W.M.R.
April 1944

Regional File No. E-453-A

WAR MINERALS REPORT

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

COLLEGE PARK, MARYLAND

This report is preliminary and has not been edited or reviewed for conformity with North Carolina Geological Survey standards and nomenclature.

Preliminary Issue,
For Temporary Use Only,
Subject to Correction.

Final Report - Project 753

Hamme Tungsten District
Vance County, N. C.

- Tungsten -

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WAR MINERALS REPORT

UNITED STATES DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

Report of the Bureau of Mines to Hon. Harold L. Ickes,
Secretary of the Interior.

Hamme Tungsten District,
Vance County, N. C.

- Tungsten -

SUMMARY

The Hamme Tungsten District in northwestern Vance County, N. C., was prospected by the Bureau of Mines during the period June to December 1943. The exploration program consisted of mapping, trenching, diamond drilling, sampling, and the necessary incidental work. The exploration program was highly successful. A total reserve, measured, indicated, and inferred, of some 379,000 tons of ore, averaging 0.91 percent WO_3 was discovered. This reserve contains about 345,000 units of WO_3.

During the period that the Bureau of Mines was exploring the area, Haile Mines, Inc., and the R. G. Lassiter interests did considerable

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1/ The War Minerals Reports of the Bureau of Mines are issued by the United States Department of the Interior to give official expression to the conclusions reached on various investigations relating to domestic minerals. These reports are based upon the field work of the Bureau of Mines and upon data made available to the Department from other sources. The primary purpose of these reports is to provide essential information to the war agencies of the United States Government and to assist owners and operators of mining properties in the production of minerals vital to the prosecution of the war.

2/ The investigation was made under the general supervision of Paul M. Tyler, Regional Engineer, Eastern Region; and under the immediate supervision of Harold B. Ewoldt, District Engineer for the states of North Carolina and Tennessee. Frank K. McIntosh was Project Engineer, assisted by William J. Dempsey, Mining Engineer; and Charles J. Cohen, Geological Engineer. The report was written and data compiled by Harold B. Ewoldt, Frank K. McIntosh, and Charles J. Cohen. The report was checked by W. H. Munds, Mining Engineer, and was edited by C. Kelleher, Mining Engineer.

exploration work. The known mineralized occurrences were rapidly expanded from the original discovery on the Walker Property to some fifty occurrences scattered over an area 8 miles long and 1½ miles wide.

Owing to the large area prospected, the principal mineral showings were not prospected in depth. The exploration program was limited by the demand for ore that could be readily extracted and processed for immediate use. Consequently, no drilling was done below 200 feet of vertical depth. The completed drilling demonstrated that the widths and grades of the ore at that depth were as good or better than the ore exposed at the surface. There is no definite reason why the deposits should not continue to a much greater depth. It is proposed that $35,000 be allotted to explore the principal veins in depth.

The Bureau of Mines Project 753 has opened an entirely new tungsten district in a new area. In addition to the immediate value of the tungsten discovered, the knowledge gained in prospecting and exploiting a new discovery in the Piedmont physiographic province is of tremendous value. An entire region is opened to prospecting for hitherto unknown mineral deposits.

INTRODUCTION

The Hamme Tungsten district in Vance County, N. C., was visited in May and June 1943 by Bureau of Mines engineers. A preliminary report 3/ was written proposing that the area be explored to determine the tungsten reserves.

3/ Hamme Tungsten Property, File No. E 453

A project was started in June 1943. The exploration program consisted of mapping, trenching, and diamond drilling. The district is located in the northwest corner of Vance County, N. C., some 18 miles northwest of Henderson, the county seat. The producing area can best be reached by driving to Townsville on North Carolina Highway 39, then driving about 2 miles westerly on a recently constructed access road.

Various properties in the area have changed ownership several times. The following table lists the several properties on which exploration work was conducted. The table indicates control of the properties at the time exploration work was done by the Bureau.

Name of Property	Approximate Acreage	Controlled by	Form of Control	Location of Property
Burwell	548	R. G. Lassiter	Lease	Vance Co., N. C. and Mecklenburg Co., Va.
Sneed	201	In dispute	Fee	Vance Co., N. C.
Morgan	2,247	Morgan	Fee	Vance Co., N. C.
Scott	50	Haile Mines	Mineral Rights	Vance Co., N. C.
Jamieson	193	R. G. Lassiter	Lease	Vance Co., N. C.
Morton Estate	573	Haile Mines	Fee	Vance Co., N. C.
Walker	595	Haile Mines	Fee	Vance Co., N. C.
Morton	45	Haile Mines	Fee	Vance Co., N. C.
Tippett	Unknown	R. G. Lassiter	Lease	Vance Co., N. C.
Taylor	163	Taylor	Lease	Mecklenburg Co., Va.
Total	4,615+			

Huebnerite is the principal mineral of interest. Some scheelite is present in the ore. Minor quantities of copper, lead, zinc sulfides, and fluorspar occur with the tungsten minerals.

HISTORY

The mineralized area is in a sparsely settled section, inhabited almost inclusively by colored tenant farmers. The region was extensively cultivated before the Civil War but is now mainly covered with second-growth timber. In the cultivated areas, the principal crop is tobacco with minor acreages of cotton and corn.

Mineralized quartz outcrops are prominent in the region, but their significance was unnoticed until the Hamme Brothers became interested in the area during the summer of 1942. The first recorded mention of tungsten ores in Vance County was made by Joseph Hyde Pratt, State Geologist of North Carolina in Economic Paper No. 4, of the North Carolina Geological Survey, published in 1900.

The Hamme Brothers, Joseph and Richard, spent their boyhood in the district. They carried some specimens of the ore to Dr. Jasper L. Stuckey, State Geologist of North Carolina at Raleigh. Upon learning the identity of the mineral the brothers quietly acquired control of the more promising areas. Ore was produced and a small mill was erected. The first shipment of concentrate, some 13,000 pounds, was made in July 1943.

Early in August 1943 Haile Mines, Inc., took over the Hamme holdings. The new operators placed some additional equipment in operation and continued to produce tungsten concentrates. From information available to the Project Engineer, some 2,797 tons of ore were milled from August to December 1943 and some 60,501 pounds of concentrates were recovered. The concentrates averaged 70 percent WO_3. The average recovery was 22 pounds of concentrate per ton

of ore. Incomplete data indicate the average recovery at about 55 percent of the head value.

The Bureau began exploration work in the area June 27, 1943, and suspended the project December 7, 1943. Considerable speculation was begun on lands in the mineral district. Mr. R. G. Lassiter, president of Southern Aggregates, Inc., Raleigh, N. C., acquired considerable property. He immediately began an ambitious prospecting program and hauled ore to a newly constructed mill at Greystone, N. C. This mill is some 20 miles from the main mining district. Very little is known concerning the factual results of the venture.

The Bureau program began with mapping and trenching, followed by diamond drilling. Reconnaissance work was conducted over a considerable area. Owing to the increased land values, caused by speculation, the boundaries of the mineral belt were rapidly extended north and south of the original discovery.

PHYSICAL FEATURES

The relief of the district is mature and consists of wide shallow valleys and low rounded ridges. The elevation above sea level varies from 275 to 430 feet. The main ridges and valleys trend northeast-southwest.

Apparently the topography is controlled by the quartz lenses and the accompanying hard silicified, often sericitized zones. The enclosing schists and granites are usually deeply weathered. One instance was noted of an overburden thickness of 72 feet but 30 feet from a strong quartz outcrop. Consequently, most of the veins are found on the ridges.

DESCRIPTION OF THE DEPOSIT

Geology of Hamme Tungsten Area: 4/

The Hamme tungsten area is in the moderately rolling eastern part of the Piedmont physiographic province at altitudes around 400 feet. It occupies a strip 8 miles long (fig. 1).

A granite gneiss with distinctive opalescent blue quartz is the principal host rock to the mineralization. The gneiss forms the western side of a belt of granite some miles wide. West of the gneiss is a concordant, north-south striking, steeply dipping series of chloritic and ottrelite-bearing schists, possibly of volcanic origin. The schists are granitized at the gneiss contacts and carry blue quartz there. Mineralization closely follows the main contact of schist and gneiss, as well as a north-northeast bearing persistent schist septum included in the gneiss (fig. 3).

Mineralization is in the form of quartz veins, about 50 tungsten-bearing veins having been located. They have diverse orientations and no system other than a tendency of the veins associated with schist to strike with the schist. Dips are generally steep, ranging from 50° to vertical. Veining is as intense and strong at the extremities of the mineralized strip, and beyond, as in the central part, but tungsten content declines rapidly as the central mile or so is left. For the most part, the veins are lenticular and less than 300 feet long.

4/ The Federal Geological Survey and the Federal Bureau of Mines have cooperated to carry out detailed mapping and study of the area. Dr. W. A. White of the North Carolina Department of Conservation and Development made a preliminary study and wrote an article: Title: Tungsten deposit near Townsville, N. C. Mineral Investigation Number 1, August 1943.

Some veins, however, both in the central and in the outlying parts of the area, persist for 1,000 feet or so. The most productive vein so far, Walker No. 3, has been traced for about 900 feet along the outcrop. Its width ranges up to 28 feet at the surface and the average width is estimated as about 10 feet. The deepest successful intersection to date, on Walker No. 3 vein, is 180 feet beneath the outcrop. On two or three veins, a definite southward pitch of the vein limits has been ascertained.

The veins are not straight-walled, but pinch, swell, split, and have en echelon breaks. Moderately pitching grooves occur on the sides of the veins. The veins generally are distinctly sheeted with mineral bands tending to parallel the walls. The quartz in the central part of the area disintegrates to a sugary texture. It has been suggested that this might be due to an inversion strain.

The principal tungsten mineral is huebnerite ($MnWO_4$). It is dark reddish brown, with a light yellow streak, soft, and with excellent cleavage.

In places the crystals are torn apart and cemented with quartz which is indistinguishable from the general vein quartz. Scheelite is generally well under 30 percent of the huebnerite. It is found in greatest part as films, apparently secondary, on surfaces of the huebnerite and less commonly as solid grains. Generally it is cream colored, but in a few places it is apple green (cuproscheelite or cuprotungstite).[5/] A little stolzite ($PbWO_4$) has been noted on the concentrating tables. In the zone of oxidation, where the huebnerite suffers some decomposition, tungstite occurs. The principal gangue,

5/ G. H. Espenshade, Federal Geological Survey, Oral Communication.

after quartz, is sericite and a somewhat phosphorescent purple fluorite. An augur hole in the tailings at the beginning of operations is reported [5/] to have shown 4 percent fluorite. Other accessory minerals are chalcopyrite, sphalerite, tetrahedrite, tennantite, galena, pyrite, rhodochrosite, and a bismuth-silver-bearing galena with a marked parting. In general, the richer the vein the more common are nonferrous sulfides and the rarer the pyrite. High-temperature accessory minerals are conspicuous by their absence. A little spessartite occurs and a trace of tin is reported in the tungsten concentrates. In one drill hole, 0.15 percent of copper was found. This value was 10 percent of the tungsten trioxide content. Appreciable silver values are reported in sulfide-bearing concentrates. Molybdenum and phosphorus are present only in traces.

The walls of the veins are sericitized schist. Tungsten is in places plastered on the walls but does not penetrate them to any extent.

PLAN OF OPERATION

The original operational plan called for exploration of the Walker and Morton tracts, then controlled by the Hamme Brothers. New discoveries rapidly enlarged the district. Mineralized quartz veins or lenses were noted in an area with an extreme length, northeast to southwest, of 10 miles, and a width of 1½ miles. The area was extended from the northwest corner of Vance County, N. C., into Mecklenburg County, Va.

To fully cope with such a large area, the working plan was altered to determine the location and surface extent of the more promising

5/ G. H. Espenshade, Federal Geological Survey, Oral Communication.

orebodies, together with the grade and persistence in depth. It was believed that exploration at extreme depth did not fall within the scope of the present project and the maximum vertical depth of 200 feet was considered sufficient.

The work program consisted of trenching the veins at intervals of about 100 feet. This operation was done by hand methods and by the use of a bulldozer. When the quartz outcrops were sufficiently cleaned, large samples were blasted from the trenches, crushed and quartered to approximately 100 pounds each. When the extent and approximate grade of the outcrop was sufficiently known to justify further development, it was diamond drilled to determine the character in depth. The veins were found to be irregular as to widths, and the mineralization was erratic. For this reason large trench samples were taken and the diamond drill holes were maintained at large diameters where conditions permitted.

WORK ACCOMPLISHED

An area 1½ miles wide by 2 miles long was surveyed in detail. Reconnaissance work was completed over an additional area of some 14 square miles. The Federal Geological Survey and the Bureau of Mines cooperated in this work.

A total of 125 trenches was dug by hand on the various properties. These excavations totaled 2,085 linear feet and 820 cubic yards. Approximately 68 percent of the excavation was in solid rock, 28 percent in alluvium and 4 percent in loose rock. Labor amounted to 619½ man-shifts.

Bulldozer trenching totaled 7,904 linear feet and 8,205 cubic yards. About 92 percent of the material excavated was alluvium and 8 percent was loose rock. In addition, some 17,000 feet of road was constructed. The road work consisted mainly of removing brush to permit access with the compressor and crusher to the various trenches.

A total of 162 samples was blasted from the various trenches. These samples averaged about 4 tons each. They were crushed and quartered to approximately 100 pounds each, then forwarded to the Regional Office for analysis.

The diamond drilling program required 41 holes on 17 veins. The total footage drilled was 7,083.4 feet. It was found that the mineralization occurred only in the quartz veins and occasionally passed a few inches into the vein walls. It was necessary to maintain samplers at all times and some 1,414 core samples were taken. However, but 339 samples of the mineralized core were shipped to the Regional Office for analysis.

Most of the diamond drilling was done on a footage contract with Sprague and Henwood, Inc. Some drilling was done by E. J. Longyear Company. The average cost per foot drilled, including supervision, was $3.256.

ORE RESERVES

The ore estimates are based on trench and diamond drill samples, together with a not-too-complete knowledge of the geologic structure of the orebodies. It is a matter of discussion whether the orebodies are the remnants of lenses, canoe-shaped bodies, or elongated shoots. It is to be expected that the eventual mining of the ore will result

in a different total reserve than is given in this report. The following rules were used in averaging the drill samples:

1. Where core recovery was better than 90 percent, the sludge assay was disregarded.

2. Otherwise sludge samples were averaged according to their theoretical weight with the core samples. By attaching as much importance to sludge samples as has been done, the adjusted averages are probably low. This fact is illustrated in the cases where core recovery was over 90 percent. There, the grade of the sludges was consistently lower, averaging but 65 percent of the core values.

3. In some cases where the sludges overlapped the core samples, the tungsten values in the sludge have been assumed to be distributed in the same ratio as in the cores.

4. The best assays alone were used. Where necessary they were diluted to a 3-foot true width. Waste was included in the averages if less than 5 feet wide. This width was considered the minimum thickness for a pillar.

5. The cut-off in the walls was taken as 0.2 percent WO_3.

6. The ore estimate has been figured for selective mining. It is possible that a somewhat larger tonnage of ore than estimated will have to be mined to recover the units of WO_3 estimated.

The ore reserves are tabulated below. The complete data are given in the appendix.

Reserves	Tonnage	Percent WO_3	Units WO_3
Measured ore	60,400	0.87	52,824
Indicated ore	164,100	0.93	152,140
Inferred ore	154,800	0.91	140,745
Total all classes	379,300	0.91	345,709

PROPOSAL

The following program is proposed: That

1. Additional diamond drilling be done to prospect the principal veins in depth.

2. This campaign consists of at least 7,000 feet of drilling at a cost of about $35,000.

3. The Federal Geological Survey be requested to complete detailed geologic maps of the Piedmont physiographic province.

4. Prospecting of favorable areas be done by the Bureau of Mines to develop new mineral deposits; the costs and details of this program to be worked out after the completion of the preliminary geologic mapping.

The Bureau of Mines exploration program as conducted by Project 753 has definitely located a new commercial deposit of tungsten ore. In addition to the current value of the Hamme tungsten district, the project has demonstrated the presence of commercial ore deposits in the Piedmont physiographic province. This province, which extends through the southeastern coastal states, represents one of the largest unexplored mineral areas in the continental United States.

APPROXIMATE CAPITAL EXPENDITURES

It is extremely difficult to estimate the cost of equipping a plant to mine and treat the ores in the district, owing to the large size of the district. Assuming one property operating, the cost of mine plant and development is estimated at $125,000, a 250-ton modern mill at $225,000, or a total investment of $350,000, exclusive of the property. Prorated against the present ore reserves, a capital cost of $1.08 per unit of WO_3 is indicated.

SUGGESTED MINING METHOD

The great number of veins in the district precludes adherence to any one mining method. The larger veins can be mined by shrinkage stoping. More selective mining methods will be needed on the smaller veins. The selective mining methods will undoubtedly require timber and consequently will be more expensive than shrinkage stoping. It is expected that the average underground mining cost for the district will be about $3 per ton.

SUGGESTED MILLING METHOD

Current ore dressing tests by the Bureau of Mines at College Park indicate that stage-grinding followed by jigging, tabling, and flotation will give a good recovery. The cost of such a milling method is estimated at $2 per ton. It is expected that such a milling plant will recover about 85 percent of the WO_3 in the ore.

ESTIMATED RATE AND COST OF PRODUCTION

Based on present known ore reserves, a mining and milling plant to handle 250 tons of ore per 24 hours is warranted. The estimated costs of such an operation are as follows:

	Per ton ore	Based on 85% Recovery Per Unit WO_3
Mining	$3.00	$3.90
Milling	2.00	2.60
Plant amortization	.97	1.66
Overhead	1.50	1.95
Total estimated costs	$7.47	$10.11

These figures do not cover initial cost of the property.

CONCLUSION

The exploration program recently completed by the Bureau of Mines has definitely proved a commercial deposit of tungsten ore in Vance County, N. C.

The existence of a proved ore deposit in the Piedmont physiographic province offers possibilities of finding additional ore deposits in the southeastern United States. It is proposed that additional work be done on the principal veins in the Hamme tungsten district to explore the orebodies at greater depth.

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 9 Vein Walker #3

Angle between hole and vein 57° - 47° Sine 0.84 - 0.73

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
BX	76	75.0	- 79.0	98	3.4	0.31	77	75.0	- 79.0	39	3.4	0.16	3.4	0.31
BX	78	79.0	- 83.0	83	3.4	0.67	79	79.0	- 83.0	32	3.4	0.60	3.4	0.62
BX	80	83.0	- 84.0	96	0.8	2.49							0.8	2.49
BX	81	84.0	- 87.0	65	2.5	0.00	82	83.0	- 87.0	45	3.4	0.42		
BX	83	87.0	- 90.0	84	2.3	0.00	85	87.0	- 92.0	44	3.9	0.12		
BX	84	90.0	- 92.0	86	1.6	0.00								
BX	86	92.0	- 96.0	85	3.1	0.00	87	92.0	- 96.0	19	3.1	0.06		
BX	88	96.0	- 97.0	94	0.8	0.10	89	96.0	- 97.0	34	0.8	0.00		
AX	90	97.0	-100.0	76	2.3	0.00								
AX	91	100.0	-102.0	67	1.6	0.00	92	97.0	-102.0	89	3.9	0.00		
AX	93	102.0	-105.33	92	2.6	0.00	95	102.0	-106.0	87	3.1	0.00		
AX	94	105.33	-106.0	90	0.5	0.00								
AX	96	106.0	-110.0	85	3.1	0.00	97	106.0	-110.0	76	3.1	0.08		
BX	98	110.0	-111.0	76	0.8	0.00								
AX	99	111.0	-114.0	81	2.3	0.00	200	111.0	-114.0	60	2.3	0.00		
AX	201	119.0	-123.0	58	2.9	0.00	220	119.0	-123.0	80	2.9	0.00		
AX	203	123.0	-124.5	54	1.1	0.00	205	123.0	-126.0	65	2.2	0.07	2.2	0.61
AX	204	124.5	-126.0	65	1.1	1.51							0.8	0.15
AX	206	126.0	-130.0	68	2.9	0.00	207	126.0	-130.0	56	2.9	0.06		
Average		75.0	-127.1	81	10.6	0.66		75.0	-127.1		10.6 (Hor. Wd.	0.50	10.6 10.8)	0.62

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 8 Vein Morton #1

Angle between hole and vein Sine

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
	No Vein													

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole 7 Vein Morton #1

Angle between hole and vein 64° Sine 0.90

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
AX	55	120.0	125.0	92	4.5	0.00	63	120.0	125.0	29	4.5	0.00	4.5	0.0
AX	64	125.0	129.0	96	3.6	0.00	56	125.0	130.75	36	4.5	0.00	4.5	0.0
AX	65	129.0	130.0	36	0.9	0.00								
AX	66	130.0	130.75	39	0.7	0.00	57	130.0	130.75	25	0.7	0.00	0.7	0.0
AX	67	130.75	134.0	74	2.9	1.69	58	130.75	134.0	52	2.9	1.20	2.9	1.33
AX	68	134.0	137.0	49	2.7	0.05	59	134.0	137.0	67	2.7	0.00	2.7	0.01
AX	69	137.0	140.0	72	2.7	0.00	60	137.0	140.0	83	2.7	0.00	2.7	0.00
AX	70	140.0	142.0	88	1.8	0.30	61	140.0	142.0	81	1.8	0.03	1.8	0.12
AX	71	142.0	144.0	87	1.8	0.75	62	142.0	144.0	64	1.8	0.45	1.8	0.54
AX	72	144.0	146.0	101	1.8	0.00								
Average		130.75	144.0	81	6.5	1.04		130.75	144.0	63	6.5 (Hor. Wd.	0.78	6.5 7.1)	0.86
EX	74	219.0	219.8	79		00								
							73	219.0	223.0	77		00		
EX	75	219.8	223.0	80		00								
EX	76	223.0	227.0	102		00	77	223.0	227.0	66		00		

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 6 Vein Morton #1

Angle between hole and vein 64° Sine 0.90

	Core						Sludge						Adjusted Grade	
Hole Size	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
AX	43	45.0 -	50.0	76	45	0.93	53	45.0 -	50.0		4.5	0.47	4.5	0.60
AX	44	50.0 -	53.5		45	0.03								
Average		45.0 -	50.0		45	0.93					4.5 (Hor. Wd.	0.47	4.5 4.9)	0.60
							54	100 -	105			Nil		
AX	49	105 -	110			0.03	52	105 -	110			Nil		

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 5 Vein Morton #3

Angle between hole and vein 49 Sine 0.75

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Precent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
BX	45	71.0	76.0		3.8	0.3								
BX	46	76.0	81.0		3.8	0.3								
BX	47	86.0	91.0		3.8	0.3								
	48	96.0	101.0		3.8	0.5								

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 4 Vein Walker #1

Angle between hole and vein Sine

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
No Vein														

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 3 Vein Morton #1

Angle between hole and vein 60° Sine 0.87

	Core						Sludge						Adjusted Grade	
Hole Size	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
AX	38	75.0 -	77.5		2.3	0.02								
AX	39	77.5 -	81.5		3.5	1.16								
							41	79.0 -	85.0		5.8	0.30		
AX	40	81.5 -	85.0		3.0	0.02								
Best Average		77.5 -	81.5 (Hor. Wd.		3.5 3.7	1.16								

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 2 Vein Walker #3

Angle between hole and vein 41° Sine 0.66

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
	42	173	176		2.0	0.06								
Average		173	176		2.0	0.06								

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 1 Vein Morton #1

Angle between hole and vein Sine

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage to	Percent Recovery	True Width	% WO_3	True Width	% WO_3

No Vein

APPENDIX

1. Tables

Drill Sampling Tables 1-41

Ore Reserves Tables

2. Project Cost Forms

3. Maps

4. Photographs

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 10 Vein Walker #3

Angle between hole and vein 72° Sine 0.95

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
AX	208	88.0	93.0	34	1.0	0.38	209	88.0	93.0	65	1.0	0.13	10	0.16

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 11 Vein Walker #3

Angle between hole and vein 54° Sine 0.81

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
AX	210	129.0	130.5	64	1.2	0.02								
							212	129.0	134.0	50	4.1	0.01		
AX	211	130.5	134.0	66	2.8	0.02								
AX	213	134.0	136.5	83	2.0	0.03								
							215	134.0	139.0	61	4.1	0.00		
AX	214	136.5	139.0	61	2.0	0.05								
AX	216	139.0	140.0	97	0.8	0.02	217	139.0	140.0	62	0.8	0.02		
AX	218	140.0	144.0	92	3.2	0.60	219	140.0	144.0	31	3.2	0.35	3.2	0.60
AX	230	144.0	146.0	95	1.6	0.55							1.6	0.55
							222	144.0	147.0	38	2.4	0.19		
AX	221	146.0	147.0	102	0.8	0.00								
AX	223	147.0	151.0	45	3.2	0.00	224	147.0	151.0	52	3.2	0.00		
Average		140.0	146.0	93	4.9	0.58		140.0	146.0	33	4.9 (Hor. Wd.	0.33	4.9 5.0	0.58

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Hole Number 12 Vein Walker #3

Angle between hole and vein 66½ Sine 0.92

	Core						Sludge						Adjusted	Grade
Hole Size	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	236	57.5-	58.0		0.5	Nil								
BX	237	57.0-	62.5		1.4	Nil								
BX	225	115.0-	120.0	69	4.6	0.00	226	115.0-	120.0	27	4.6	0.00		
AX	227	120.0-	125.0	30	4.6	0.53	228	120.0-	125.0	70	4.6	0.83	4.6	0.80
AX	229	125.0-	128.0	23	2.8	0.00	230	125.0-	128.0	60	2.8	0.00	2.8	0.00
AX	231	128.0-	130.2	39	2.0	1.52	232	128.0-	130.2	73	2.0	0.20	2.0	0.38
AX	233	130.2-	132.2	63	1.8	0.65	234	130.2-	132.2	60	1.8	0.71	1.8	0.70
Average		120.0-	132.2	35	11.2	0.59		120.0-	132.2	66	11.2 (Hor. Wd.	0.49	11.2 11.9)	0.50

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 13 Vein Walker #3

Angle between hole and vein 56° Sine 0.83

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
NX	252	32.0-	34.5		2.1	0.05								
BX	253	97.5-	98.0	92	0.4	0.00								
BX	254	164.0-	167.0	92	2.5	0.02								
AX	255	258.0-	260.0	79	1.7	0.05								
							257	258.0-	263.0	86	4.2	0.02		
BX	256	260.0-	263.0	37	2.5	0.04								
AX	258	263.0-	268.0	28	4.2	0.42	259	263.0-	268.0	74	4.2	0.49	4.2	0.48
AX	260	268.0-	270.0	65	1.7	0.01	261	268.0-	270.0	56	1.7	0.02	1.7	0.02
AX	262	270.0-	272.0	57	1.7	1.97	263	270.0-	272.0	71	1.7	1.98	1.7	1.98
AX	264	272.0-	274.0	76	1.7	1.57	265	272.0-	274.0	69	1.7	0.82	1.7	1.02
AX	266	274.0-	276.0	77	1.7	2.42	267	274.0-	276.0	74	1.7	2.40	1.7	2.41
AX	268	276.0-	279.0	62	2.5	3.42	269	276.0-	279.0	78	2.5	3.71	2.5	3.64
AX	270	279.0-	282.0	36	2.5	1.26	271	279.0-	282.0	58	2.5	1.12	2.5	1.14
Average		263.0-	282.0	52	16.0	1.48		263.0-	282.0	69	16.0 (Hor. Wd.	1.44	16.0 16.3)	1.44

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 14 Vein Walker #3

Angle between hole and vein $57\frac{1}{2}^{o}$ Sine 0.84

	Core						Sludge						Adjusted Grade	
Hole Size	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
AX	238	113.8	114.3		0.4	0.00								
AX	239	119.0	121.0	91	1.7	0.00								
							241	119.0	122.0	54	2.5	1.42		
	240	121.0	122.0	83	0.8	7.14							0.8	5.12
AX	242	122.0	125.0	94	2.5	0.00	243	122.0	125.0	60	2.5	0.24	2.5	0.00
AX	244	125.0	128.0	60	2.5	0.41	245	125.0	128.0	56	2.5	0.60	2.5	0.56
AX	246	128.0	130.0	30	1.7	0.00	247	128.0	130.0	63	1.7	0.00	1.7	0.00
AX	248	130.0	132.0	53	1.7	0.00	249	130.0	132.0	55	1.7	0.00	1.7	0.00
AX	250	132.0	134.0	66	1.7	0.00	251	132.0	134.0	52	1.7	0.00	1.7	0.00
Average		121.0	128.0	78	5.8	1.00		121.0	128.0	57	5.8 (Hor. Wd. 5.9)	0.97	5.8	1.03

Hemme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 15 Vein Walker #3-A

Angle between hole and vein 41° Sine 0.66

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
AX	272	99.0	100.0			Nil								
AX	273	100.0	104.8	39	3.2	5.22	274	100.0	104.8	58	3.2 (Hor. Wd.	1.21	3.2 3.5)	177

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 16 Vein Walker #2

Angle between hole and vein Sine

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3

No Vein

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 17 Vein Walker #7

Angle between hole and vein 69° Sine 0.93

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
BX	275	61.0	62.5	58	1.5	0.00	277	61.0	66.0	33	4.7	0.32		
BX	276	62.5	66.0	58	3.3	0.46							3.3	0.46
BX	278	66.0	68.0	84	1.9	0.08	279	66.0	68.0	25	1.9	1.66	1.9	1.03
BX	280	68.0	69.0	86	0.9	0.48	281	68.0	69.0	48	0.9	0.71	0.9	0.61
BX	282	69.0	70.0	72	0.9	0.00	283	69.0	70.0	15	0.9	0.08	0.9	
BX	284	70.0	73.0	88	2.8	0.00	285	70.0	73.0	24	2.8	0.16		
BX	286	73.0	78.0	95	4.7	0.05		73.0	78.0		4.7			
BX	287	78.0	81.7	43	3.4	0.07	288	78.0	81.9	44	3.4	0.09		
BX	289	81.7	87.0	65	4.9	0.05	290	81.9	87.0	38	4.9	0.01		
Average		62.5	69.0	70	6.0	0.34		62.5	69.0	33	6.0 (Hor. Wd.	0.87	6.0 6.6)	0.66

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 18 — Vein Morgan #3
Angle between hole and vein 72° — Sine 0.95

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
NX	293	66.0	68.0	65	1.9	0.00								
BX	294	68.0	69.5	41	1.4	0.00								
AX	295	69.5	72.0	57	2.4	0.00	296	69.5	72.0	33	2.4	0.00		
AX	297	72.0	74.4	91	2.3	0.00	298	72.0	74.4	36	2.3	0.00		

