Yukon. The main workings, on the Bonanza King Claim, are located on the east side of Nancy Leo Creek about 1,000 feet from the mouth. The creek is a tributary of Williams Creek and joins the latter about 3/4 of a mile above the mouth. A wagon road leading from the Yukon River about one mile above the mouth of Williams Creek is almost completely overgrown. Copper showings were first staked in the area in 1907 and the Bonanza King property was visited by Cairnes in 1907 (1903, p. 10) and 1909 (1910, pp. 57-60). The shaft and upper adit had been driven at the time of his visit in 1909 and only the lower adit has been driven subsequently, presumably about 1913. The author visited the property in July 1965.

The showings consist of quartz lenses, up to 5 feet in width and carrying copper minerals, that occur in altered volcanic rocks of the Mount Nansen group (unit 7, Eostock, 1936a, Map 340 A) close to the contact of later granitic rocks (unit 10, op. cit.). The lenses contain minor bornite and chalcopyrite, now mainly altered to secondary copper minerals, and a small amount of bright pink microcline similar to that in the country rocks. They lie in the plane of foliation (about N 40°W and dipping steeply) of the enclosing volcanic rocks and are believed to consist of a number of echelon lenses rather than a single vein although outcrops are poor between the workings. Rocks assigned to the Mount Nansen group vary from fine grained green volcanics to gneissic rocks crowded with bright pink microcline feldspar crystals similar to those in the nearby granitic rocks. The latter are highly foliated with coarse phenocrysts of pink microcline to about 25 mm and much green hornblende. The workings, all partially caved, consist of a lower adit about 10 feet above creek level, an upper adit about 200 feet above the creek level, and a shaft an additional 200 feet higher in elevation.

The lower adit, now caved at about 210 feet, follows a quartz vein up to 5 feet in width that trends about N 40° W and dips 60° SW. Wall rock consists of volcanic rocks that are in part altered to buff weathering quartz carbonate rock and in part crowded with microcline crystals and gneissic in appearance. The quartz is fractured and rusty weathering with a minor amount of copper staining. A composite sample of material picked from the dump and containing minor bornite and chalcopyrite assayed*: trace of gold, 0.64 ounces of silver per ton and 1.6 per cent copper.

The second adit, located to the NW of the lower adit and about 200 feet above it in elevation, lies about 40 feet NE of the contact of the granitic rocks. The adit was driven on a trend of N 45° W for a distance of about 50 feet and a cross-cut to the EW

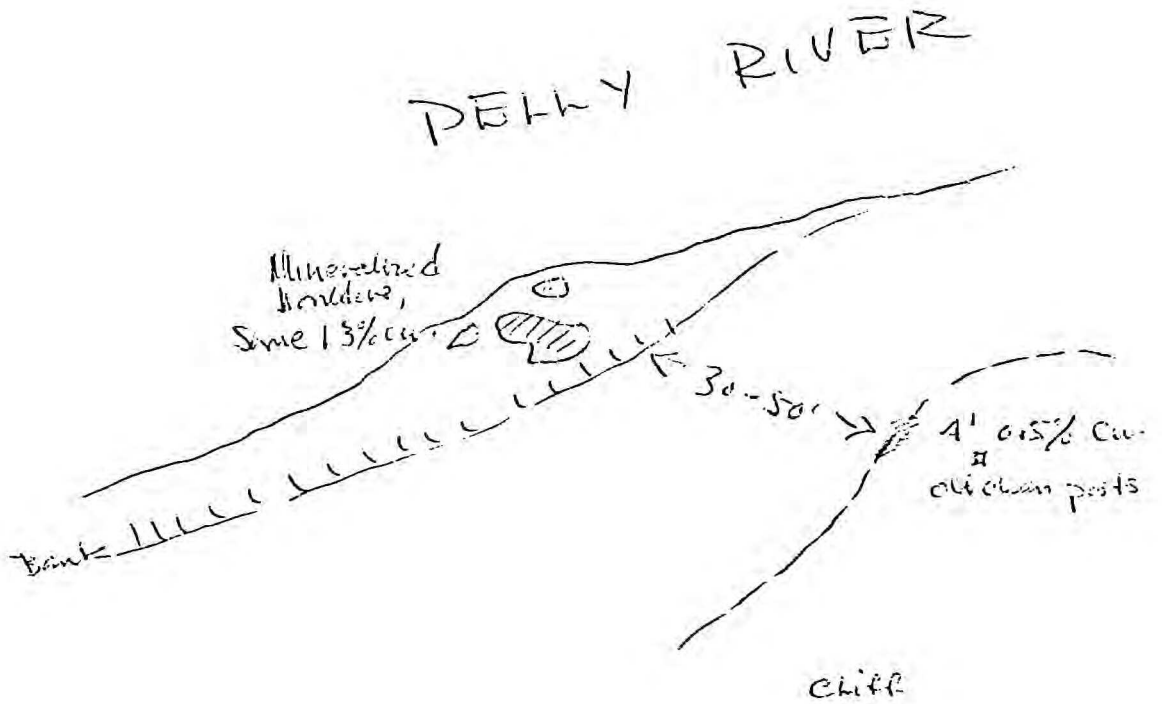
* Assayed by G. Spalding, Whitehorse, Y.T.

