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Item 11

TENNESSEE MOUNTAIN TUNGSTEN

ELKO CO. NEVADA

TENNESSEE MOUNTAIN TUNGSTEN

Alder Mining District

Elko County, Nevada

December, 1971

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I

PROPERTY

1) Location and Access

The Tennessee Mountain Tungsten properties are located in the Independence Mountain Range on the Nevada side of the Nevada-Idaho border, approximately 78 miles (via Nevada State Highway 11 and 43) north of Elko, Nevada (see Map, Appendix I). Boise, Idaho, 128 miles to the northwest and Elko represent the centers of supply and service over excellent paved highways reaching within one-half mile of the mill and within 12 miles of the mine. The 12 miles of improved access road consists of 8 miles of County maintained U. S. Forest Service road and 4 miles of recently constructed haulage road.

The concentrator or mill is located in Mountain City, Nevada adjoining the Duck Creek Indian Reservation. The mill property is located on State Highway 43 and the South Fork of the Owyhee River is the water source. Both the mining properties and the mill site are located in the Humboldt National Forest in Elko County, Nevada.

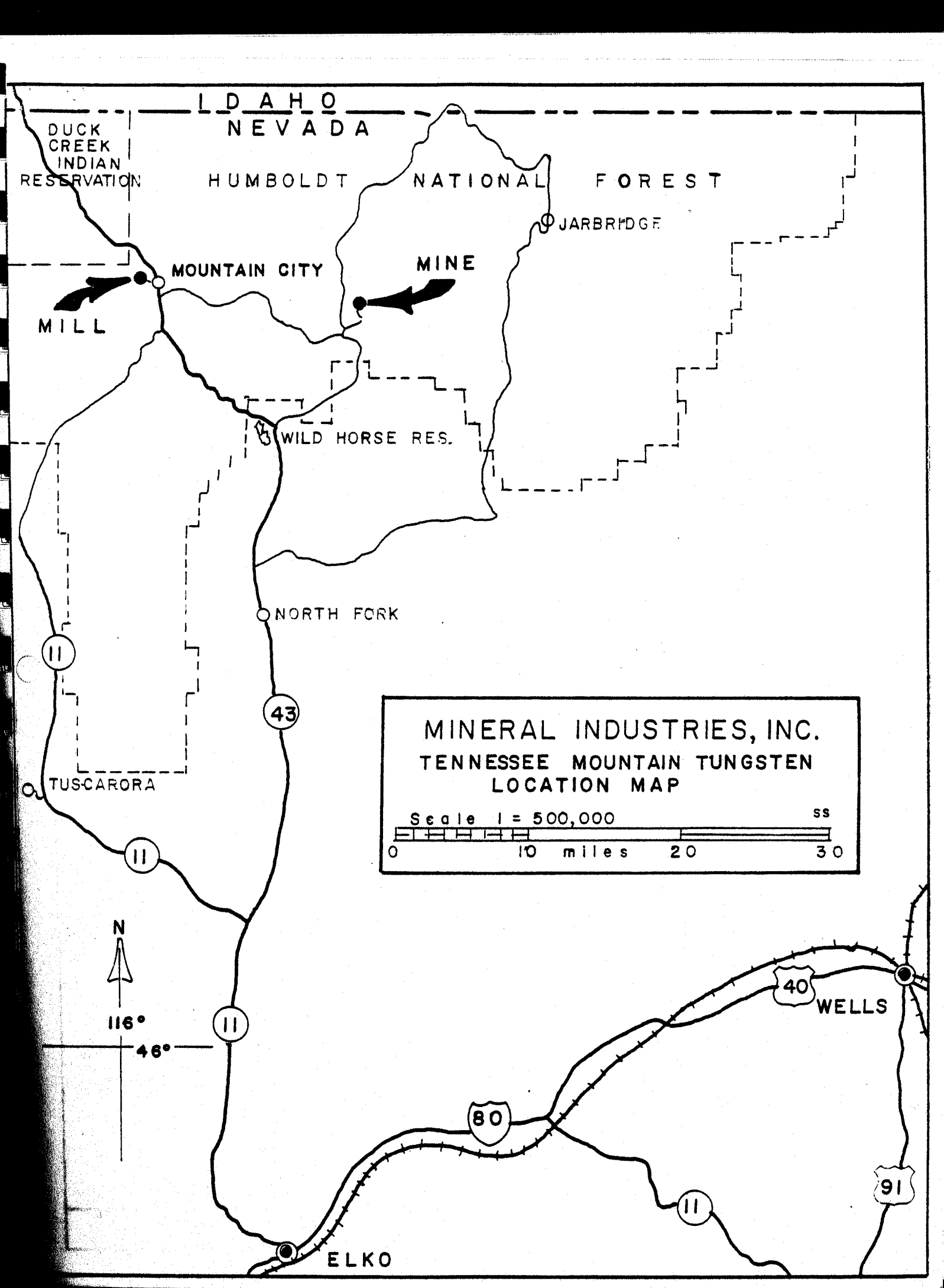
Elko is the nearest railhead with freight loading facilities servicing the area with both the Southern and Western Pacific Railroads running east and west. United Air Lines has scheduled daily service into Elko, Interstate Highway 80 connects Elko with Reno to the west and Salt Lake City, Utah to the east.

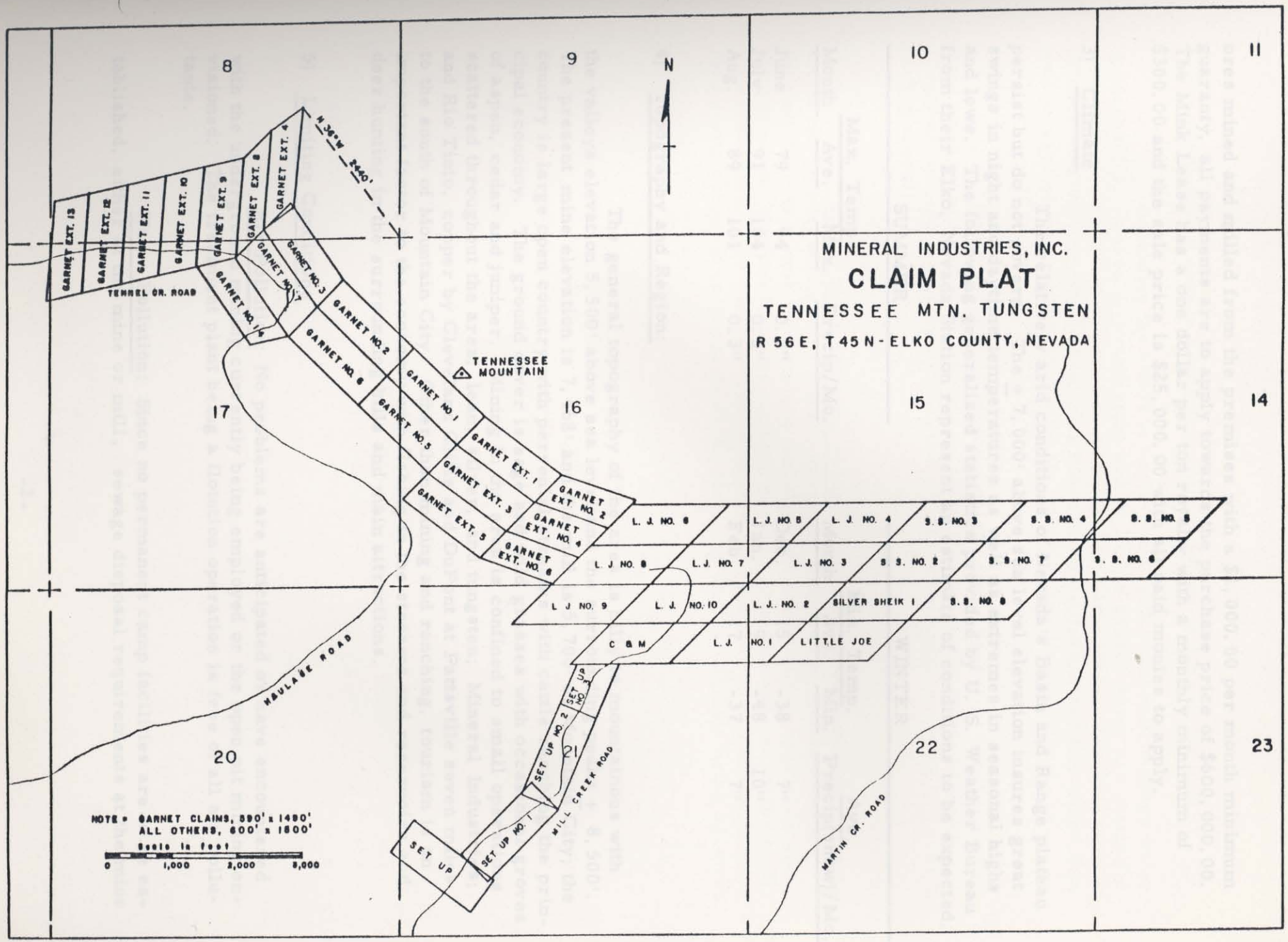
2) Property Description

The property consists of leases on 44 unpatented mining claims comprising of approximately 850 acres. The mill site is held via a Special Use Permit from the United States Forest Service dated November 9th, 1968, for a term of ten years covering approximately 23.2 acres in the NW 1/2, Section 2, T 45 North, Range 53 East, and in SW 1/4, Section 36, T 46 North, Range 53 East at a rental rate of $225.00 per year.

The mining property is comprised of two separate leases; one group of twenty claims is referred to as the Garnet Claims, the Montrose Lease, and one group of 24 claims known as the Mink Claims, the Mink-Culley Lease. All of the claims are contiguous and in Sections 8, 14, 15, 16, 17, 22, 21 and 20, Range 56 East, Township 45 North, Elko County, Nevada. The Garnet Claims are recorded in the County Seat at Elko under the names of Messrs. Montrose and Knowles of Elko and Mountain City, Nevada. The Mink Claims are also recorded in Elko under the names of Messrs. Mink and Culley of Mountain City, Nevada.

The Montrose Lease carried a one dollar per ton royalty on all


IDAHO
NEVADA
DUCK CREEK INDIAN RESERVATION
HUMBOLDT NATIONAL FOREST
JARBRIDGE
MOUNTAIN CITY
MINE
MILL
WILD HORSE RES.
NORTH FORK
11
43
TUSCARORA
11
N
116°
46°
11
40
WELLS
80
11
91
ELKO
MINERAL INDUSTRIES, INC.
TENNESSEE MOUNTAIN TUNGSTEN
LOCATION MAP
Scale 1 = 500,000
0
10 miles
20
30


MINERAL INDUSTRIES, INC.
CLAIM PLAT
TENNESSEE MTN. TUNGSTEN
R 56 E, T 45 N - ELKO COUNTY, NEVADA
N
8
9
10
11
17
16
15
14
20
21
22
23
TENNESSEE MOUNTAIN
N 36° W 2440'
TENNEL CR. ROAD
HAULAGE ROAD
MILL CREEK ROAD
MARTIN CR. ROAD
GARNET EXT. 13
GARNET EXT. 12
GARNET EXT. 11
GARNET EXT. 10
GARNET EXT. 9
GARNET EXT. 8
GARNET EXT. 4
GARNET NO. 7
GARNET NO. 3
GARNET NO. 2
GARNET NO. 6
GARNET NO. 5
GARNET NO. 1
GARNET EXT. 1
GARNET EXT. 3
GARNET EXT. 5
GARNET EXT. NO. 2
GARNET EXT. NO. 4
GARNET EXT. NO. 6
L. J. NO. 6
L. J. NO. 5
L. J. NO. 4
S. S. NO. 3
S. S. NO. 4
S. S. NO. 5
L. J. NO. 8
L. J. NO. 7
L. J. NO. 3
S. S. NO. 2
S. S. NO. 7
S. S. NO. 6
L. J. NO. 9
L. J. NO. 10
L. J. NO. 2
SILVER SHEIK 1
S. S. NO. 8
C & M
L. J. NO. 1
LITTLE JOE
SET UP NO. 3
SET UP NO. 2
SET UP NO. 1
SET UP
NOTE = GARNET CLAIMS, 990' x 1490'
ALL OTHERS, 600' x 1800'
Scale in feet
0
1,000
2,000
3,000

ores mined and milled from the premises with a $1,000.00 per month minimum guaranty, all payments are to apply towards the purchase price of $600,000.00. The Mink Lease has a one dollar per ton royalty with a monthly minimum of $300.00 and the sale price is $25,000.00 with all paid monies to apply.