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 19 Vein Walker #6

Angle between hole and vein 52 Sine 0.79

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
NX	355	49.0	- 52.5			0.00								
BX	356	52.5	- 55.0	44	2.0	1.48	357	52.5	- 55.0	42	2.0	0.63	2.0	0.76
BX	358	55.0	- 60.0	25	4.0	0.44	359	55.0	- 60.0	23	4.0	0.09	4.0	0.13
AX	360	110.0	-114.0	29	3.2	0.07	361	110.0	-114.0	60	3.2	0.19	3.2	0.18
AX	362	114.0	-117.0	24	2.4	0.00	363	114.0	-117.0	59	2.4	0.00	2.4	0.00
AX	364	134.5	-136.0		1.2	Nil								
Average		52.5	- 60.0	38	6.0	0.79		52.5	- 60.0	36	6.0 (Hor. Wd.	0.27	6.0 6.1)	0.37

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 20 Vein Walker #2

Angle between hole and vein 36° Sine 0.59

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
AX	318	132.0 -	137.0	23	3.0	0.02	319	132.0 -	137.0	91	3.0	0.01	3.0	0.01
AX	320	137.0 -	140.0	22	1.8	0.78	321	137.0 -	140.0	76	1.8	0.32	1.8	0.36
AX	322	140.0 -	142.0	45	1.2	0.03	323	140.0 -	142.0	82	1.2	0.12	1.2	0.10
AX	324	142.0 -	144.0	73	1.2	3.55	325	142.0 -	144.0	68	1.2	1.86	1.2	2.30
AX	326	144.0 -	147.0	79	1.8	0.70	327	144.0 -	147.0	52	1.8	2.43	1.8	1.94
AX	328	147.0 -	150.0	62	1.8	3.83	329	147.0 -	150.0	54	1.8	1.30	1.8	1.84
AX	330	150.0 -	152.0	79	1.2	0.05	331	150.0 -	152.0	20	1.2	0.64	1.2	0.47
AX	332	152.0 -	155.0	66	1.8	0.75	333	152.0 -	155.0	30	1.8	0.91	1.8	0.87
AX	334	155.0 -	157.5	60	1.5	1.58	335	155.0 -	157.5	45	1.5	1.48	1.5	1.50
BX	336	157.5 -	158.5	85	0.6	0.23							0.6	0.23
AX	337	158.5 -	161.5	29	1.8	0.01	338	158.5 -	161.5	70	1.8	2.37	1.8	2.12
AX	339	161.5 -	163.5	54	1.2	0.14	340	161.5 -	163.5	32	1.2	0.92	1.2	0.76
AX	341	163.5 -	166.5	33	1.8	0.02	342	163.5 -	166.5	22	1.8	0.71	1.8	0.63
AX	343	166.5 -	168.5	42	1.2	0.02	344	166.5 -	168.5	19	1.2	0.04	1.2	0.03
AX	345	168.5 -	169.0	152	0.3	0.01							0.3	0.01
AX	346	169.0 -	172.0	52	1.8	0.26	347	169.0 -	172.0	91	1.8	0.26	1.8	0.26
AX	348	172.0 -	175.0	62	1.8	0.33	349	172.0 -	175.0	87	1.8	0.19	1.8	0.22
AX	350	175.0 -	178.0	82	1.8	0.68	351	175.0 -	178.0	42	1.8	0.92	1.8	0.85
AX	352	178.0 -	181.0	37	1.8	0.02	353	178.0 -	181.0	35	1.8	0.13	1.8	0.11
Average		137.0 -	178.0	36	24.2	0.83							24.2	0.94
													(Hor. Wd. 24.7)	

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 21 Vein Walker #1

Angle between hole and vein 43° Sine 0.68

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
BX	299	141.0 -	146.0	95	3.4	0.38	300	141.0 -	146.0	28	3.4	0.00	3.4	0.38
BX	301	146.0 -	149.0	85	2.0	0.07	302	146.0 -	149.0	51	2.0	0.07	2.0	0.07
BX	303	149.0 -	150.3	74	0.9	0.17	304	149.0 -	150.3	89	0.9	0.13	0.9	0.15
BX	305	150.3 -	153.3	92	2.0	0.26	306	150.3 -	153.3	33	2.0	0.27	2.0	0.26
BX	307	153.3 -	156.0	82	1.8	0.15	308	153.3 -	156.0	30	1.8	0.17	1.8	0.16
BX	309	156.0 -	159.0	91	2.0	0.00		156.0 -	159.0	20			2.0	
BX	310	159.0 -	164.0	96	3.4	0.27	311	159.0 -	164.0	37	3.4	0.08	3.4	0.27
BX	312	164.0 -	167.0	93	2.0	0.00	313	164.0 -	167.0	24	2.0	0.00	2.0	0.00
BX	314	167.0 -	170.0	48	2.0	0.00	315	167.0 -	170.0	26	2.0	0.13	2.0	0.09
BX	316	170.0 -	175.0	15	3.4	0.77	317	170.0 -	175.0	24	3.4	0.09	3.4	0.13
Average		141.0 -	146.0	90	3.4	0.38							3.4 (Hor. Wd. 3.4)	0.38

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 22 Vein Walker #12

Angle between hole and vein 59° Sine 0.86

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
BX	365	142.2	145.7	96	3.0	0.08	366	142.2	145.7	14	3.0	0.00		
BX	367	145.7	149.0	96	2.8	0.00								

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 23 Vein Walker #3

Angle between hole and vein 34° Sine 0.56

	Core						Sludge					Adjusted Grade	
Hole Size	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	368	204	207	118	1.7	0.00							1.7	0.00
							370	204	209	24	2.8	0.00		
BX	369	207	209	86	1.1	2.78							1.1	1.15
BX	371	209	213	95	2.2	1.21	372	209	213	34	2.2	0.99	2.2	1.21
BX	373	213	217	86	2.2	0.00	374	213	217	31	2.2	0.68	2.2	0.40
BX	375	217	221	78	2.2	2.27	376	217	221	37	2.2	1.85	2.2	2.01
Average		207	221	86	7.8	1.39		207	221	33	7.8 (Hor. Wd.	1.01	7.8 8.0)	1.20

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 24 Vein Walker #2

Angle between hole and vein 60° Sine 0.87

	Core						Sludge					Adjusted Grade	
Hole Size	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	377	111.0	116.0	43	4.4	0.08	378	111.0	116.0	44	4.4	0.00	4.4	0.01
BX	379	116.0	118.0	68	1.7	0.17	380	116.0	118.0	99	1.7	0.10	1.7	0.12
BX	381	118.0	121.0	44	2.6	0.43	382	118.0	121.0	42	2.6	0.00	26	0.09
BX	383	121.0	123.0	59	1.7	0.43	384	121.0	123.0	51	1.7	0.60	1.7	0.34
BX	385	123.0	126.0	73	2.6	1.39	386	123.0	126.0	26	2.6	0.89	2.6	1.07
BX	387	126.0	129.0	74	2.6	0.59	388	126.0	129.0	53	2.6	0.45	2.6	0.50
BX	389	129.0	134.0	80	4.4	0.00	390	129.0	134.0	42	4.4	0.25	4.4	0.15
Average		121.0	129.0		6.9	0.85					6.9 (Hor. Wd.	0.65	6.9 7.1)	0.72

Hamme Tungsten Area - Project 753
Diamond Drilling Sampling

Hole Number 25 Vein Jamieson #2

Angle between hole and vein 57° Sine 0.84

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
EX	391	99.0	103.0	74	3.4	0.00	393	99.0	104.0	47	4.2	0.00		
EX	392	103.0	104.0	87	0.8	0.02								
EX	394	104.0	105.3	77	1.1	0.00	395	104.0	105.3	61	1.1	0.00		
EX	396	105.3	107.3	56	1.7	0.19	397	105.3	107.3	35	1.7	1.13	1.7	0.15
EX	298	107.3	111.0	52	3.1	6.82	399	107.3	111.0	18	3.1	1.87	3.1	3.12
EX	400	111.0	113.0	86	1.7	0.00	401	111.0	113.0	19	1.7	0.50	1.7	0.29
Average		107.3	113.0	64	4.8	4.43		107.3	113.0	18	4.8 (Hor. Wd.	1.39	4.8 4.9)	2.33

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 26 Vein Sneed #1

Angle between hole and vein 42° Sine 0.68

Hole Size	Core: Sample Number	Core: Footage From	Core: Footage To	Core: Percent Recovery	Core: True Width	Core: % WO_3	Sludge: Sample Number	Sludge: Footage From	Sludge: Footage To	Sludge: Percent Recovery	Sludge: True Width	Sludge: % WO_3	Adjusted Grade: True Width	Adjusted Grade: % WO_3
AX	439	110.0	113.5	38	2.4	0.00	440	110.0	113.5	43	2.4	0.00		
AX	441	113.5	117.0	47	2.4	0.00	442	113.5	117.0	65	2.4	0.07		
AX	443	117.0	120.0	43	2.0	0.00	444	117.0	120.0	75	2.0	0.00		
AX	445	123.0	126.0	41	2.0	0.00								
AX	446	126.0	128.0	51	1.4	0.25								
AX	447	128.0	130.0	76	1.4	0.00								
		No Ore												

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 27 Vein Sneed #1

Angle between hole and vein 56° Sine 0.83

Hole Size	Core Sample Number	Core Footage From	Core Footage To	Core Percent Recovery	Core True Width	Core % WO_3	Sludge Sample Number	Sludge Footage From	Sludge Footage To	Sludge Percent Recovery	Sludge True Width	Sludge % WO_3	Adjusted Grade True Width	Adjusted Grade % WO_3
BX	408	82.3	84.3	74	1.7	0.00								
BX	409	100.0	102.5	103	2.1	0.00	410	100.0	102.5	81	2.1	0.00		
BX	411	102.5	104.5	27	1.7	0.03	412	102.5	104.5	46	1.7	0.00		
BX	413	104.5	108.0	69	2.9	0.00	414	104.5	108.0	56	2.9	0.00		
BX	415	108.0	111.0	77	2.5	0.00	416	108.0	111.0	40	2.5	0.00		
BX	417	111.0	113.0	85	1.7	0.71	418	111.0	113.0	52	1.7	0.00	1.7	0.29
BX	419	113.0	116.0	85	2.5	0.08	420	113.0	116.0	31	2.5	0.08		
BX	421	116.0	119.0	89	2.5	0.07	422	116.0	119.0	45	2.5	0.00		
BX	423	119.0	124.0	27	4.2	0.10	424	119.0	124.0	43	4.2	0.00		
BX	425	124.0	126.0	40	1.7	0.00	426	124.0	126.0	49	1.7	0.00		
BX	427	126.0	129.0	97	2.5	8.08	428	126.0	129.0	42	2.5	5.34	2.5	8.08
BX	429	129.0	132.0	79	2.5	1.52	430	129.0	132.0	57	2.5	1.76	2.5	1.67
BX	431	132.0	135.5	74	2.9	2.15	432	132.0	135.5	53	2.9	1.21	2.9	1.54
BX	433	135.5	139.0	7	2.9	5.81	434	135.5	139.0	61	2.9	1.89	2.9	2.02
BX	435	139.0	142.0	23	2.5	0.00	436	139.0	142.0	70	2.5	0.83	2.5	0.73
Average		126.0	142.0	51	13.3	3.54		126.0	142.0	57	13.3 (Hor. Wd.	2.16	13.3 13.6)	2.74
BX	437	145.5	146.5	83	0.8	0.00								
BX	438	153.0	154.0	78	0.8	0.08								

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 28 Vein Walker #11

Angle between hole and vein 50° Sine 0.77

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	402	122.7	124.7	98	1.5	0.00	403	122.7	124.7	50	1.5	0.04		
BX	404	124.7	126.7	70	1.5	9.44	405	124.7	126.7	22	1.5	1.36	1.5	4.08
BX	406	126.7	129.7	70	2.3	0.02	407	126.7	129.7	28	2.3	0.27	1.5	0.28
Average		124.7	128.7	70	3.0	4.72		124.7	128.7	25	3.0 (Hor. Wd. 3.0)	0.88	3.0	2.18

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 29 Vein Jamieson #1 or Walker #13

Angle between hole and vein 66° Sine 0.91

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3

No Ore Cut

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 30 Vein Sneed #1

Angle between hole and vein 53° Sine 0.80

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	453	105.0 -	107.0	54	1.6	0.00								
							455	105.0 -	110.0	57	4.0	0.00		
BX	454	107.0 -	110.0	33	2.4	0.00								
AX	456	110.0 -	114.0	13	3.2	0.00	457	110.0 -	114.0	67	3.2	0.02		
AX	458	114.0 -	117.5	24	2.8	0.27	459	114.0 -	117.5	67	2.8	0.00	2.8	0.03
		No Ore												

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 31 Vein Sneed #1

Angle between hole and vein Sine

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3

No Ore Cut

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 32 Vein Jamieson #1 or Walker #13

Angle between hole and vein 61° Sine 0.87

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	448	124.0	128.0	68	3.5	0.06	449	124.0	128.0	18	3.5	0.16	3.5	0.13
AX	450	128.0	130.2	83	1.9	0.00	451	128.0	130.2	43	1.9	0.02	1.9	0.01
AX	452	130.2	133.2	101	2.6	0.00								
		No Ore												

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 33 Vein Sneed #2

Angle between hole and vein 61° Sine 0.87

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	460	96.7	99.0	95	2.0	0.19								
BX	461	114.0	116.5	68	2.2	0.00	462	114.0	116.5	51	2.2	0.00	2.2	0.00
BX	463	116.5	118.5	49	1.7	0.00	464	116.5	118.5	50	1.7	0.15	1.7	0.11
BX	465	118.5	121.7	51	2.8	0.18	466	118.5	121.7	69	2.8	0.06	2.8	0.09
BX	467	121.7	123.7	45	1.7	0.06	468	121.7	123.7	41	1.7	0.00	1.7	0.01

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 34 Vein Sneed #2

Angle between hole and vein 49° Sine 0.75

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	469	113.5 -	116.0	100	1.9	1.02								
BX	470	127.7 -	130.0	97	1.7	0.17								
Average		113.5 -	117.5	100	3.0	0.64								
				(Hor. Wd. | 3.1)									

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 35 Vein Scott Zone

Angle between hole and vein Sine

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
		No vein												

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 36 Vein Scott Zone

Angle between hole and vein Sine

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
	No Vein													

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 37 Vein Burwell

Angle between hole and vein 50° Sine 0.77

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	472	133.5 -	139.5	100	4.6	Nil								

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 38 Vein Morgan #1

Angle between hole and vein 84° Sine

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	471	92.5	95.5			0.00								

No Ore

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 39 Vein Morgan #1

Angle between hole and vein 83° Sine 0.99

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
BX	473	82.0	83.5	103	1.5	1.10								
Average		82.0	85.0		3.0 (Hor. Wd. 3.8)	0.55								

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 40 Vein Burwell

Angle between hole and vein 62° Sine 0.88

Hole Size	Core						Sludge						Adjusted Grade	
	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
	535	133.2 -	138.0	91	4.2	Nil								
	536	138.0 -	143.3	104	4.7	Nil								
	537	143.3 -	148.3	99	4.4	Nil								
	No Ore													

Hamme Tungsten Area - Project 753
Diamond Drill Sampling

Hole Number 41 Vein Tippett

Angle between hole and vein Sine

Hole Size	Core						Sludge					Adjusted Grade	
	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	Sample Number	Footage From	Footage To	Percent Recovery	True Width	% WO_3	True Width	% WO_3
	No Vein													

Hamme Tungsten Area
Diamond Drill Adjusted Averages

Hole	Vein	Width True (& Horiz.)	Percent WO_3
1	Morton #1	No vein	
2	Walker #3	No vein	
3	Morton #1	3.5(3.7)	1.16
4	Morton #1	No vein	
5	Morton #1	No vein	
6	Morton #1	4.5 (4.9)	0.60
7	Morton #1	6.5 (7.1)	0.86
8	Morton #1	No vein	
9	Walker #3	10.6 (10.8)	0.62
10	Walker #3	No ore	
11	Walker #3	4.9 (5.0)	0.58
12	Walker #3	11.2 (11.9)	0.50
13	Walker #3	16.0 (16.3)	1.44
14	Walker #3	5.8 (5.9)	1.03
15	Walker #3a	3.2 (3.5)	1.77
16	Walker #2	No vein	
17	Walker #7	6.0 (6.6)	0.66
18	Morgan #3	No ore	
19	Walker #6	6.0 (6.1)	0.37
20	Walker #2	24.2 (24.7)	0.94
21	Walker #1	3.4 (3.4)	0.38
22	Walker #12	No ore	
23	Walker #3	7.8 (8.0)	1.20
24	Walker #2	6.9 (7.1)	0.72
25	Jamieson #2	4.8 (4.9)	2.33
26	Sneed #1	No ore	
27	Sneed #1	13.3 (13.6)	2.74
28	Walker #11	3.3 (3.0)	2.18
29	(Jamieson #1) (Walker #13)	No ore	
30	Sneed #1	No ore	
31	Sneed #1	No ore	
32	(Jamieson #1) (Walker #13)	No ore	
33	Sneed #2	No ore	
34	Sneed #2	3.0 (3.1)	0.64
35	Scott Zone	No vein	
36	Scott Zone	No vein	
37	Burwell	No ore	
38	Morgan #1	No ore	
39	Morgan #1	3.0 (3.8)	0.55
40	Burwell	No ore	
41	Tippett	No vein	

HAMME TUNGSTEN ORE RESERVES

Vein	Horizontal Width Ft.	Tonnage	Percent WO_3	Units WO_3
		All Classes		
Walker #1	7.0	3,000	0.60	1,800
" #1A	4.5	8,400	0.70	5,880
" #2	12.8	36,500	0.89	32,707
" #3	11.3	200,600	0.90	179,634
" #4	4.7	3,900	0.62	2,418
" #7	5.9	15,300	0.76	11,628
" #10	1.7	1,400	0.79	1,106
" #11	3.0	2,500	1.50	3,750
Sneed #1	7.3	37,300	1.38	51,474
" #2	5.6	18,700	0.47	8,789
Scott Zone	7.1	11,400	0.45	5,130
Morton #1	5.8	25,000	1.10	27,572
Morton Estate	6.2	7,800	0.51	3,978
Morgan #1	4.5	1,800	0.65	1,170
" #2	1.6	2,700	0.99	2,673
Taylor (Virginia)	1.5	3,000	2.00	6,000
Total all classes	9.5	379,300	0.91	345,709

Measured

Vein	Horizontal Width Ft.	Tonnage	Percent WO_3	Units WO_3
Walker #3	12.1	60,400	0.87	52,824
Total Measured	12.1	60,400	0.87	52,824

Indicated

Walker #1	7.0	1,500	0.60	900
Walker #2	12.8	23,100	0.90	20,781
Walker #3	10.8	98,000	0.91	88,830
Walker #7	5.9	4,100	0.76	3,116
Sneed #1	7.3	13,100	1.38	18,078
Sneed #2	5.6	6,300	0.47	2,961
Morton #1	5.9	17,100	0.99	16,889
Morgan #1	4.5	900	0.65	585
Total indicated	9.9	164,100	0.93	152,140

Inferred

Vein	Horizontal Width Ft.	Tonnage	Percent WO_3	Units WO_3
Walker #1	7.0	1,500	0.60	900
Walker #1A	4.5	8,400	0.70	5,880
Walker #2	12.8	13,400	0.89	11,926
Walker #3	11.3	42,200	0.90	37,980
Walker #4	4.7	3,900	0.62	2,418
Walker #7	5.9	11,200	0.76	8,512
Walker #10	1.7	1,400	0.79	1,106
Walker #11	3.0	2,500	1.50	3,750
Sneed #1	7.3	24,200	1.38	33,396
Sneed #2	5.6	12,400	0.47	5,828
Scott Zone	7.1	11,400	0.45	5,130
Morton #1	5.5	7,900	1.35	10,683
Morton Estate	6.2	7,800	0.51	3,978
Morgan #1	4.5	900	0.65	585
Morgan #2	1.6	2,700	0.99	2,673
Taylor (Virginia)	1.5	3,000	2.00	6,000
Total inferred	8.0	154,800	0.91	140,745
Total measured	12.1	60,400	0.87	52,824
Total indicated	9.9	164,100	0.93	152,140
Total inferred	8.0	154,800	0.91	140,745
Total all classes	9.5	379,300	0.91	345,709

WALKER #1 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage	Percent WO_3
	Indicated		
A	7.0	1,500	0.60
	Inferred		
B	7.0	1,500	0.60
Total all classes	7.0	3,000	0.60

BLOCKING WALKER #1

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
A	Pit 1	7.0	0.60	A $\frac{50 \times 50 \times 7}{12} = 1,500$ tons
B	Block A	7.0	0.60	B $\frac{50 \times 50 \times 7}{12} = 1,500$ tons

WALKER #1A ORE RESERVES

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred	4.5	8,400	0.70
Total	4.5	8,400	0.70

BLOCKING WALKER #1A

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 22	1 to 5	0.04	$\frac{225 \times 100 \times 4.5}{12} = 8,400$ tons
Tr. 23	3 to 5	1.04	
Tr. 54	3.5	1.13	
Average	4.5	0.7	

WALKER #2 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage	Percent WO_3
	Indicated		
A	8.0	2,000	1.00
B	13.1	12,700	0.91
C	12.8	8,400	0.86
Total	12.8	23,100	0.90
	Inferred		
D	12.8	13,400	0.89
Total all classes	12.8	36,500	0.89

BLOCKING WALKER #2 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
A	Pit 2	8.0	1.0 (Assumed)	A $\frac{142 \times 42 \times 8}{2 \times 12}$ = 2,000 tons
B	Pit 2	8.0	1.00	B $\frac{(116 + 88) \times 114 \times 13.1}{2 \times 12}$ = 12,700 tons
B	Tr. 123	6.5	0.71	
B	D.H. 20	24.7	0.94	
B	Average	13.1	0.91	
C	Tr. 123	6.5	0.71	C $\frac{(20 + 118) \times 114 \times 12.8}{2 \times 12}$ = 8,400 tons
C	D.H. 20	24.7	0.94	
C	D.H. 24	7.1	0.72	
C	Average	12.8	0.86	
D	Blocks A-C	12.8	0.89	D $\frac{(206 + 214) \times 60 \times 12.8}{2 \times 12}$ = 13,400 tons

WALKER #3 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage	Percent WO_3
		Measured	
A	8.3	5,800	0.76
B	16.9	5,700	0.80
C	15.3	9,600	0.90
D	14.3	12,300	0.90
E	10.7	6,900	1.03
F	6.7	2,400	0.80
G	8.0	5,900	0.74
H	11.1	8,500	0.97
I	10.3	3,300	0.76
Total		60,400	0.87
		Indicated	
J	9.9	6,900	0.70
K	8.6	8,800	0.84
L	12.1	14,100	1.08
M	5.0	2,300	1.03
N	6.0	1,500	1.13
O	11.3	64,400	0.89
Total		98,000	0.91
		Inferred	
In depth	11.3	42,200	0.90
Total all classes		200,600	0.90

BLOCKING WALKER #3 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
A	Tr. 1	10.0	0.26	A $\frac{280 \times 60 \times 8.3}{2 \times 12}$ = 5,800 tons
A	Tr. 2	4.0	2.41	
A	D.H. 9	10.8	0.62	
A	Average	8.3	0.76	
B	Tr. 1	10.0	0.26	B $\frac{130 \times 62 \times 16.9}{2 \times 12}$ = 5,700 tons
B	Pit 4	30.0	1.05	
B	D.H. 9	10.8	0.62	
B	Average	16.9	0.80	
C	Pit 4	30.0	1.05	C $\frac{215 \times 70 \times 15.3}{2 \times 12}$ = 9,600 tons
C	D. H. 9	10.8	0.62	
C	D. H. 11	5.0	0.58	
C	Average	15.3	0.90	
D	Pit 4	30.0	1.05	D $\frac{215 \times 96 \times 14.3}{2 \times 12}$ = 12,300 tons
D	D.H. 11	5.0	0.58	
D	Tr. 3	8.0	0.54	
D	Average	14.3	0.90	
E	D.H. 9	10.8	0.62	E $\frac{352 \times 44 \times 10.7}{2 \times 12}$ = 6,900 tons
E	D.H. 11	5.0	0.58	
E	D.H. 13	16.3	1.44	
E	Average	10.7	1.03	
F	Tr. 3	8.0	0.54	F $\frac{145 \times 60 \times 6.7}{2 \times 12}$ = 2,400 tons
F	D.H. 11	5.0	0.58	
F	Tr. 4	7.0	1.25	
F	Average	6.7	0.80	
G	D.H. 11	5.0	0.58	G $\frac{195 \times 91 \times 8.0}{2 \times 12}$ = 5,900 tons
G	Tr. 4	7.0	1.25	
G	D.H. 12	11.9	0.50	
G	Average	8.0	0.74	
H	D.H. 11	5.0	0.58	H $\frac{195 \times 94 \times 11.1}{2 \times 12}$ = 8,500
H	D. H. 12	11.9	0.50	
H	D.H. 13	16.3	1.44	
H	Average	11.1	0.97	

BLOCKING WALKER #3 VEIN (continued)

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
I	Tr. 4	7.0	1.25	I $\frac{118 \times 66 \times 10.3}{2 \times 12}$ = 3,300 tons
I	D.H. 12	11.9	0.50	
I	Tr. 5	12.0	0.73	
I	Average	10.3	0.76	
J	Tr. 5	12.0	0.74	J $\frac{228 \times 73 \times 9.9}{2 \times 12}$ = 6900 tons
J	D.H. 12	11.9	0.50	
J	D.H. 14	5.9	1.03	
J	Average	9.9	0.70	
K	D.H. 12	11.9	0.50	K $\frac{228 \times 108 \times 8.6}{2 \times 12}$ = 8,800 tons
K	D.H. 14	5.9	1.03	
K	D.H. 23	8.0	1.20	
K	Average	8.6	0.84	
L	D.H. 12	11.9	0.50	L $\frac{288 \times 97 \times 12.1}{2 \times 12}$ = 14,100 tons
L	D.H. 13	16.3	1.44	
L	D.H. 23	8.0	1.20	
L	Average	12.1	1.08	
M	Tr. 39	4.0	-	M $\frac{170 \times 64 \times 5.0}{2 \times 12}$ = 2,300 tons
M	D.H. 14	5.9	1.03	
M	Average	5.0	1.03	
N	Tr. 39	4.0	-	N $\frac{190 \times 32 \times 6.0}{2 \times 12}$ = 1,500 tons
N	D.H. 14	5.9	1.03	
N	D.H. 23	8.0	1.20	
N	Average	6.0	1.13	
O	Blocks A-N	11.3	0.89	O $\frac{68,424 \times 11.3}{12}$ = 64,400 tons

WALKER #7 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage to nearest 100 tons	Percent WO_3
		Indicated	
A	5.9	4,100	0.76
		Inferred	
B	5.9	11,200	0.76
Total all classes		15,300	0.76

BLOCKING WALKER #7 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
A	Tr. 16	8.0	0.53	A $\frac{275 \times 60 \times 5.9}{2 \times 12}$ = 4,100 tons
A	Tr. 40	3.0	1.58	
A	D.H. 17	6.6	0.66	
A	Average	5.9	0.76	
B	Block A	5.9	0.76	B $\frac{50 \times 275 \times 5.9}{12}$ = 6,800 tons
				$\frac{50 \times 137.5 \times 5.9}{2 \times 12}$ = 1,700 tons
				$\frac{80 \times 137.5 \times 5.9}{2 \times 12}$ = 2,700 tons
				Total B 11,200 tons

WALKER #4 ORE RESERVES

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred	4.7	3,900	0.62
Total	4.7	3,900	0.62

BLOCKING WALKER #4 VEIN

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 36	4.0	0.95	$\frac{100 \times 100 \times 4.7}{12} = 3,900$ tons
Tr. 37	4.0	0.89	
Tr. 38	6.0	0.23	
Average	4.7	0.62	

WALKER #10 ORE RESERVES

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred	1.7	1,400	0.79
Total	1.7	1,400	0.79

BLOCKING WALKER #10 VEIN

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 30	2.0	0.84	$\frac{100 \times 100 \times 1.7}{12} = 1,400$ tons
Tr. 35	1.5	0.72	
Average	1.7	0.79	

WALKER #11 ORE RESERVES

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred	3.0	2,500	1.50
Total	3.0	2,500	1.50

BLOCKING WALKER #11 VEIN

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 32	3.0	1.66	$\frac{100 \times 100 \times 3}{12} = 2,500$ tons
D.H. 28	3.0	2.18	
Average	3.0	1.92	
Estimated grade		1.50%	

SNEED #1 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage	Percent WO_3
		Indicated	
A	7.3	13,100	1.38
		Inferred	
B	7.3	24,200	1.38
Total all classes	7.3	37,300	1.38

BLOCKING SNEED #1 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
A	Tr. 56	8.0	0.33	A $\frac{(300 \times 106) + (270 \times 42)}{2 \times 12} \times 7.3 = 13,100$ tons
A	Tr. 57	4.0	0.78	
A	Tr. 58	8.5	0.33	
A	Tr. 59	2.5	1.87	
A	D.H. 27	13.6	2.74	
A	Average	7.3	1.38	
B	A	7.3	1.38	B $\frac{(280 \times 105) + (100 \times 50) + (180 \times 30)}{12} \times 7.3 =$ 24,200 tons

SNEED #2 ORE RESERVES

Block	Horizontal Width Ft.	Percent WO_3	Tonnage in nearest 100 tons
		Indicated	
A	5.6	0.47	6,300
		Inferred	
B	5.6	0.47	12,400
Total all classes	5.6	0.47	18,700

BLOCKING SNEED #2 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO_3
A	Tr. 62	3.0	0.67
A	Tr. 63	11.9	0.52
A	Tr. 64	7.0	0.12
A	Tr. 65	3.0	0.69
A	D.H. 34	3.1	0.64
A	Average	5.6	0.47
B	A	5.6	0.47

A $\frac{270 \times 100 \times 5.6}{2 \times 12} = 6,300$ tons

B $\frac{200 \times 200 \times 5.6 - 6,300}{12} = 12,400$ tons

SCOTT ZONE ORE RESERVE

Site	Horizontal Width	Tonnage	Percent WO_3
		Inferred to 50 feet depth	
Tr. 69	5.5	4,100	0.69
Tr. 101	8.0	2,000	0.38
Tr. 113	8.0	5,300	0.39
Total	7.1	11,400	0.45

MORTON #1 ORE RESERVES

Block	Horizontal Width Ft.	Tonnage	Percent WO_3
	Indicated		
A	7.3	5,000	0.96
B	3.5	2,200	0.56
C	6.0	5,500	0.75
D	5.4	4,400	1.53
Total	5.9	17,100	0.99
	Inferred		
E	6.0	1,800	0.75
F	5.4	6,100	1.53
Total	5.5	7,900	1.35
Total all classes	5.8	25,000	1.10

MORTON ESTATE ORE RESERVE

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred	6.2	7,800	0.51
Total	6.2	7,800	0.51

BLOCKING MORTON ESTATE

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage in nearest 100 tons
Tr. 104	8.0	0.24	$\frac{150 \times 100 \times 6.2}{12} = 7,800$ tons
Tr. 106	4.5	0.99	
Average	6.2	0.51	

BLOCKING MORTON #1 VEIN

Block	Sample Site	Horizontal Width Ft.	Percent WO3	Tonnage to nearest 100 tons
A	Tr. 650	4.0	0.40	A $\frac{210 \times 78 \times 7.3}{2 \times 12}$ = 5,000 tons
A	Tr. 700	1.5	5.84	
A	Tr. 750	6.5	0.40	
A	Tr. 800	14.5	0.49	
A	Tr. 850	10.0	1.52	
A	Average	7.3	0.96	
B	Tr. 900	4.0	1.15	B $\frac{(200 \times 18.5)+(196 \times 19)\times 3.5}{12}$ = 2,200/ tons
B	Tr. 950	3.7	0.37	
B	Tr. 1000	3.5	0.28	
B	Tr. 1050	1.5	0.01	
B	D.H. 6	4.9	0.60	
B	Average	3.5	0.56	
C	D.H. 6	4.9	0.60	C $\frac{(51 \times 109)+(81 \times 68) \times 6.0}{12}$ = 5,500/ tons
C	D.H. 7	7.1	0.86	
C	Average	6.0	0.75	
D	Tr. 1250	3.5	0.34	D $\frac{(146 \times 57)+(44\times 11)+(70 \times 13)}{12}\times 5.4$ = / 4,400 tons
D	Tr. 1300	5.0	0.89	
D	Tr. 1350	11.0	2.48	
D	Tr. 1400	4.0	1.07	
D	D.H. 3	3.7	1.16	
D	Average	5.4	1.53	
E	Block C	6.0	0.75	E $\frac{(230 \times 26)+(55 \times 25) \times 6.0}{2 \times 12}$ = 1,800/ tons
F	Block D	5.4	1.53	F $\frac{(234 \times 51)+(40 \times 38) \times 5.4}{12}$ = 6,100/ tons

MORGAN #1 ORE RESERVES

	Horixontal Width	Tonnage	Percent WO_3
Indicated	4.5	900	0.65
Inferred	4.5	900	0.65
Total	4.5	1,800	0.65

BLOCKING MORGAN #1 VEIN

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 77	6.0	0.70	$\frac{50 \times 50 \times 4.5}{12}$ = 900 tons
D.H. 39	3.0	0.55	
Average	4.5	0.65	

MORGAN #2 ORE RESERVES

	Horizontal Width	Tonnage	Percent WO_3
Inferred	1.6	2,700	0.99
Total	1.6	2,700	0.99

BLOCKING MORGAN #2 VEIN

Sample Site	Horizontal Width Ft.	Percent WO_3	Tonnage to nearest 100 tons
Tr. 97	1.5	0.96	$\frac{200 \times 100 \times 1.6}{12}$ = 2,700 tons
Tr. 98	1.75	1.59	
Tr. 99	1.5	0.31	
Average	1.6	0.99	

TAYLOR (Virginia) ORE RESERVES

	Horizontal Width Ft.	Tonnage	Percent WO_3
Inferred to 100 vertically	1.5	3,000	2.00
Total	1.5	3,000	2.00

Form SM-7a

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY OF COSTS

HAND TRENCHING

Project: 753 Period covered: June - Dec. - 1943

Number of trenches 125 Designation or names of trenches excavated __

Cubic yards alluvium 236 ; loose rock 30 ; solid rock 554 ; total 820

Linear feet total 2085 .