about 40 feet from the portal is now caved at 20 feet. The adit is in sheared and altered volcanic rock containing scattered quartz stringers to a few inches in width and parallel to the foliation.

Further to the NW and about 200 feet in elevation above the second adit, a shaft about 25 feet deep has been sunk on a zone about 8 feet wide of quartz with some copper stain on the contact between volcanic and granitic rocks. The zone appears to trend about N 70° E and dip 80° S. A chip sample taken across 4 feet on the lip assayed*: 0.01 ounces of gold and 0.82 ounces of silver per ton and 2.4 per cent copper.

The Homestake property on Merrice (Merritt) Creek, about 3 miles south of the Bonanza King property, was not visited but from the description given by Cairnes (1910, pp. 57-60) it appears to be a similar type of deposit.

* Assayed by G. Spalding, Whitehorse, Y.T.



Sketch of minor copper occurrence on Pelly River at Bradley's Canyon.

Do not bother re-examining - do
 geochron. & prospecting at area as a
 whole.

PLACER OCCURRENCES

#1 T. Wheeler (62°06'N, 137°12'W)

References: Green and Godwin (1963, p. 64; 1964, p. 83).

T. Wheeler holds a 1-mile ¹⁹⁶⁴ lease near the head of Nansen Creek and during the 1964 season employed A. Van Bibber to operate it from July 1st to August 30th. Production for the season was 121 ounces of crude gold.

CARMACKS AREA

Nansen Creek

#1

T. Wheeler (62°06'N, 137°12'W)

Reference: Green and Godwin (1963, p. 64).

¹⁹⁶³
T. Wheeler operates, on a part time basis only, a bulldozer-sluicing plant on a 1-mile lease on the east fork of Nansen Creek. In 1963, because of difficulty in getting equipment to the property, sluicing was carried out for only 18 hours. Twenty-three ounces of crude gold were produced.

CARMACKS AREA

Nansen Creek

#1 T. Wheeler (62°06'N, 137°12'W)

¹⁹⁶²
T. Wheeler operates a bulldozer-sluicing plant on a 1-mile lease on the east fork of Nansen Creek. He produced about 35 ounces of crude gold during 1 1/2 months in the summer of 1962.

#2 Seymour Placers (62°20'N, 137°16'W)

1964

Seymour Placers, operated by A.W. Warville and son, M. Warville, lease 10 placer claims on a tributary creek (locally known as Revenue Creek) to Big Creek from P.F. Guder. Revenue Creek enters Big Creek on the right limit about 4 miles upstream from the mouth of Seymour Creek. In addition, the Warvilles hold 2 one-mile placer prospecting leases on Mechanic Creek, another right limit tributary about 1 mile upstream from Revenue Creek. During 1964, Warville and his son working on Revenue Creek, sank a prospect shaft to bedrock and did some preliminary stripping. The shaft, 24 feet deep, is located about one-half mile up the creek. About 7 ounces of crude gold were recovered during the season, most of which came from the shaft. P.F. Guder has produced a small amount of gold in the past from small open cuts, which did not reach bedrock.