3) Climate

The relatively arid conditions of Nevada's Basin and Range plateau persist but do not govern. The ± 7,000' above sea level elevation insures great swings in night and daytime temperatures as well as extremes in seasonal highs and lows. The following generalized statistics provided by U. S. Weather Bureau from their Elko, Nevada Station represent an estimate of conditions to be expected.

SUMMER

Month	Max. Temp. Ave.	Max.	Precip/Mo.
June	79	94	0.7"
July	91	104	0.3"
Aug.	89	101	0.3"

WINTER

Month	Min. Temp. Ave.	Min.	Ave. Precip(snow)/Mo.
Dec.	15	-38	7"
Jan.	9	-48	10"
Feb.	17	-37	7"

4) Topography and Region:

The general topography of the area is hilly to mountainous with the valleys elevation 5,500' above sea level and the surrounding peaks ± 8,500'. The present mine elevation is 7,468' and the mill is 5,700' at Mountain City; the country is large open country with perrenial streams with cattle ranching the principal economy. The ground cover is sage and wild grasses with occasional groves of aspen, cedar and juniper. Mining in the area is confined to small operations scattered throughout the area; lead, silver, and tungsten; Mineral Industries; and Rio Tinto, copper by Cleveland Cliffs and DuPont at Pattsville seven miles to the south of Mountain City. Other than mining and ranching, tourism is an important factor to the economy with fishing in the streams and reservoirs and deer hunting in the surrounding hills and main attractions.

5) Limiting Conditions

Air Pollution: No problems are anticipated or have encountered with the underground mining currently being employed or the open pit mining envisioned. The treatment plant being a flotation operation is free of all air pollutants.

Water Pollution: Since no permanent camp facilities are to be established, either at the mine or mill, sewage disposal requirements at the mine

can be handled by a simple septic tank installation as is done at the mill.

Assuming the effort to recirculate 100% of the mill tailings water is successful, losses by evaporation and/or lost to ground water are insignificant, and thus no threat to pollution of the ground water table. The mill tailings effluent does not carry any chemicals known to be deliterous and this water may well be used of irrigation purposes on the ranch below the mill site.

Health Hazards: No toxic or otherwise unusually harmful conditions exist or are expected. A well designed and monitored safety program effectively avoids any of the normal industrial hazards of this mining and concentrating operation.

Effect on Neighboring Areas: No established community exists within the vicinity of the mine and the operation itself is not visible from the Highway that traverses the area and therefore the effect will be negligible with the continued cooperation of the multiple use land program outlined by the U. S. Forest Service. The concentrator is located well out of town and offers no problems with complete cooperation of the State and County Officials being received.

II

GEOLOGY

1) General and Economic Geology

The Tennessee Mountain Tungsten Mine is located on the contact of the Tennessee Mountain formation sedimentaries and the intrusive Coffeepot stock, slightly NW of the center of T 46 North, R 56 East, Elko County, Nevada. A very comprehensive study of the geology of the area is available in two publications: Nevada Bureau of Mines Bulletin 54, "Geology and Mineral Resources of Elko County, Nevada" (1957) by A. E. Granger, Bell, Simmons and Lee; and Nevada Bureau of Mines Bulletin 67, "Geology of the Rowland Quadrangle, Elko County, Nevada" (1967), by Kent Bushnell. A brief summary of the above works and descriptions is a necessary prelude to a discussion of the economic development of the mine and other potential ore bodies on the Garnet Claims.

Only four rock types in the area are of interest to this report: The Tennessee Mountain formation, the Coffeepot stock, aplite veins, and the metamorphic rock, Tactite. These are the only rock types found in the claim boundaries and of economic significance in regards to the formation of the tungsten minerals scheelite and powellite.

The Tennessee Mountain Formation is a thick sequence of highly deformed, interbedded, thinly bedded limestone and argillaceous rocks. It is tightly folded, faulted, cut by cleavage, and slightly to highly metamorphosed. It is assigned to Cambrian or Ordovician age. The limestone in the formation consists of thin beds (0.5 to 1.5 cm thick) of medium gray, aphanitic limestone and silty limestone separated by very thin phyllite laminae. Cleavage has obliterated bedding nearly completely and only the slight presence of bedding gives an indication of the attitude of the formation.

In late Cretaceous age the Coffeepot stock was emplaced as a forcible intrusion of molten magma into and through the Tennessee Mountain Formation. This rock is classified Adamelite (quartz monzonite). The quartz monzonite (granite) on the claims are medium grained and consist of 5 percent microline and plagioclase, 70 percent orthoclase, 25 percent quartz, and less than one (1) percent dark minerals.

During the last stages of magmatic activity aplite dikes up to 15 feet thick were emplaced. They are medium to course grained and composed to plagioclase and orthoclase, quartz, and secondary magnetite, sericite, muscovite, and chlorite.

Tactite is present as large lenses along the contact between the granite and the Tennessee Mountain Formation. The tactite is made up of over

50% garnet, with the remainder being pyroxene, hornblende and minor chlorite, actinolite, epidote, and plagioclase. The tactite was formed by the reaction between the granitic rocks and the limestones; and the strong contact metamorphism and metasomatism present in the aureoles from the stock show the high temperatures the limestone was subjected to during late Cretaceous age.

The ore minerals are scheelite (Ca WO_4) and powellite (Ca (Mo, W) O_4), which are finely disseminated through the tacite, with minor amounts found in the other three rock types. The scheelite-powellite is associated with pyrite, molybenite, minor chalcopyrite and pitcheblende. The tactite throughout shows minor to major scheelite mineralization, with preliminary work showing areas having assays in excess of .7 WO_3. The large size of the tactite necessitates much more work on the claims regarding other zones of economic significance.

2) Ore Reserves

The former leaser, Union Carbide Corporation, gave the property reserves of 396,000 tons of .42% WO_3. This was after extensive geologic work, numerous dozer cuts and trenches, and many diamond drill holes both underground and surface. There are several good exposures of both ore grade material and mineralization on the property under discussion but only the one ore shoot that is actually being developed is being treated as "ore reserves." This is an area of only approximately 150 feet by 50 feet in an area of hundreds of acres of favorable lithology with ore showing in several sectors better than is showing on the surface of the area now being worked.

The following figures are derived from approximately 5,000 tons mined, five diamond drill holes, forty long holes, 500 feet of drifting, and 120 feet of raising. The grade average is maintained at .60% WO_3 for the reserve figures and has been ascertained via both assaying of the drill holes, channels, muck samples, and other standard mining practices as well as approximately 4,000 tons being run through the concentrator.

Proven: Three separate blocks in the single ore shoot.

Block 1. Measured from the upper level to the surface:
80 feet long by 20 feet wide by 60 feet vertical (65°)
96,000 cubic feet with 11.8 ft. 3/ton = 8,136 tons.

Block 2. Measured from the lower level to the upper level.
100 feet in strike x 25 feet wide x 110 feet high.
275,000 cubic feet is 23,305 tons.

Block 3. Measured beneath the lower level and on drill intersects.
100 feet long x 80 feet vertical and 25 feet wide.
200,000 cubic feet = 16,949 tons.

Total Proven Ore at .60% WO_3 grade ---- 48, 390 tons.

Probable : Extension on the same ore shoot.

The absolute limits of the known ore horizon is not known at this time, the above widths and lengths as listed on the proven category are actual measurements with the foot wall still showing ore and the lengths are known only where cut and extended for actual surveying. The depth is completely unknown as far as limits are concerned with the deepest drilling still showing ore. A figure of the same magnitude as listed as "proven" is conservative for the probable category, 48, 000 tons.

Total proven and probable ore, 96, 000 tons plus 60% WO_3,
57, 834 units.

Lowering the grade average to forty-two hundreds from the above sixty would add another sixty percent to the tonnage:
96, 390 x 160% = 154, 224 tons or 64, 775 units of WO_3

The possible ore can well run into the large tonnage figures with the environment throughout the large claim area being nearly ideal for the scheelite mineralization and the known occurences exposed in the numerous trenches, pits, and cuts as well as the outcrops.

III

MINE PLANT

1) History and Past Development

The Tennessee Mountain Prospect was located in the early 1950's when tungsten interest reached its zenith because of the Government buying program which has pegged +60% WO_3 tungsten ores and concentrates at an all time high of $60/stu. The original locators drove what is now known as the upper level to evaluate their discovery, and with the information and encouragement gained from that task were able to acquire the U. S. Bureau of Mines to further evaluate their claims and to drive the lower level. After completion of the U. S. Bureau of Mines program, the owners attracted the attention of the Union Carbide Corporation (the nation's largest tungsten producer) and the property was leased to Union Carbide. Union Carbide undertook an extensive evaluation program that included surface and underground diamond drilling, numerous surface trenches, and geologic examination. The net results of this program was an assignment of a figure of 400,000 tons of .42% WO_3 content ore in the Garnet Claims. Before any further action was taken by Union Carbide falling prices (less than $20/stu.) forced their reassessment of the project. The current underground drilling project has confirmed the evidence of an ore body which is economic with tungsten values in excess of $40/stu.

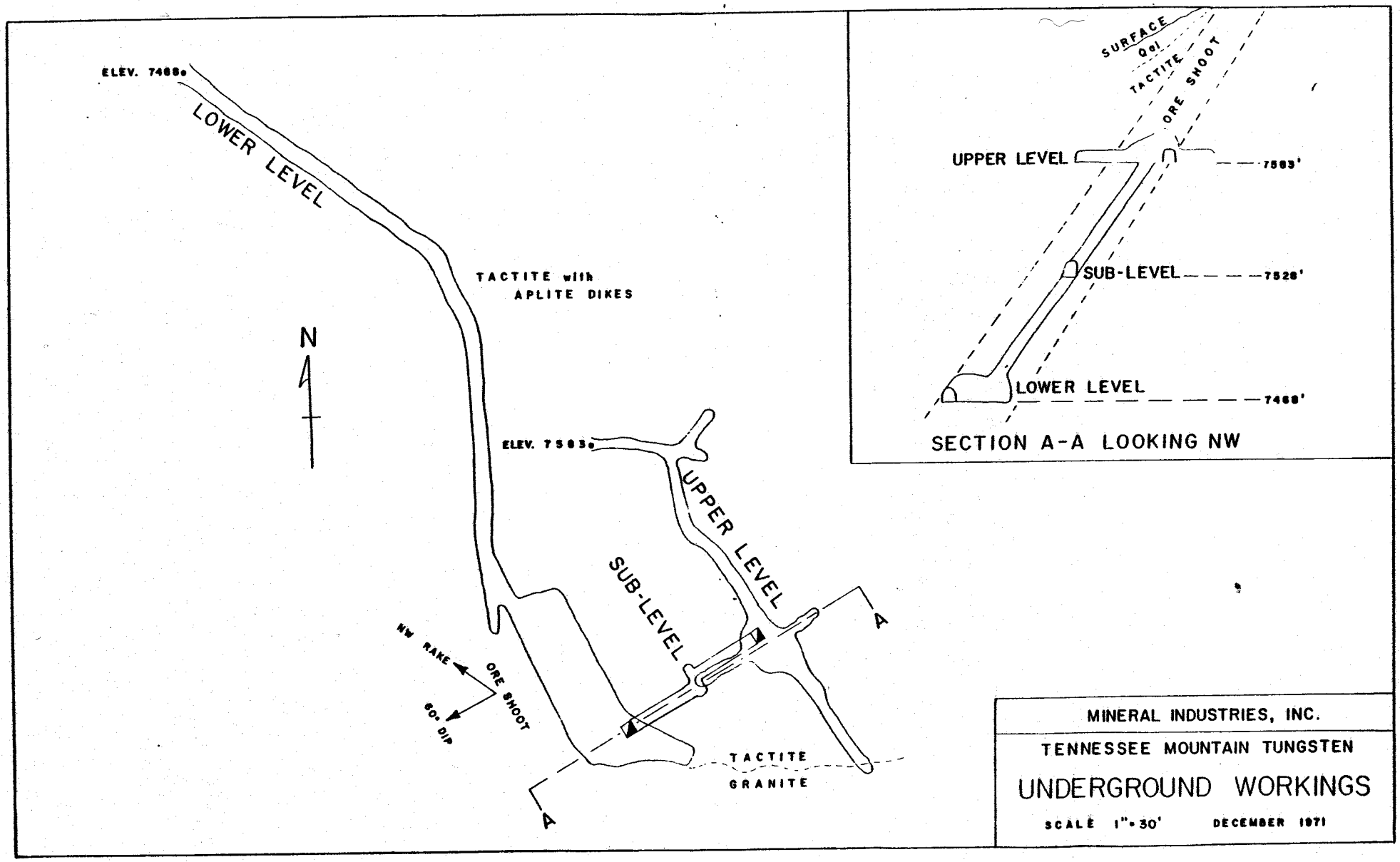
2) Mining and Development (See Appendix III)

Mineral Industries, Inc. late in 1970 leased the properties and commenced development and metallurgical testing of the ores. The concentrator was revamped to a daily capacity of plus 160 tons, records indicate that the mill had processed ore from Tennessee Mountain at the rate of 175 tons per day. The assay data derived from the extensive amount of work accomplished in the last ten months reflect an overall grade average of .60% WO_3 in the immediate area that is under development.