Cross section trenches: Minimum ___; Maximum ____; Average 2.5 x 4.25

Man-shifts worked 619.5 .

Accumulated total feet trenching on project during project 2085

Item[1/]	Cost		
	Amount	Per cubic yard	per linear foot
Labor	$2948.41	$3.595	$1.414
Explosives	160.17	0.195	0.076
Other Supplies	832.79	1.015	0.399
Depreciation of Equipment	926.70	1.130	0.444
Supervision	1194.20	1.456	0.574
Transportation	3.12	.004	0.002
Totals	$6065.39	$7.395	$2.909

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges. Two copies this form to be forwarded Tucson monthly.

Form SM-7a

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY OF COSTS

BULLDOZER TRENCHING

Project 753 Period covered: June - Dec. - 1943

Number of trenches 97 Designation or neames of trenches excavated **

Cubic yards alluvium 7600 ; loose rock 605 ; solid rock ___; total 8205

Linear feet total 7904.

Cross section trenches: Minimum ___; Maximum ____; Average 3.5' x 8.5'

Accumulated total feet trenching on project during project 7904

Item 1/	Cost		
	Amount	Per cubic yard	Per linear foot
Rental of Equipment	1920.00	.234	.242
Supervision	250.00	.030	.031
Totals	$2170.00	$ .264	$ .273

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges. Two copies this form to be forwarded Tucson monthly.

Form SM-7e

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY OF COSTS
OR PREPARATORY WORK

Project 753 Period covered June - Dec. - 1943

Location of work Vance County, N. C.

Purpose of work Development of Tungsten deposit

Nature of work Construction of tool and sample shed, and other preparatory work incidential to operation of project.

Man-shifts worked 100

Item[1/]	Cost
Labor	$425.32
Timber	47.24
Other Supplies	60.0
Supervision	233.70
Totals	766.26

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges. Two copies this form to be forwarded Tucson monthly.

Form SM-7e

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY OF COSTS
PREPARATORY WORK (Surveying & drafting)

Project 753 Period covered June - Dec. - 1943

Location of work Vance County, N. C.

Purpose of work To aid in developing tungsten deposit.

Nature of work Transit and plane table surveys, preparation of maps, sections, drill logs, other pertinent engineering work.

Item 1/	Cost
Labor	$835.92
Other Supplies	420.46
Rental of Equipment (transit & Plane table)	108.80
Supervision	3195.94
Transportation	18.96
Totals	4580.08

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges. Two copies this form to be forwarded Tucson monthly.

Form SM-9 (Revised)

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM
SUMMARY OF COSTS
FINAL ROAD AND TRAIL BUILDING

Project 753 Period covered June - Dec. 1943

Roads: Length built feet 17000, Width feet 9,

alluvium 2030, Loose rock 800,

Total 2830,

Item 1/	Roads Costs		
	Amount	Per Cubic Yard	Per Foot
Rental of Equipment	$1355.19	0.479	0.08
Supervision	100.00	.035	.005
Totals	$1455.19	0.514	0.085

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges.
Two copies this form to be forwarded Tucson monthly.

Form SM-11 (revised)

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM
FINAL SUMMARY OF COSTS

D. D. SAMPLING

Project 753 — Period covered June - Dec. - 1943

Number of man-shifts worked 464 — Name or number of excavations sampled

Number of samples taken 1414 — Drill holes 1 to 41 inclusive

Linear feet of samples taken 7083.4

Accumulated number of samples taken to date 1414
339 samples shipped for analysis

Item 1/	Amount	Per sample	Cost Linear Per ft. of sample
Labor	$2874.66	$2.032	$0.405
Supplies	416.78	0.294	0.058
Supervision	1180.15	0.834	0.167
Transportation	215.23	0.152	0.003
Depreciation & Rental Equip.	262.40	.185	0.004
Totals	$4949.22	$3.50	$0.69

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges.
Two copies this form to be forwarded Tucson monthly.

Form SM-11 (revised)

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM
FINAL SUMMARY OF COSTS

*Miscellaneous & Trench SAMPLING

Project 753 Period covered

Number of man-shifts worked 454 Name or number of excavations sampled

Number of samples taken 162 All hand trenches, bull dozer trenches and some shafts.

Cubic feet of samples taken *Large samples up to 20 tons were blasted from trenches, crushed and quartered to 100# each.

Accumulated number of samples taken to date estimated 650 tons of sample taken before quartering.

Item 1/	Amount	Per sample	Cost ton Per sample
Labor	$2072.21	$12.791	$3.188
Supplies	417.64	2.578	.642
Supervision	793.50	4.898	1.221
Transportation	224.16	1.383	.345
Deprec. & rental	673.60	4.158	1.036
Totals	$4181.11	$25.809	$6.432

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges.
Two copies this form to be forwarded Tucson monthly.

*Includes crushing and preparatory work on all trench sampling.

Form SM-12 (revised)

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY OF CORE DRILLING COSTS

Project 753 — Period covered June - Dec. 1943

Number of drills working 3

Number holes in progress during project 41

Ex 170.0
Ax 1574.5
Bx 3326.2
Nx 2012.7

Accumulated footage drilled to date EX_____ AX_____ Total 7083.4

Footage reamed 233.5

Footage cemented during month 32

Drill-shifts worked by contractor, Number 225 (approx.)

Man-shifts worked by contractor, Number 450 (approx.)

Samples taken, number 339 per analysis, 1414 total

Item 1/	Costs to Government: Amount	Per foot drilled	Per sample taken
Contract	$20,837.00	$2.949	14.77
Drilling	378.36	.053	.27
Reaming and Casing	48.00	.007	.03
Force Account			
Supervision	1753.59	.247	1.24
Totals	$23,066.95	$3.256	$16.31

1/ See "Cost Accounting Instructions (revised)" relative distribution of charges.
Two copies this form to be forwarded Tucson monthly.

Form SM-17, revised July, 1943

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

FINAL SUMMARY COST REPORT

Project 753 Period covered June to Dec., 1943

Hand	Labor	Supplies	Other	Total
Trenching (form SM-7a)	$ 2,948.41	992.96	$2,124.02	$ 6,065.39
Bulldozer Trenching			2,170.00	2,170.00
Prep. Work (form SM-7e). . . .	425.32	107.24	233.70	766.26
Preparatory work (Surveying)	835.92	420.46	3,323.70	4,580.08
Road & Trail Build. (form SM-9)			1,455.19	1,455.19
Diamond Drilling Trench Sampling (form SM-11)	2,874.66	416.78	1,657.78	4,949.22
Miscellaneous Sampling Core Drilling (form SM-11)	2,072.21	417.64	1,691.26	4,181.11
Core Drilling Costs (form SM-12)			23,066.95	23,066.95
Total accumulated amt. spent on project	$9 156.52	2,355.08	35,722.60	47,234.20

Total Expenditures per Project Ledger to date	38,003.09
Salaries (not charged to project ledger)	7,505.38
Depreciation and use of Gov't Equipment	1,725.73
Total cost Project	$47,234.20

BUREAU OF MINES
STRATEGIC MINERALS PROGRAM

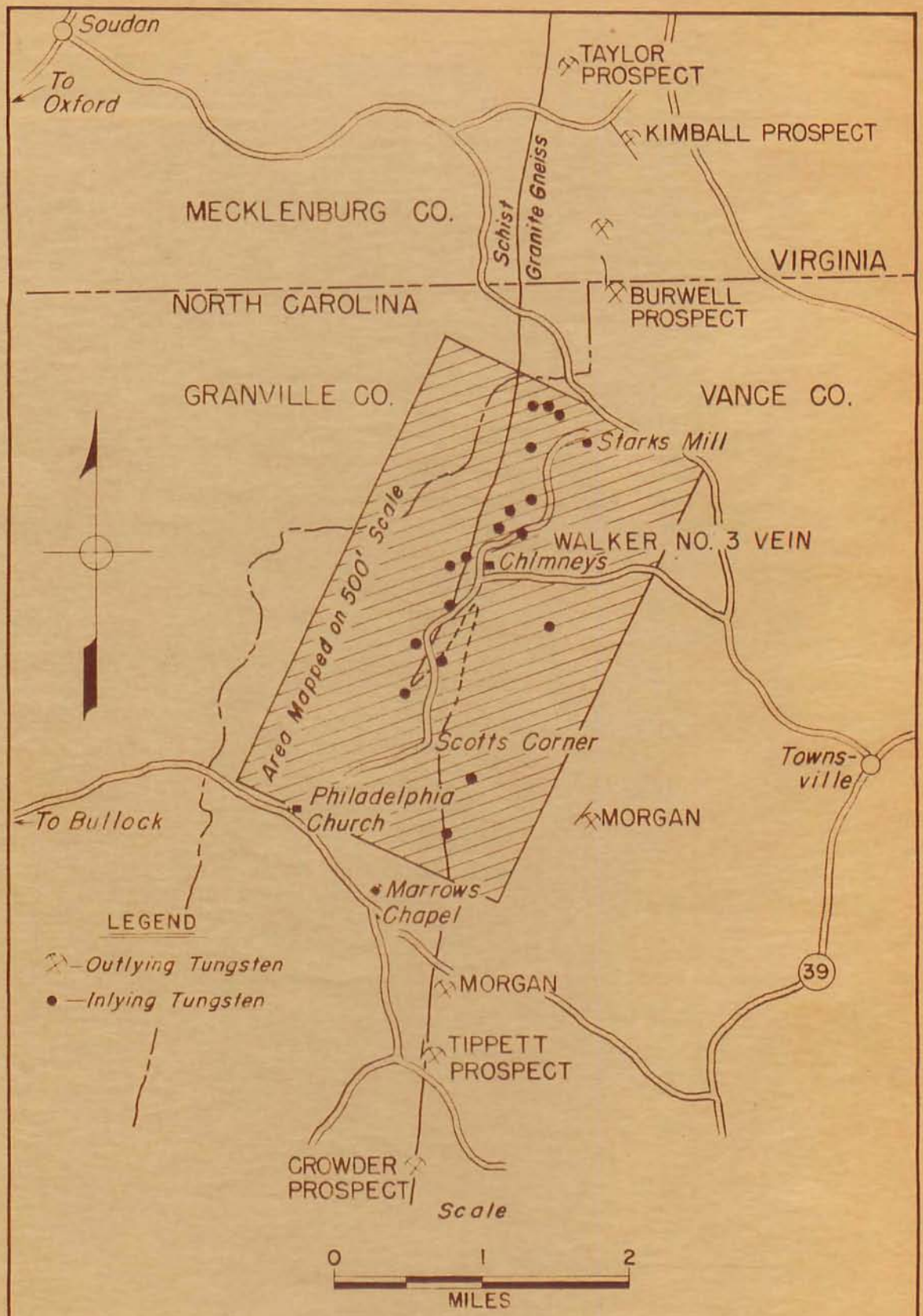
FINAL SUMMARY OF COSTS

Project 753 Period covered June - Dec. - 1943

ITEMS ON WHICH DEPRECIATION WAS CHARGED

Item	Number	Period(months)	Monthly Deprec.	Total
Chevrolet Coupe		5	$25.00	$125.00
Dodge Panel Truck		6	44.12	264.72
Ford Truck 1 ton			25.88	129.40
*Chev. dump truck 1½ ton		3	51.62	154.86
Compressor (Worthington)		5	127.50	637.50
" Smith		6	35.00	210.00
Jackhamer Worthington & I.R.	2	10	7.92	79.20
Transit		6	10.88	65.28
Plane table		4	10.88	43.52
Scales		5	3.25	16.25
		Total depreciation for project		$1725.73

* Depreciation for this item estimated, as it was transferred to College Park.



KEY MAP OF HAMME TUNGSTEN AREA
SHOWING TUNGSTEN OCCURRENCES.

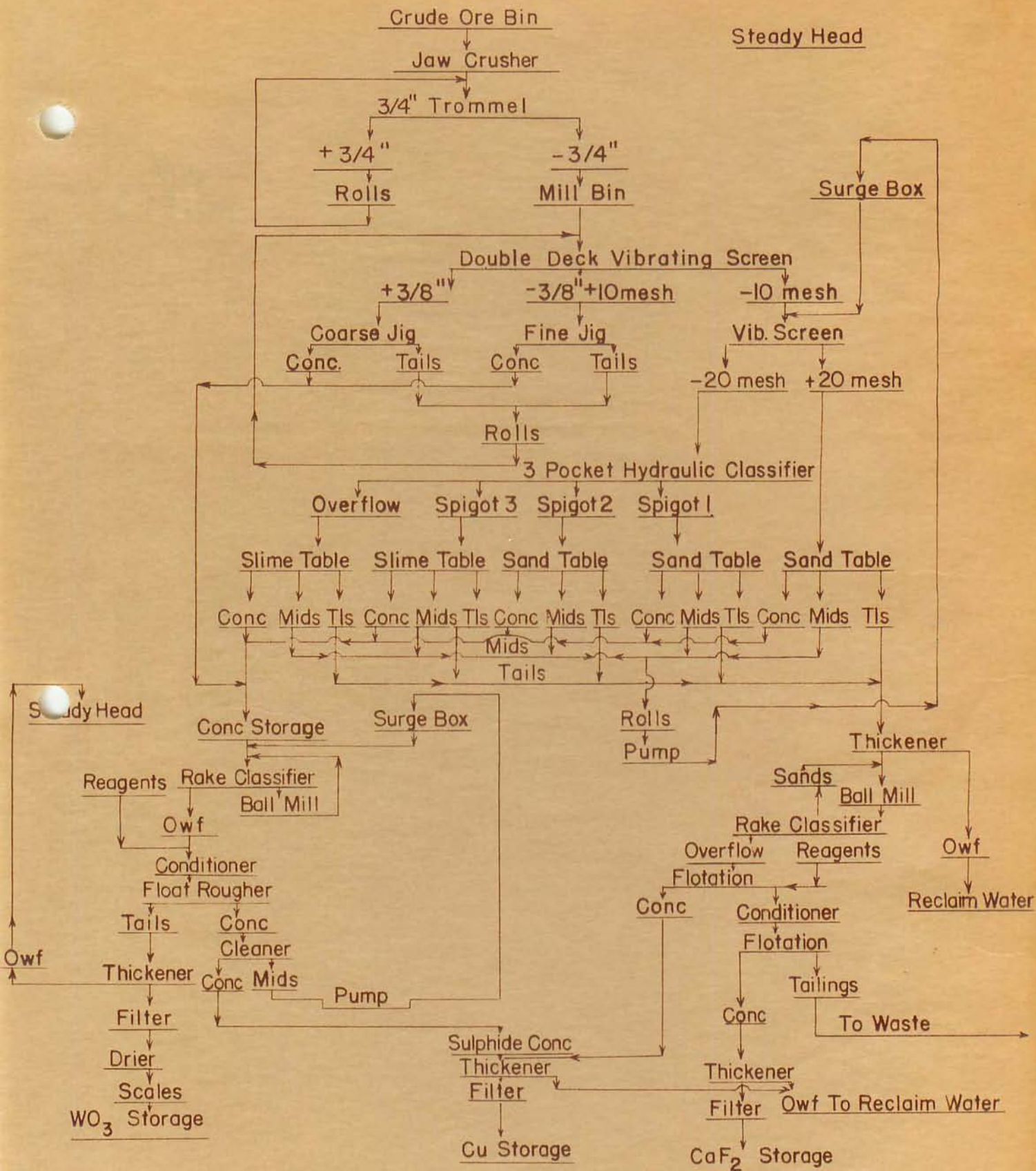
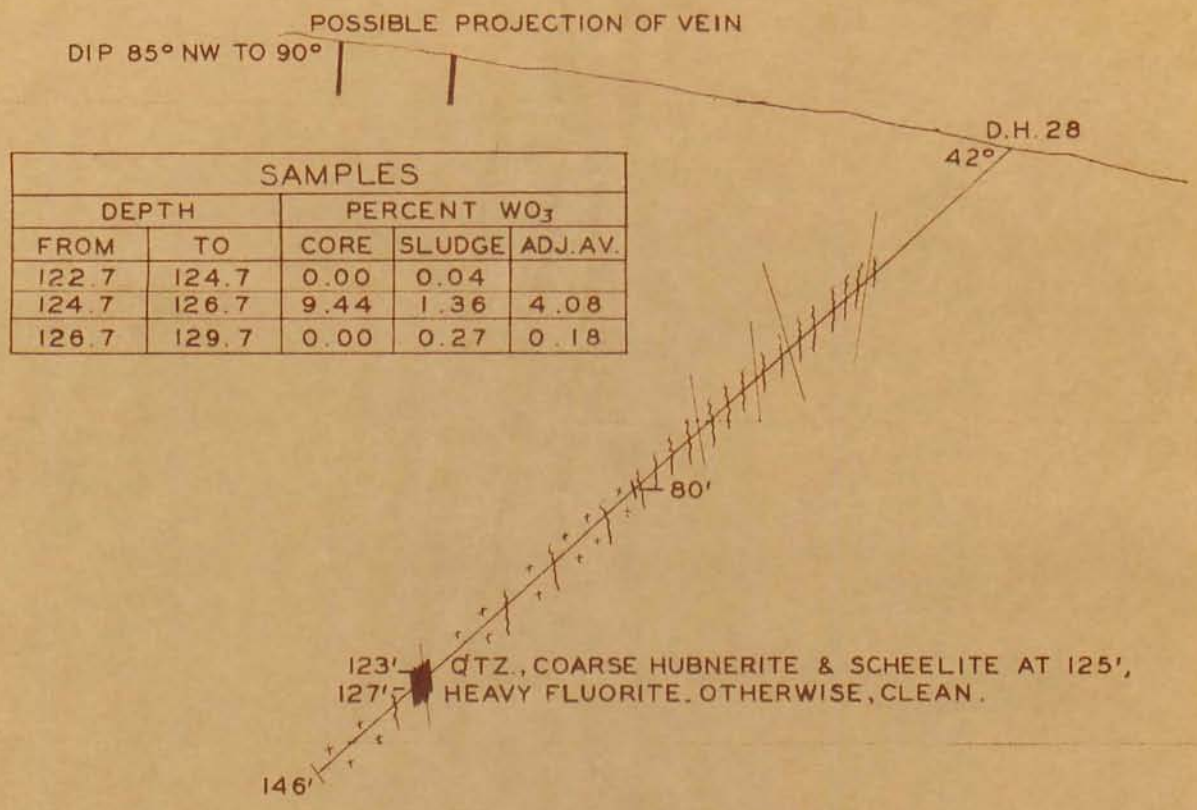


Figure 1 - FLOWSHEET FOR HAMME TUNGSTEN ORES
BY U. S. BUREAU OF MINES, EASTERN REGION.

NW SE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
122.7	124.7	0.00	0.04	
124.7	126.7	9.44	1.36	4.08
126.7	129.7	0.00	0.27	0.18

ELEV. AT COLLAR: 393.5' – LEVEL DATUM ASSUMED
LOCATION: N 22,176 – E 22,255
BEARING: N 49° W

GRANITE GNEISS
SCHIST

WALKER NO. II VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

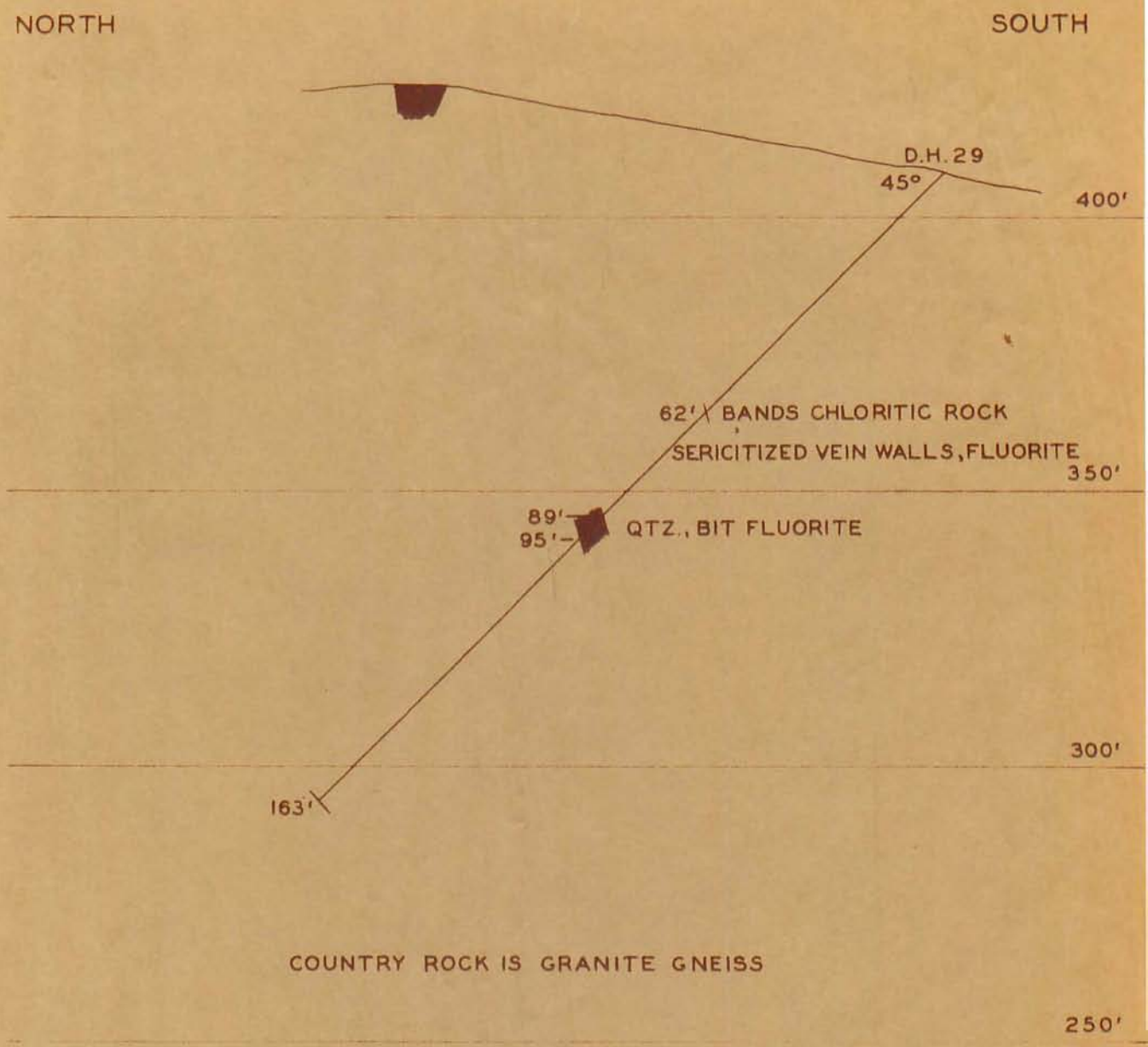
SECTION OF DRILL HOLE 28
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE OCT. 1943 PROJECT 753 FIG. NO. 42.

K & E CO., N. Y.



ELEV. AT COLLAR: 407.8' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 23,912 - E 22,058
BEARING: N 2° E

JAMIESON NO. 1 VEIN OR WALKER NO. 13

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 29
HAMME TUNGSTEN PROSPECT

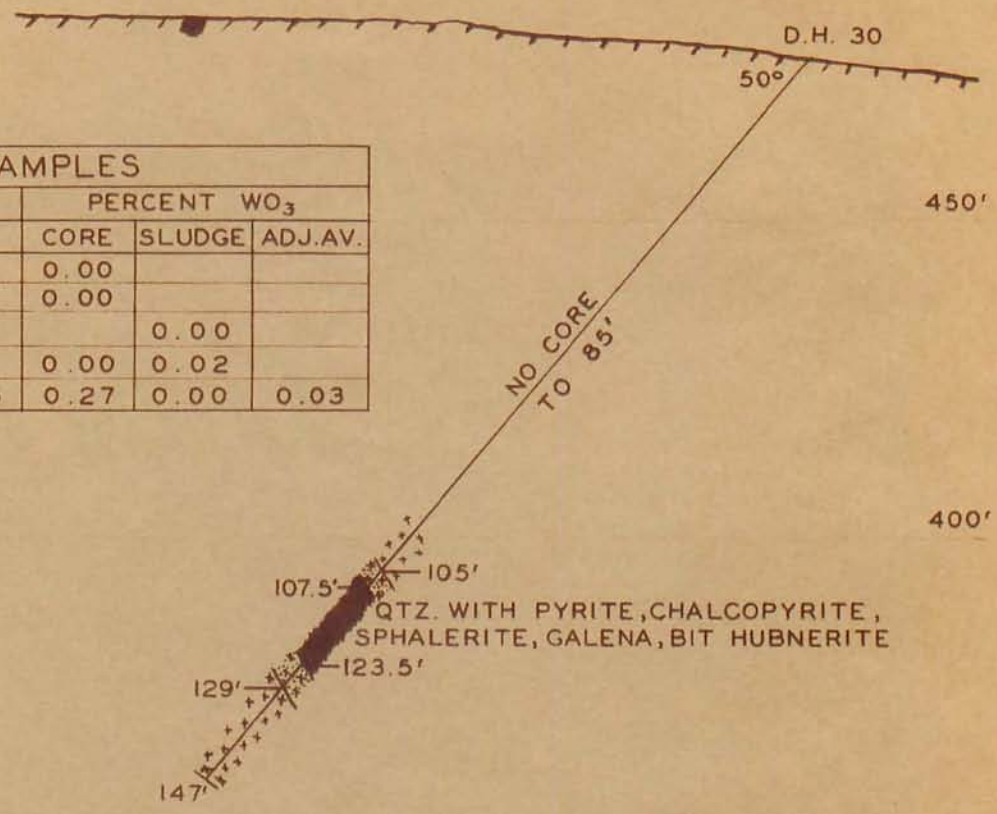
SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 43

K & E CO., N. Y.