#3 Big Creek

NTS 115 I 6

1961

Leo Proctor of Proctor Construction Company Limited, Whitehorse, acquired four 5-mile prospecting leases in the autumn of 1960 on Big Creek—an easterly flowing tributary of Yukon River in Carmacks map-area. The leases adjoin and extend above Stoddart Creek. The ground was to be tested with a Keystone drill during the spring of 1961. (The geology of the placer deposits of this area is described by Bostock, 1936a, p. 51.)

#1

1960

The Yukon Coal Company Limited—owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited—operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production from 1948 to 1960 inclusive was about 64,500 tons, an average of 6,500 tons a year. In 1960, production was 4,445 tons, most of which was used by United Keno Hill Mines at Calumet.

Most of the following information was kindly supplied by United Keno Hill Mines Limited. The main adit is 350 feet above the river and follows the main coal seam northward for 1,800 feet. The coal is taken from rooms and pillars up to 200 feet above the north end of the adit. The coal seam dips 50 to 55°W and averages 10 feet in thickness, but in places it is as much as 16 feet thick.

The geology of Tantalus Butte, the workings of the mine, and coal analyses are given by Bostock (1936a, p. 59). Tantalus Butte is underlain by conglomerates, sandstones, etc. of the Tantalus formation of Jurassic or Cretaceous age. Cairnes (1910, p. 52) stated that the strata contain three coal seams that outcrop near the top of the Butte and are 8 feet 10 inches, 9 feet 10 inches, and 7 feet thick. The mine workings expose two seams—an upper one about 2 feet thick and a lower one that varies from 7 to 16 feet thick. The main adit follows the lower seam. This seam is cut by several small faults with only a few feet of displacement, but about 1,300 feet from the portal the seam is offset to the right a distance of 90 feet along a northeasterly trending, steeply dipping fault. About 500 feet farther north there is a similar fault, of unknown offset.

CARMACKS AREA

#1 Tantalus Butte Mine (62°08'N, 136°16'W)

References: Bostock (1936a, pp. 59-62); Skinner (1961, p. 30; 1962, p. 30)

1962

The Yukon Coal Company Limited, which is owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited, operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production by Yukon Coal Company Limited from 1948 to 1962 inclusive was 101,711 tons. Annual production during this period has varied from less than 4,000 tons to a maximum of 14,113 tons in 1954. In 1962, production was 7,650 tons, which, with the exception of about 50 tons, was used by United Keno Hill Mines Limited at Elsa and Calumet.

Carmacks#1 Tantalus Butte Mine

NTS 115 I

References: Cairnes (1910, pp. 52-53); Bostock (1936a, pp. 59-62; 1937, pp. 13-16; 1939, p. 17; 1941, pp. 26-27); Skinner (1961, p. 30).

1961

The Yukon Coal Company Limited—owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited—operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production by Yukon Coal Company Limited from 1948 to 1961 inclusive was about 91,000 tons, an average of 6,500 tons a year. In 1961, production was 7,804 tons, most of which was used by United Keno Hill Mines at Elsa and Calumet.

The Yukon Coal Company Limited, which is owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited, operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production by Yukon Coal Company Limited from 1948 to 1963 inclusive was 109,943 tons. Annual production during this period has varied from less than 4,000 tons to a maximum of 14,113 tons in 1954. In 1963, production was 8,232 tons, which, with the exception of about 144 tons, was used by United Keno Hill Mines Limited at Elsa and Calumet. A maximum crew of 10 men is employed.

The main entry, elevation 2,056 feet and about 350 feet above the Yukon River, follows the main coal seam northward for 2,300 feet. The seam dips about 55°W. When visited late in 1963, most of the production was coming from a south-raking block that is bounded by northeast-trending, steep southeasterly dipping faults, which cross the main entry about 1,300 and 1,800 feet from the portal. The seam within this block averages about 11 feet in thickness. It has been developed by six counter entries above the main entry and raises, some of which reach the surface. Mining, using the room and pillar method, was being carried out from a number of counters. Exploration was also being carried out beyond the northern fault.

