REPORT ON

SILVER DYKE MINE

MINA, NEVADA

Submitted By

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April 12, 1954

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INTRODUCTION:

During the examination of the Silver Dyke Mine, from February 20 to March 6, 1954, the 400, 500, 600 and 700 levels of the mine, and the portion of the surface over the main workings, were surveyed by J. H. Eastman and C. C. Ronnie. The survey was tied to claim corners for position and azimuth, the datum elevation was assumed, all stations were calculated and 1" - 20' scale plans of the underground workings were completed.

The geology of the present main workings was roughly mapped; the drifts were sampled; and the information for the report was compiled in the period from March 10 to April 2, 1954.

REPORT ON

SILVER DYKE MINE

MINA, NEVADA

SUMMARY AND CONCLUSIONS:

The Silver Dyke Mine in west central Nevada is owned by Mr. Chauncey Florey of Grants Pass, Oregon. The mine is at present producing twenty five ton per day, and has produced approximately eighty thousand tons of estimated 1% WO_3 ore since its discovery in 1915.

The mine is equipped for small scale production, and is totally dry. Present blocked ore reserves are 5,000 tons of 0.55% WO_3 ore. There is no indication that the structure or the mineralization is bottoming, and indicated ore reserves are 135 tons per foot of depth along the developed length of the mine.

An immediate development program, costing $60,000, should put the mine on profitable production of fifty tons per day of 1% ore. This production should provide an annual net profit after taxes of $150,000. The only capital expenditure required of the purchaser would be the down payment of $50,000, the remainder of the purchase price could be paid from net profits. During the two year period in which the purchase price would be paid the net earnings would be 100% on a capital investment of $50,000. In succeeding years the net earnings would be 300%.

The district around the Silver Dyke Mine is highly mineralized with silver-lead, copper, gold, and tungsten. At least one attractive tungsten mine is for sale in the neighbourhood.

Because (1) a high net earning could be realized on a small capital investment in the Silver Dyke Mine, and (2) there are other potential mines that could be purchased in the district, it is recommended that the Silver Dyke Mine be purchased.

SILVER DYKE MINE

MINA, NEVADA

OWNER

Mr. Chauncey Florey, a lumberman of Grants Pass, Oregon, holds clear title to the Silver Dyke mine on purchase from Nevada Tungsten Corporation. Purchase price is rumored to have been $50,000. The owner carries $50,000 worth of title insurance issued at Reno, Nevada.

Mr. A. Weiler, a Packard dealer of Roscdale, California, the present mine superintendent, now residing at Mina, Nevada, has held an option on the property, which he has relinquished to American Exploration and Mining Company for a small share in profits.

PROPERTY

The Silver Dyke mine property comprises thirteen full size claims, approximately 260 acres. Three claims; Silver Dyke No. 1, Silver Dyke No. 2, and Isabel No. 2, are patented; the other ten: Isabel, Isabel No. 1, Granite No. 1, Copperopia, Boula K, Almo J, Ida B. Lizard, Manieta, and Canyon claims are held by location, and assessment work on these claims has been recorded at the county recorder's office at Hawthorne, Nevada.

Since all these claims are contiguous, assessment work can be performed on any one claim to cover the group. The surface plan (Fig. 1, in pocket) illustrates the arrangement of the claims with relation to surface geology. Only four claims actually cover the vein, the other nine are located on the footwall side of the vein, where the camp, old mill, main portal, ore bins, and mill tailings are located. The exact location of the Canyon mineral claim is not known, and has been sketched on the map from information on the recorder's notice.

LOCATION

The Silver Dyke property lies in Range 34E, Township 5N, in the Gold Range Mining District, Mineral County, State of Nevada.

Mina, the nearest town, is 170 miles southeast of Reno, Nevada, on U.S. Highway 95, and is the southern terminus of the Southern Pacific Railway branch line from Reno. From Mina, the mine is six miles south on U.S. 95, then seven miles north west by fair gravel road.

The mine lies in the Excelsior mountains with surface outcrops at 7500 foot elevation, and the main portal at 7000 elevation. The vein crosses hills cut by narrow steep-walled gullies, which join the canyon forming the approach to the mine.