The lower level has been enlarged from the original Bureau of Mines work with the removal of some 3,000 tons of ore and a 4 x 4 raise has been driven at an inclination of 60° for a length of approximately 120 feet connecting the upper and lower levels. The mineralization in the raise shows to be continuous with the upper portions indicating the better quality. There is now a 10 x 10 x 30 station cut 60 feet above the lower level in the raise and all walls assay very good, plus .60%. The upper level has been cleaned out and a room 20 x 40 x 10 feet high has been cut at the raise intersection further expanding the proven reserves of the ore shoot.

Mining and development is accomplished via trackless methods uti-

lizing an Eimco 911 LHD and Jackleg drills. The mined material is loaded onto contract haulers trucks for the 31 mile haul to the Mountain City Mill. A new four and one-half haulage road has been constructed and the grades now do not exceed seven percent at any place replacing the 15 to 20% grades that were necessary with the old access road.


ELEV. 7468'
LOWER LEVEL
TACTITE with APLITE DIKES
N
ELEV. 7583'
UPPER LEVEL
SUB-LEVEL
NW RAKE
ORE SHOOT
60° DIP
TACTITE
GRANITE
4
4
SURFACE
Qal
TACTITE
ORE SHOOT
UPPER LEVEL
7583'
SUB-LEVEL
7528'
LOWER LEVEL
7468'
SECTION A-A LOOKING NW
MINERAL INDUSTRIES, INC.
TENNESSEE MOUNTAIN TUNGSTEN
UNDERGROUND WORKINGS
SCALE 1"=30'
DECEMBER 1971

IV

TREATMENT PLANT

1) Milling and Processing (See Appendix II)

The grading, analysis and marketing of tungsten ore is based on the tungsten trioxide (WO_3) content and not the metal content. Scheelite as mined at Tennessee Mountain, when pure, assays 80.6% WO_3. An extremely high purity concentrate demanding premium prices is plus 65% WO_3, while concentrates carrying as low as 15% WO_3 have a market value.

Bench matallurigical tests on the Tennessee Mountain ore have been run by both the Booth Company and the Galligher Company of Salt Lake City, Utah. A pilot run of approximately 3,000 tons was run through the mill by Mineral Industries, Inc. in 1971 producing an acceptable grade concentrate which was shipped to Upper Scheelite, California. Union Carbide Corporation's assays showed an average grade of 34.716% WO_3 which was the settlement assay.

The mill located at Mountain City has proven its ability to produce a marketable concentrate from a run of ore assaying .60% WO_3. As the accompanying flowsheet points out, the ore is first reduced by closed circuit crushing to -3/8" size and stored in the fine ore bin for further reduction and beneficiation. This crushing step should take place on a single shift basis with the milling and beneficiation running 24 hours per day.

The minerals scheelite and powellite are liberated via grinding, and size is controlled via classification. The finely ground material in slurry form is automatically sampled to show the head assay. The first flotation step is the rougher cells after conditioning and followed by the cleaner circuit. The waste product stripped of its values (tails) is subjected to the scavenger cells for further verification, so that no values are being lost to the tailings pond. All tails going to waste are continuously and automatically sampled.

The final product of the cleaners is the tungsten concentrate, and this is automatically sampled and pumped to the filter. The filter draws off the excess moisture with the excess going to the thickener for storage and recycling. The end product (concentrates) is 80 to 100 times more concentrated than the original mine run feed. The Mill Superintendent, Metallurgist, and Crews are responsible for the material balance, reporting daily assays on mill feeds, tails and concentrates, knowing the tonnage going in and the weight of concentrates being sold, along with grades, and balancing it mathematically.

The concentrates are placed in barrels for final shipment. Further steps of concentration are available and have been tested in the laboratory on the Tennessee Mountain ores. They will be further evaluated and placed into the flowsheet if economics so warrant.

2) Material Flow & Equipment (See Appendix II)

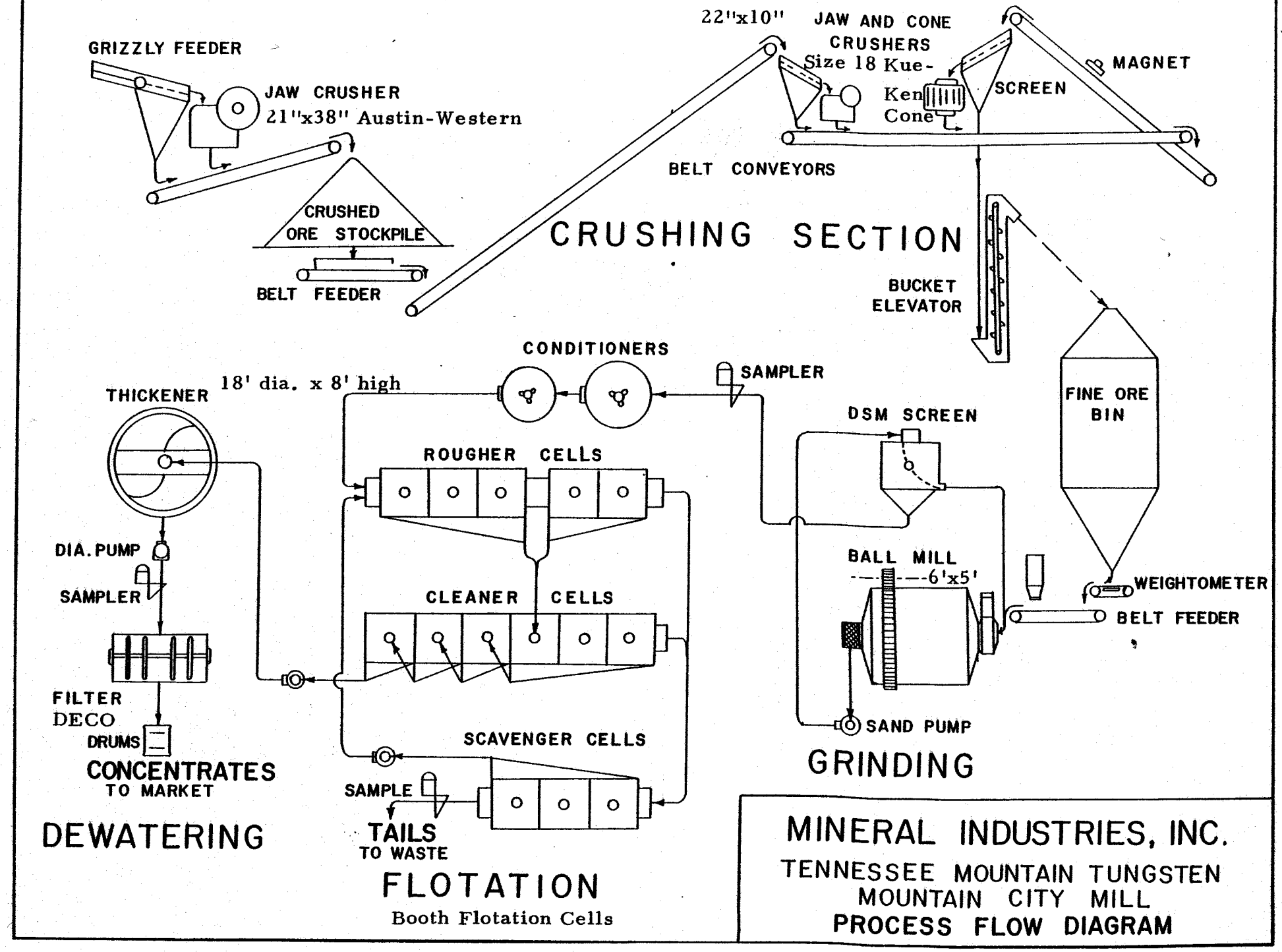
Crushing and Screening: A Lima Model 60 1-1/2 yd. front end loader feeds a Simplicity Vibrating Feeder from the coarse ore stockpile. The plus 2" material is fed via the feeder to an Austin-Western 22" x 38" Jaw Crusher which reduces the material to minus 4" which joins the fines scalped by the vibrator on a 24" Belt Conveyor to the course ore surge pile. Beneath the coarse ore surge pile is a twenty ton steel bin with a 30" x 17' Link Belt Feeder drawing from it. The Belt Feeder feeds via a Vari-Drive an 18" tunnel belt conveyor which leads to a Pacific 10" x 20" Jaw Crusher. Preceeding the jaw crusher is a vibrating grizzly set at 1/2" and the jaws are set at 3/4". The minus half and three-quarter material then is conveyed via an 18" Scissors Belt Conveyor to a 3' x 5' Hewitt Robbins Vibrating Screen. The minus one-half inch material passes through the screen to the Link Belt Bucket Elevator while the oversize is fed to an 18" Kue Ken Cone Crusher which drops its product back onto the scissors conveyor to close the circuit with the screen. The bucket elevator conveys the -1/2" material 42' high and discharges into the steel fine ore bin.

Grinding & Classification: The ore is drawn from the fine ore bin by a Merrick Model C Constant Weight Feeder which totalizes the weight and gives an adjustable feed to the 12" Belt Conveyor feeding the Ball Mill. Lime is fed to the feed at the rate of 6# per ton at this point via a Denver Dry Reagent Feeder. The grinding mill is a 6' diam. x 5' Grate Discharge, Open End Marcy Ball Mill which discharges into a pump feed box. Water is added at both the feed end of the mill as well as the discharge end, the pulp density is maintained in the mill at approximately 70% while the density to the cells is 26% to 30%. A wilfley Model K 3" Sand Pump conveys the material to a 4' Door Oliver Model T DSM Screen Classifier, all material plus 65 Mesh is returned via gravity to the feed end of the ball mill while the minus 65 mesh material is pumped via a 2" Deco Vertical Sand Pump to the 5' x 5' Denver Agitator-Conditioner.

Flotation: Reagents are fed via Clarkson Model E. Reagent Feeders into the conditioner; Acintol FA-2, 1.5# per ton, Sodium Silicate, 2.0# per ton, and Quebracho at the approximate rate of 1.0# ton, additional is added into the cells as needed as well as additional lime is added to control the PH. The pulp flows via gravity to the rougher cells consisting of 6 Booth Flotation Machines, the sand discharges to the scavenger cells made up of two Booth Flotation Machines. The sand discharge of the scavengers is subjected to automatic sampling with a GECO Automatic Sampler. The cleaner circuit is made up by a bank of 6 Deco 18 Specials Flotation Machines, the rougher concentrates are subject to four cleaning stages. The froth overflow from the scavenger cells is returned to the rougher feed and the froth from the rougher is fed to the first stage of cleaning. This feed is approximately 18% solids and assays approximately 10% to 12% WO_3. The first stage of cleaning is made up of three cells with the sands being discharged to recirculation to the roughers, the next three cleanings are successive single cell steps. The final concentrate is pumped via a DECO Vertical Sand Pump to

the thickener.

Dewatering and Packaging: The thickener is a 20' x 10' deep DECO with a bolted steel tank, the underflow is controlled at about 50% solids by a DECO Simplex Adj. Stroke Dia. Pump. the pump brings the pulp to an Eimco 4' four disc filter where the moisture is pulled out leaving the cons drop to the bin at approximately 15% moisture, the filter effluent is returned to the thickener. The filtered concentrates are further dried via propane to about 5% moisure content then placed in drums for shipment after weighing and assaying. Automatic Samplers cut the flow of concentrates before filtering as well as the tails prior to being pumped to ponds for disposal to yield a metallurgical balance.