NW SE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV.
105	107	0.00		
107	110	0.00		
105	110		0.00	
110	114	0.00	0.02	
114	117.5	0.27	0.00	0.03

ELEV. AT COLLAR: 475' – ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 17,971 – E 18,995
BEARING: N 60° W

GRANITE GNEISS
SERICITIZED GRANITE

SNEED NO. 1 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

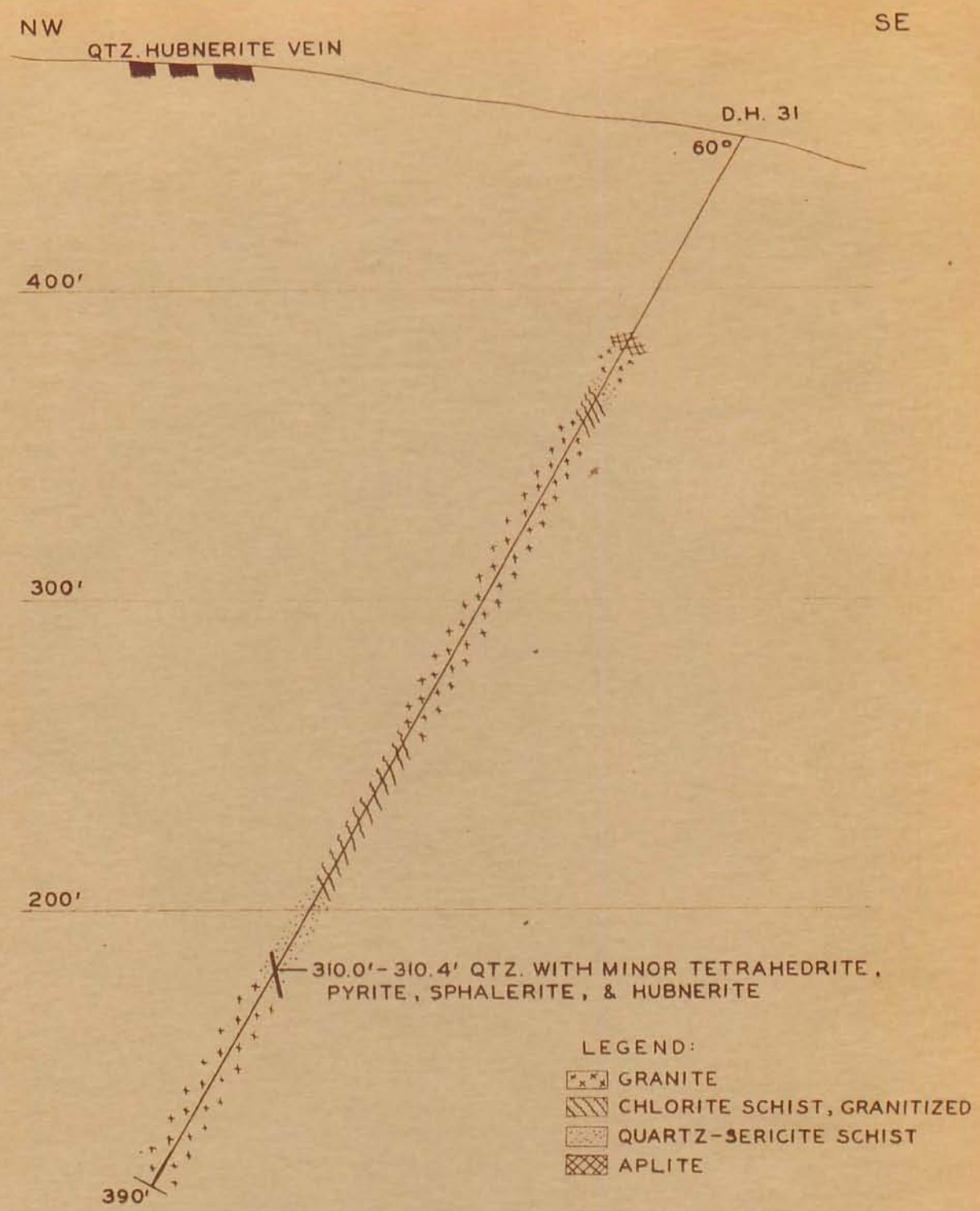
SECTION OF DRILL HOLE 30 HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 44
AFTER U.S.G.S.

K & E CO., N. Y.



ELEV. AT COLLAR: 449'-ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N17,662 - E18,910
BEARING: N58°W

SNEED NO. 1 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 31
HAMME TUNGSTEN PROSPECT

SCALE
0 50' 100'

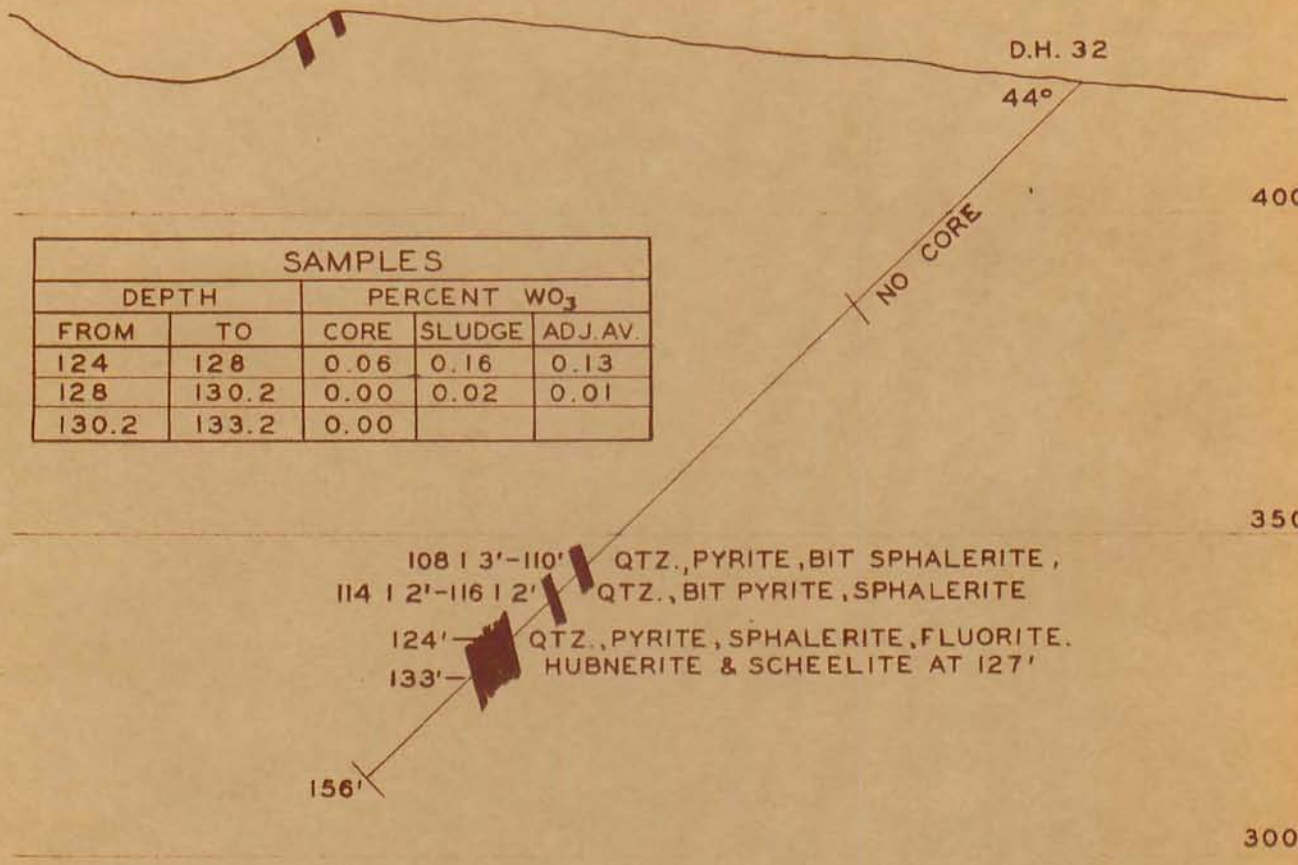
PROJ. ENG. ..... DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 45
AFTER U.S.G.S.

K & E CO., N. Y.

NORTH

SOUTH



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
124	128	0.06	0.16	0.13
128	130.2	0.00	0.02	0.01
130.2	133.2	0.00		

COUNTRY ROCKS ARE GRANITE GNEISS AND A LITTLE SCHIST.

ELEV. AT COLLAR: 420.5' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 23,899 - E 22,226
BEARING: N 3°E

JAMIESON NO. 1 VEIN OR WALKER NO. 13

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

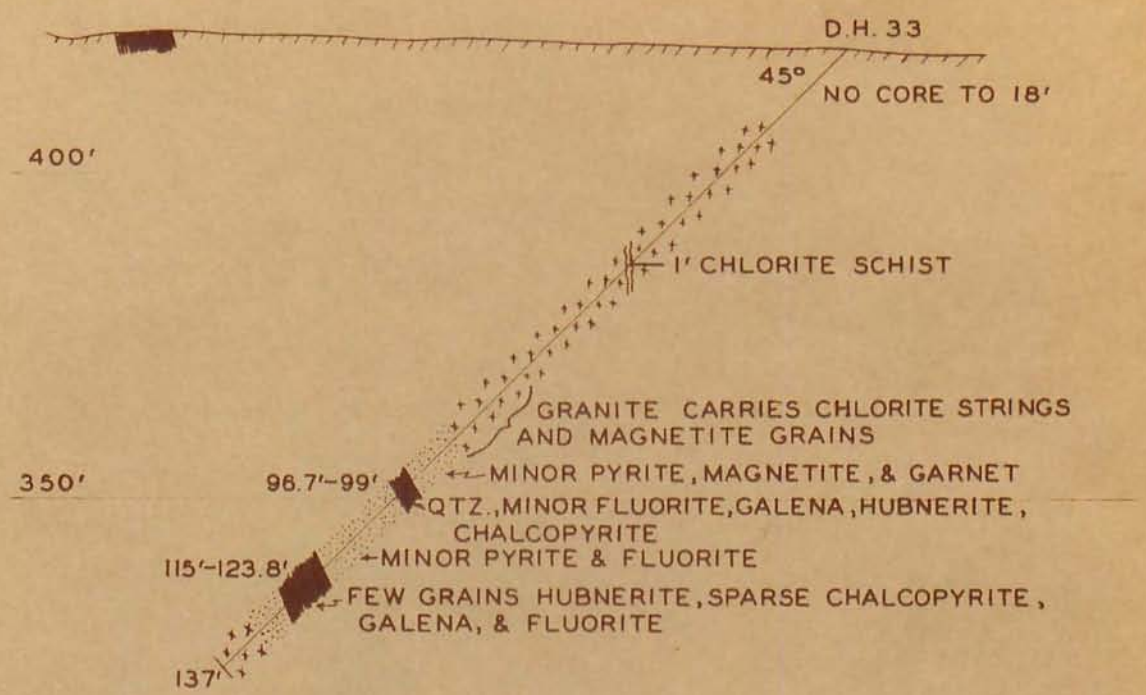
SECTION OF DRILL HOLE 32
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 46

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
96.7	99	0.19		
114	116.5	0.00	0.00	
116.5	118.5	0.00	0.15	0.11
118.5	121.7	0.18	0.06	0.09
121.7	123.7	0.06	0.00	0.01

ELEV. AT COLLAR: 419' – ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 16,878 – E 18,303
BEARING: N 40° W

SNEED NO. 2 VEIN

GRANITE
SERICITE QUARTZ

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

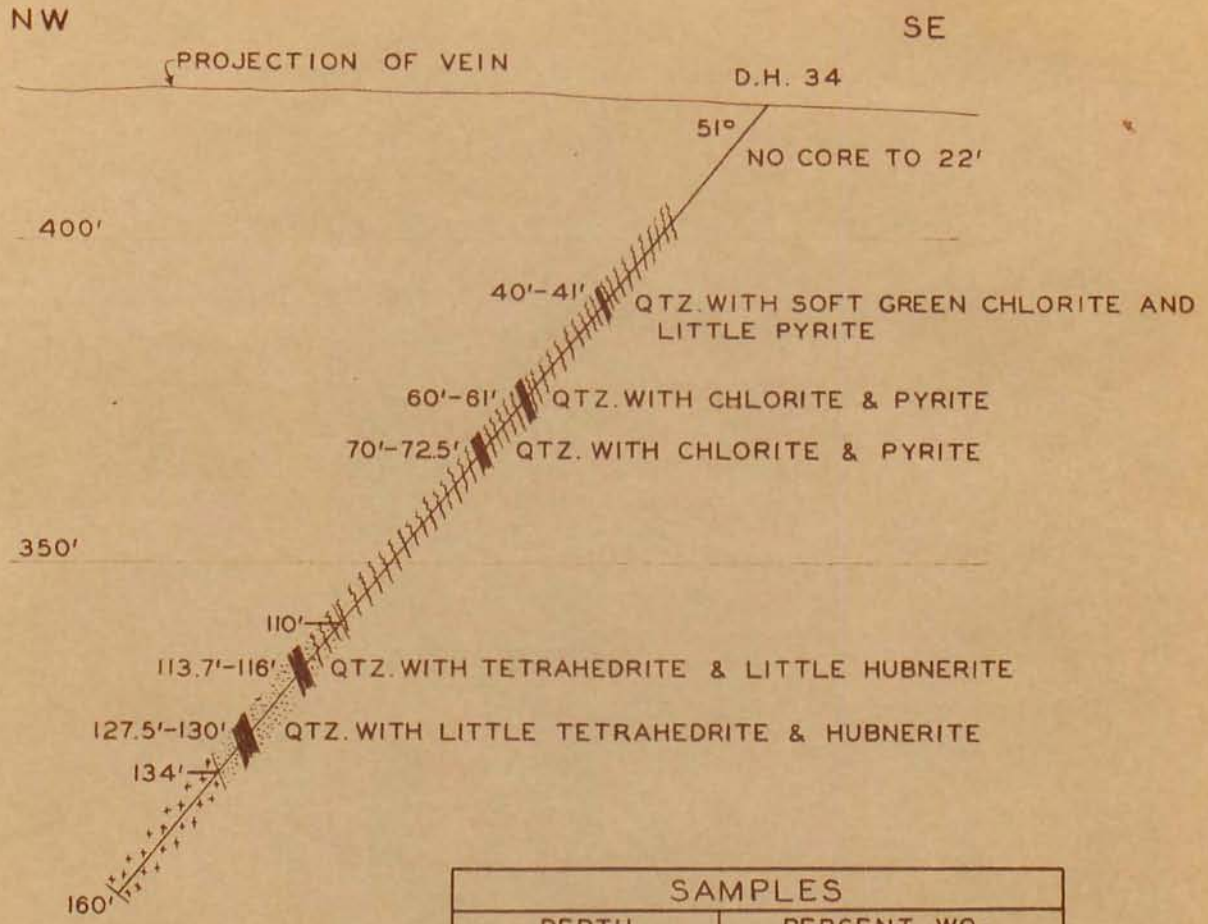
SECTION OF DRILL HOLE 33
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 47
AFTER U.S.G.S.

K & E CO., N.Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
113.5	116	1.02		
127.8	130	0.17		

ELEV. AT COLLAR: 421.7' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 16,759 - E 18,183
BEARING: N 46° W

SNEED NO. 2 VEIN

GRANITIZED CHLORITE SCHIST
QUARTZ SERICITE
GRANITE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 34
HAMME TUNGSTEN PROSPECT

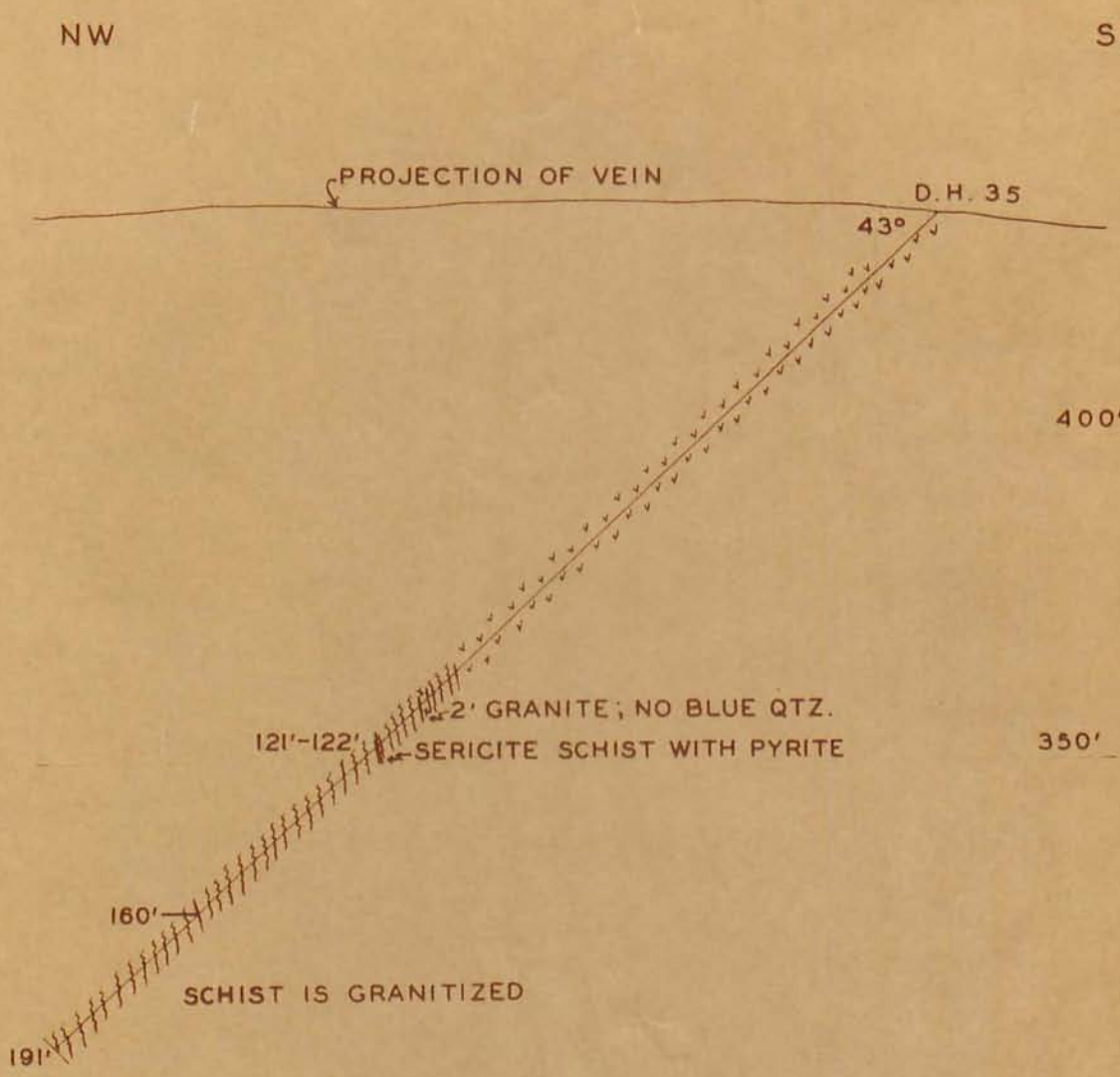
SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 48

AFTER U.S.G.S.

K & E CO., N. Y.



ELEV. AT COLLAR: 435' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 16,250 - E 17,700
BEARING: N 61° W

DIABASE
CHLORITE SCHIST

SCOTT ZONE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 35
HAMME TUNGSTEN PROSPECT

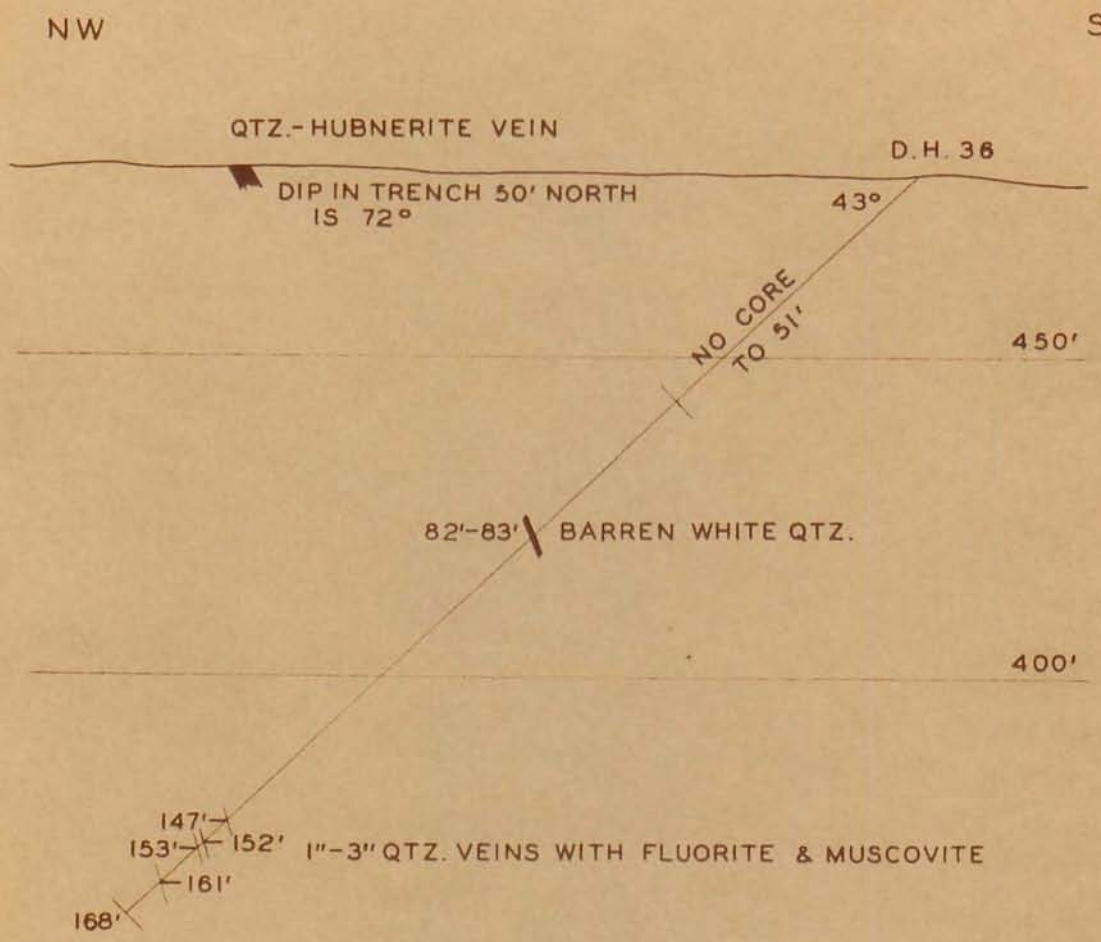
SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 49

AFTER U.S.G.S.

K & E CO., N. Y.



COUNTRY ROCK IS CHLORITE SCHIST WITH SHEARED FELDSPAR AND EPIDOTE GRAINS

ELEV. AT COLLAR: 478.5' -ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 16,017 - E 17,236
BEARING: N 52° W

SCOTT ZONE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 36
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

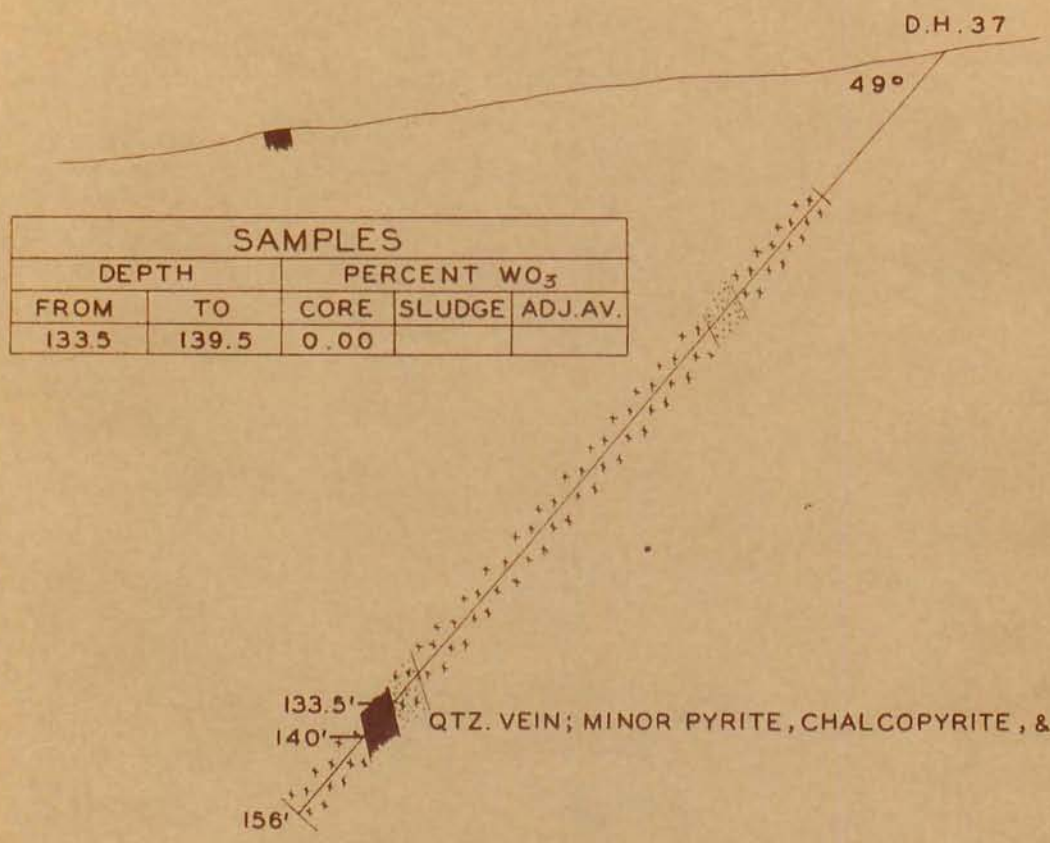
PROJ. ENG. DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 50

AFTER U.S.G.S.

K & E CO., N. Y.

SW NE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV.
133.5	139.5	0.00		

ELEV. AT COLLAR NOT DETERMINED
LOCATION: N 29,410 - E 25,550
BEARING: S 64° W

BURWELL VEIN

GRANITE
SERICITIZED GRANITE
SOFT SCHISTOSE SERICITE AGGREGATE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 37
HAMME TUNGSTEN PROSPECT

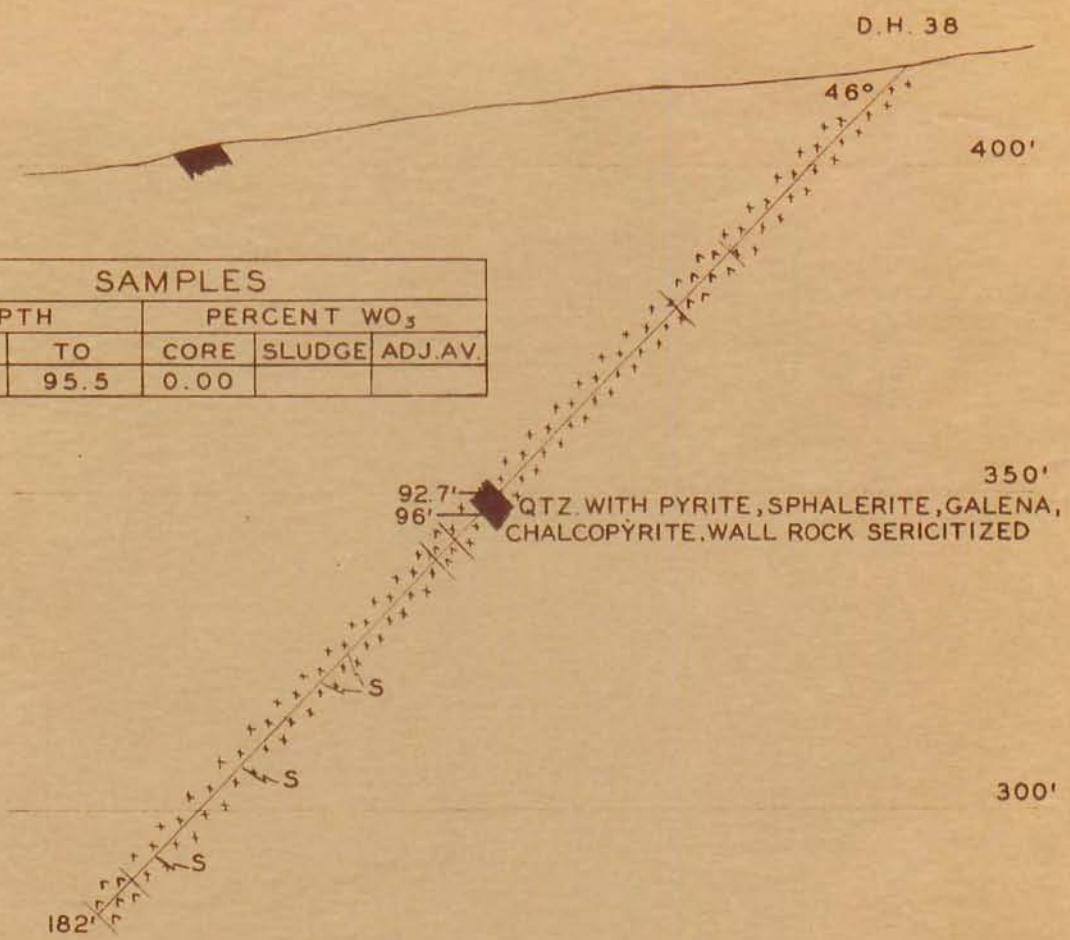
SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 51

AFTER U.S.G.S.

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV.
92.5	95.5	0.00		

ELEV. AT COLLAR: 415.5' – ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 12,074 – E 19,261
BEARING: N 83° W

MORGAN NO. 1 VEIN

FINE-GRAINED GREEN BASIC FLOW
GRANITE WITH BLUE QUARTZ
SERICITIZED ZONE (< 2') WITH MINOR FLUORITE & PYRITE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 38
HAMME TUNGSTEN PROSPECT

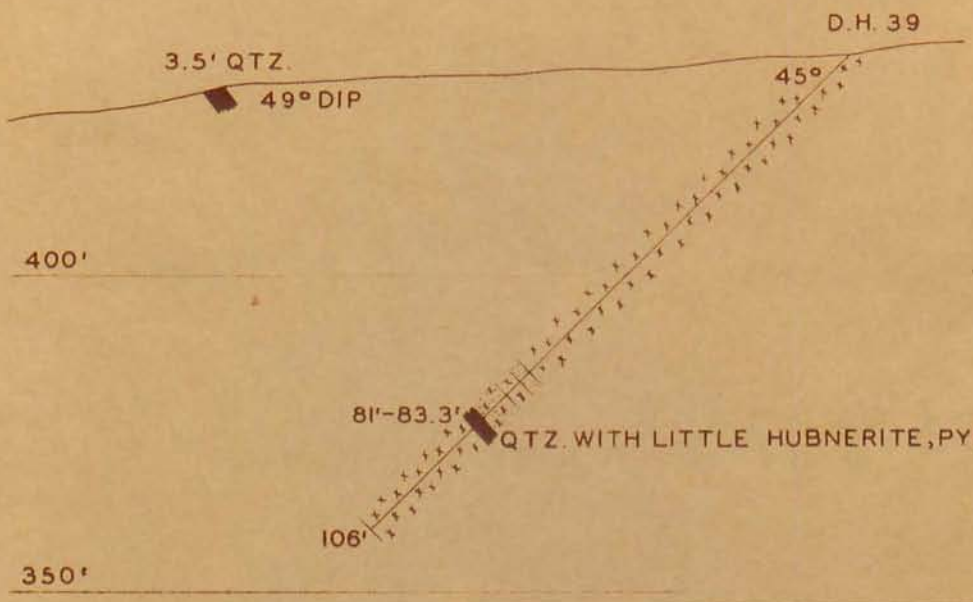
SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 52
AFTER U.S.G.S.