The last two miles of the road to the mine pass through this canyon with grades up to 15% in the vicinity of the old camp. The county road department grades the road occasionally, and have done so recently. Except when the road is snow-covered, no transportation difficulties arise.

The climate at the mine and at the town of Mina is generally arid, as illustrated by the type of vegetation in the photographs. Although snowfalls of several feet have been reported at the mine, thawing is very rapid from the south facing mine slopes. Flash floods occur every five to ten years, but these would only necessitate some road repair. Climate should not present any problems to regular mining

No timber suitable for mine use is growing anywhere in the district. All timber used underground is imported from California or Oregon, at approximately $100. per thousand fbm.

Drill water for the mine and for camp use is pumped from a small spring in an old surface shaft to tanks above the mine portal and above the camp. Total water available is about 1400 gallons per day, which is believed to have been sufficient for mining and camp use in the past. When Nevada-Massachussets Company operated a mill adjacent to the mine, water for milling only was pumped fifteen miles from the Pilot Range of mountains across the valley to the east. This pipeline has since been removed.

Electric power is delivered to the mine by the Mineral County Power Service at 440 volts over a power line reported to be capable of carrying 2300 volts. The cost of power was not determined, but should be much less than the 5¢ per KWH domestic rate. Mr. Florey reports his power bill to be around $200. per month for the mine and small camp

HISTORY

The University of Nevada Bulletin No. 5, Volume XXX, entitled "The Tungsten Mineralization at the Silver Dyke, Nevada", by Paul F. Kerr, is a reliable reference to the property up to 1936. The publication covers the history to 1936, the details of the geology, and the theory of ore deposition.

The first claims were stakes in 1909 for silver. In 1915, C. E. Noble discovered scheelite in the surface exposures of the Noble vein, reported to have assayed 17% WO_3. Noble's claims were purchased by Atkins, Kroll and Company of San Francisco in 1916, and ore was reported to have been shipped directly to Germany prior to the U.S. entry in the World War. In 1918 the holdings were sold to Boane, Beck and Noonan, who later sold the interests to the senior partner, Boane. In 1929 the Beane holdings and the original Wagner claims were consolidated under lease by Nevada-Massachussets Company.

Nevada-Massachussets Company operated the mine and adjoining mill until 1938, when under pressure of low tungsten prices and litigation with the owner, Mrs. Boane, the lease was relinquished and the property returned to the Boane estate.

A series of small leasors worked the property, mostly in the Wagner end, in the period 1938 to 1950. In 1950 the mine was purchased from the Boane estate for a small sum by Nevada Tungsten Corporation, a Delaware corporation of New York businessmen, with Mr. J. Sinke, a former New York banker, as president.

Nevada Tungsten Corporation refitted the mine with pipe and rail, retimbered the internal shaft on the Wagner ore shoot, mined approximately 3,000 tons of ore from the Goodale zone, and drew approximately 7,000 tons of ore from old chutes. The average grade of this ore was less than 0.5% WO_3.

In 1951, the Nevada Tungsten Corporation, which also held the 150 ton per day mill at Sodaville, were attracted by the offer of sufficient ore from a neighboring prospect to run their mill at capacity. Since they were short of capital to continue developing the Silver Dyke Mine, Nevada Tungsten sold the mine to Chauncey Florey, the present owner.

Mr. Florey has permitted some small leasing at the mine and recently has placed the mine on production to supply the 25 ton per day mill he has constructed in Mina.

PRODUCTION:

Korr states "Complete production figures for Silver Dyke have never been published, but county tax records for Mineral County, Nevada, indicate a production of scheelite concentrates valued in excess of $1,000,000 during the ownership of Atkins, Kroll and Company and Boane, Bock and Noonan".

Bullion tax records in the private files of Mr. L. B. Spencer, land surveyor, residing at Mina, show that during one three month period in 1916, Atkins, Kroll and Company shipped 1935 tons with a gross value of $247,000. At $20. per unit this ore must have averaged 6.4% WO_3. This ore was probably run of mine, since there is no evidence of old concentrators, and hand sorting would have been very difficult without ultraviolet lamps, which were not introduced to the mine until 1934.