MINERAL INDUSTRIES, INC.

TENNESSEE MOUNTAIN TUNGSTEN
MOUNTAIN CITY MILL
PROCESS FLOW DIAGRAM

V

ANCILLARY FACILITIES

1) Water

The mine water supply, both cullinary and drilling, is derived from Tenneco Creek flowing through the property adjacent to the present mine portal at the lower level. It is a perennial stream and flows at the rate of approximately 60 gallons per minute, ample for the mine usage.

The treatment plant derives its cullinary water from a deep well pump set in a well located on the mill property and adjacent to the mill offices. The process water is drawn from the South Fork of the Owyhee River via an Ingersoll-Rand 2MRV-50 HP pump and approximately 600 feet of six inch pipe. The water rights are filed with the County and are of a sufficient magnitude to fulfill any envisioned plant expansion. The river is sustained the year around by the Bureau of Indian Affairs' Wild Horse Reservoir ten miles upstream.

2) Power

No public power or natural gas is available at the mine although the Idaho Power Company's line from Idaho to Mountain City, Nevada is only seven miles distant from the present workings.

The mill has public power, both single and three phase, via Idaho Power Company. The rates are competitive and reasonable and sufficient line capacity exists to absorb expension. This source of power is the only transmission to the town of Mountain City as well as the Rio Tinto Mine, sustained outages are acted on immediately and are rare in occurence.

3) Housing and Schooling

Housing is available in Mountain City, Nevada as well as the newly developed Wild Horse Reservoir area. Schooling is available at Owyhee, Nevada on the Duck Creek Indian Reservation and in Elko, Nevada along with Mountain Home, Idaho. No plans are being made for any accommodations other than the small camp facilities already existing at the mine. It is expected that all workers will commute from the present housing available in the area.

VI

ECONOMIC FORECAST

The following economic forecast and analysis is based on a years experience at the mine and running nearly 3,000 tons of the mined ore through the concentrator, trucking in all of the seasons, and all phases of mining and development including driving drift, raising, and stoping. This experience and backlog of information affords quite accurate forecasts into costs, grade of ore, recovery and subsequent economic analysis.

The following costs are based on the present mill and mine facilities running at the rate of 50,000 tons per year:

Haulage The concentrator is located thirty one road miles from the mine site; 18 miles of paved state highway, 4-1/2 miles of U. S. Forest Service road constructed by Mineral Industries, Inc., and 8-1/2 miles of county maintained road. In the past, Mineral Industries has paid a $3.00 per ton trucking rate on small lots to the local trucking companies on a contract basis. It is realistic to use a cost of 4¢ per ton mile on paved roads and 7¢ per ton mile on dirt and gravel roads utilizing company owned or leased trucks. This calculates out to $1.63 direct trucking cost and to this must be added 30¢ per ton ($15,000 per year) road maintenance cost and another 20¢ per ton for mine stockpile and loading costs yielding a total haulage cost of $2.13 per ton.

Milling The mill has recently been revamped to double its previous capacity and has been run at the rate of 175 tons per day to prove its capabilities. All subsequent cost calculations are based on a feed rate of 160 tons per day, 85% availability, and a year around operation.

Direct Operating Cost	Cost/ton	Cum/ton
Supervision	$0.62	$0.62
Mill Stockpile	.30	.92
Crushing and Storage	.32	1.24
Grinding and Classification	.19	1.43
Flotation and Reagents	.60	2.03
Dewatering and Tailings Disposal	.10	2.13
Packaging and Sales	.06	2.19
Electrical	.27	2.46
Process Heat and Water	.18	2.64
Automotive	.04	2.68
Analytical and Metallurgical	.18	2.86
Miscellaneous and Repairs	.34	3.20
Hourly Payroll Labor	1.75	4.95

Royalty The present lease held by Mineral Industries, Inc. on the properties is a lease-purchase with all paid royalties to apply toward the final end price. For all intents and purposes of this report the royalty of one dollar per ton is treated as a direct operating cost.

G & A General and Administration covers a broad spectrum and will be set up at the figure of $60,000 per year extrapolating to $1.20 per ton.

Mining The concentrator runs seven days a week and 24 hours a day while mining should be accomplished in a five day week on a two or three shift basis. Therefore, the mine must develop and produce at a daily rate or over 200 tons. Mine development must be conducted in conjunction with the actual extraction of mined material but well in advance. Costs are computed on a five day week, two shift basis:

Development A program to develop and block out new ore reserves will be conducted concurrently with the mining and milling of the proven ore body.

Direct Operating Cost	Cost/ton	Cum/ton
Supervision	$0.53	$0.53
Hourly Payroll Labor	1.50	2.03
Blasting	.50	2.53
Drilling	.30	2.83
Loading and Hauling	.72	3.55
Miscellaneous	.24	3.79

Total Direct Cost Summary:

Royalty	$1.00 per ton
Mining	3.79 " "
Hauling	2.13 " "
Development	2.00 " "
Milling	4.95 " "
G & A	1.20 " "
	$15.07 per ton

As pointed out prior, the mill feed is projected to contain .60% WO_3 (six tenths of a unit). The recovery from the mill is adjudged to be 90%, this is producing a concentrate containing plus thirty per-cent WO_3. The present market for this grade concentrate has been established with a large U. S. consumer agreeing to purchase at the rate of $40.00 per unit f. o. b. Upper Scheelite, California. The pro-forma cash flow analysis is calculated as follows:

50,000 tons per year x .60% WO_3 x 90% recovery x $40.00 per unit = $1,080,000.00 in sales per annum. 50,000 tons per year x $15.07 cost per ton = $753,500.00 direct costs per year.

Gross Sales per year	$1,080,000.00
Cost of Sales	753,500.00
Gross profit before taxes, depreciation & depletion	$ 326,500.00 per year

The possibilities of expanding the magnitude of the operation is very good with a strong possibility that an open pit type operation may be developed on the property. A hypothetical example for explanatory reasons is hereby given utilizing todays market and costs.

Open Pit Mining - Avg. Ore, .42% - 100,000 tpy mill relocated

Costs:		
	Royalty	$1.00
	Mining & Develop.	2.25
	Hauling	.70
	Milling	3.75
	G & A	.60
		$8.30

Sales - 37,800 units at $40.00 per unit =	$1,512,000.00
Cost of Sales - 100,000 tons at $8.30/ton =	830,000.00
	$ 682,000.00

VII

TUNGSTEN

Tungsten is definitely a metal of the twentieth century. Prior to 1900 it had almost no commercial use although it was an important but unsuspected part of the legendary Damascus steel. Tungsten was first identified in 1847 in Bohemia and the metal was isolated in Spain in 1883. Tungsten alloy steel was later discovered to be vastly superior for cutting metal at high speed and created a sensation at the Paris exposition in 1900. Cutting tools made of it could be used at high temperatures that would ruin any carbon steel.

Nearly all alloy steels containing tungsten are made in the electric furnace where tungsten is introduced in the form of ferro-tungsten. Ferro-tungsten melts between 3500 and 3700 degrees F., while tungsten powder melts between 6000 and 6200 degrees F. Neither will actually melt in a steel-making furnace, but the ferro-alloy because of its lower fusion temperaturs is more easily dissolved in the molten steel. It has a lower gravity than tungsten powder and settles slower through the melt to give a more uniform distribution.

Tungsten can be heated to higher temperatures without softening than any other substance except carbon, because its melting point -- about 3410 degrees C (6182 degrees F) -- is the highest of all metals. Tungsten is indispensable as filament wire in incandescent lamps but its consumption for this purpose is small, being only 1 to 2 percent of the annual total production. One pound of tungsten drawn into a wire 0.0022 inches in diameter provides 6.2 miles of wire or filament for 14,400 lamp bulbs of 60 watt size.

Tungsten has the highest tensile strength of any known metal -- up to 600,000 lbs. per square inch. At ordinary temperatures it is not affected by acids including Aqua Regia and is soluble only in a mixture of hydrofluoric and nitric acids.

Some of the tungsten reduced to metallic form is used in making cemented carbides. High purity tungsten powder is combined with carbon at high temperatures in an inert atmosphere. The resulting carbide is crushed and mixed with cobalt powder which acts as a cementing agent when the material is sintered. The result is a cemented tungsten carbide, the hardest known artificial substance. Cemented carbides are used in making rock drill bits, dies, and many types of cutting tools such as single-point tools, forming tools, milling cutters, etc.

APPENDIX II

APPENDIX I

TREATMENT TESTS OF SCHEELITE ORES FROM CALIFORNIA, NEVADA, AND UTAH

BY A. L. ENGEL AND E. S. SHEDD

* * * * * * * * * * **Report of Investigations 5087**

UNITED STATES DEPARTMENT OF THE INTERIOR
Douglas McKay, Secretary
BUREAU OF MINES
J. J. Forbes, Director

Work on manuscript completed April 1954. The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is made: "Reprinted from Bureau of Mines Report of Investigations 5087."

November 1954

INTRODUCTION AND SUMMARY

This report is a compilation of the results of preliminary tests on ores containing scheelite (calcium tungstate). In most of the ores, scheelite was the only value; but several samples contained other values, such as gold, base metals, or, in one instance beryl. These investigations were made to assist the development of domestic tungsten resources by establishing satisfactory treatment methods suitable for small-scale operations. The samples were obtained through the Mining Division of the Bureau of Mines and represent, for the most part, newly discovered deposits.

A previous report[2/] discussed laboratory test procedures. A less detailed description of test procedures is included in the present report. As is usual in an investigation of this type, only a limited amount of work was done on most of the samples to indicate the results that could be expected from simple treatment of the particular ore. The occurrence of scheelite and the texture of the minerals present differ greatly in individual ores and must be determined and considered in establishing such details of treatment as grinding to obtain optimum liberation of the minerals, the preferred type of gravity concentration, or possible further treatment by flotation.

In the tests described, the treatment methods included gravity concentration, magnetic separation, and flotation.

Ten of the samples originated in California, 7 in Nevada, and 1 in Utah.

Table 1 summarizes test results.

ACKNOWLEDGMENTS

The work described in this report was done under the general supervision of J. B. Zadra, chief, Hydrometallurgical and Ore-Dressing Branch, Metallurgical Division, Region III, Bureau of Mines, Reno, Nev. Many of the microscopical examinations of test products were made by Edward Morrice, metallurgist at the Reno Station. Analyses were made by A. C. Rice, C. E. Arrington, and J. M. Boylan.

2/ Engel, A. L., Treatment Tests of Scheelite Ores and Tailings: Bureau of Mines Rept. of Investigations 4867, 1952, 11 pp.

Scheelite Ore From Garnet Tungsten Mine, Mountain City, Elko County, Nev.

The ore contained about 1.4 percent WO_3 as scheelite in quartz gangue with garnet, hornblende, and calcite. Considerable scheelite was liberated by crushing to minus-10-mesh, but optimum liberation required grinding to minus-150-mesh. Apparently the scheelite was contaminated with molybdenum, probably in some form of the mineral powellite. Analyses showed 0.03 percent Mo.

Gravity-concentration tests were made on ore crushed to minus-10-mesh and classified hydraulically into three sands and slimes. Each was treated separately on the laboratory shaking table. The coarser middlings were reground to minus-35-mesh and re-treated. The combined concentrates were cleaned on the high-intensity magnetic separator. Final concentrates contained 57.39 percent WO_3, representing 50-percent recovery. This product also contained 1.25 percent Mo. Detailed data of this test were:

Gravity concentration - Garnet tungsten ore

Product	Weight, percent	WO_3, percent	Distribution of WO_3, percent
Concentrates	1.16	57.39	50.06
Magnetic rejects	6.78	.32	1.63
Sand tailings	64.46	.07	3.45
Slimes	27.60	2.17	44.86
Composite	100.00	1.33	100.00

The sand-table tailings could be discarded. The magnetic rejects and slimes could be treated by flotation, after the oversize portion was ground to minus-150-mesh. This would amount to about one-third of the original weight of ore and contain 1.8 percent WO_3, representing about 47 percent of the total tungsten content of the original ore.