K & E CO., N. Y.

NW SE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
82	83.5	1.10		

ELEV. AT COLLAR: 434'-ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 12,267-E 19,278
BEARING: N 84° W

MORGAN NO. 1 VEIN

GRANITE
SERICITIZED GRANITE
SERICITE AGGREGATE

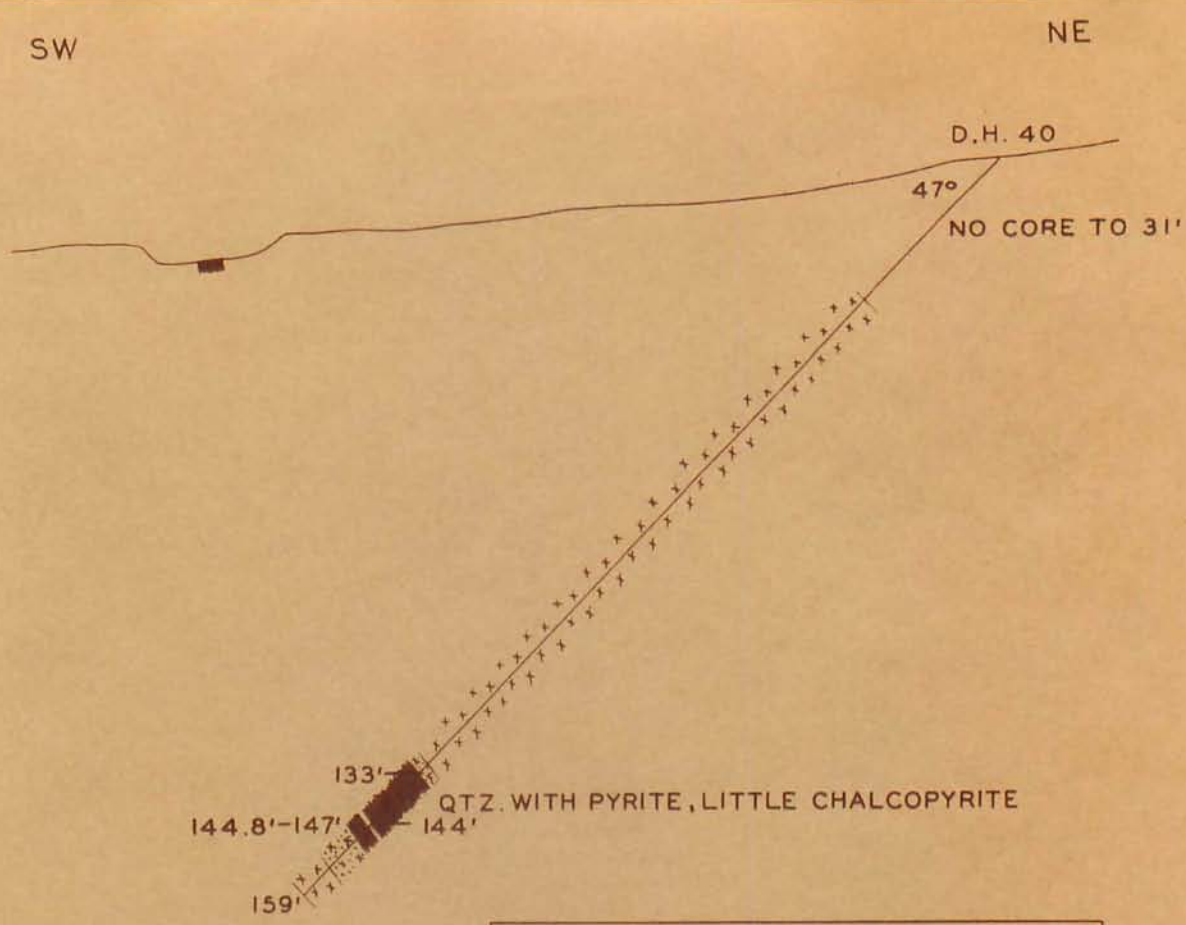
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
SECTION OF DRILL HOLE 39
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 53
AFTER U.S.G.S.

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
133.2	138	0.00		
138	143.3	0.00		
143.3	148.3	0.00		

ELEV. AT COLLAR IS UNDETERMINED
LOCATION: N 29,234 - E 25,611
BEARING: S 75° W

BURWELL VEIN

GRANITE
SERICITIZED GRANITE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 40
HAMME TUNGSTEN PROSPECT

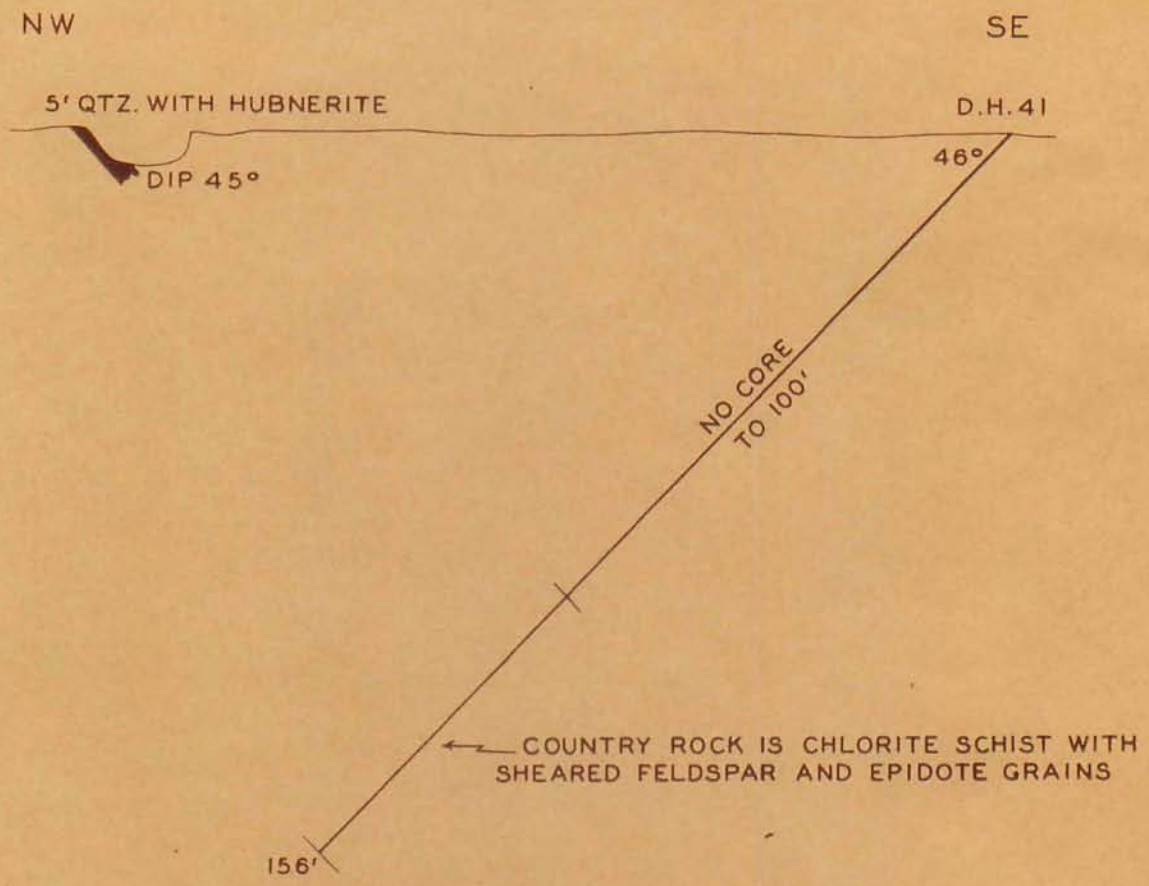
SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 54

AFTER U.S.G.S.

K & E CO., N. Y.



ELEV. AT COLLAR IS UNDETERMINED
LOCATION: N 4,216 - E 16,815
BEARING: N 83° W

TIPPETT VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 41
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE DEC. 1943 PROJECT 753 FIG. NO. 55
AFTER U.S.G.S.

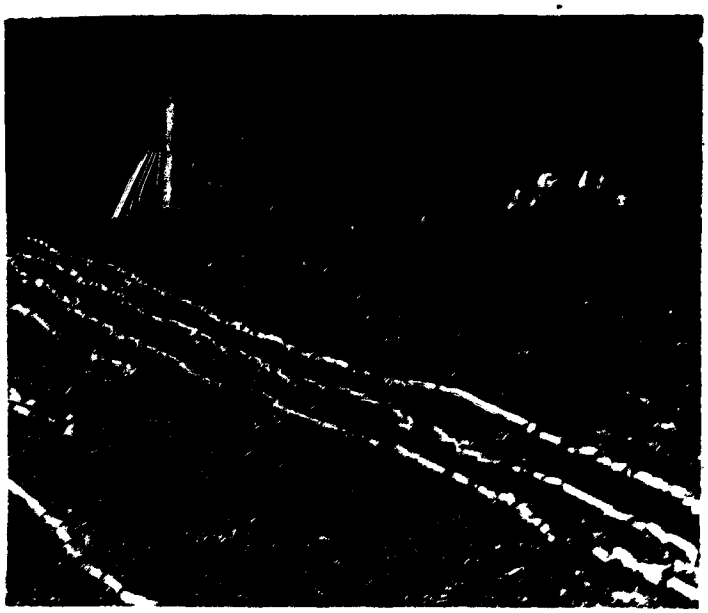
K & E CO., N.Y.

Setting up Sprague and Henwood Diamond Drill on Morton Property.

Hamme Brothers 10 Stamp Mill.

HAMME TUNGSTEN DISTRICT, NORTH CAROLINA.

Portion of completed access road leading to Hamme Tungsten property



Sample & Tool Shed - Overflow core staked out in foreground

HAMME TUNGSTEN DISTRICT, NORTH CAROLINA.

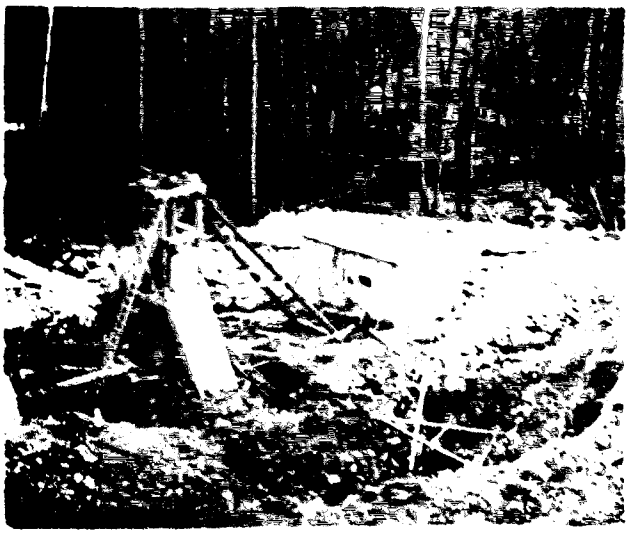
Stripping the vein (at left) on Jamieson Property

Harold B. Ewoldt inspecting 10 foot face of high grade Ore on Walker No. 3.

HAMME TUNGSTEN DISTRICT, NORTH CAROLINA

Nº 4 Pit on Walker Nº 3 Vein. At the time the photo was taken it had produced some 35,000 pounds of 70% WO Concentrates.

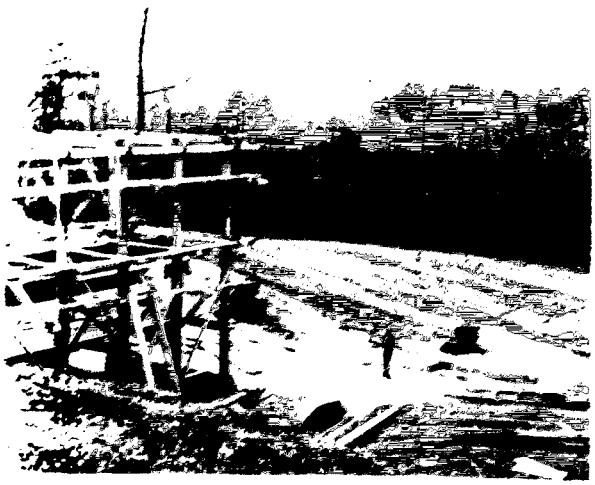
Crushing and cutting large trench samples



Lassiter Shaft- Jamieson 2

Churn Drilling- Showing Ore Face- Burwell Property

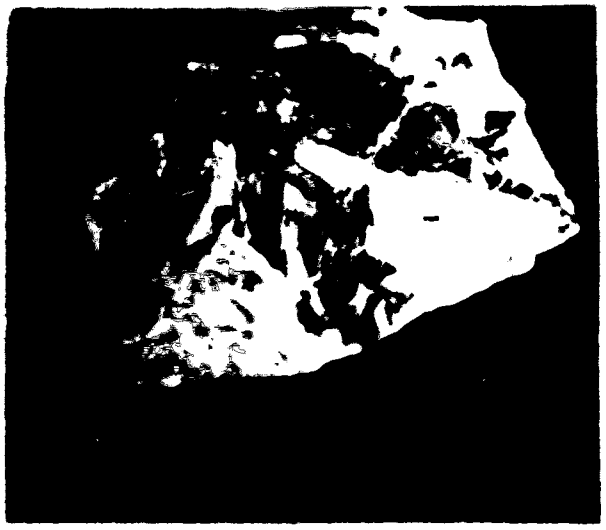
HAMME TUNGSTEN DISTRICT
NORTH CAROLINA



New Mill Site - Haile Mines, Inc.

Mine Buildings - Haile Mines, Inc.

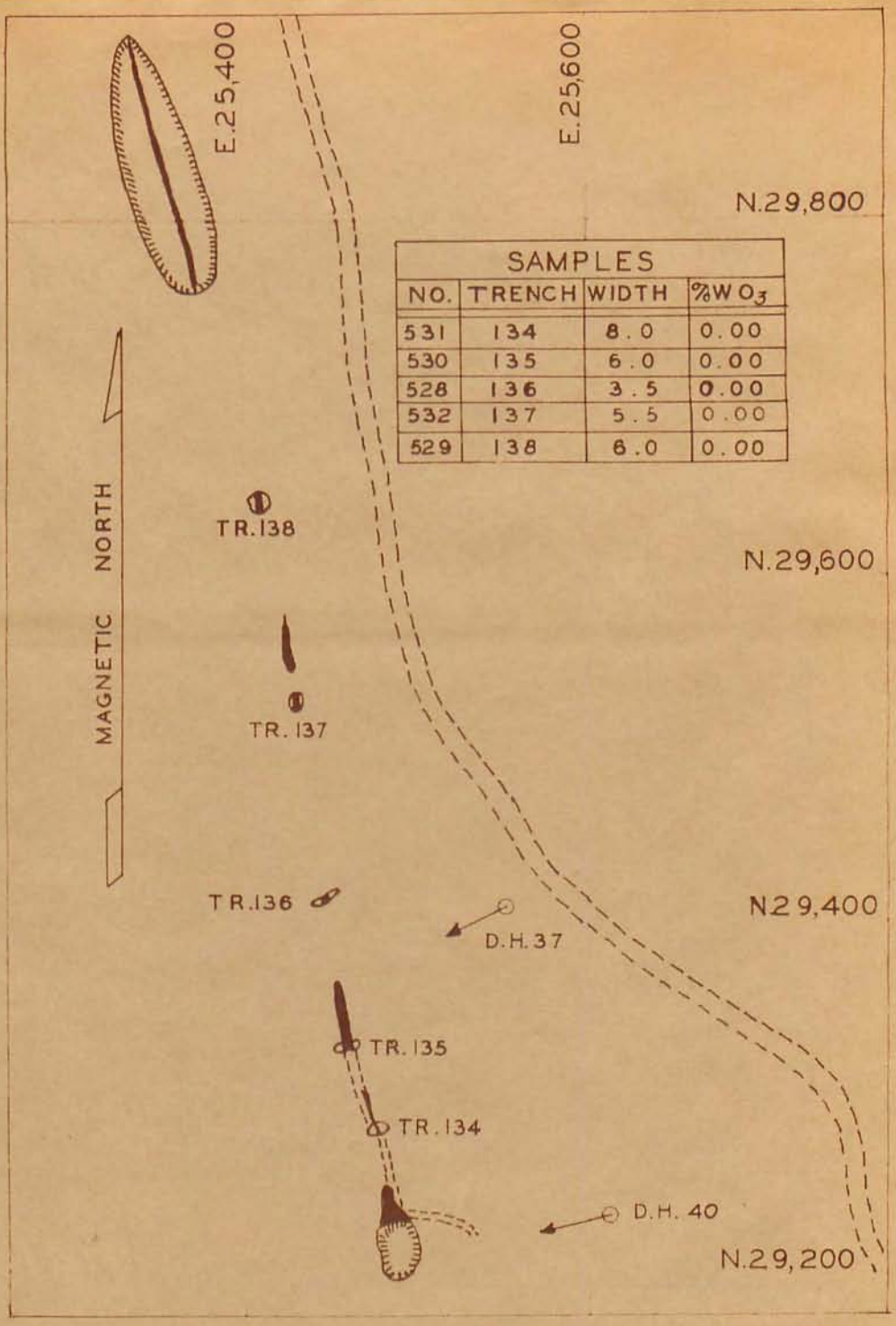
HAMME TUNGSTEN DISTRICT, NORTH CAROLINA



Hubnerite Specimen - Haile Mines Inc.

Present Mill - Haile Mines Inc.

HAMME TUNGSTEN DISTRICT, NORTH CAROLINA



SAMPLES			
NO.	TRENCH	WIDTH	$\%WO_3$
531	134	8.0	0.00
530	135	6.0	0.00
528	136	3.5	0.00
532	137	5.5	0.00
529	138	6.0	0.00

SCALE

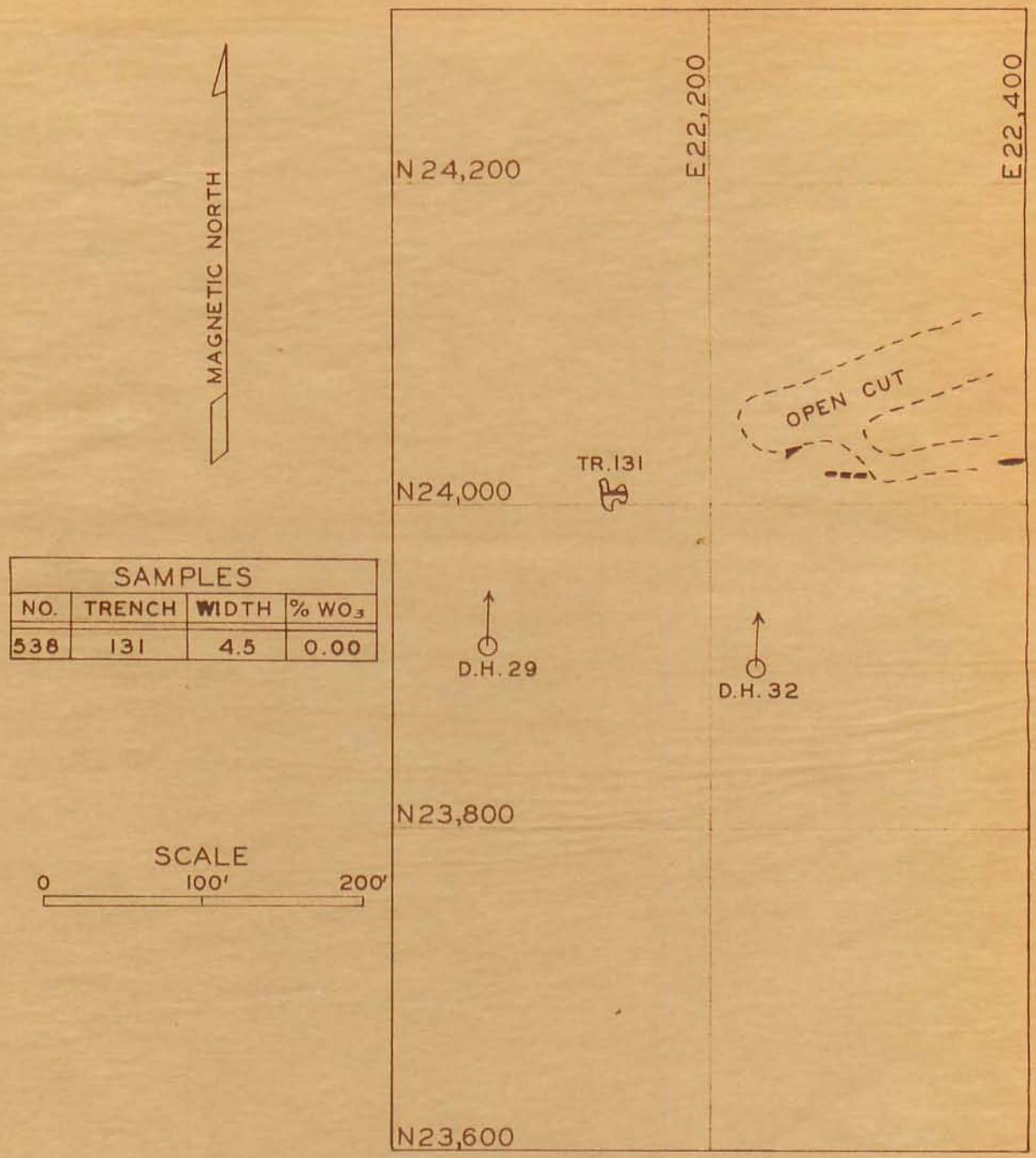
0′ 100′ 200′

AFTER U.S.G.S.

PROJECT 753 : HAMME TUNGSTEN AREA

PLAN WITH TRENCH ASSAYS OF BURWELL VEIN

FIG. NO. 4.

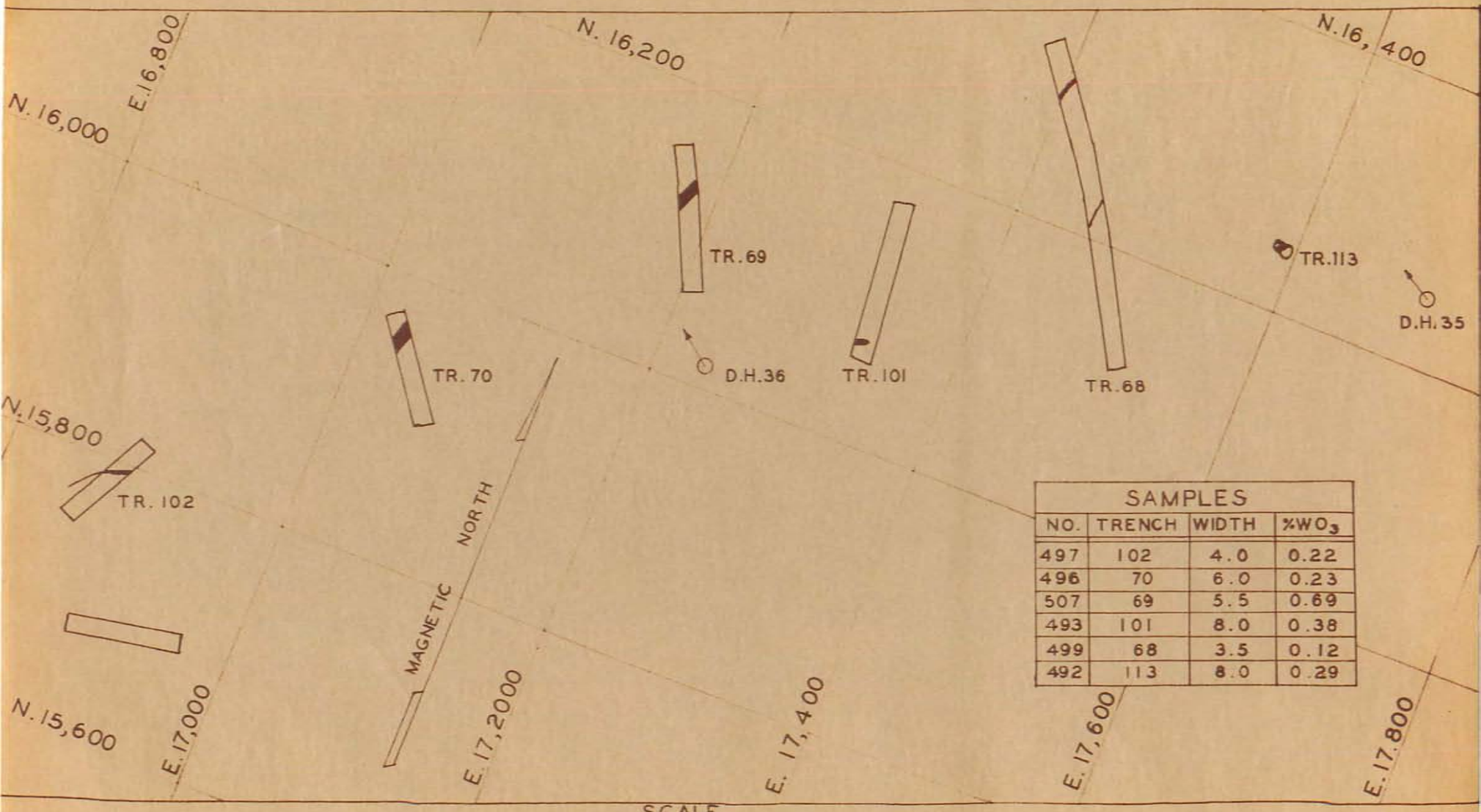


SAMPLES			
NO.	TRENCH	WIDTH	% WO_3
538	131	4.5	0.00

PROJECT 753: HAMME TUNGSTEN AREA

PLAN WITH TRENCH ASSAYS OF JAMIESON NO. 1 OR WALKER NO. 13 VEIN

FIG. NO. 5



SAMPLES			
NO.	TRENCH	WIDTH	$\%WO_3$
497	102	4.0	0.22
496	70	6.0	0.23
507	69	5.5	0.69
493	101	8.0	0.38
499	68	3.5	0.12
492	113	8.0	0.29

SCALE
0 100 200

FIG. NO. 12

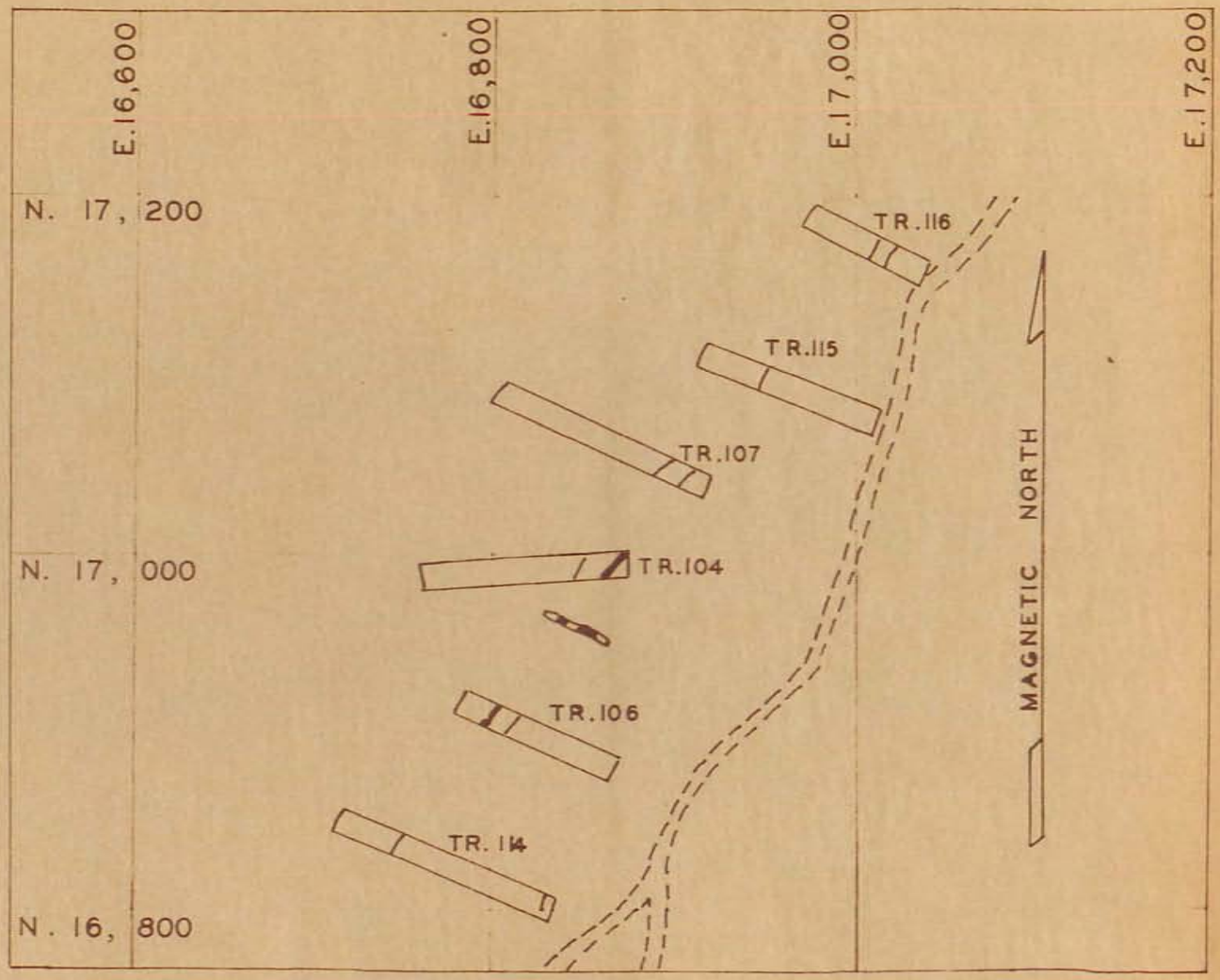
PROJECT 753: HAMME TUNGSTEN AREA

PLAN WITH TRENCH ASSAYS OF SCOTT ZONE

SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
490	107	1.5&1.5	0.00
498	106	1.5&3.0	0.99
491	104	8.0	0.24