Mr. E. L. Pine, of Reno, Nevada, who was engineer for Nevada-Massachussets during the main producing period from 1933 to 1938, stated that the mine operated on one shift per day, and the mill on three, milling 50 tons per day. This would indicate that if milling was continuous for a five year period, at least 75,000 tons of ore were extracted from the mine.

Figures in Kerr's report indicate that in 1936 the mill heads must have assayed at least 1% WO_3. Kerr also states that in 1936 Silver Dyke was the second largest tungsten producer in the state of Nevada.

If the longitudinal section area (Fig. 3 in pocket) of all the stopes is measured by planimeter and multiplied by an average thickness of five feet, the total tonnage mined on the main structure can be calculated to have been 57,000 tons. The Noble Vein probably did not produce in excess of 10,000 tons. Unless considerable ore has been produced from west of the caved section of the 400 level, the total openings observed could not have produced over 80,000 tons.

The average grade of this ore was probably 1% or more, considering the grade of the ore shipped by Atkins, Kroll and Company, the amount of coarse scheelite on the old dumps, and the probably 0.3% grade of the Nevada-Massachussets mill tailings.

MINE WORKINGS

Figure 2 (in pocket) illustrates the relation of the main haulage, or 400, level to the property boundaries. The longitudinal section in Fig. 3 (in pocket) illustrates the amount of development work done to date on the vein.

The main entry and haulage level of the mine is the 400 level cross cut at 7,000 foot elevation. This cross cut intersects the vein eight hundred feet from the portal, and drifts extend 1,900 feet west and 850 feet east along the vein from the cross cut.

These drifts tap the bottom of old shafts from surface. From east to west, these shafts are: (1) The Wagner shaft, just east of the main cross fault which was the former main producing shaft on the Wagner-Beane ore shoot. (2) The Beane shaft, 150 feet east of the Wagner shaft, which was sunk flatter than the dip of the vein and ended in the hanging wall. (3) The Atkins shaft, approximately 400 feet west of the Wagner shaft, which is only 170 feet deep, has two short levels to the east, and has produced no ore. (4) The Goodale shaft, 1,450 feet west of the Wagner shaft, which was sunk to the 150 foot level. The bottom of the shaft is tapped by a raise from the 400 level.

The Noble vein, a gash vein angling north-west into the Goodale workings, has been partly mined from surface, partly from a shaft close to the Goodale shaft, and partly from the lowest level of the Goodale shaft. The downward extension of the Noble vein has been followed for 230 feet on the 400 level, directly below the producing zone near surface, without encountering mineralization.

Two winzes have been sunk from the 400 level: (1) The 600 West winze, which is 200 feet deep and has three short levels, was

sunk to find the downward extension of the 600 west ore shoot. (2) The 340 East winze, which is 300 feet deep with three 100 foot interval levels, has been sunk on the downward extension of the Wagner-Beans ore shoot. This 340 East winze is now the main producing shaft of the mine.

On surface there are several short adits, both east and west of the main workings along the strike of the vein. None of these adits has produced economic ore, although there is some good ore in hand sorted dumps at the portal of a few of these adits.

The mine workings are entirely dry, including the shaft bottom. Water may be encountered to depth, but the Dandelaria mine, thirteen miles to the south, is dry at the eighteenth level.

GEOLOGY

Kerr has analyzed the geology of Silver Dyke in considerable detail after spending part of three field seasons on the property. His geology was checked wherever possible and it was decided to accept his mapping entirely, rather than spend time remapping the surface and underground workings.

The Silver Dyke vein system occupies a strong east-west, steeply north dipping shear that can be traced on surface for a length of four and one half miles. The central productive section of the vein lies partly along the contact of diorite on the south and volcanic tuff and agglomerate on the north, and partly entirely in the diorite, with the volcanic contact just to the north. These older rocks are overlain to the east and west by volcanics of probable Tertiary age, and the vein system, or part of the vein system, has also cut these younger rocks, forming more prominent outcrops than in the older rocks. (See photos.)

The shear has apparently undergone repeated movement and continuous introduction of quartz so that Kerr has been able to recognize several divisions in the cross-section. (Fig. 4) Only the narrow replacement quartz zone and occasionally the thin ribbon quartz zone has been ore, that is, the tungsten mineralization is confined to the footwall zone against the diorite.