The coal is of the high-volatile Bituminous Group. It occurs in the Tantalus Formation, which consists (Bostock, 1936a, p. 28) largely of conglomerate, with some sandstone, shale, and a few coal seams. Wheeler (1961, p. 74) considered the Tantalus Formation to be of Upper Jurassic (?) and Lower Cretaceous age.

three counters have been established above the main entry. At the time of the visit all the mine production was being obtained from the development work in the new block.

A channel sample of the coal, taken in No. 1 Room, 50 feet north from No. 18 Raise on No. 2 Counter, where the seam has an apparent thickness of 16 feet, was analysed by the Mines Branch of the Department of Mines and Technical Surveys with the following results:

Laboratory No.	2251-65	2252-65	
Proximate Analyses (Dry Basis)			
Ash	24.1	15.1	
Volatile Matter	31.8	32.2	
Fixed Carbon	44.1	52.7	
Ultimate Analysis (Dry Basis)			
Carbon	61.0	69.5	
Hydrogen	3.9	4.1	
Sulphur	0.3	0.2	
Nitrogen	0.8	0.9	
Ash	24.1	15.1	
Oxygen (by difference)	9.9	10.2	
Equilibrium Moisture	2.4	3.1	
Calorific Value	Btu/lb	10,580	11,720

The coal is classified as high volatile B bituminous according to the ASTM System of Classification of Coal by Rank. All samples are agglomerating and have a swelling index of 1 (ASTM). Coals of this type would not be expected to yield metallurgical grade coke.

2251-65: 8 foot channel sample from footwall of seam.

2252-65: 8 foot channel sample from hanging-wall of seam.

COAL MINING

WHITEHORSE MINING DISTRICT

CARMACKS AREA

NTS 115 I

#1 Tantalus Butte Mine (62°08'N, 136°16'W)

1963
References: Cairnes (1910, pp. 52-53); Bostock (1936a, pp. 59-62; 1938, p. 13; 1939, p. 17; 1941, pp. 26-27); Wheeler (1961, p. 74); Skinner (1961, p. 30; 1962, p. 30); Green and Godwin (1963, p. 65).

COAL MINING

WHITEHORSE MINING DISTRICT

CARMACKS AREA

NTS 115 I

#1

Tantalus Butte Mine (62°08'N, 136°16'W)

References: Cairnes (1910, pp. ¹⁹⁶⁴52-53); Bostock (1936a, pp. 59-62); Wheeler (1961, p. 74); Skinner (1961, p. 30; 1962, p. 30); Green and Godwin (1963, p. 65; 1964, pp. 83-84).

The Yukon Coal Company Limited, which is owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited, operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production by Yukon Coal Company Limited from 1948 to 1963 inclusive was 109,941 tons. Annual production during this period has varied from less than 4,000 tons to a maximum of 14,113 tons in 1954. In 1964, production was 7,220 tons, which, with the exception of about 120 tons, was used by United Keno Hill Mines Limited at Elsa and Calumet. A maximum crew of 11 men is employed.

The coal is of the high-volatile Bituminous Group. It occurs in the Tantalus Formation, which consists (Bostock, 1936a, p. 28) largely of conglomerate, with some sandstone, shale, and a few coal seams. Wheeler (1961, p. 74) considered the Tantalus Formation to be of Upper Jurassic (?) and Lower Cretaceous age.

The main entry, elevation 2,056 feet and about 350 feet above the Yukon River, follows the main coal seam northward and is about 2,550 feet in length. The seam strikes north and dips about 55°W. During 1964, most of the production came from a south-raking block that is bounded by northeast-trending, steep southeasterly dipping faults, which cross the main entry about 1,300 and 1,800 feet from the portal. The seam within this block averages about 11 feet in thickness. It has been developed by six counters above the main entry and raises, some of which reach the surface. Mining, using the room and pillar method, was being carried out from a number of counters.