Several flotation tests were made on ore ground to minus-150-mesh. Concentrates were made, containing 31 percent WO_3 representing 80-percent recovery. The rougher tailings contained 0.04 percent WO_3 indicating a gross recovery of 98 percent, but the cleaner tailings contained 17 percent of the total tungsten, and this would not all be recovered in continuous operation. Details of flotation were:

Flotation - Garnet tungsten ore

Product	Weight, percent	WO_3, percent	Distribution of WO_3, percent
Cleaner concentrates	3.90	1/31.05	80.70
Cleaner tailings	16.15	1.58	17.03
Rougher tailings	79.95	.04	2.27
Composite	100.00	1.50	100.00

1/ The concentrates contained also 0.80 percent Mo.

Reagents, in pound per ton of ore:

Sodium carbonate	1.0
Quebracho, to rougher	.1
Quebracho, to cleaners	.05
Oleic acid	.25
Aerosol OT-85	.05
B-23 (frother)	.25

Scheelite Ore From Defense Tungsten Mine, Humboldt County, Nev.

APPENDIX III

Telephone 363-3302

Hand Sample Serial 16075-16076

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

W. C. WANLASS, President
L. G. HALL, Vice President
G. P. WILLIAMS, Treasurer
GERALDINE A. WANLASS, Secretary
P. O. Box 1528
Salt Lake City, Utah 84110

Mine Mineral Industries, Inc.
725 Kearns Building
Salt Lake City, Utah 84101

RESULTS PER TON OF 2000 POUNDS

June 28, 1971

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Wet on Ore	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent
										WO_3	
Raise Sample #1	6-21-71									0.96	
Raise Sample #2	6-21-71									2.32	

Remarks

Charges $ 14.00

G. P. Williams

Telephone 363-3302

Hand Sample Serial 15510

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

W. C. WANLASS, President
L. G. HALL, Vice President
G. P. WILLIAMS, Treasurer
GERALDINE A. WANLASS, Secretary
P. O. Box 1528
Salt Lake City, Utah 84110

Mine Minerals Industries, Inc.
725 KeanrsBuilding
Salt Lake City, Utah 84101

RESULTS PER TON OF 2000 POUNDS

June 17, 1971

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Wet on Ore	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent
										WO_3	
Raise Sample 6-14-71										4.26	

Remarks

Charges $ 7.00

G. P. Williams

ASSAY REPORT

DATE Sept. 30, 1970

NORTH AMERICAN LABORATORIES, INC.
Assayers & Chemists
PHONE 262-5467
5217 MAJOR STREET
P.O. BOX 7305
MURRAY, UTAH 84107

Western Exploration & Engineering
Kearns Bldg.
Salt Lake City, Utah 84111

Lab No. 2246 - 2302

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	WO_3				VALUE OF GOLD PER TON
#79						0.24				
88						0.20				
89						0.30				
121						0.32				
130						0.22				
131						0.55				
132						0.64				
138						0.16				
201						0.44				
XXX8207						0.38				
211						0.40				
212						0.50				
213						0.24				
219						0.46				
226						0.40				
227						0.52				
234						0.48				
236						0.32				
237						0.55				
238						0.44				
239						0.36				
251						0.27				
252						0.54				
253						0.20				
255						0.52				
256						0.70				
257						0.70				
258						0.60				
259						0.76				
261						0.26				
263						0.96				
264						1.16				
267						0.82				
270						0.52				
272						0.58				
273						0.46				
274						0.50				
278						0.48				
279						0.64				
280						0.64				
281						0.62				
285						0.50				
286						0.36				
287						0.46				
288						0.39				
289						0.54				
292						0.42				
293						0.84				

CHARGES $_____

BY Hans H. Thomsen

ASSAY REPORT

DATE Sept. 30, 1970

Western Exploration & Engineering
Kearns Bldg.
Salt Lake City, Utah 84111

NORTH AMERICAN LABORATORIES, INC.
Assayers & Chemists
PHONE 262-5467
5217 MAJOR STREET
P.O. Box 7305
MURRAY, UTAH 84107

lab No. 2246 - 2302 (Page 2 of 2 sheets)

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	WO_3				VALUE OF GOLD PER TON
#294						0.54				
296						0.78				
297						0.64				
302						0.42				
305						1.32				
142						0.24				
143						0.44				
Total - 55 Assays										

CHARGES $ 385.00 less 10% Bulk = $346.50

BY _____

ASSAY REPORT

DATE Sept. 30, 1970

Western Exploration & Engineering
Kearns Bldg.
Salt Lake City, Utah 84111

NORTH AMERICAN LABORATORIES, INC.
Assayers & Chemists
PHONE 262-5467
5217 MAJOR STREET
P.O. Box 7305
MURRAY, UTAH 84107

Lab No. 2204 - 2229

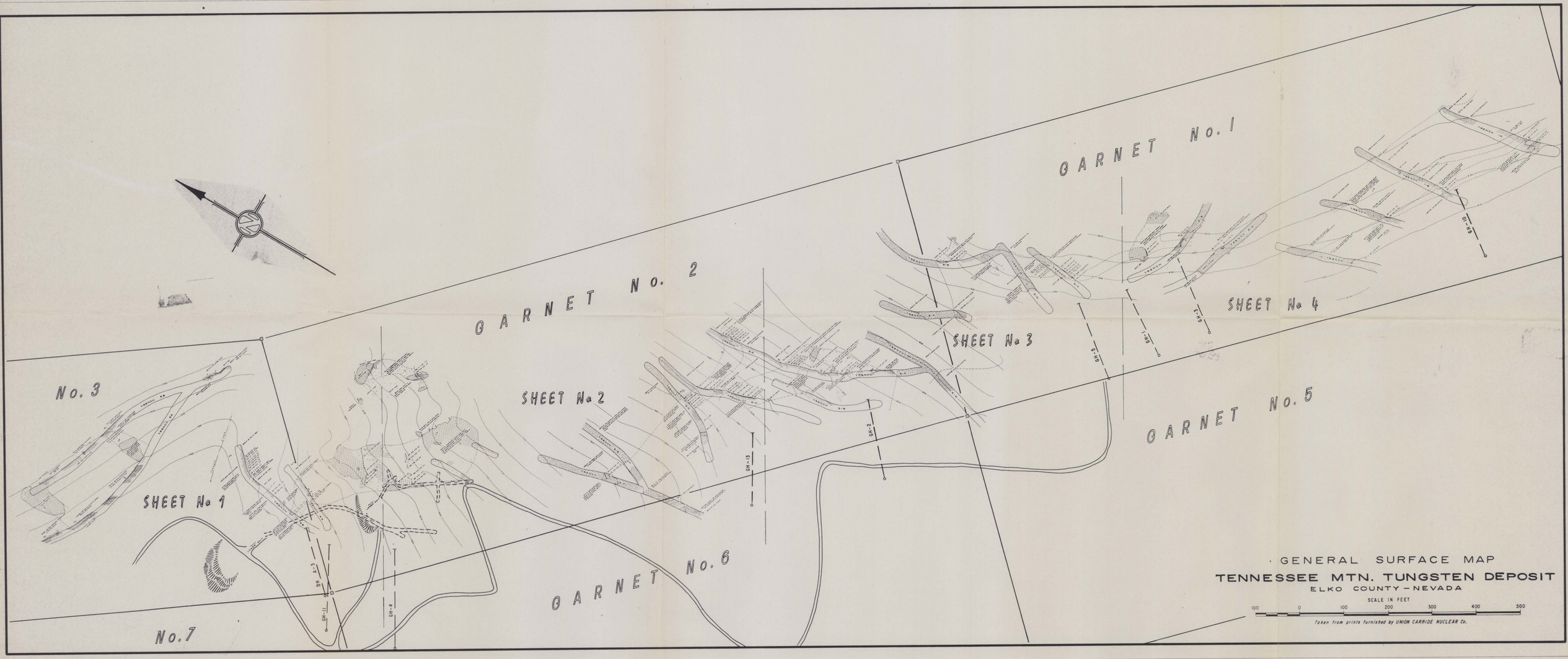
ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	WO_3				VALUE OF GOLD PER TON
#57						0.370				
70						0.370				
79						0.530				
87						0.440				
88						0.480				
89						0.460				
121						0.430				
124						0.420				
125						0.490				
126						0.540				
127						0.620				
128						0.500				
130						0.420				
131						0.670				
132						0.680				
133						0.410				
134						0.146				
136						0.244				
137						0.170				
138						0.096				
139						0.180				
154						0.286				
166						0.480				
167						0.700				
179						0.025				
180						0.500				
Composite 2217-2229				(no chg.)		0.39 -	(math -	0.36)		

26 samples @ $7.

CHARGES $ 182.00 less 10% Bulk = $163.80

BY Vance H. Tennison



GENERAL SURFACE MAP

TENNESSEE MTN. TUNGSTEN DEPOSIT

ELKO COUNTY – NEVADA

SCALE IN FEET

100 0 100 200 300 400 500

Taken from prints furnished by UNION CARBIDE NUCLEAR Co.

2470011

Sec. 7 | Sec. 8 | Sec. 9

H. MOFFAT Co.

GARNET EXT. No. 13 | GARNET EXT. No. 12 | GARNET EXT. No. 11 | GARNET EXT. No. 10 | GARNET EXT. No. 9 | GARNET No. 8 | GARNET No. 4

GARNET EXT. No. 14 | GARNET No. 7 | GARNET No. 3 | GARNET No. 6 | GARNET No. 2 | GARNET No. 1 | GARNET No. 5

TENNESSEE MTN.

GARNET EXT. No. 1 | GARNET EXT. No. 3 | GARNET EXT. No. 5 | GARNET EXT. No. 2 | GARNET EXT. No. 4 | GARNET EXT. No. 6

Sec. 18 | Sec. 17 | Sec. 16

T 45 N

Sec. 19 | Sec. 20 | Sec. 20

R 56 E

GARNET MAIN CLAIM No. 1 | No. 17 | No. 15 | No. 13 | No. 11 | No. 9 | No. 7 | No. 5 | No. 3 | No. 18 | No. 16 | No. 14 | No. 12 | No. 10 | No. 8 | No. 6 | No. 4 | No. 2

SCALE IN FEET

1000 0 1000 2000 3000 4000 5000

EXPLANATION
(ALL SHEETS)

- ALLUVIUM
- TACTITE
- LIGHT SILICATE TACTITE
- SCHEELITE MINERALIZATION
- LIMESTONE
- QUARTZITE
- GRANITE and APLITE
- QUARTZ
- PHYLLITE

FAULTS or CONTACTS
- Positive
- Inferred
- Doubtful

STRIKE and DIP
- Contacts and Faults
- Bedding

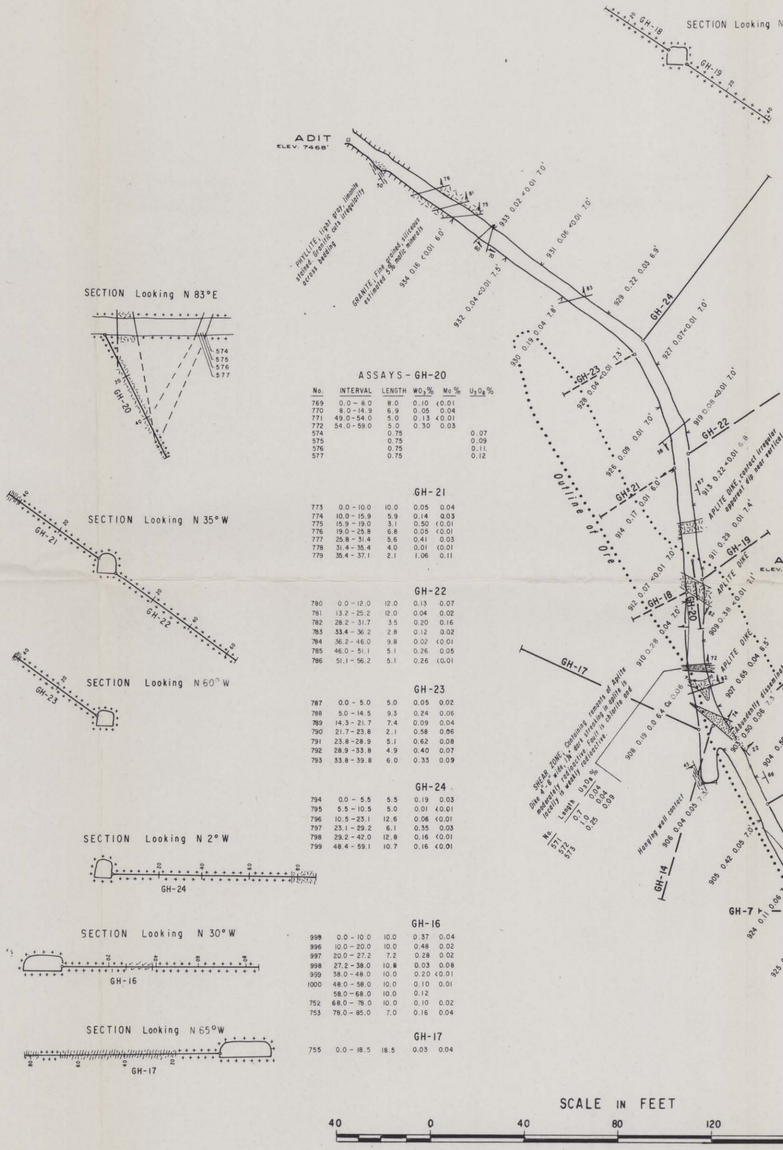
SAMPLES
945 0.46 0.02 7.0'
945 Sample No.
0.46 WO_3%
0.02 Mo%
7.0' Interval

- DIAMOND DRILL HOLE
- SURVEY MONUMENT
- LOCATION MONUMENT

CLAIM MAP
TENNESSEE MTN. TUNGSTEN DEPOSIT
ELKO COUNTY – NEVADA

Taken from a print furnished by UNION CARBIDE NUCLEAR Co.