SCALE

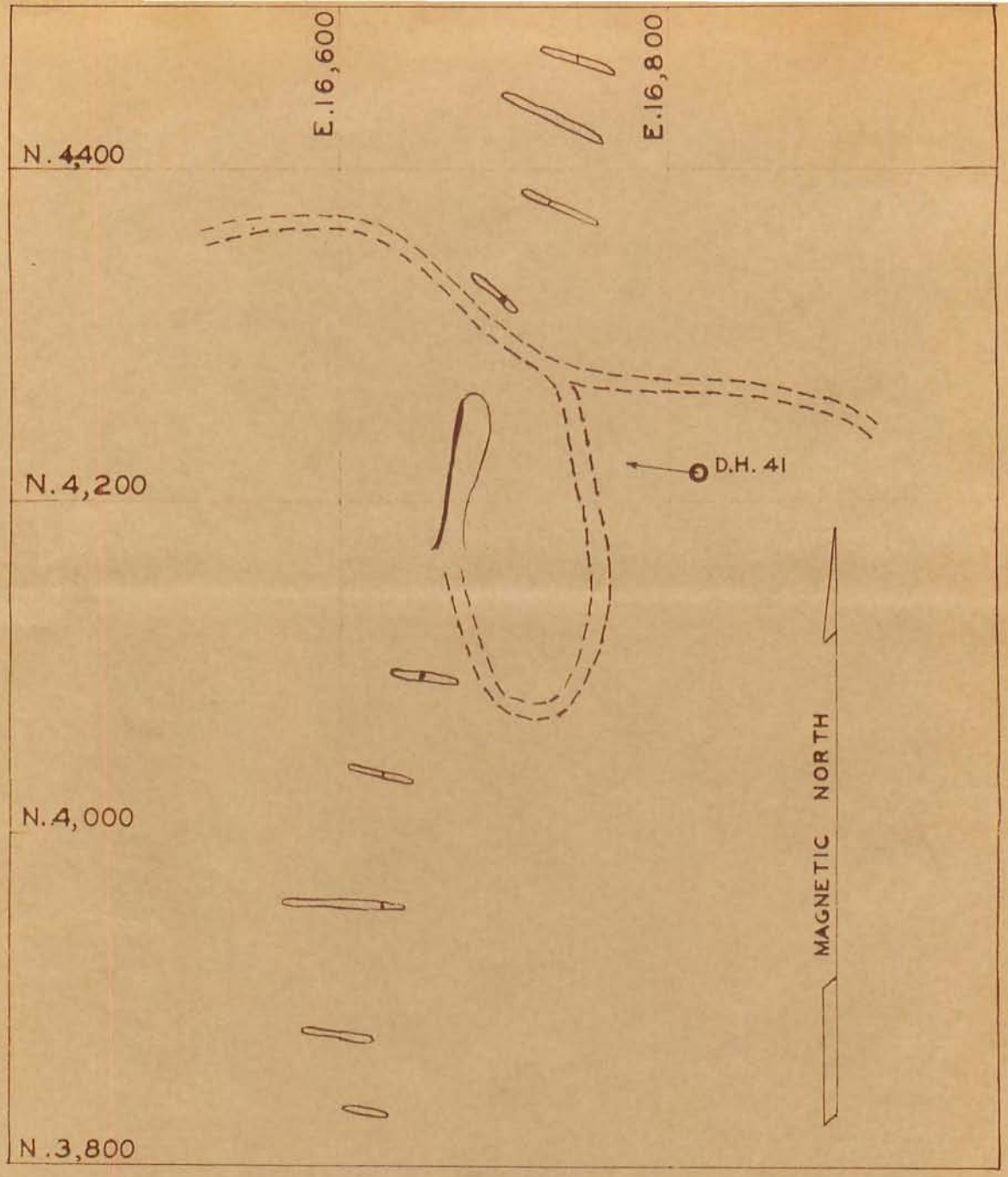
0' 100' 200'



PROJECT 753: HAMME TUNGSTEN AREA

PLAN WITH TRENCH ASSAYS OF MORTON ESTATE NO. 1 VEIN

FIG. NO. 13



SCALE

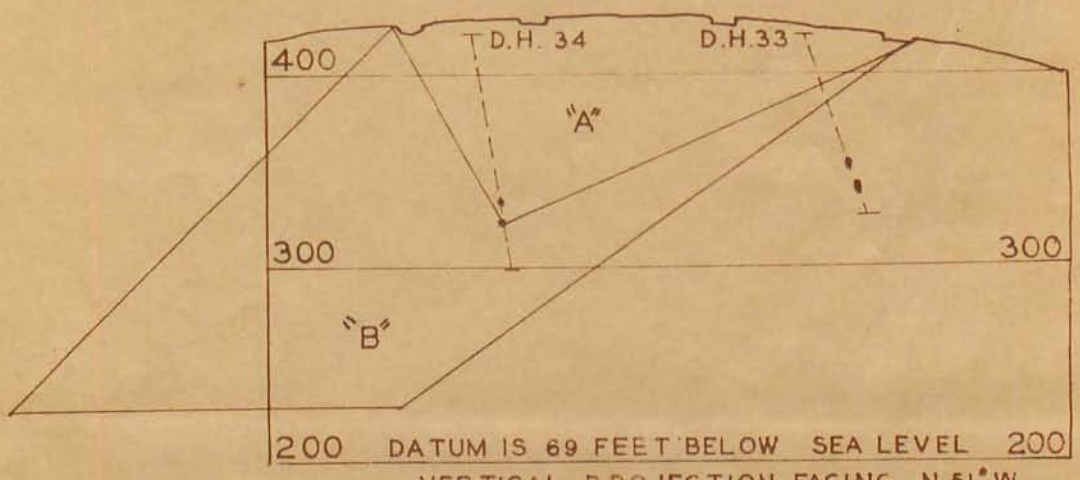
0 100' 200'

AFTER U.S.G.S.

PROJECT 753 : HAMME TUNGSTEN AREA

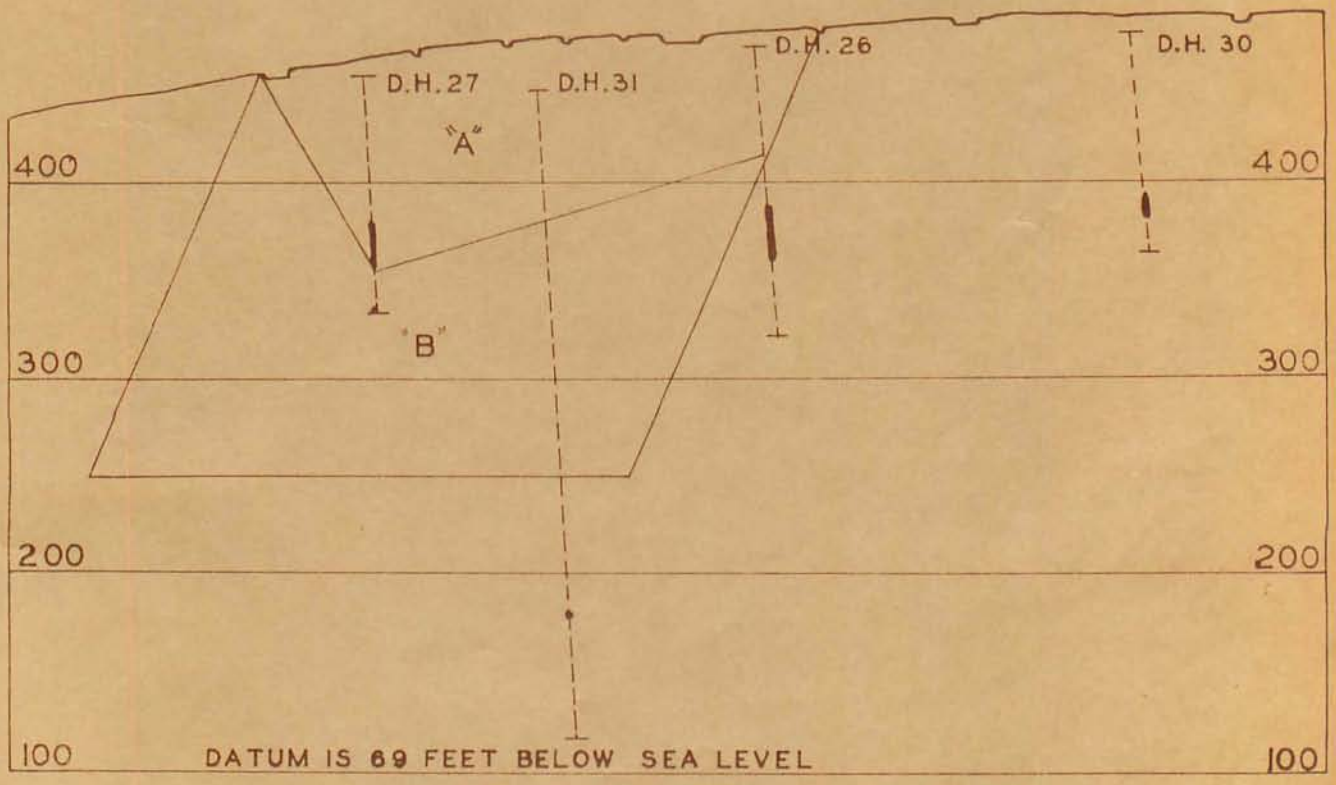
PLAN OF TIPPETT VEIN

FIG. NO. 15



VERTICAL PROJECTION FACING N.51°W.

SNEED NO. 2 VEIN



VERTICAL PROJECTION FACING N.59°W.

SNEED NO. 1 VEIN

0 100' 200'

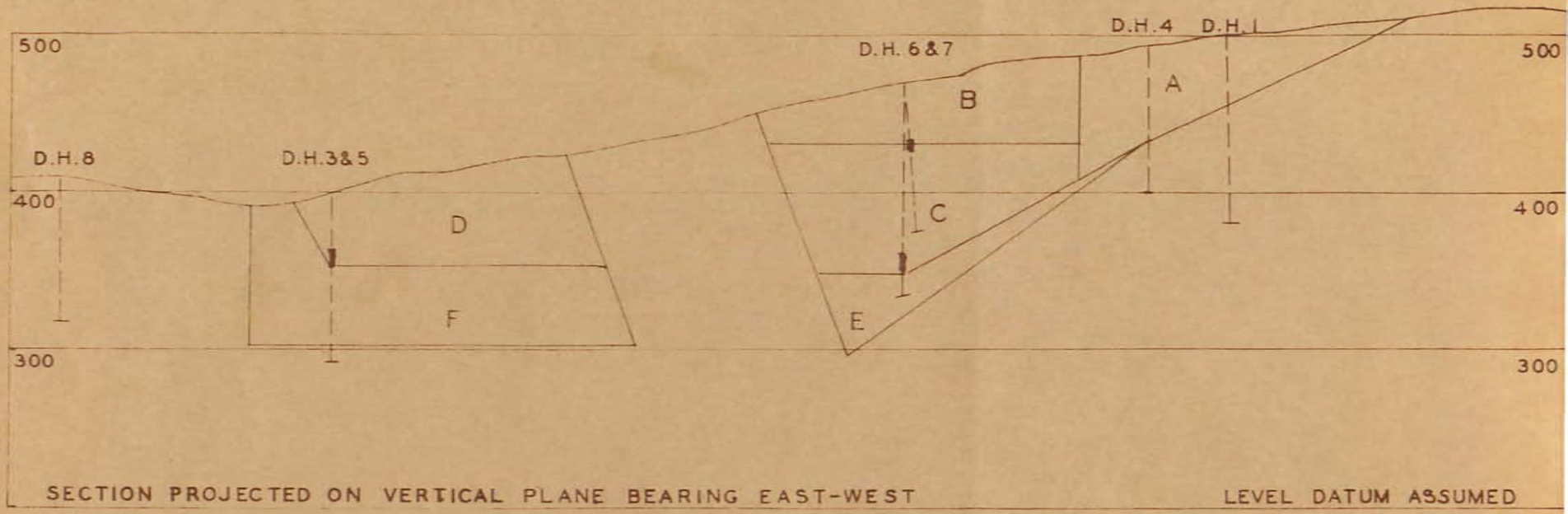
SCALE

PROJECT 753: HAMME TUNGSTEN AREA

LONGITUDINAL PROJECTION OF SNEED VEINS

SHOWING ORE BLOCKS

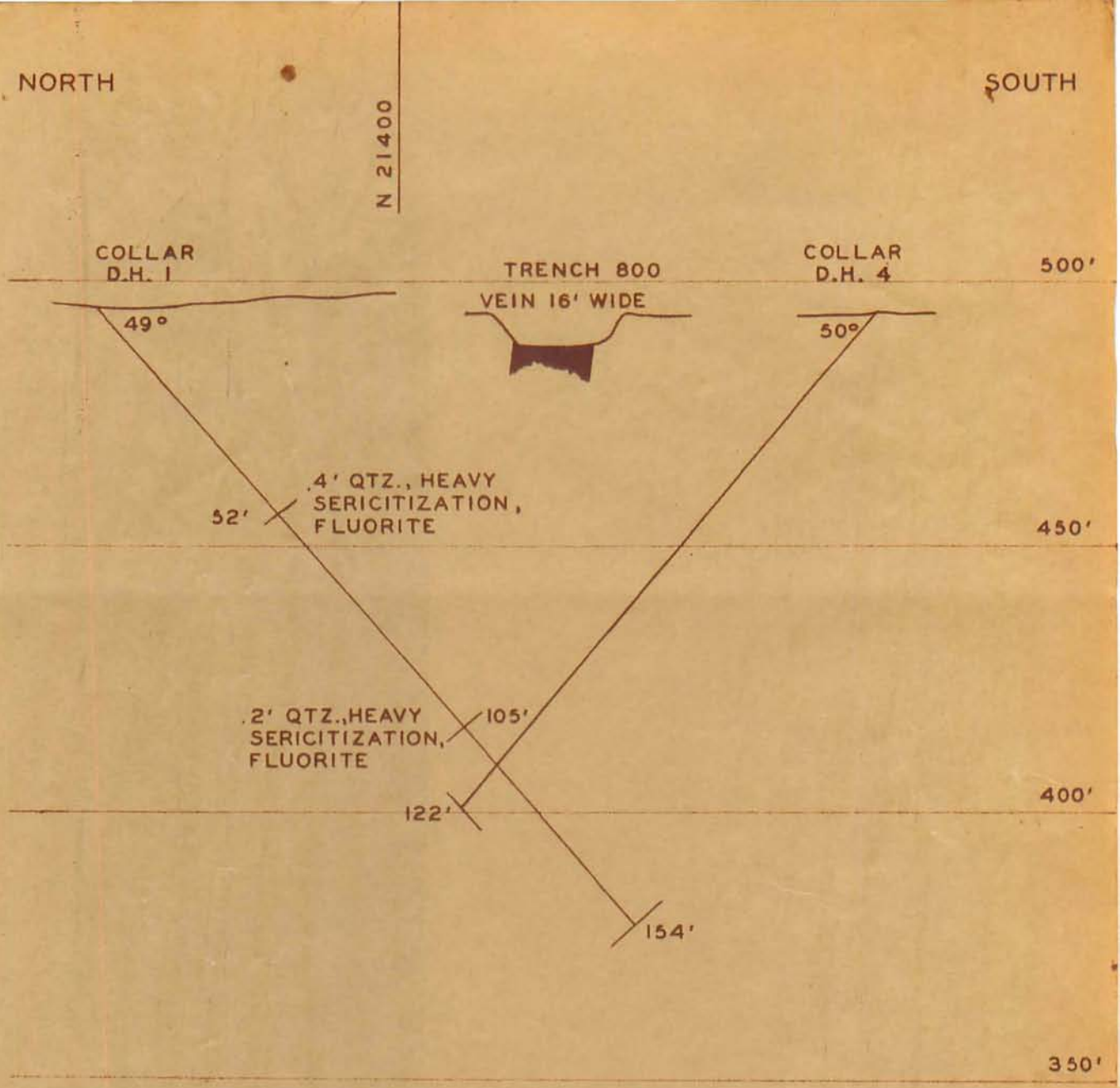
FIG. NO. 16



PROJECT 753
HAMME TUNGSTEN AREA
LONGITUDINAL SECTION OF MORTON NO.1 VEIN
SHOWING ORE BLOCKS

SCALE
0 100 200

FIG. NO.18



D.H. 1
ELEV. AT COLLAR: 496.5'
LOCATION: E 20765, N 21457
BEARING: SOUTH

D.H. 4
ELEV. AT COLLAR: 494.0'
LOCATION: E 20715, N 21309
BEARING: NORTH

LEVEL DATUM ASSUMED

COUNTRY ROCKS ARE GRANITE GNEISS, SERICITIZED GRANITE GNEISS, AND SOME CHLORITIC SCHIST.

MORTON NO. 1 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLES 1 AND 4
HAMME TUNGSTEN PROSPECT

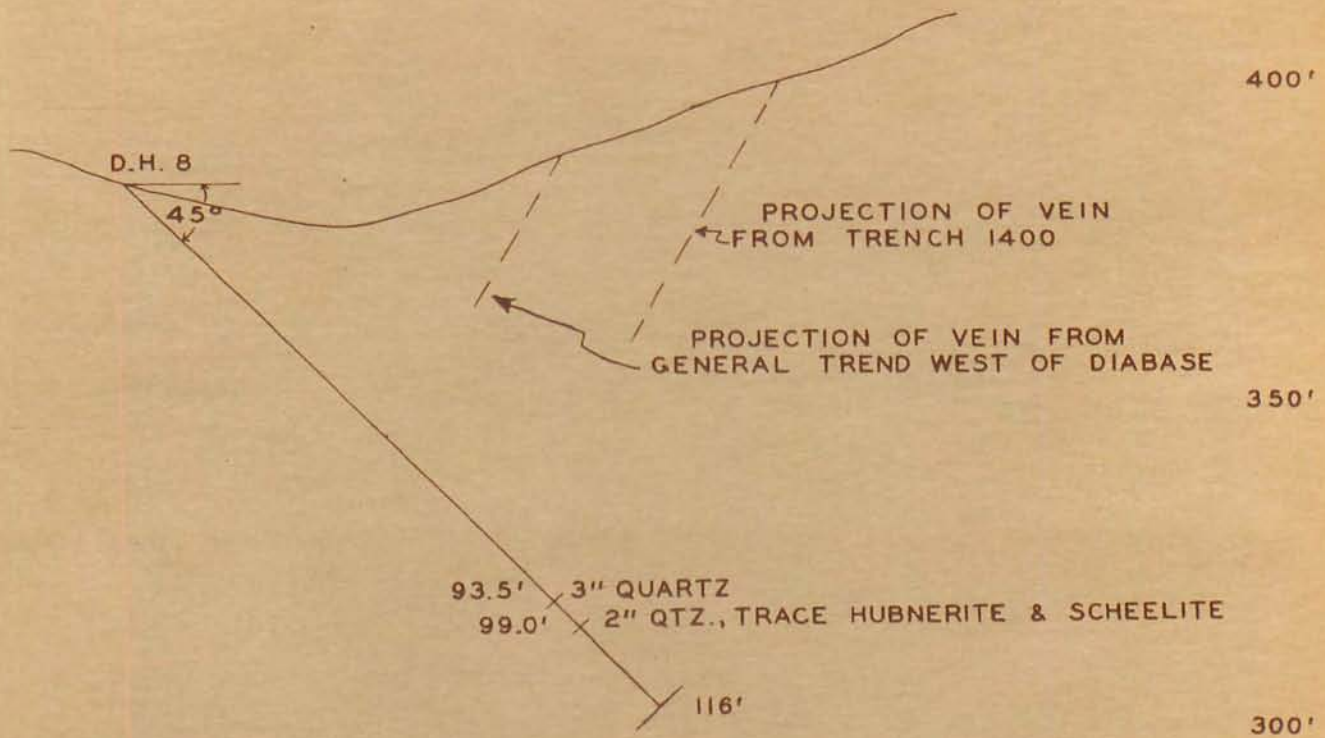
SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE AUG. 1943 PROJECT 753 FIG. NO. 19

K & E CO., N. Y.

NORTH SOUTH



CORE CONSISTS OF GRANITE GNEISS, SERICITIZED GRANITE GNEISS, CROSS-CUTTING QUARTZ-SERICITE MASSES, AND A FEW PEGMATITE STRINGS. BOTTOM IN GRANITE GNEISS.

ELEV. AT COLLAR: 388.0'- LEVEL DATUM IS ASSUMED
LOCATION: N 21,512 - E 20,032
BEARING: SOUTH

MORTON NO. 1 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

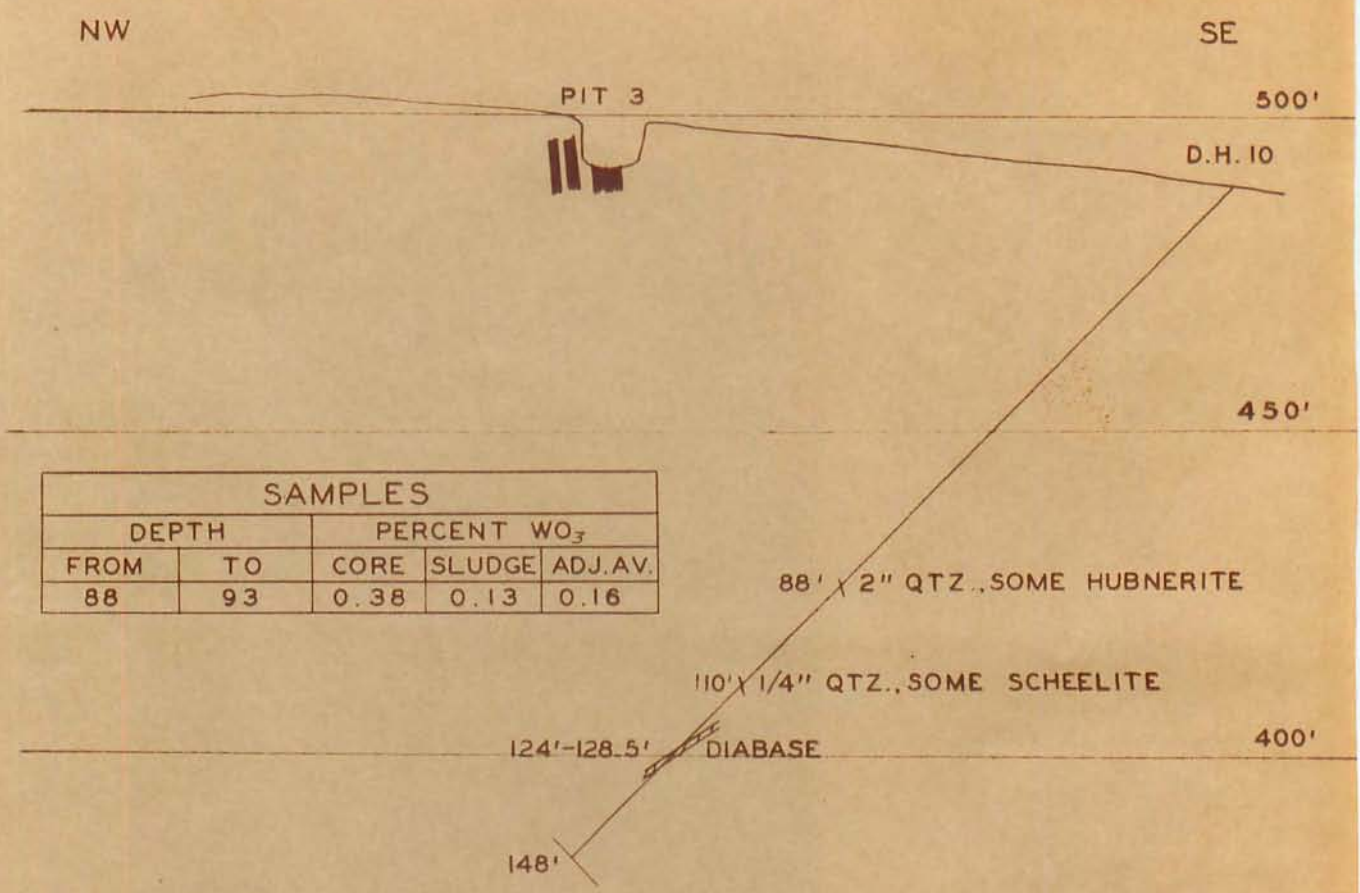
SECTION OF DRILL HOLE 8
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE AUG. 1943 PROJECT 753 FIG. NO. 23

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
88	93	0.38	0.13	0.16

ELEV. AT COLLAR: 489.1' – LEVEL DATUM ASSUMED
LOCATION: N 20,615 – E 20,476
BEARING: N 35° W

WALKER NO. 3 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

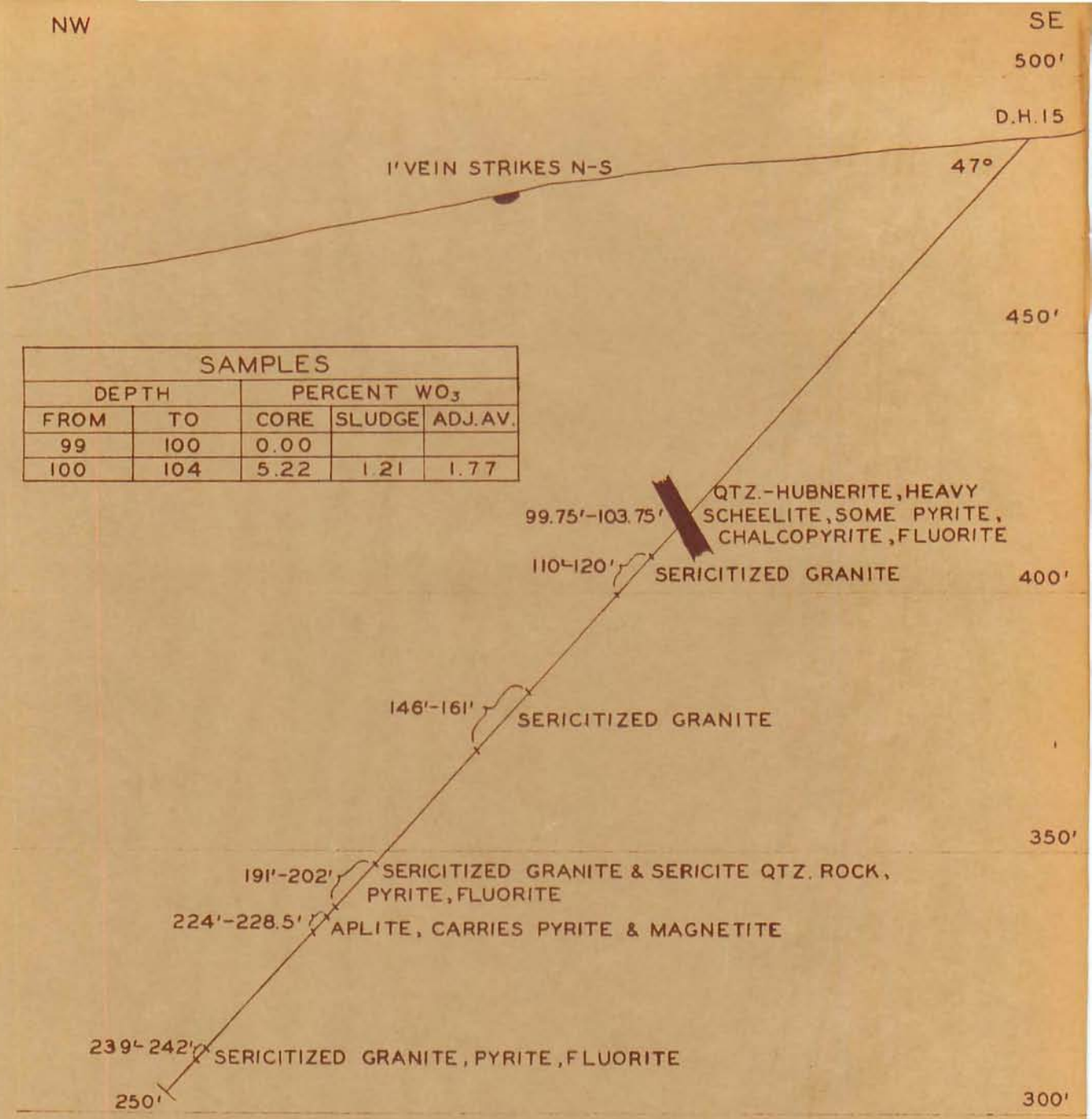
SECTION OF DRILL HOLE 10 HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE SEPT. 1943 PROJECT 753 FIG. NO. 24

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
99	100	0.00		
100	104	5.22	1.21	1.77

COUNTRY ROCK IS GRANITE GNEISS

ELEV. AT COLLAR: 488.5' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,111 - E 19,583
BEARING: N 40° W

WEST OF
WALKER NO. 3 VEIN
(WALKER NO. 3-A VEIN)

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

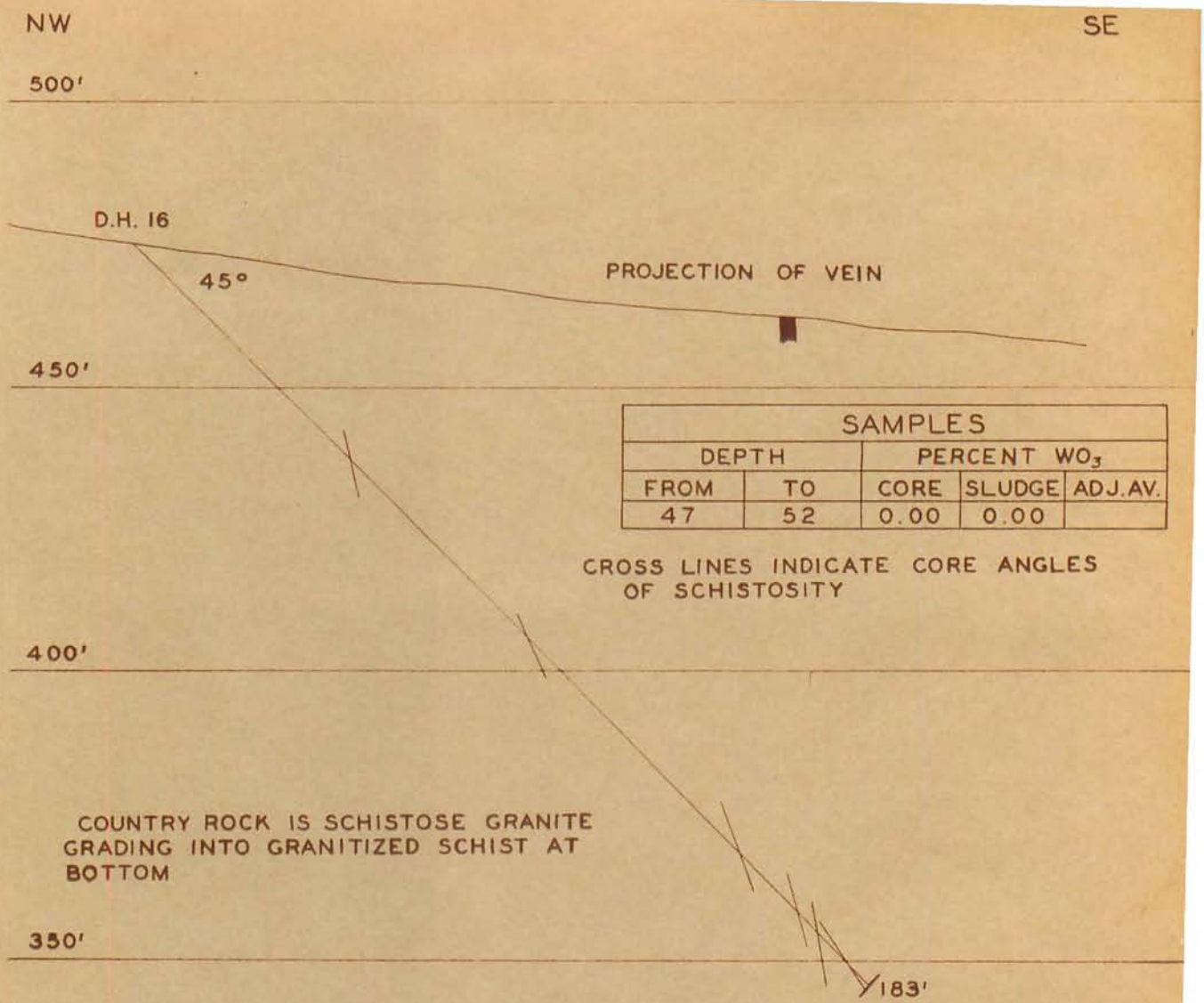
SECTION OF DRILL HOLE 15 HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE OCT. 1943 PROJECT 753 FIG. NO. 29