When the writer visited the property early in 1965, a seam about 18 feet in width had been picked up beyond the northern fault in the main entry and followed for about 200 feet. This seam lies in about the projected position of the seam south of the fault, but it is not known whether it is the same seam. Where exposed in the main entry, about the location of the planned No. 20 raise, the seam had a true width of about 15 feet with the footwall not exposed. There were no visible partings in the seam as exposed, although a few discontinuous dark siliceous bands appear to be present. As broken, the coal from this face is about 30 per cent lump. Three raises, Nos. 17, 18, and 19 are being driven in the new block and

Chemical and Physical Properties

Laboratory Number	CHANNEL				DUST	MINE RUN
	2596 -65	2597 -65	2598 -65	2599 -65	2600 -65	2601 -65
<u>Proximate Analysis</u>						
Moisture.....	% 1.4	2.1	1.9	2.0	2.3	2.0
Ash.....	% 9.1	11.1	15.8	17.8	14.1	13.7
Volatile Matter.....	% 35.8	33.3	32.0	30.6	32.8	33.1
Fixed Carbon.....	% 53.7	53.5	50.3	49.6	50.8	51.2
<u>Ultimate Analysis (Dry Basis)</u>						
Carbon.....	% 73.2	73.1	67.9	66.7	69.4	70.7
Hydrogen.....	% 4.9	4.6	4.3	4.1	4.4	4.4
Sulphur.....	% 0.3	0.3	0.6	0.5	0.5	0.3
Nitrogen.....	% 1.0	1.0	0.9	0.9	1.0	0.9
Ash.....	% 9.2	11.3	16.1	18.2	14.5	14.0
Oxygen.....	% 11.4	9.7	10.2	9.6	10.2	9.7
<u>Calorific Value (Moist Basis)</u>						
Btu/lb.	12,590	12,290	11,210	11,100	11,680	11,850
Grindability.....	46	46	73	61	61	60
<u>Ash Fusibility</u>						
Initial Deformation Temp. °F	2070	2030	2070	2050	2120	2100
Softening Temp. Spherical °F	2130	2120	2150	2140	2240	2210
Softening Temp. Hemispherical..... °F	2210	2190	2200	2160	2310	2260
Fluid Temp. °F	2280	2210	2260	2240	2370	2340
Equilibrium Moisture.....	2.9	2.8	3.0	2.8	4.3	3.3

2596-65 to 2599 - Channel sample across the face of the main entry
11 June 1965

Hanging-Wall	Thickness in feet	
	Unit	Total from Base
2596-65 - Coal with about 1 inch of "bone at base"	1.7	13.4
2597-65 - uniform coal with small lenses of "siliceous material"	5.4	11.7
2598-65 - soft clay bands and dirty coal	1.9	6.3
2599-65 - uniform coal with small lenses of "siliceous material"	4.4	4.4

Foot Wall

2600-65 - Sample of dust from the tippie

2601-65 - Run of mine sample, about 200 pounds

"The coal is classified as high volatile B bituminous according to the ASTM System of Classification of Coal by Rank. All samples are agglomerating and have a swelling index of 1 (ASTM). Coals of this type would not be expected to yield metallurgical grade coke.

Float-and-sink tests on the Plus 48 mesh size fraction indicate that the coal would not be difficult to beneficiate with high yields. However cleaning would not be expected to significantly improve the coking properties, as indicated by the swelling indices of the various gravity fractions. The relatively low yield of 1.30 specific gravity material with FSI of 3 would not make such a separation favourable."

COAL MINING

WHITEHORSE MINING DISTRICT

CARMACKS AREA

NTS 115 I

#1

Tantalus Butte Mine (62°03'N, 136°16'W)

References: Cairnes (1910a, pp. 52-53); Bostock (1936a, pp. 59-62); Wheeler (1961, p. 74); Skinner (1961, p. 30; 1962, p. 30); Green and Godwin (1963, p. 65; 1964, pp. 83-84); Green (1965, pp. 82-84).

1965

The Yukon Coal Company Limited, which is owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited, operates the Tantalus Butte coal mine under management of United Keno Hill Mines Limited. The mine is at Carmacks, about 100 miles north-northwest of Whitehorse. The Tantalus Butte mine has operated since about 1923, except for the years 1939 to 1948. The Yukon Coal Company was formed in 1947 and the mine reopened in 1948. Production by Yukon Coal Company Limited from 1948 to 1964 inclusive was 117,161 tons. Annual production during this period has varied from less than 4,000 tons to a maximum of 14,113 tons in 1954. In 1965, production was 9,806 tons, which with the exception of about 104 tons was used by United Keno Hill Mines Limited at Elsa and Calumet. A maximum crew of 11 men is employed in the Tantalus Formation, which consists (Bostock, 1936a, p. 28) largely of conglomerate, with some sandstone, shale, and a few coal seams. Wheeler (1961, p. 74) considered the Tantalus Formation to be of Upper Jurassic (?) and Lower Cretaceous age.