2470 0011



ASSAYS GH-18

No.	INTERVAL	LENGTH	WO₃%	Mo%
760	0.0 - 6.0	6.0	0.52	0.04
761	6.0 - 12.8	6.8	0.62	0.04
762	12.8 - 24.5	11.7	0.03	<0.01
763	24.5 - 27.4	2.9	0.42	0.02
764	27.4 - 30.2	2.8	0.02	0.02

GH-19

765	0.0 - 5.0	5.0	0.55	0.04
766	5.0 - 12.6	7.6	0.71	0.03
767	12.6 - 19.4	6.8	0.39	0.06
768	19.4 - 23.7	4.3	0.04	<0.01

ASSAYS - GH-20

No.	INTERVAL	LENGTH	WO₃%	Mo%	U₃O₈%
769	0.0 - 8.0	8.0	0.10	<0.01	
770	8.0 - 14.9	6.9	0.05	0.04	
771	49.0 - 54.0	5.0	0.13	<0.01	
772	54.0 - 59.0	5.0	0.30	0.03	
574		0.75			0.07
575		0.75			0.09
576		0.75			0.11
577		0.75			0.12

GH-21

773	0.0 - 10.0	10.0	0.05	0.04
774	10.0 - 15.9	5.9	0.14	0.03
775	15.9 - 19.0	3.1	0.50	<0.01
776	19.0 - 25.8	6.8	0.05	<0.01
777	25.8 - 31.4	5.6	0.41	0.03
778	31.4 - 35.4	4.0	0.01	<0.01
779	35.4 - 37.1	2.1	1.06	0.11

GH-22

780	0.0 - 12.0	12.0	0.13	0.07
781	13.2 - 25.2	12.0	0.04	0.02
782	28.2 - 31.7	3.5	0.20	0.16
783	33.4 - 36.2	2.8	0.12	0.02
784	36.2 - 46.0	9.8	0.02	<0.01
785	46.0 - 51.1	5.1	0.26	0.05
786	51.1 - 56.2	5.1	0.26	<0.01

GH-23

787	0.0 - 5.0	5.0	0.05	0.02
788	5.0 - 14.5	9.3	0.24	0.06
789	14.3 - 21.7	7.4	0.09	0.04
790	21.7 - 23.8	2.1	0.58	0.56
791	23.8 - 28.9	5.1	0.62	0.08
792	28.9 - 33.8	4.9	0.40	0.07
793	33.8 - 39.8	6.0	0.33	0.09

GH-24

794	0.0 - 5.5	5.5	0.19	0.03
795	5.5 - 10.5	5.0	0.01	<0.01
796	10.5 - 23.1	12.6	0.06	<0.01
797	23.1 - 29.2	6.1	0.35	0.03
798	29.2 - 42.0	12.8	0.16	<0.01
799	48.4 - 59.1	10.7	0.16	<0.01

GH-16

999	0.0 - 10.0	10.0	0.37	0.04
996	10.0 - 20.0	10.0	0.48	0.02
997	20.0 - 27.2	7.2	0.28	0.02
998	27.2 - 38.0	10.8	0.03	0.08
999	38.0 - 48.0	10.0	0.20	<0.01
1000	48.0 - 58.0	10.0	0.10	0.01
	58.0 - 68.0	10.0	0.12	
752	68.0 - 78.0	10.0	0.10	0.02
753	78.0 - 85.0	7.0	0.16	0.04

GH-17

755	0.0 - 18.5	18.5	0.03	0.04

ASSAYS GH-6

No.	INTERVAL	LENGTH	WO₃%	Mo%
888	0.0 - 5.0	5.0	0.33	<0.01
889	5.0 - 9.2	4.2	0.35	0.11

GH-9

915	0.0 - 10.0	10.0	0.57	0.06
916	10.0 - 19.1	9.1	1.02	0.09
917	19.1 - 20.6	1.5	0.14	<0.01
918	20.6 - 31.7	11.1	1.52	0.12
920	31.7 - 43.2	11.5	0.65	<0.01
921	43.2 - 53.2	10.0	0.30	<0.01
922	53.2 - 60.3	7.1	0.14	<0.01

GH-7

890	0.0 - 2.1	2.1	0.42	0.11
891	2.1 - 4.0	1.9	0.08	0.06
892	4.0 - 7.2	3.2	0.003	0.62

GH-8

893	0.0 - 5.0	5.0	0.42	0.08
894	5.0 - 13.0	8.0	0.38	<0.01
896	13.0 - 18.0	5.0	0.62	0.09
897	18.0 - 23.0	5.0	1.15	0.13
898	23.0 - 28.0	5.0	0.72	0.07
899	28.0 - 33.0	5.0	0.53	0.08
900	33.0 - 39.8	6.8	0.83	0.38
901	39.8 - 43.0	3.2	0.20	0.07
902	43.0 - 45.9	2.9	0.09	0.24

GH-12

935	0.0 - 2.0	2.0	0.69	0.04
936	2.0 - 6.6	4.6	0.17	0.03
937	6.6 - 7.9	1.3	0.63	0.03
938	7.9 - 15.7	7.8	0.21	<0.01
939	15.7 - 21.0	5.3	0.36	<0.01
940	21.0 - 26.8	5.8	0.37	0.06
941	26.8 - 31.8	5.8	0.10	0.02
942	31.8 - 34.4	2.6	0.05	<0.01
943	34.4 - 42.3	7.9	0.30	<0.01
944	42.3 - 53.3	11.0	0.02	0.10
947	57.9 - 62.5	4.6	0.02	0.06
948	63.5 - 70.0	6.5	0.01	<0.01
949	75.7 - 82.3	6.6	0.07	<0.01
950	82.3 - 90.1	7.8	0.15	0.03
951	90.1 - 104.0	13.9	0.05	0.02
958	104.0 - 114.0	10.0	0.07	
959	114.0 - 124.0	10.0	0.09	0.04
960	124.0 - 144.0	20.0	0.04	0.17
961	120.0 - 134.0	10.0	0.07	0.04
962	144.0 - 154.0	10.0	0.11	0.59
963	154.0 - 164.0	10.0	0.06	0.09
964	164.0 - 174.0	10.0	0.04	

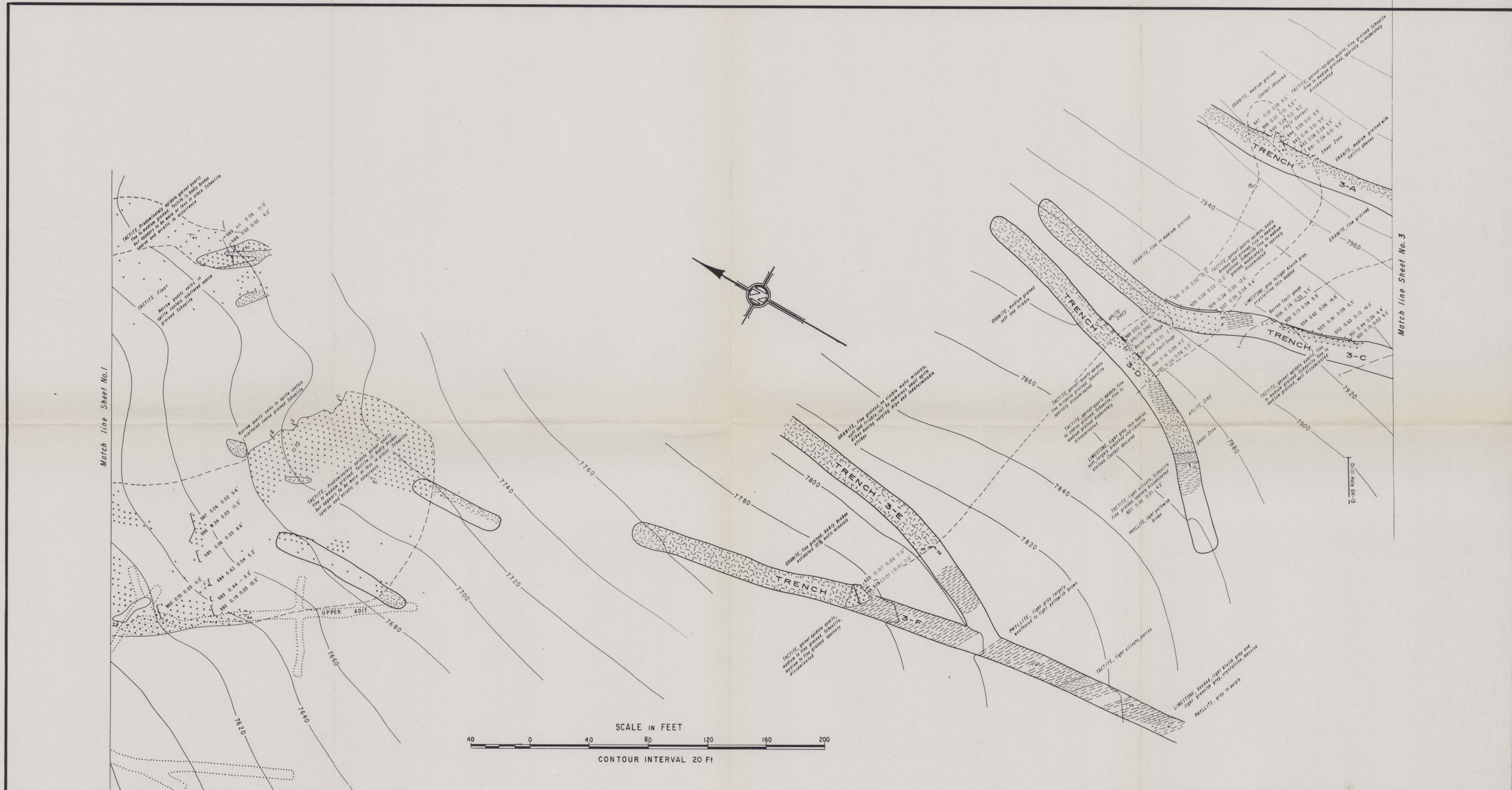
ASSAYS GH-14

No.	INTERVAL	LENGTH	WO₃%	Mo%
965	0.0 - 8.0	8.0	0.41	0.05
966	8.0 - 18.0	10.0	0.49	0.03
974	25.1 - 33.0	7.9	0.22	0.02
975	33.0 - 38.0	5.3	0.56	0.06
976	38.3 - 46.4	8.1	0.32	0.03
977	46.4 - 54.4	8.0	0.54	0.04
978	54.4 - 65.0	10.6	0.66	
979	65.0 - 75.0	10.0	0.76	0.07
980	75.0 - 85.0	10.0	0.57	0.06
981	85.0 - 93.0	8.0	0.84	
991	93.0 - 100.0	7.0	2.06	0.17
992	100.0 - 106.9	6.9	0.12	
993	117.8 - 123.0	5.2	0.07	0.04
994	125.0 - 133.0	8.0	0.28	0.04