The vein system has been offset by fairly numerous, small, northeast trending faults, and just east of the Wagner shaft by a south east trending fault with an apparent 550 feet horizontal displacement. Although these faults appear to offset the vein, some are at least pre-mineral in part, as some fault zones are occupied by quartz ribbons with minor scheelite, and no ore fragments are to be found in the gauge of these faults as would be the case if they were post-mineral.

The small cross faults also seem to exercise some control on the tungsten mineralization since the ore occurs in shoots along the strike of the vein, bounded at either end by cross faults.

The ore bodies lie in vertical or raking ore shoots along the strike on the vein. Three ore shoots on the main structure are now accessible, and there is rumour of a fourth ore shoot west of the caved section of the 400 level. The three ore shoots are: (1) The Wagner-Beane ore shoot, in the east end of the mine, which has a strike length of about 405 feet and a downward rake of 70° East (2) The 600 West ore shoot, lying 600 feet west of the main adit, with strike length of 60 feet, and an unknown rake. (3) The Goodale ore shoot, lying 850 feet to 1,150 feet west of the main adit, with a strike length of 300 feet, and no apparent rake.)

It is reasonable to expect additional blind ore shoots both in the producing section of the mine and along the strike of the vein to the east and west. Consideration should be given to extending the mine workings in both directions to prospect this favourable ground.

The productive quartz replacement zone varies from two to fifteen feet thick, and averages four feet thick. This zone consists of diorite breccia fragments, partially replaced by quartz, in a quartz cement. Scheelite is concentrated in the quartz around the boundaries of the breccia fragments and is finely coated along the quartz crystal boundaries. Scheelite crystals one half inch in diameter are very common and often in the richer sections of an ore shoot a one to two inch thick sheet of almost solid scheelite will be found on the footwall.

Kerr (p. 33) considers that the calcium needed to form scheelite was derived from the diorite during the replacement of the diorite by quartz. The diorite analyses up to 7% CaO. If this hypothesis is correct, it must also be assumed that calcium could be derived in a similar manner from the hanging wall volcanic rocks, since the breccia fragments in the high grade stope below the 700 level on the Wagner ore shoot are volcanic rock.

However, small amounts of crystalline calcite have been found on the 400 level west of the Goodale ore shoot and also in the Noble drift. Both occurrences were in the ore zone, and therefore, it can be assumed that calcium carbonate was a constituent of the hydrothermal solutions from which the scheelite was deposited.

The occurance of calcite and the occurrence of ore in volcanic breccia is considered important since it indicates that ore may not be limited to the one mile length of the vein that cuts the diorite stock.

CONTINUITY OF ORE SHOOTS

Kerr (p. 60) states "Ore shoots appear as well developed at the tunnel (400) level as they have been in the upper levels. Plots of ore showings, level by level, indicate that the values obtainable on the tunnel level are equal to those existing at any parallel level in the mine. The workings have not yet developed indications of a

limiting depth to the tungsten mineralization".

In general, the above statement is true, but the following evidence could be taken to indicate depth limitation in the west end of the mine.

The Noble vein definitely pinches out with depth, since the vein is very narrow and contains little schoolite, 150 feet below where the vein has been mined extensively from the Goodale 150 level through to surface.

The 600 West ore shoot, which has been mined for 150 feet above the 400 level, does not extend much below the 400 level, although there is some low grade mineralization on the 50 foot and 100 foot levels of the 600 winze. However, this 600 west ore shoot does not outcrop at surface and therefore must be considered a blind, pod-like ore shoot.

The Goodale ore shoot appears to have a shorter strike length on the 400 level than has been mined 60 feet above the 400 level. On the longitudinal section (Fig. 3) the absence of stoping west of the Goodale shaft at the 400 level is quite noticeable.

Although this evidence could indicate limiting depth or ore in the west end of the mine, it must be noted that the ore shoots are irregular and could quite reasonably be expected to vary considerably in strike length with depth, and that pod-like, blind ore bodies such as the 600 West ore shoot could re-occur.