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV.
47	52	0.00	0.00	

CROSS LINES INDICATE CORE ANGLES OF SCHISTOSITY

ELEV. AT COLLAR: 475'-ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,288-E 20,352
BEARING: S 58° E

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

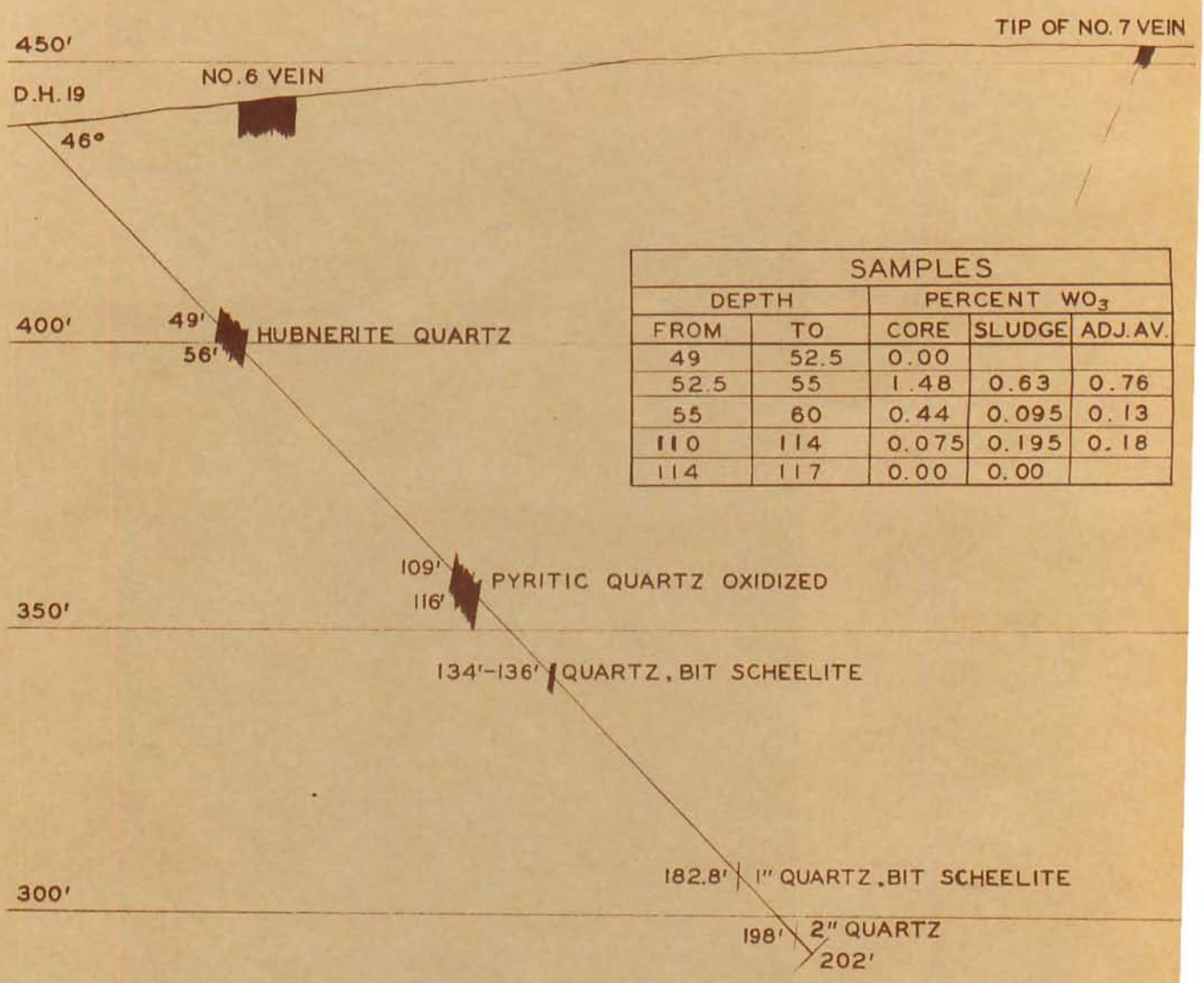
SECTION OF DRILL HOLE 16 HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT EN

DATE OCT. 1943 PROJECT 753 FIG. NO. 30

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
49	52.5	0.00		
52.5	55	1.48	0.63	0.76
55	60	0.44	0.095	0.13
110	114	0.075	0.195	0.18
114	117	0.00	0.00	

COUNTRY ROCKS ARE SERICITIC AND CHLORITIC SCHISTS

WALKER NO. 6 AND NO. 7 VEINS

ELEV. AT COLLAR: 438.7' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,163 - E 19,076
BEARING: S 14° 30' E

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 19
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE OCT. 1943 PROJECT 753 FIG. NO. 33

K & E CO., N. Y.

NW

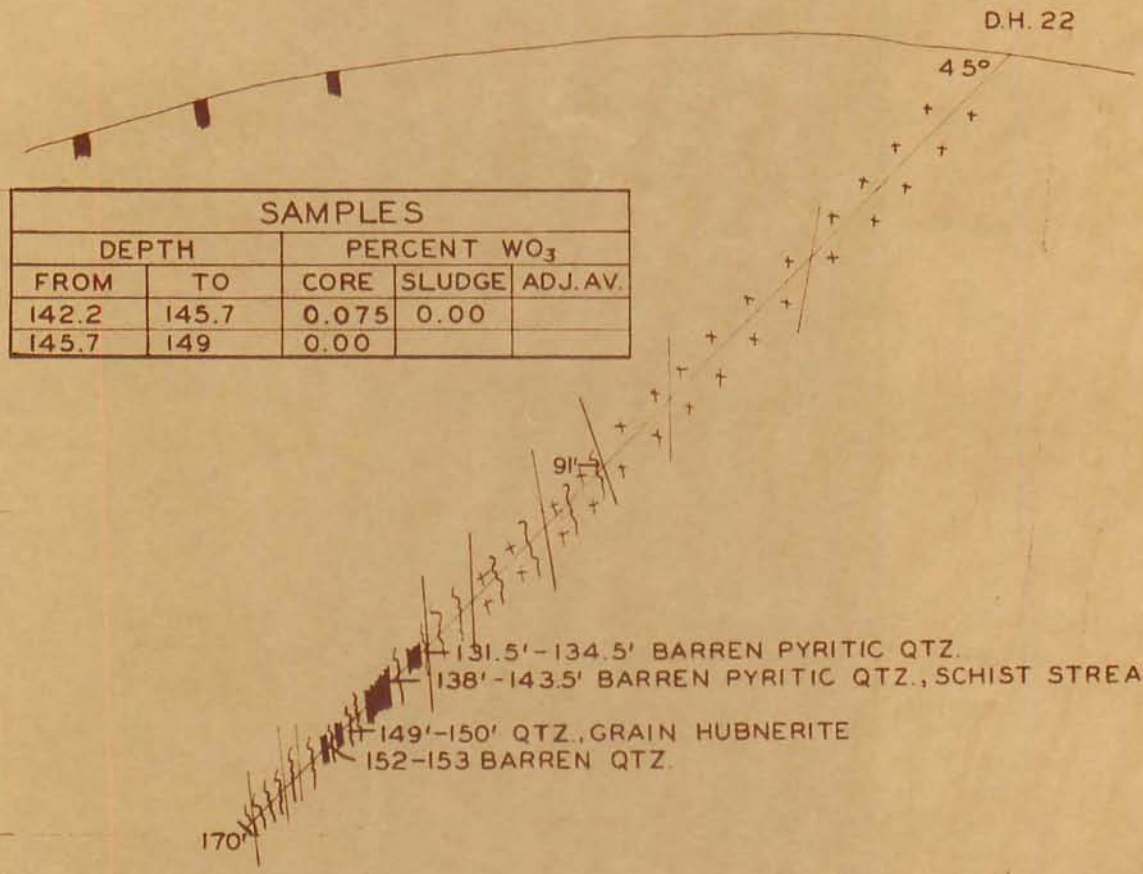
SE

400'

350'

300'

250'



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
142.2	145.7	0.075	0.00	
145.7	149	0.00		

ELEV. AT COLLAR: 371.0' - LEVEL DATUM ASSUMED
LOCATION: N 24,644 - E 24,408
BEARING: N 52° W

GRANITE GNEISS
SCHIST

WALKER NO. 12 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

SECTION OF DRILL HOLE 22
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

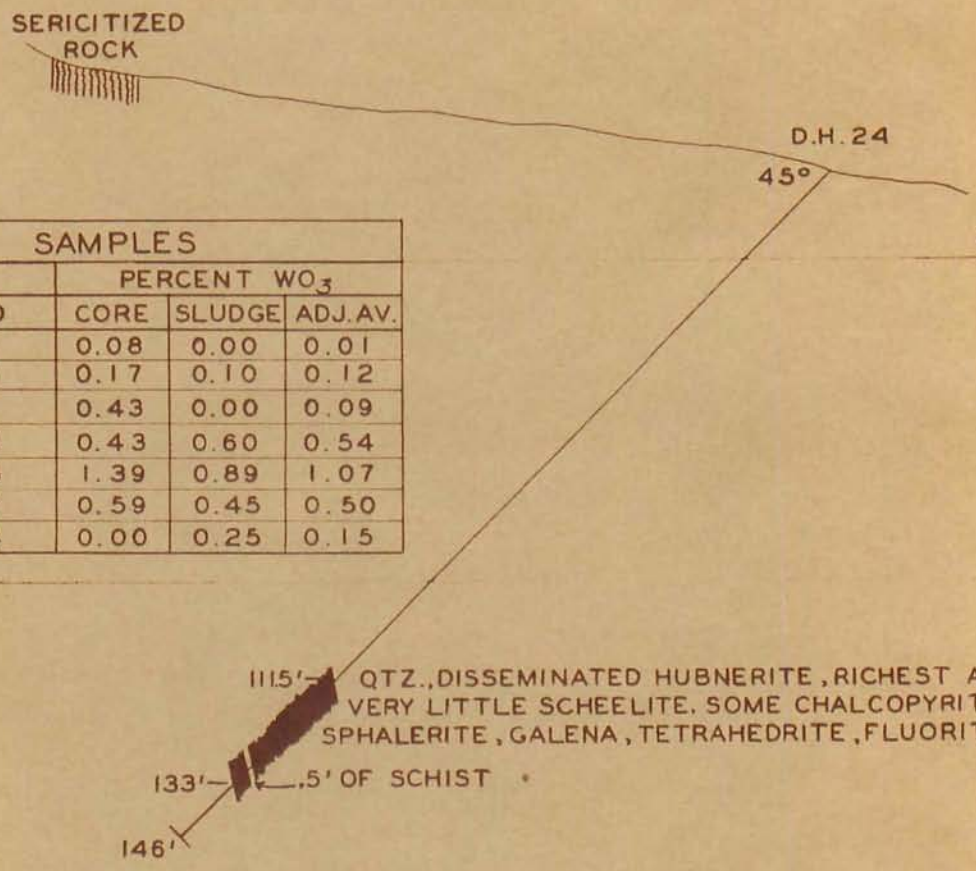
PROJ. ENG. DISTRICT ENG.

DATE OCT. 1943 PROJECT 753 FIG. NO. 36

K & E CO., N. Y.

NW SE

500'



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
111	116	0.08	0.00	0.01
116	118	0.17	0.10	0.12
118	121	0.43	0.00	0.09
121	123	0.43	0.60	0.54
123	126	1.39	0.89	1.07
126	129	0.59	0.45	0.50
129	134	0.00	0.25	0.15

COUNTRY ROCK IS GRANITE & SERICITIZED GRANITE, SOME SCHIST.

ELEV. AT COLLAR: 463.6' - LEVEL DATUM ASSUMED
LOCATION: N 19,821 – E 20,283
BEARING: N 50° W

WALKER NO. 2 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

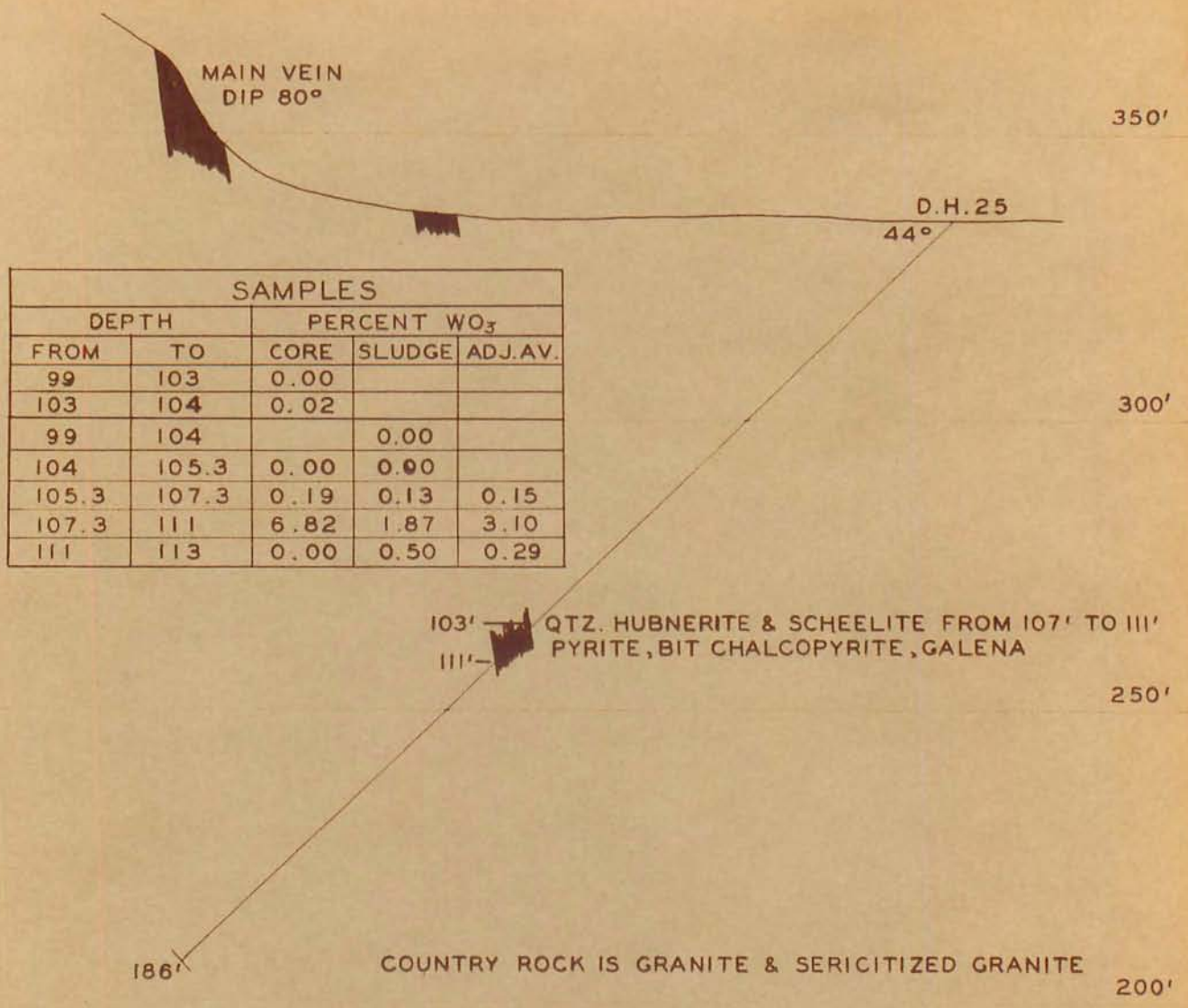
SECTION OF DRILL HOLE 24
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG

DATE OCT. 1943 PROJECT 753 FIG. NO. 38

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
99	103	0.00		
103	104	0.02		
99	104		0.00	
104	105.3	0.00	0.00	
105.3	107.3	0.19	0.13	0.15
107.3	111	6.82	1.87	3.10
111	113	0.00	0.50	0.29

ELEV. AT COLLAR: 335.3' – LEVEL DATUM ASSUMED
LOCATION: N 25,231 – E 23,255
BEARING: S 56° W

JAMIESON NO. 2 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

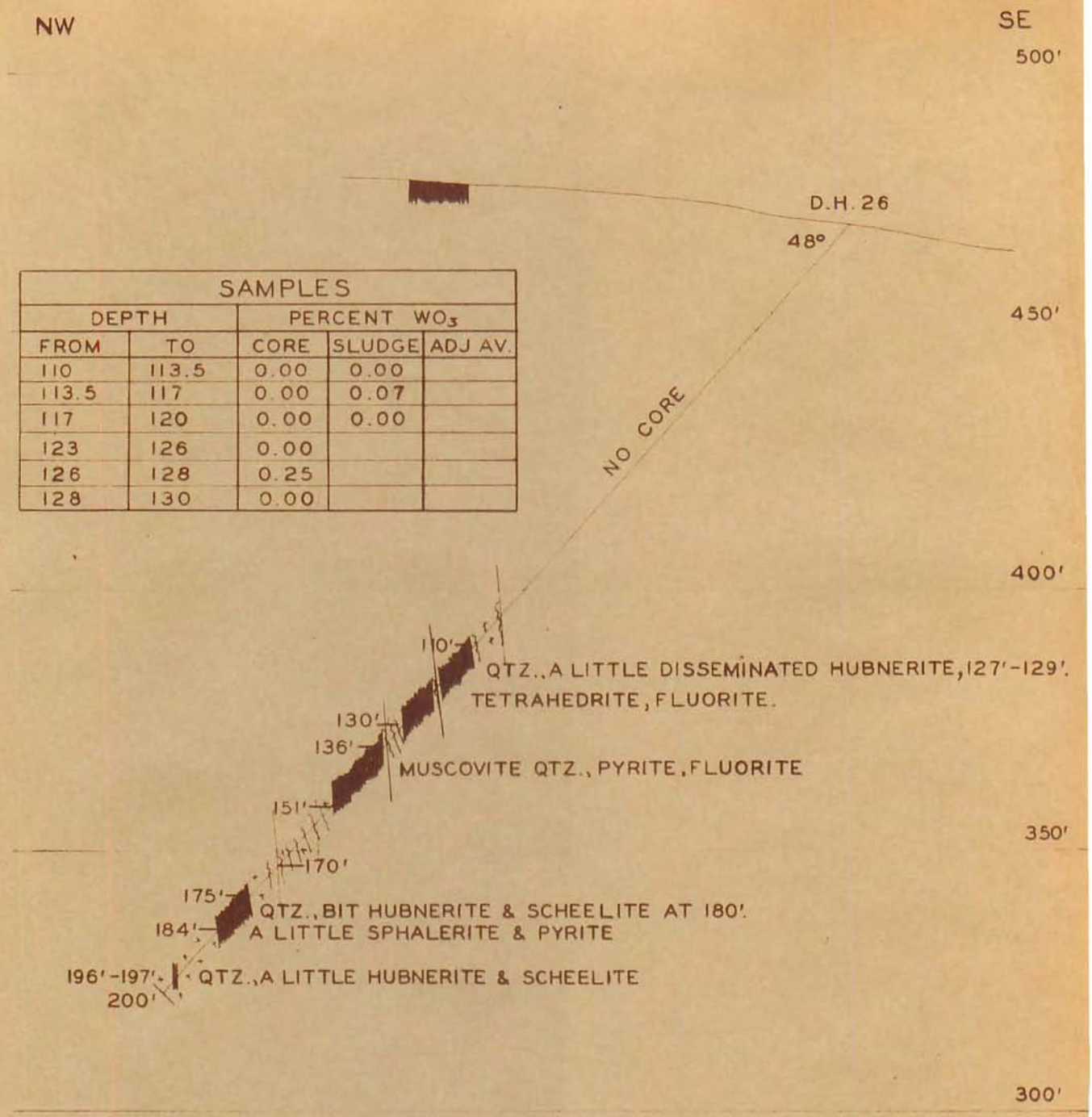
SECTION OF DRILL HOLE 25
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. DISTRICT ENG.

DATE OCT. 1943 PROJECT 753 FIG. NO. 39

K & E CO., N. Y.



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ AV.
110	113.5	0.00	0.00	
113.5	117	0.00	0.07	
117	120	0.00	0.00	
123	126	0.00		
126	128	0.25		
128	130	0.00		

ELEV. AT COLLAR: 470.9' — LEVEL DATUM ASSUMED
LOCATION: N 17,805 — E 18,886
BEARING: N 62° W

GRANITE GNEISS
SCHIST

SNEED NO. 1 VEIN

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

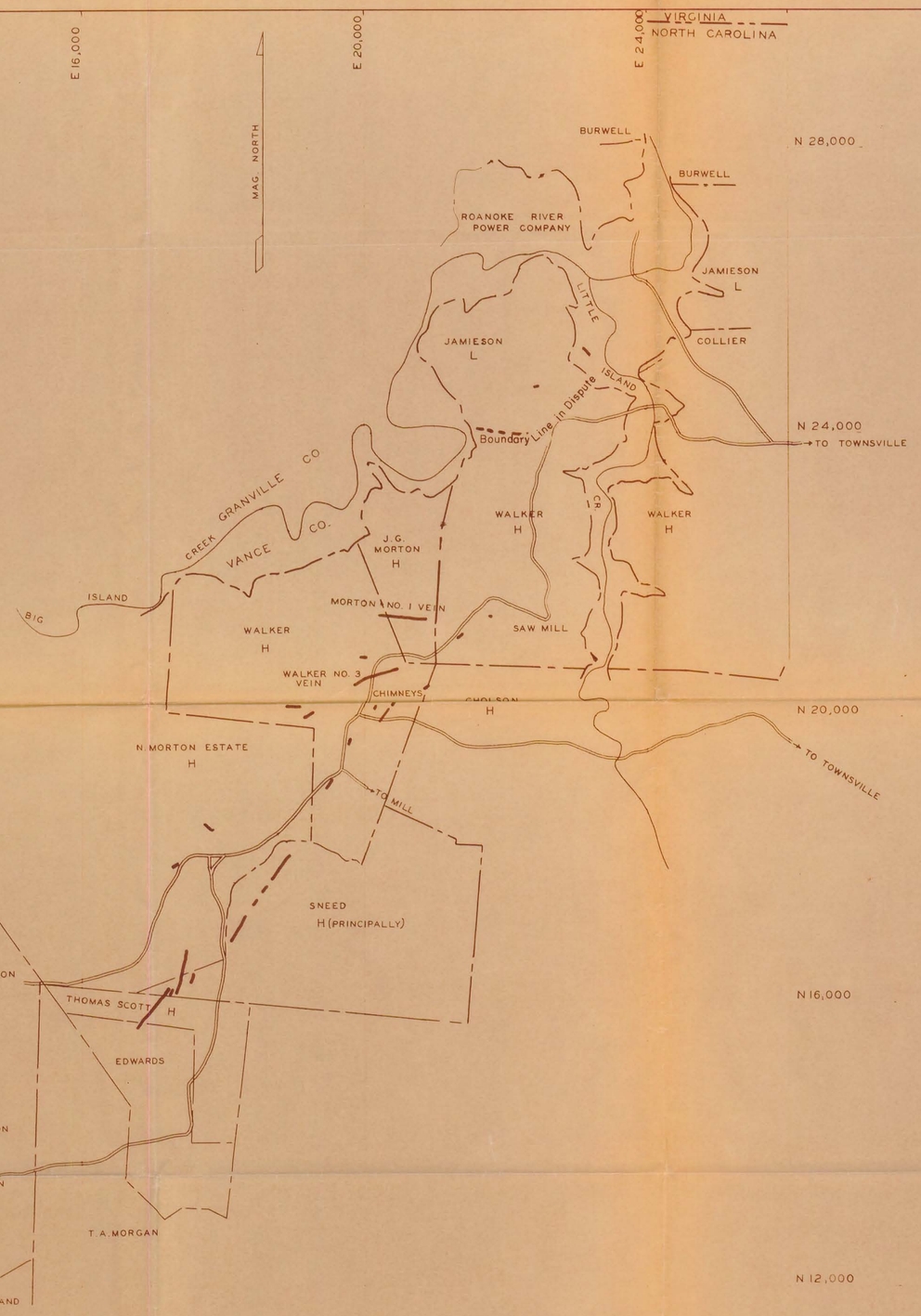
SECTION OF DRILL HOLE 26
HAMME TUNGSTEN PROSPECT

SCALE
0 30' 60'

PROJ. ENG. ..... DISTRICT ENG.

DATE NOV. 1943 PROJECT 753 FIG. NO. 40

K & E CO., N. Y.