Taken from a print furnished by UNION CARBIDE NUCLEAR Co.
Dated 11-11-56

UNDERGROUND WORKINGS
TENNESSEE MTN. TUNGSTEN DEPOSIT
ELKO COUNTY - NEVADA

2470 0011

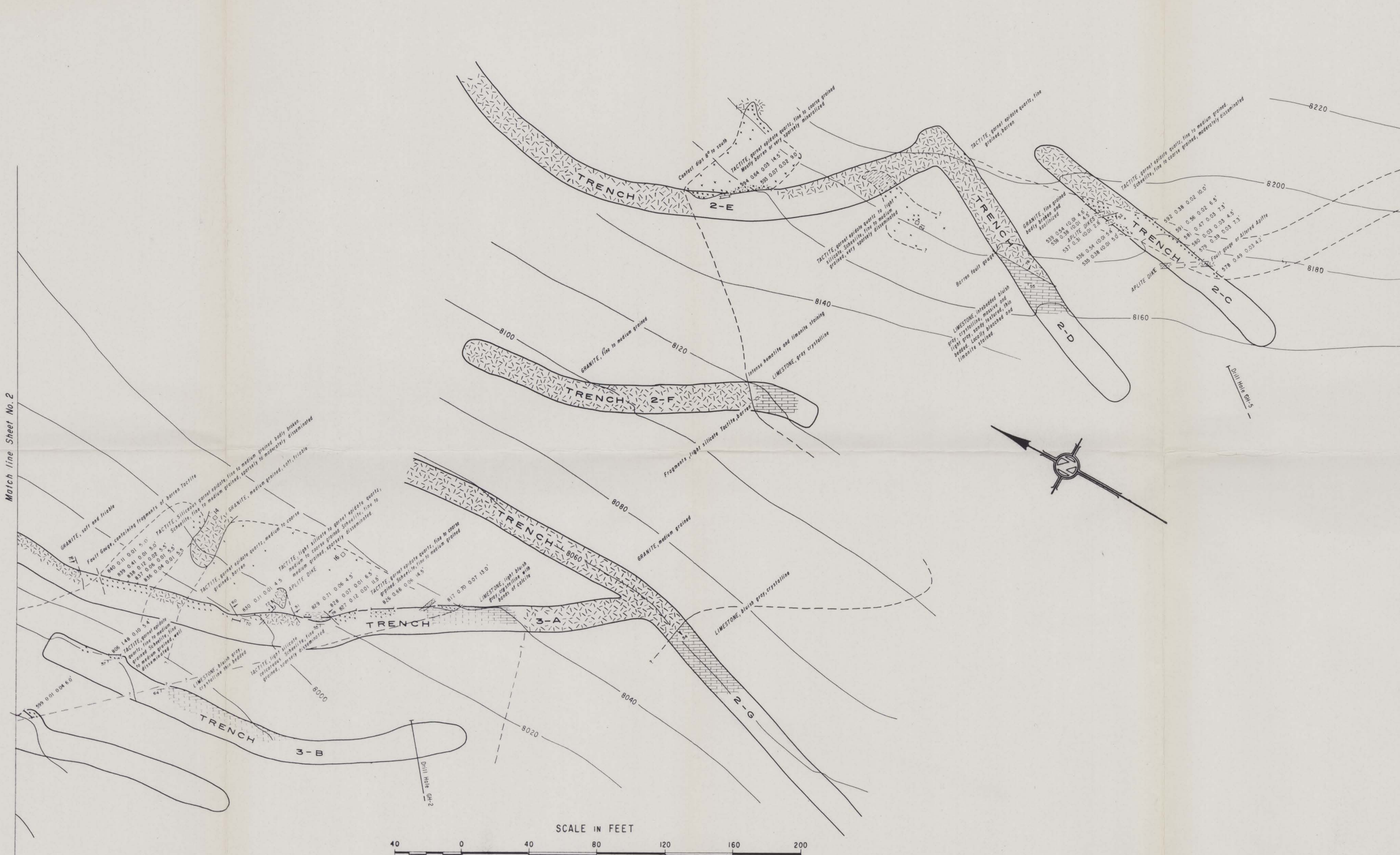


TRENCH DETAIL - *SHEET No.2*

TENNESSEE MTN. TUNGSTEN DEPOSIT

ELKO COUNTY - NEVADA

2470 0011



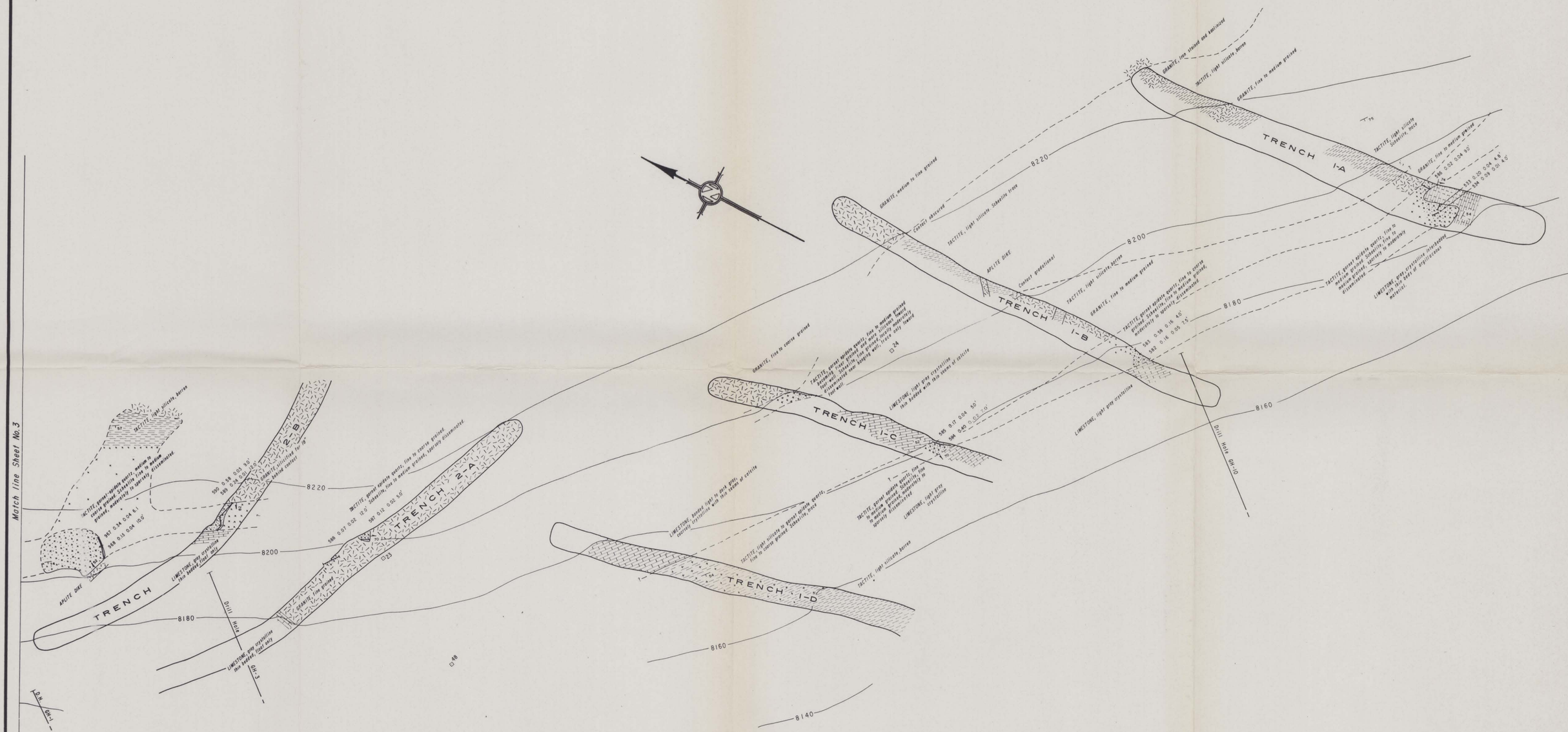
TRENCH DETAIL – SHEET No. 3

TENNESSEE MTN. TUNGSTEN DEPOSIT

ELKO COUNTY – NEVADA

Taken from prints furnished by UNION CARBIDE NUCLEAR Co.
Dated 11-11-56

2470 0011



Match line Sheet No. 3

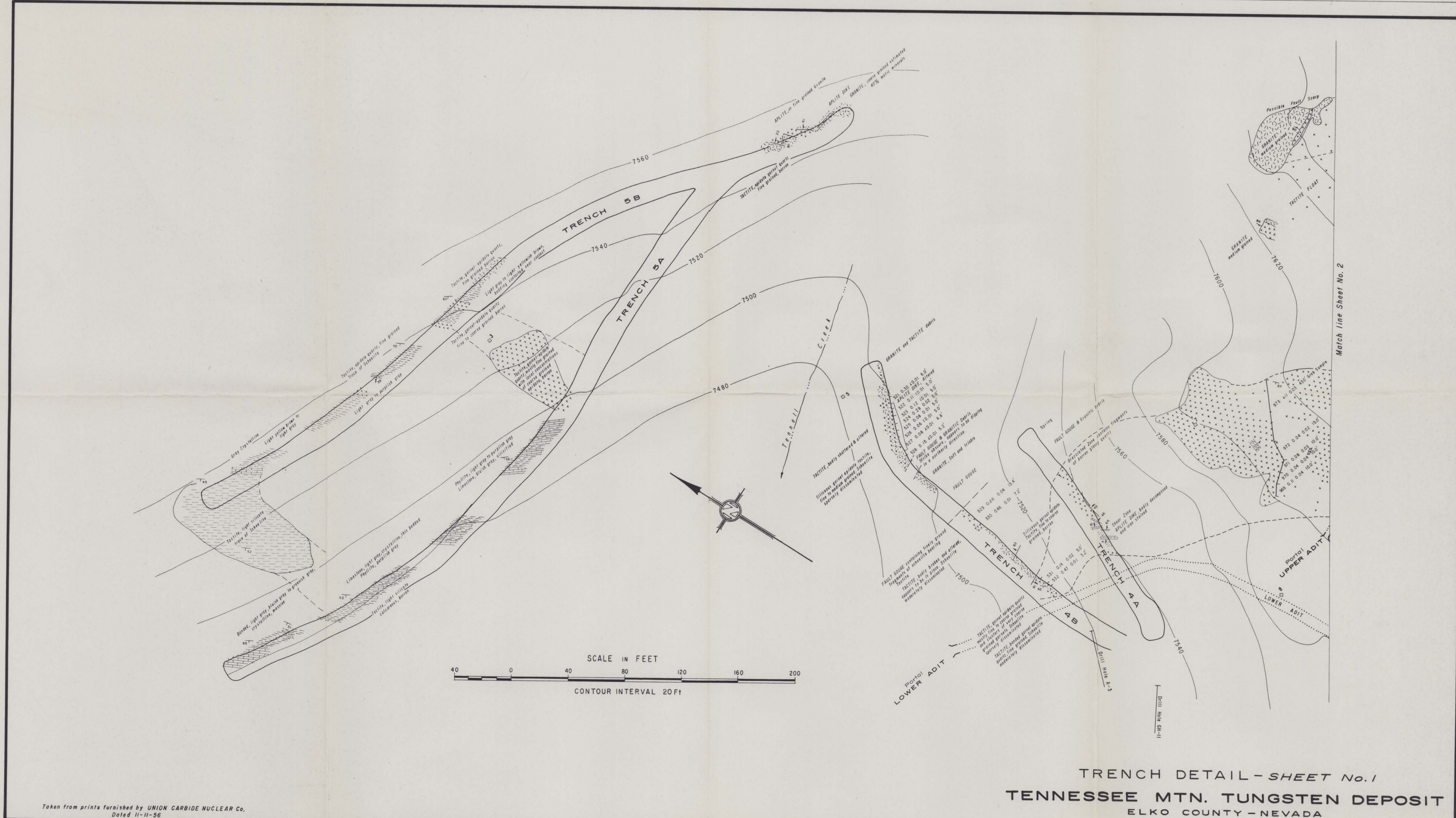
Taken from prints furnished by UNION CARBIDE NUCLEAR Co.
Dated 11-11-56