The Wagner-Beane ore shoot shows no sign of limiting depth. The ore body has at least as great a strike length at the 700 level as at the surface, and the mineralization appears stronger on the 700 level than on either the 500 or 600 levels. A low grade ore shoot that does not appear on the 400 level has been stoped at the east end of the 500 level, and if this ore body continues downward with the same east rake as the main ore shoot it would lie east of the faces of the 600 and 700 levels, increasing the strike of the Wagner-Beane ore shoot to 550 foot.

If one considers the strength of the Wagner-Beane ore shoot, the possible pinching and swelling of ore shoots, and the possibility of blind ore shoots, it is reasonable to assume that as much ore should be found below the 400 level as has been mined above. The longitudinal section (Fig. 3) shows that roughly 15% of the sectional area of the vein developed between the 400 level and surface has been economic ore. This 15% ore possibility factor can therefore be used in calculating possible ore at depth.

SAMPLING

Seventy six samples were taken in the lower Wagner-Beane ore shoot. All these samples were chip samples taken over the width of the ore seen under an ultra violet light and over a six to ten

foot length. The ore was chip sampled rather than channel sampled because the mineralization is so spotty that channel samples would not be representative unless taken at very close intervals. (Probably the best method of sampling this type of mineralization would be to blast down an even thickness of the ore band and take a careful muck sample. This method was not used because of the cost and time element.) Since the ore is composed of hard, tough scheelite-bearing quartz and soft, easily broken, barren diorite fragments, considerable difficulty was experienced in taking representative chip samples.

The samples were taken at regular intervals along the back of each level. The grade of the ore in place was estimated, and after the sample was cut the grade of the sample was also estimated. Generally the samples were estimated lower than the ore in place, in a few cases at only one quarter the back estimate.

The majority of the samples were estimated considerably higher than the assay value determined by Abbot Hanks, Inc. of San Francisco, largely due to the deceiving reflections of the fluorescence through the translucent quartz.

After the assays were received the drift backs were re-estimated and a calculation estimate was recorded for use in calculating ore reserves. This was necessary since neither the assays nor the original estimates could be accepted as representative.

It should be noted that even a representative assay from a back pillar would not indicate the true value of the ore removed from the stope above, because the pillars were undoubtedly left in the lower grade ore. Where the ore was good grade, the entire back was stoped out of the drift and the drift timbered.

ORE RESERVES

From the measured ore widths and estimated grade, five thousand tons of 0.55% WO_3 ore were calculated to be blocked out between the 400 and 700 levels of the 340 East shaft. (Fig. 5 in pocket). This ore is generally narrow, from one and one half to three feet thick and contains no mineralization of estimated grade less than 0.3%.

This 5,000 tons of 0.55% is the only positive ore blocked out in the mine. There are very limited amounts of ore in scabs and pillars above the 400 level, but it is doubtful if this ore could be recovered at a profit.

Since the ore shoots comprise approximately 15% of the longitudinal sectional area along the developed length between the 400 level and surface, and the average width of ore is four feet, 100,000 tons of possible ore can be calculated over the 2700 feet of developed length of developed for an additional 740 feet of depth.

This is 135 tons per foot of depth over the 2700 foot of length.

The Wagner-Deane ore shoot is indicated to be 300 foot long and averages three feet wide on the 700 level, and the downward extension would contain a possible 77 tons per foot of depth over the 300 foot length.

The Goodale ore shoot has a strike length of 200 feet at the 400 level and an average width of four feet, indicating 67 tons per foot of depth over the 200 foot length.

If a probability factor of 0.5 is applied to the above calculations the Wagner-Deane ore shoot could be expected to contain 40 tons of probably ore per foot of depth, and the Goodale ore shoot 30 tons per foot. These factors will be used as a basis for cost calculations.

Because the structure is strong and the widths, length and grade of the ore shoots appear unchanged for the 700 foot of depth already developed, the ore may reasonably be expected to extend for another thousand foot of depth. This depth would give a possible 135,000 tons of ore.

EQUIPMENT AND BUILDINGS

The following is a rough inventory of equipment and buildings.

Equipment:

Electric power line and substation.

350 cfm Ingersoll Rand electric driven compressor with two air receivers.