The main entry, elevation 2,056 feet and about 350 feet above the Yukon River, follows the main coal seam northward and is about 2,530 feet in length. The seam strikes north and dips about 55° W. It is cut by northeast-trending, steep southeasterly dipping faults, which cross the main entry about 1,300 and 1,800 feet from the portal. The seam was located about 80 feet beyond the second fault and production in 1965 was won from this portion.

Samples of the coal, taken by A.D. Oliver, Resident Mining Inspector, were analysed by the Mines Branch of the Department of Mines and Technical Surveys with the following results:

COAL MINING AND EXPLORATION

WHITEHORSE MINING DISTRICT

CARMACKS AREA

NTS 115 I

□ #1

Tantalus Butte Mine (62°06'N, 136°16'W)

References: Cairnes (1910a, pp. 52-53); Bostock (1936a, pp. 59-62); Wheeler (1961, p. 74); Skinner (1961, p. 30; 1962, p. 30); Green and Godwin (1963, p. 65; 1964, pp. 83-84); Green (1965, pp. 82-84; 1966, pp. 121-122).

1966

The Tantalus Butte Mine of the Yukon Coal Company Limited - owned by Territorial Supply Company Limited, a subsidiary of United Keno Hill Mines Limited and Cassiar Asbestos Corporation Limited - is the only producing coal mine in Yukon. It is located at Carmacks, about 100 miles north-northwest of Whitehorse. The mine has operated since about 1923, except between 1939 and 1948. Since 1948, annual production has ranged from less than 4,000 tons to a maximum of 14,113 tons (1954) and cumulative production for the period 1948 to 1965 inclusive was 125,967 tons. Production during 1966 was 6,000 tons, virtually all of which was used by United Keno Hill Mines Limited at Elsa and Calumet. A crew of 10 men was employed.

The coal is of the high-volatile Bituminous Group. It occurs in the Tantalus Formation which includes conglomerate with subordinate sandstone and shale and a few coal seams (Bostock, 1936a, p. 28). Wheeler (1961, p. 74) considered the Tantalus Formation to be of Upper Jurassic (?) and Lower Cretaceous age.