TRENCH DETAIL — *SHEET No. 4*

TENNESSEE MTN. TUNGSTEN DEPOSIT

ELKO COUNTY — NEVADA

2470 0011



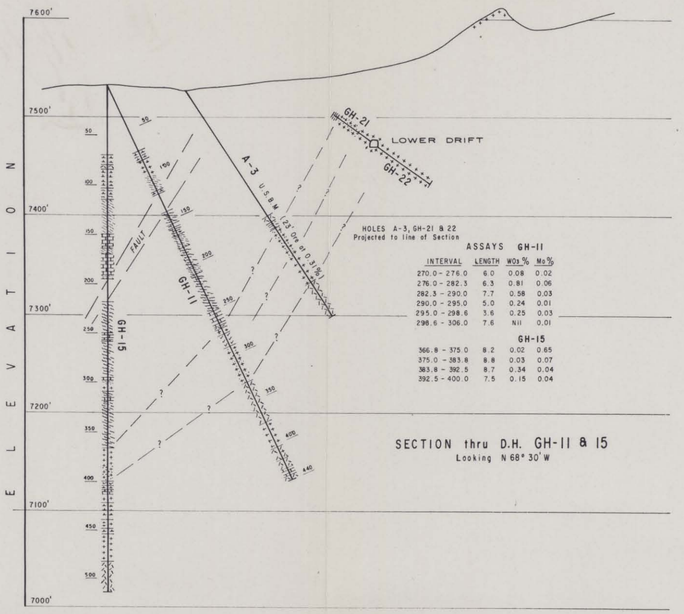
TRENCH DETAIL – SHEET No. 1

TENNESSEE MTN. TUNGSTEN DEPOSIT

ELKO COUNTY – NEVADA

Taken from prints furnished by UNION CARBIDE NUCLEAR Co.
Dated 11-11-56

2470 0011



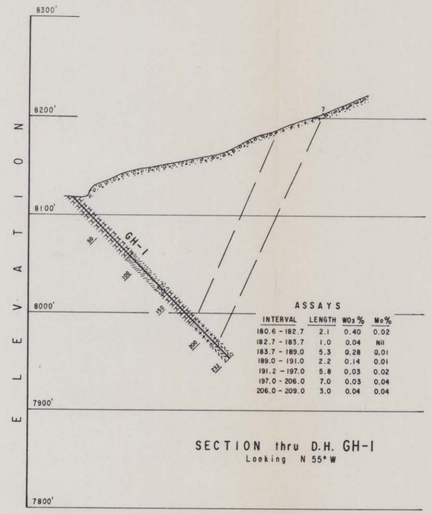
ASSAYS GH-11

INTERVAL	LENGTH	WO3 %	Mo %
270.0 - 276.0	6.0	0.08	0.02
276.0 - 282.3	6.3	0.81	0.06
282.3 - 290.0	7.7	0.58	0.03
290.0 - 295.0	5.0	0.24	0.01
295.0 - 298.6	3.6	0.25	0.03
298.6 - 306.0	7.6	Nil	0.01

GH-15

366.8 - 375.0	8.2	0.02	0.65
375.0 - 383.8	8.8	0.03	0.07
383.8 - 392.5	8.7	0.34	0.04
392.5 - 400.0	7.5	0.15	0.04

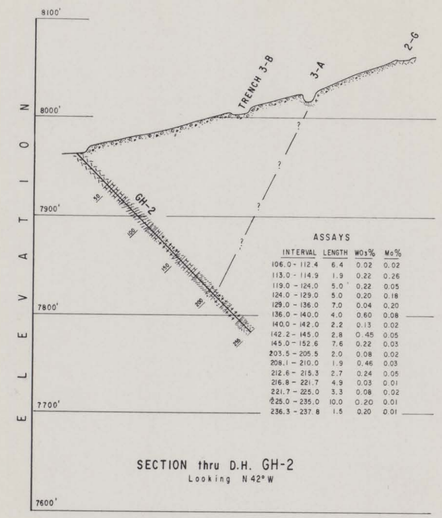
SECTION thru D.H. GH-11 & 15
Looking N 68° 30' W



ASSAYS

INTERVAL	LENGTH	WO3 %	Mo %
180.6 - 182.7	2.1	0.40	0.02
182.7 - 183.7	1.0	0.04	Nil
183.7 - 189.0	5.3	0.28	0.01
189.0 - 191.0	2.2	0.14	0.01
191.2 - 197.0	5.8	0.03	0.02
197.0 - 206.0	7.0	0.03	0.04
206.0 - 209.0	3.0	0.04	0.04

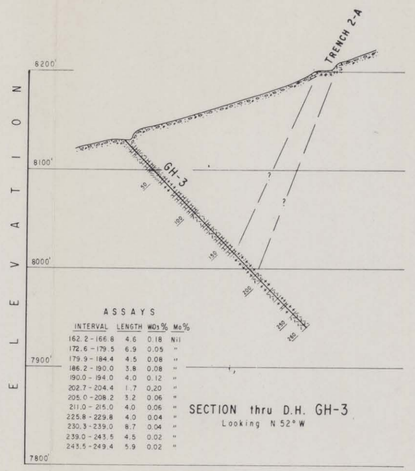
SECTION thru D.H. GH-1
Looking N 55° W



ASSAYS

INTERVAL	LENGTH	WO3 %	Mo %
106.0 - 112.4	6.4	0.02	0.02
113.0 - 114.9	1.9	0.22	0.26
119.0 - 124.0	5.0	0.22	0.05
124.0 - 129.0	5.0	0.20	0.18
129.0 - 136.0	7.0	0.04	0.20
136.0 - 140.0	4.0	0.60	0.08
140.0 - 142.0	2.2	0.13	0.02
142.2 - 145.0	2.8	0.45	0.05
145.0 - 152.6	7.6	0.22	0.03
203.5 - 205.5	2.0	0.08	0.02
208.1 - 210.0	1.9	0.46	0.03
212.6 - 215.3	2.7	0.24	0.05
216.8 - 221.7	4.9	0.03	0.01
221.7 - 225.0	3.3	0.08	0.02
225.0 - 235.0	10.0	0.20	0.01
236.3 - 237.8	1.5	0.20	0.01

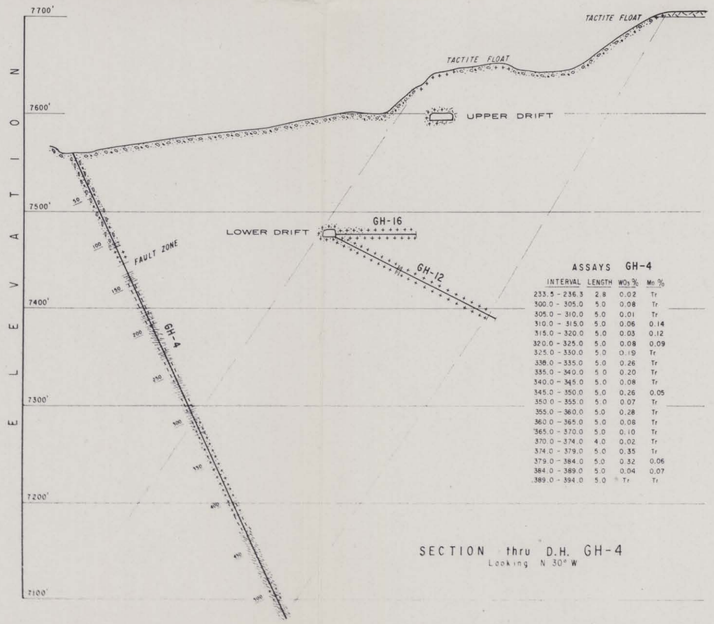
SECTION thru D.H. GH-2
Looking N 42° W



ASSAYS

INTERVAL	LENGTH	WO3 %	Mo %	
162.2 - 166.8	4.6	0.18	Nil	
172.6 - 179.5	6.9	0.05	"	
179.9 - 184.4	4.5	0.08	"	
186.2 - 190.0	3.8	0.08	"	
190.0 - 194.0	4.0	0.12	"	
202.7 - 204.4	1.7	0.20	"	
205.0 - 208.2	3.2	0.06	"	
211.0 - 215.0	4.0	0.06	"	
225.8 - 229.8	4.0	0.04	"	
230.3 - 239.0	9.7	0.04	"	
239.0 - 243.5	4.5	0.02	"	
243.5 - 249.4	5.9	0.02	"	

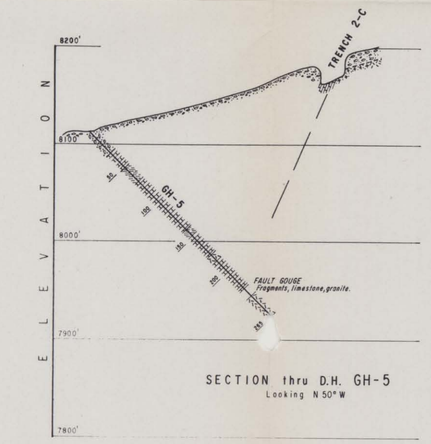
SECTION thru D.H. GH-3
Looking N 52° W



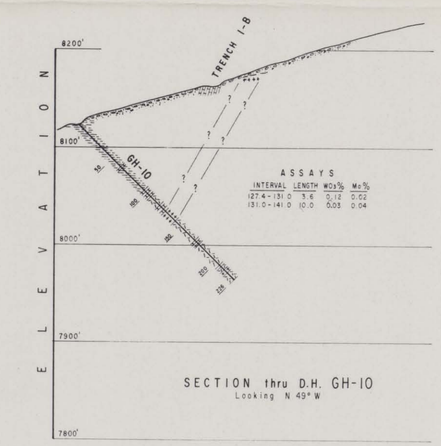
ASSAYS GH-4

INTERVAL	LENGTH	WO3 %	Mo %
233.5 - 236.3	2.8	0.02	Tr
300.0 - 305.0	5.0	0.08	Tr
305.0 - 310.0	5.0	0.01	Tr
310.0 - 315.0	5.0	0.06	0.14
315.0 - 320.0	5.0	0.03	0.12
320.0 - 325.0	5.0	0.08	0.09
325.0 - 330.0	5.0	0.19	Tr
330.0 - 335.0	5.0	0.26	Tr
335.0 - 340.0	5.0	0.20	Tr
340.0 - 345.0	5.0	0.08	Tr
345.0 - 350.0	5.0	0.26	0.05
350.0 - 355.0	5.0	0.07	Tr
355.0 - 360.0	5.0	0.28	Tr
360.0 - 365.0	5.0	0.08	Tr
365.0 - 370.0	5.0	0.10	Tr
370.0 - 374.0	4.0	0.02	Tr
374.0 - 379.0	5.0	0.35	Tr
379.0 - 384.0	5.0	0.32	0.05
384.0 - 389.0	5.0	0.04	0.07
389.0 - 394.0	5.0	Tr	Tr

SECTION thru D.H. GH-4
Looking N 30° W



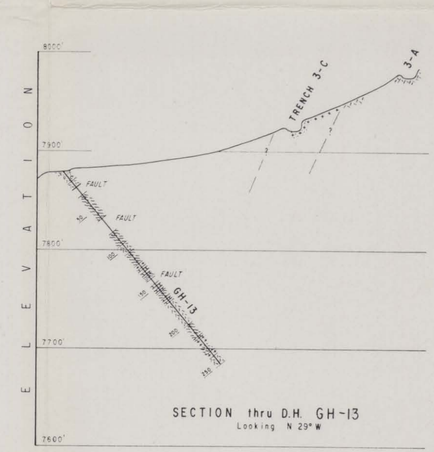
SECTION thru D.H. GH-5
Looking N 50° W



ASSAYS

INTERVAL	LENGTH	WO3 %	Mo %
127.4 - 131.0	3.6	0.12	0.02
131.0 - 141.0	10.0	0.03	0.04

SECTION thru D.H. GH-10
Looking N 49° W



SECTION thru D.H. GH-13
Looking N 29° W

SCALE IN FEET

100 0 100 200 300 400 500

Taken from prints furnished by UNION CARBIDE NUCLEAR Co.
Dated 11-11-56

DRILLED SECTIONS
TENNESSEE MTN. TUNGSTEN DEPOSIT
ELKO COUNTY - NEVADA

2470 0011