Equipped blacksmith shop.

Baldwin Electric Mule locomotive with about 20 one-ton end-dump cars.

50 H.P. Denver Electric hoist with a 3,500 rope pull rating and capacity for 1,800 feet of 5/8" cable, and one three quarter ton bucket.

Single drum Gardner-Denver tugger hoist, with half ton bucket.

Three Ingersoll-Rand Drifters and two column bars.

Two 48 Ingersoll-Rand Jackhammers and one air leg.

Two 48 and one 58 Ingersoll-Rand stopers.

One hitch cutter.

Limited amounts of old drill steel, and air and water hose.

One 2-drum air slusher with scraper.

Two electric pumps and one 6000 gallon water tank.

One 12B Eimco mucking machine.

Electric bench saw.

12" blower fan with 300 foot of Dupont Ventube collapsible fan pipe.

2" air and water line and track to all operating parts of the mine.

Buildings:

Blacksmith shop.

Storage sheds.

New Small dry house with showers.

Small ore bin with sorting room, and 200 ton capacity underground bin below.

Old superintendent's house, four miners' cabins and old cookhouse, all in poor repair.

A second compressor, additional drills, new steel, hose, pipe and rail, and some extension of the present dry would be required to develop the mine and maintain production.

MILLING FACILITIES

Mr. Florey, the mine owner, has constructed a 25 ton per day mill in Mina. This mill is poorly designed and very poorly built, and it is doubtful that the owner makes the 70% recovery that he claims. Since this mill could not be operated efficiently or expanded or remodeled without considerable expense, its only value is a limited salvage value.

The Nevada Tungsten Corporation, address Mina, Nevada, own a 150 ton per day custom tungsten mill at Sodaville, four miles south of Mina, and nine miles from the mine. Lacking a regular supply of ore, this mill closed recently. The mill, mill site and water supply are for sale, or for lease at $3.00 per ton or possibly less. The president of Nevada Tungsten Corp., Mr. J. Sinke, claims that this mill could make a 75% recovery on Silver Dyke ore, by gravity separation alone.

With the installation of some flotation units the Sodaville mill would furnish the most practical and probably most economical means of concentrating Silver Lyke ore.

MINE DEVELOPMENT REQUIRED

One method of developing the mine to additional depth would be to collar a new haulage level down the canyon, cross cut to the vein and drift along the vein under the productive area. This proposal is not practical because: it would require a large capital expenditure; no ore would be derived from the cross-cutting; a considerable length of the cross cut would be in virgin ground with no assurance of ore; and the drift would only provide 150 feet of backs below the bottom of the present shaft.

The quickest and cheapest method of developing more ore to depth would be to deepen the present shafts.

The following development is considered necessary or expedien

(1) Install a 500 cfm compressor in tandem with the present compressor and lay four inch air line from the air receiver to the 340 East shaft.

(2) Sink the 340 East shaft 65 feet and drive the 800 level 300 feet east.

(3) Drive the 700 level 150 feet farther east to test for the downward extension of the east ore shoot prospected above the 500 level. Muck from this development could be dumped into the little stope below the 700 level to obviate hoisting this muck while the hoist is being used for production or shaft sinking.

(4) Rehabilitate the 600 West winze to the 100 foot level, install a small hoist, and drive 600 feet of additional drift west to tap the downward extension of the Goodale ore shoot.

(5) Reopen the west end of the 400 level by drifting 100 feet around the cave.

By careful timing of the projects the mucking machine could be moved about and utilized on each project.

Estimated costs of these projects are:

(1) Cost of compressor, pipe and installation $10,000.

(2)	Sink 65 ft. of shaft and cut station and pockets equivalent to 50 feet of shaft - 115' x $75/ft. = $8,600 Drive 300 ft. of drift. = $9,000 @ $30/ft.		$ 17,600
(3)	Drive 150 ft. of Drift @ $30/ft.		4,500
(4)	Rehabilitate 600 West winze to 100 level @ $10/ft.	$1,000	
	Buy and install small hoist	4,000	
	Drive 600' of drift @ 30/ft	18,000	$23,000
(5)	Drive 100' of drift @ $50/ft including full timber		$ 5,000
	Total Cost of Development Projects -		$60,000

This development should open sufficient ore to allow production of 50 tons per day of ore for an additional four month period. Because the tonnage available per foot of depth is limited, development would have to be continuous to keep pace with mining. Development and production could be alternated between the two shafts so that both development and production could continue unhindered.