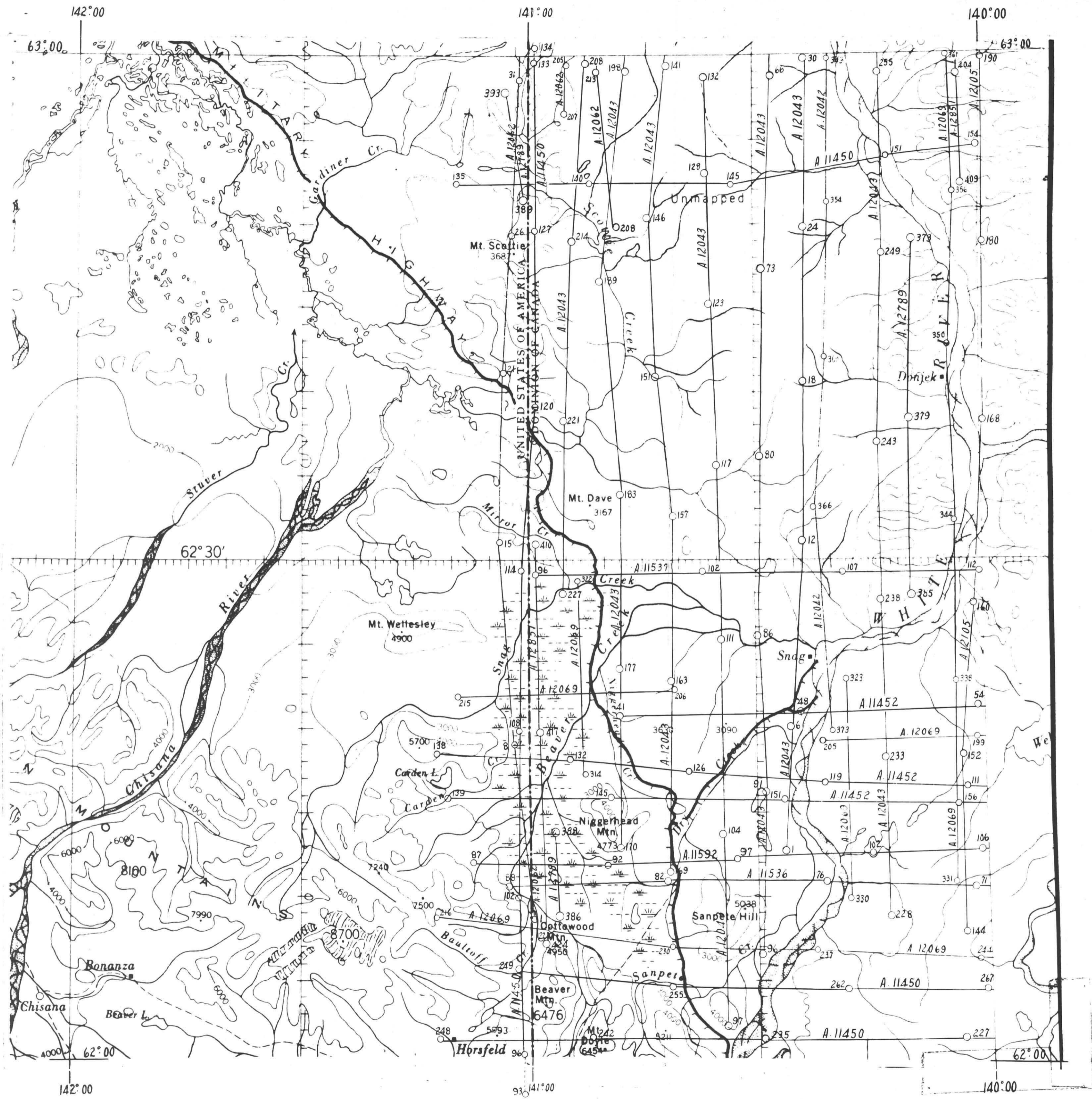
The main entry of the mine is at an elevation of 2,056 feet or about 350 feet above Yukon River. It follows the hanging-wall of the main seam in a general north-northwest direction and is about 2,600 feet long. The main coal seam strikes about north-northwest, dips 50-55° SW, and ranges in thickness from 8 to 20 feet. It is cut by northeast-trending, steep southeast-dipping faults which cross the main entry at distances about 1,300 and 1,800 feet from the portal. Mining is done by room and pillar methods, at present the rooms or drives are inclined at 30 degrees to the main entry and spaced 120 feet apart. Most production in 1966 came from the part of the mine north of the second cross-fault but some pillar-mining was done in the area between the two main faults. Analyses of coal samples from the mine are given by Green (1966, p. 123).

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#1a

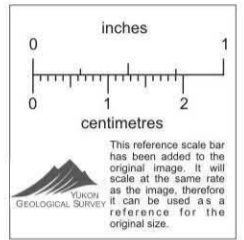
Anvil Mining Corporation Limited (about 62°05'N, 136°15'W)
(Coal) 1966

This company holds a total of 8 coal leases adjacent to the Yukon Coal Company Limited Tantalus Butte Mine and to the original Tantalus Mine on the south side of Yukon River, just east of the present bridge. A bulldozer trenching program carried out during 1966 in the latter area located a 30-foot thick coal seam which may be the south extension of the seam worked in the original Tantalus Mine. The coal from the new seam is reportedly similar in character and quality as that being produced from the present Tantalus Butte Mine.



154/48 + 173/49 SCALE: 2640' = 1" INCH

- A.11450 (93-155)(227-267)
- A.11452 (41-54)(111-156)
- A.11536 (71-88)
- A.11537 (96-112)
- A.11592 (87-106)
- A.12042 (349-373)
- A.12043 (1-30)(66-132)(141-198)(208-255)
- A.12062 (1-31)(205-213)
- A.12069 (199-244)(314-361)
- A.12105 (144-190)
- A.12789 (373-393)
- A.12851 (404-424)



B
115K/1-16