ESTIMATED DEVELOPMENT COSTS

If the Wagner-Beane and Goodale ore shoots were developed by shaft sinking and by levels driven at 100 foot intervals the development costs would be:

(a) Wagner-Beane
(Probable ore estimated at 40 tons per foot of depth over a 300 foot length.)

100 feet of shaft @ $75/ft. -	$7500..
50 equivalent feet of pocket as station @ $75/ft. -	$5000.
300 feet of drift @ $30/ft. -	$9000.
TOTAL COST	$21,500.

Probable ore developed = 40 x 100 = 4,000 tons.

Development costs per ton = $\frac{\$21500}{4000}$ = $5.40

(b) Goodale

(probable ore estimated at 30 tons per foot of depth over a 200 foot length.)

100 ft. of shaft plus pockets as above	$12,000.
600 ft. of drift @ $30/ft.	$18,000.
TOTAL COST	$30,000.

Probable ore developed = 30 x 100 = 3,000 tons.

Development cost per ton = $\frac{30,500}{3000}$ = approx. $10.20

Average development cost for the two ore shoots.

$\frac{\$21,500 + \$30,500}{4000 + 3000}$ = $7.40 per ton.

FINANCIAL AND ECONOMIC CONSIDERATIONS

The staff of the Emerald Tungsten research laboratory have made a 91% laboratory recovery on Silver Dyke ore, using gravity and flotation. Gravity alone recovered 77% of the WO_3. Therefore, the Sodaville mill with added flotation units should make at least an 80% recovery.

Estimated profit per ton of 1% ore:

Gross recovered value 1.0 x 0.8 x $63. per unit - $50.40

Development cost	-	$ 7.40
Mining Cost	-	7.00
Milling Cost	-	4.00
Mill Rental	-	3.00
Mine to Mill Trucking	-	1.00
Total Cost		$22.40
Net Profit before taxes		28.00
Taxes (at 50%)		14.00

Net profit per ton of 1.0% WO_3 ore - $14.00

Under the present option agreement the purchaser is entitled to all the broken ore in the mine, and the value, less operating costs, of the ore that has been milled since the signing of the option. Approximately 2,000 tons of 1.5% WO_3 ore is involved under this agreement, which should provide roughly $100,000 gross profit to the purchaser. This money, which is practically on hand would provide sufficient working capital to develop the mine to the point where payment on the purchase price could be made from net profits. Therefore, the only actual capital expenditure required of the purchaser would be the $50,000 down payment on the property.

If ore with only a $10 per ton net profit value were milled at 50 tons per day, 300 days per year, the annual net profit would be $150,000. During the two year period when the remainder of the purchase price is paid from net profits the net earnings would be roughly $50,000 or 100% net earnings on a $50,000 capital investment. In succeeding years the net earnings would be 300%.

NEIGHBOURING PROPERTIES

Tungsten mineralization occurs along the Silver Dyke vein system on the Haeglund property to the west and the Spencer property to the east, although no commercial grade ore has been produced. It is understood that the Haeglund property could be leased on a ten percent royalty basis.

The district around Mina is well mineralized and mining has continued in the district since 1880. Lead-silver deposits with some antimony are still being mined at Candelaria. Other lead-silver deposits, small copper deposits, and numerous gold and tungsten deposits have been mined or prospected.

One small tungsten mine and one tungsten prospect were hurriedly examined during the examination of the Silver Dyke. Both are for sale. The small mine, The Eagle Tungsten, has produced 20 ton per day of 0.6% WO_3 skarn ore and would be worth investigating with a view to purchase. The tungsten prospect, The Broken Toe Mine, is complex and not developed to depth but may yet be interesting.

It is doubtful if the Silver Dyke mine could produce steadily sufficient ore to run the Sodaville mill at capacity, so that if the Silver Dyke mine were purchased and the mill leased, other properties that could augment the Silver Dyke production should be investigated.