H – MINERAL RIGHTS CONTROLLED BY HAILE MINING CO. – HAMME GROUP
L – MINERAL RIGHTS CONTROLLED BY LASSITER GROUP

SCALE
0 1000' 2000'

AUG. 1943

PROJECT 753
HAMME TUNGSTEN AREA
PROPERTY MAP WITH PRINCIPAL TUNGSTEN VEINS

FIG. NO. 2

PROJECT 753
HAMME TUNGSTEN AREA, VANCE COUNTY, NORTH CAROLINA
MAP OF SURFACE WORKINGS

SCALE
0 500' 1000'

US. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

FIG. NO. 3

SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
116	10	3.5	0.16
117	PIT 1	7.0	1.16
122	22	3.0	0.04
487	23	3.0	1.04
488	54	3.5	1.13

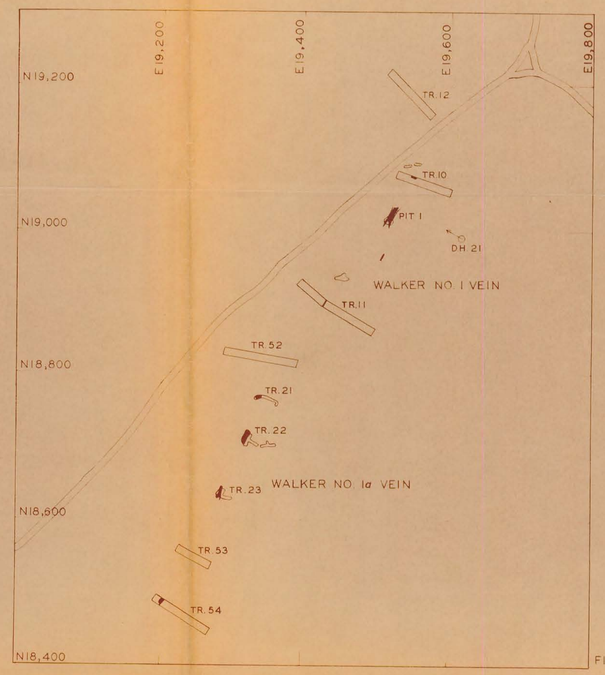


FIG 6-A

SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
105	18	4.5	0.10
115	6	4.0	0.24
541	123	6.5	0.71

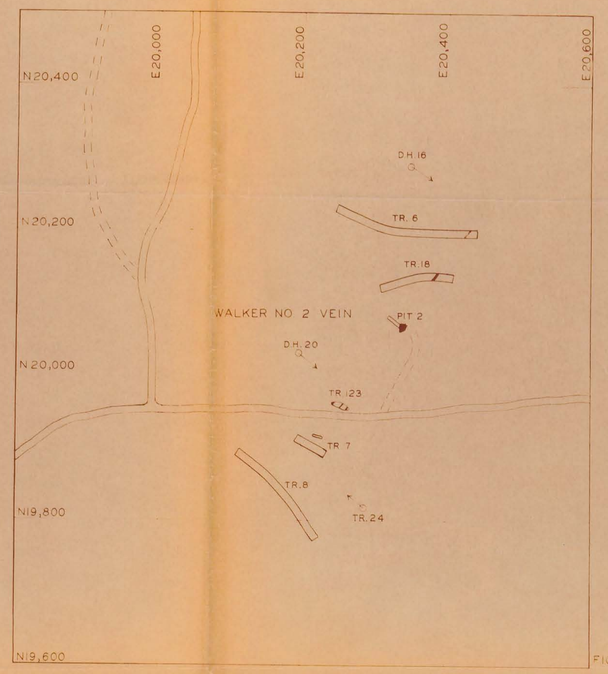


FIG. 6-B

SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
33	2	4.0	2.41
34	1	10.0	0.26
35	3	8.0	0.54
36	4	7.0	1.25
37	5	12.0	0.73

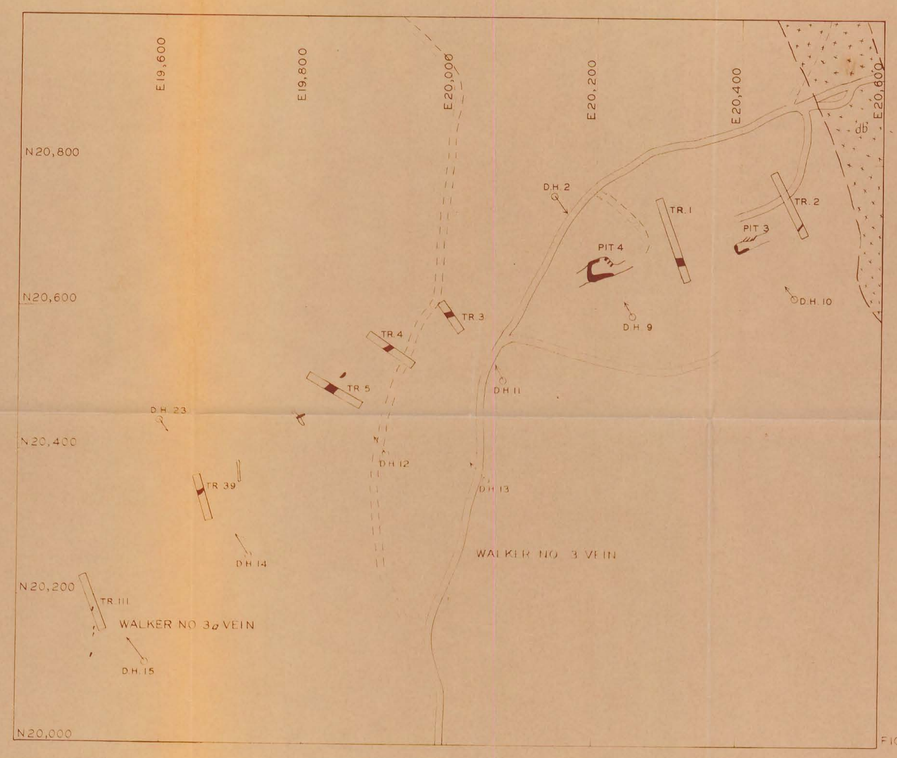


FIG. 6-C

SCALE
0 100 200

DIABASE

PROJECT 753: HAMME TUNGSTEN AREA, PLAN WITH TRENCH ASSAYS OF WALKER VEINS

FIG NO 6

SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
474	36	4.0	0.95
478	37	4.0	0.87
477	38	6.0	0.23

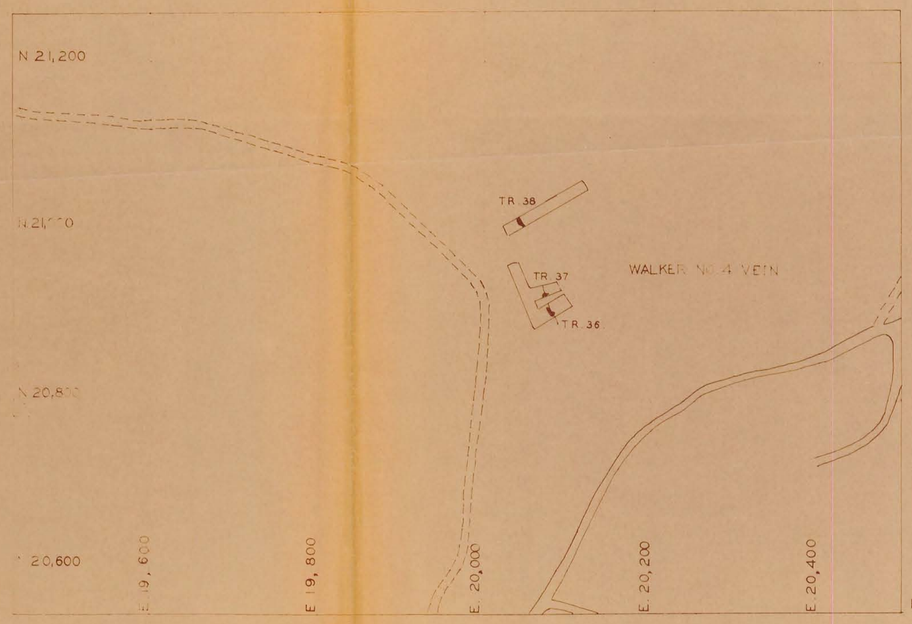


FIG. NO. 7-A

SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
483	42		0.15
486	43	2.0	0.53
485	44	5.	0.27
103	16	8.0	0.53
484	40	3.0	1.58

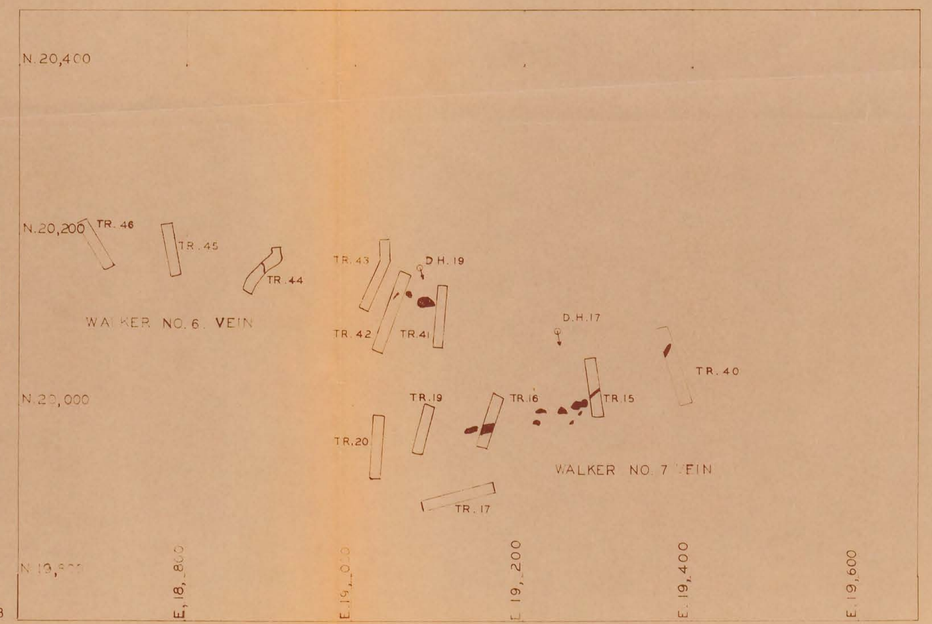


FIG. NO. 7-B

SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
118		8.0	0.85
489	50	4.0	0.05
102	4	3 & 4	0.20

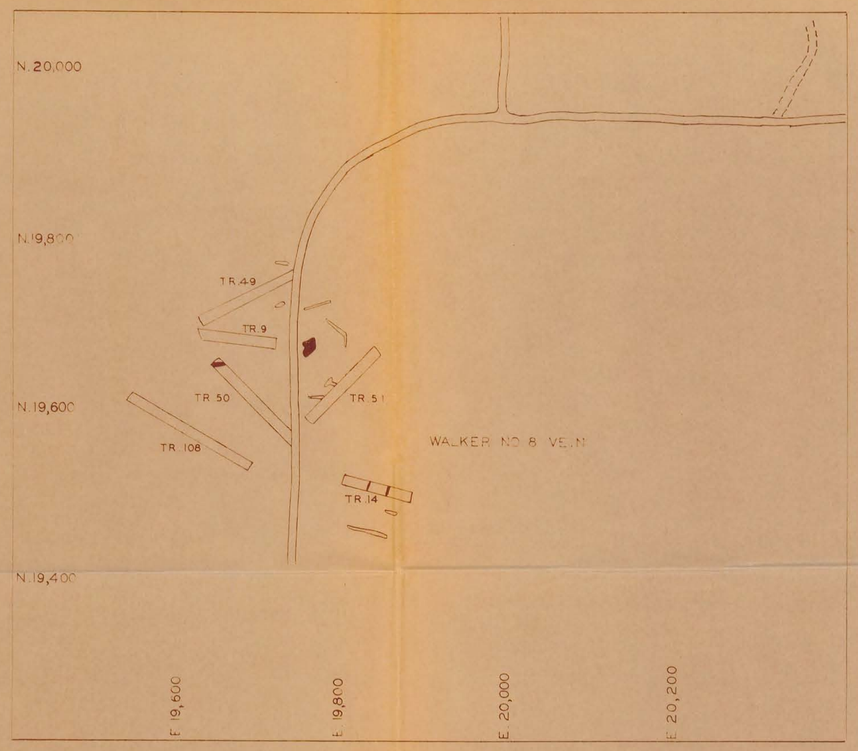


FIG. NO. 7-C

PROJECT 753 : HAMME TUNGSTEN AREA : PLAN WITH TRENCH ASSAYS OF WALKER VEINS

FIG. NO. 7

SAMPLES			
NO	TRENCH	WIDTH	%WO₃
542	139	3.5	0.44
476	47	1.5	0.01

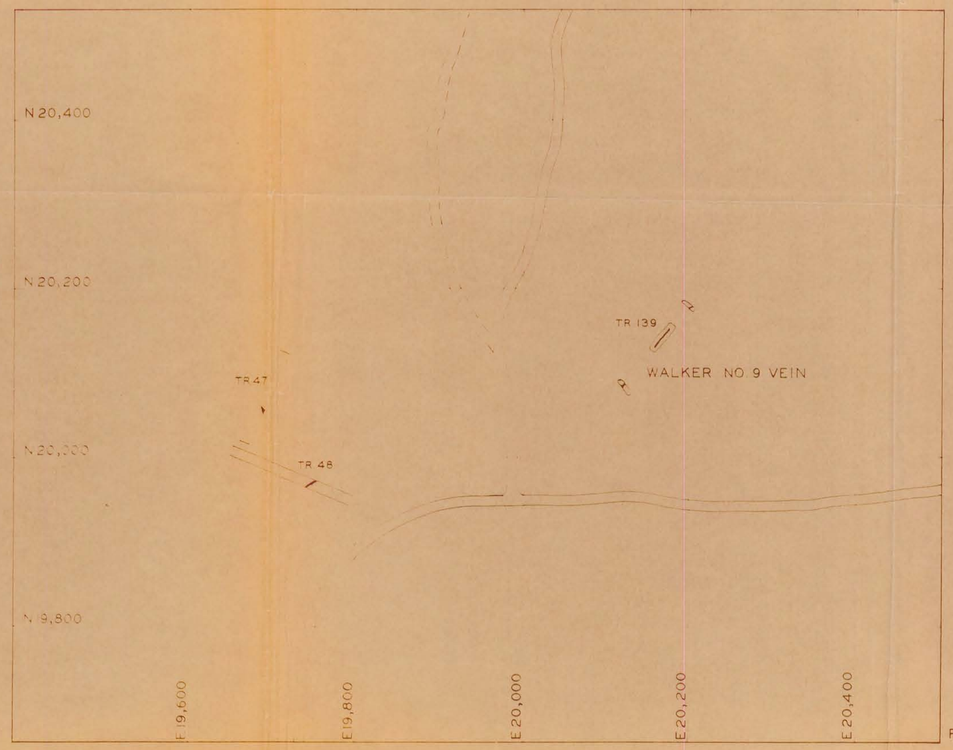


FIG. 8-A

SAMPLES			
NO	TRENCH	WIDTH	%WO₃
482	30	1.5	0.84
481	35	1.5	0.72

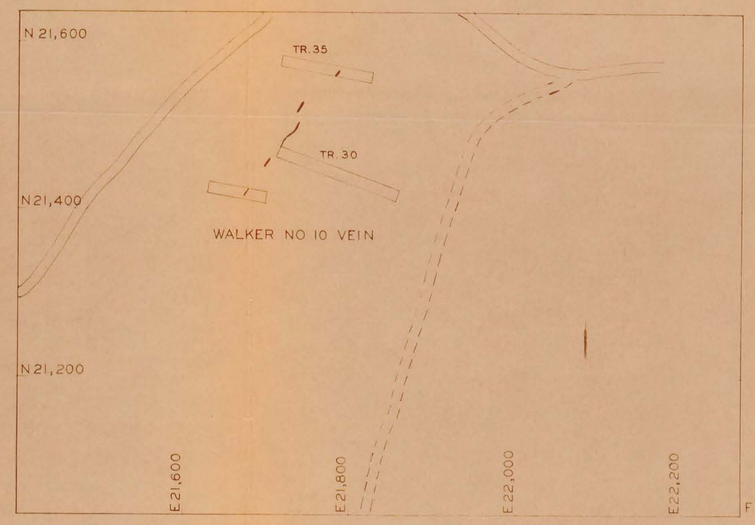


FIG 8-B

SAMPLES			
NO	TRENCH	WIDTH	%WO₃
480	31	3.5	0.16
479	32	3.0	1.66
475	33	1.5	0.20

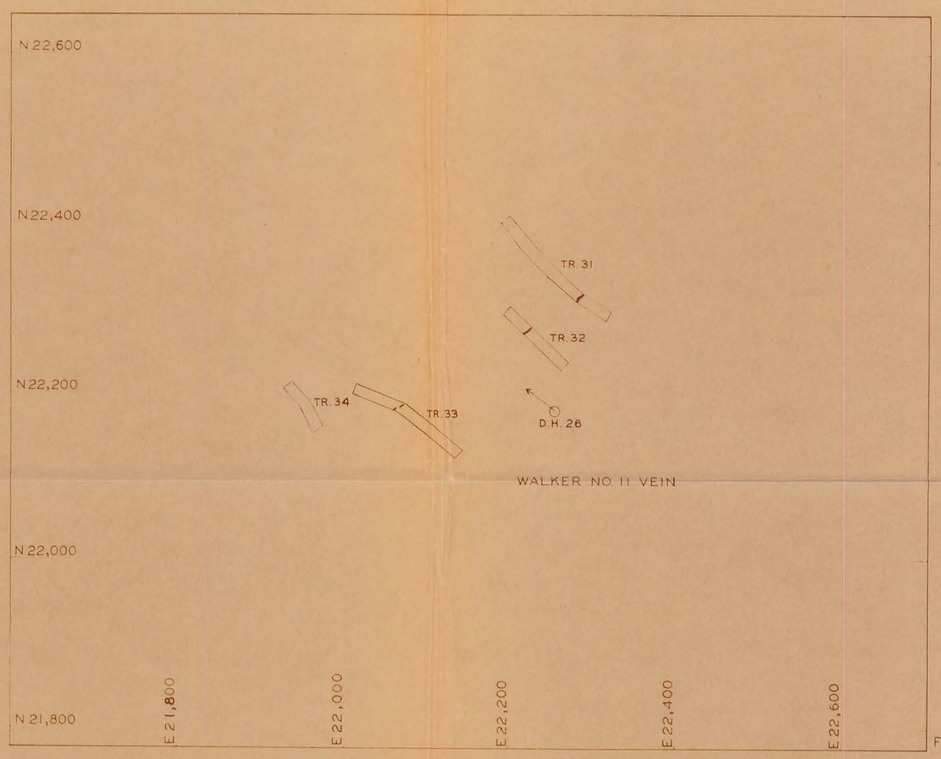


FIG. 8-C

SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
539	132	3.0	2.20
540	133	3.5&2.5	0.00

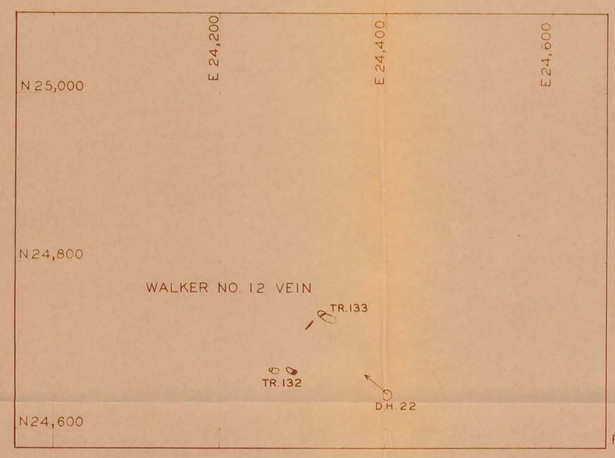


FIG. 8-D

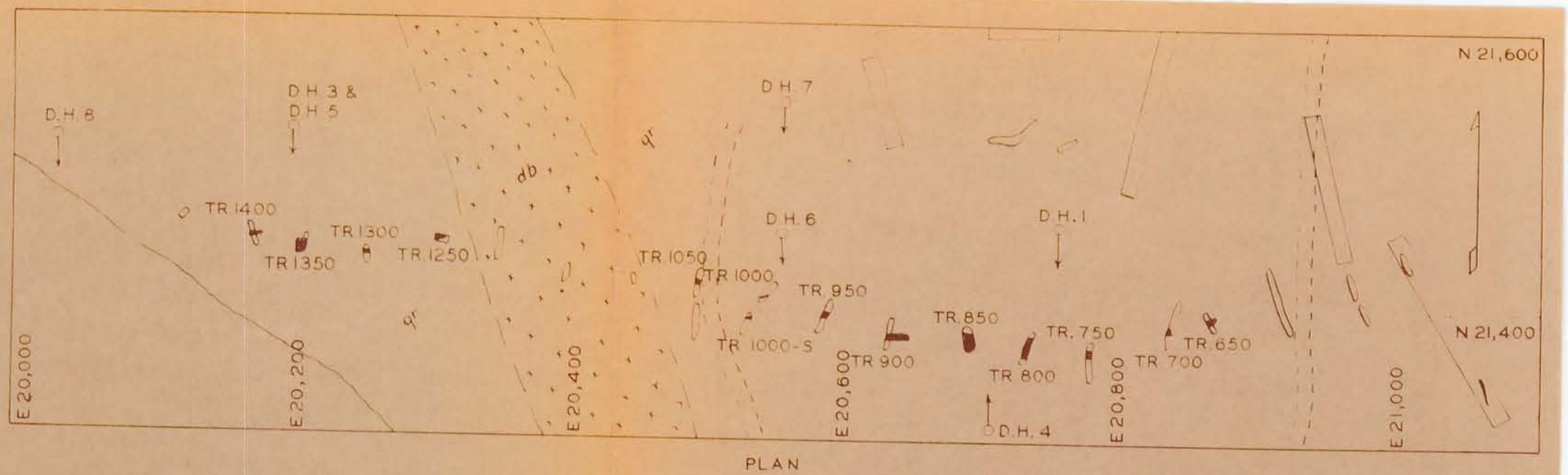
MAGNETIC NORTH

SCALE
0 100' 200'

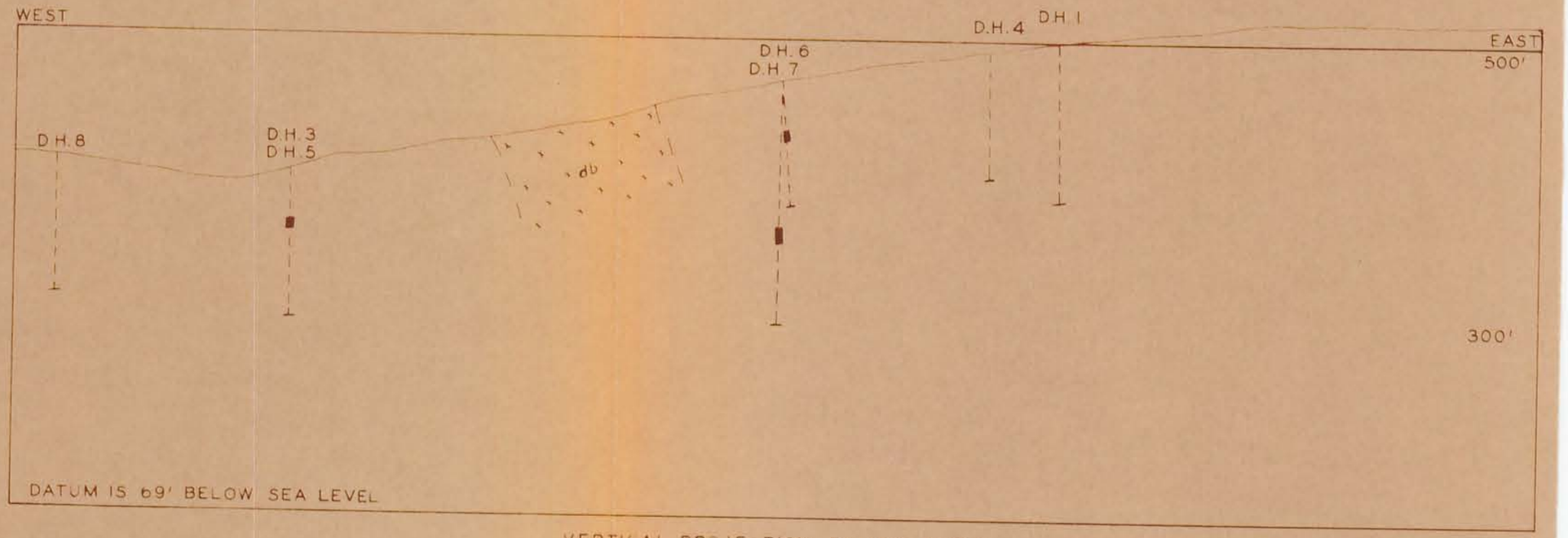
PROJECT 753 : HAMME TUNGSTEN AREA ; PLAN WITH TRENCH ASSAYS OF WALKER VEINS

FIG. NO. 8

SAMPLES			
NO	TRENCH	WIDTH	$\%WO_3$
113	1400	4.0	1.07
106	1350	11.0	2.48
107	1300	5.0	0.89
108	1250	3.5	0.34
31	1050	1.5	0.01
109	1000	3.0	0.28
32	1000-S	3.5	0.01
112	950	3.5	0.3
110	900	4.0	1.15
111	850	11.0	1.52
120	800	16.0	0.49
4	750	4.0	0.40
25	700	1.5	5.84
114	650	4.0	0.40



PLAN



VERTICAL PROJECTION FACING NORTH

qr GRANITE GNEISS

db DIABASE

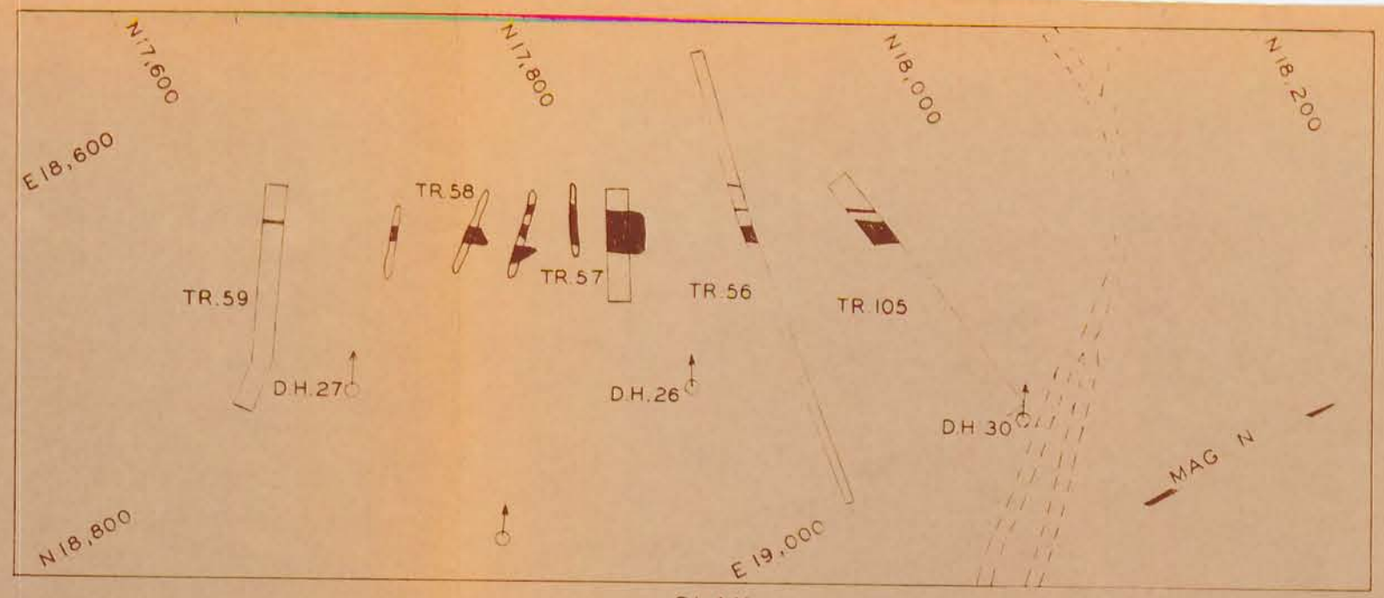
SCALE
0 100' 200'

PROJECT 753: HAMME TUNGSTEN AREA

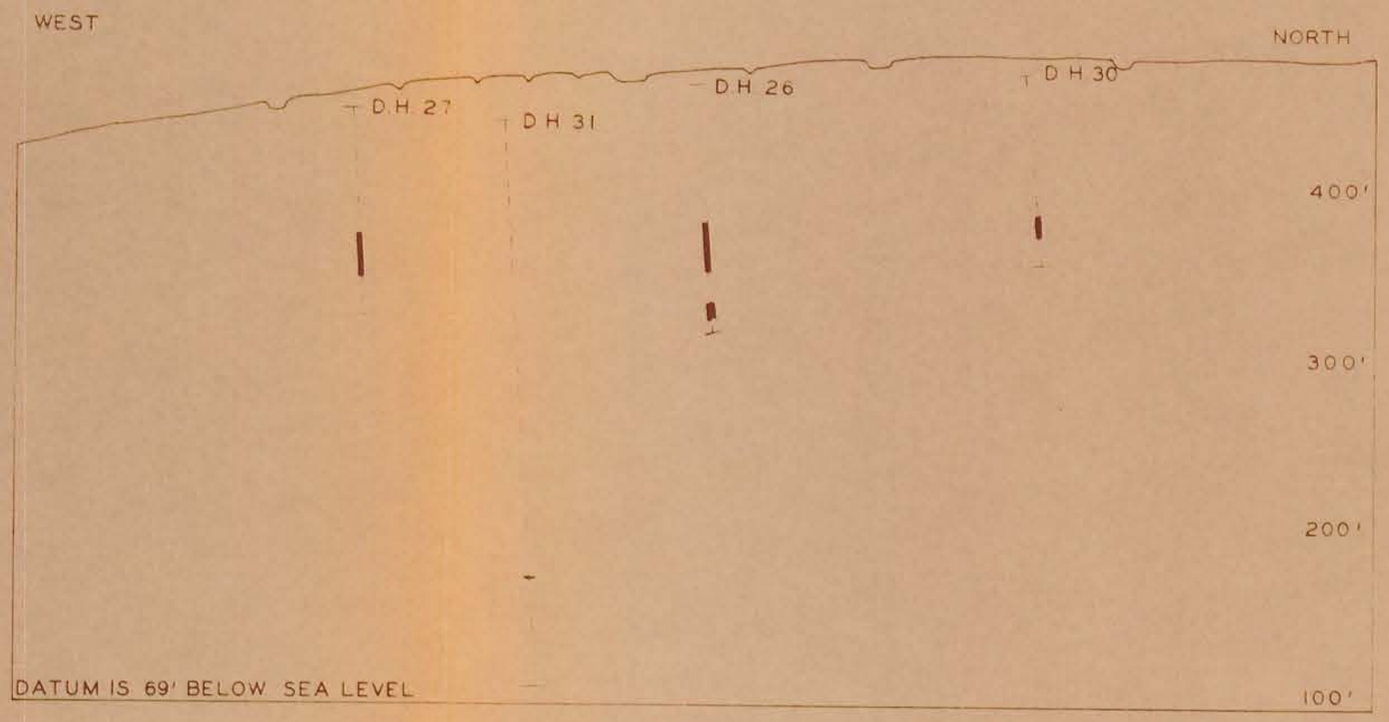
PLAN WITH TRENCH ASSAYS AND LONGITUDINAL SECTION OF MORTON NO. 1 VEIN

FIG. NO. 9

SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
502	56	7.0'	0.33
495	57	4.0'	0.78
494	58	8.5'	0.33
500	59	3.0'	1.87



PLAN



VERTICAL PROJECTION FACING N59°W

SCALE
0 100' 200'

AFTER U.S.G.S.

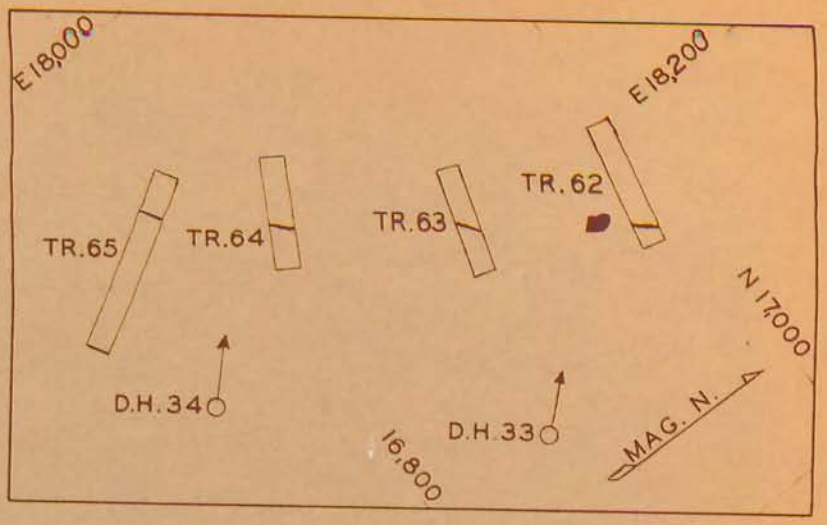
PROJECT 753: HAMME TUNGSTEN AREA

PLAN WITH TRENCH ASSAYS AND LONGITUDINAL SECTION OF SNEED NO. 1 VEIN

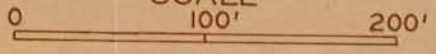
U.S DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

FIG. NO. 10

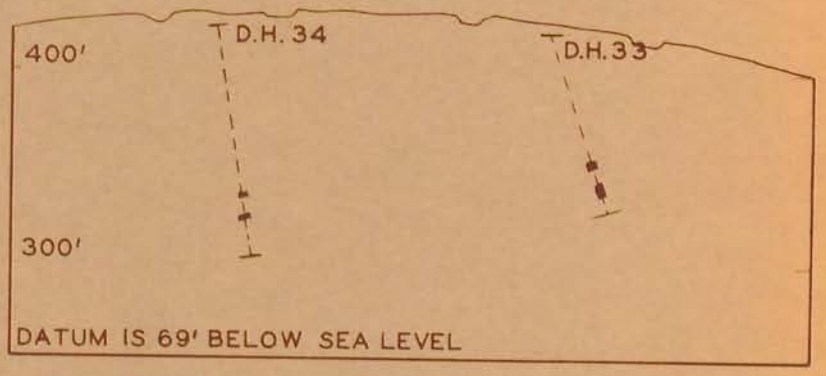
SAMPLES			
NO.	TRENCH	WIDTH	%WO_3
514	62	2.5	0.67
501	63	11.9	0.52
527	64	7.0	0.12
533	65	3.0	0.69



PLAN



AFTER U.S.G.S.



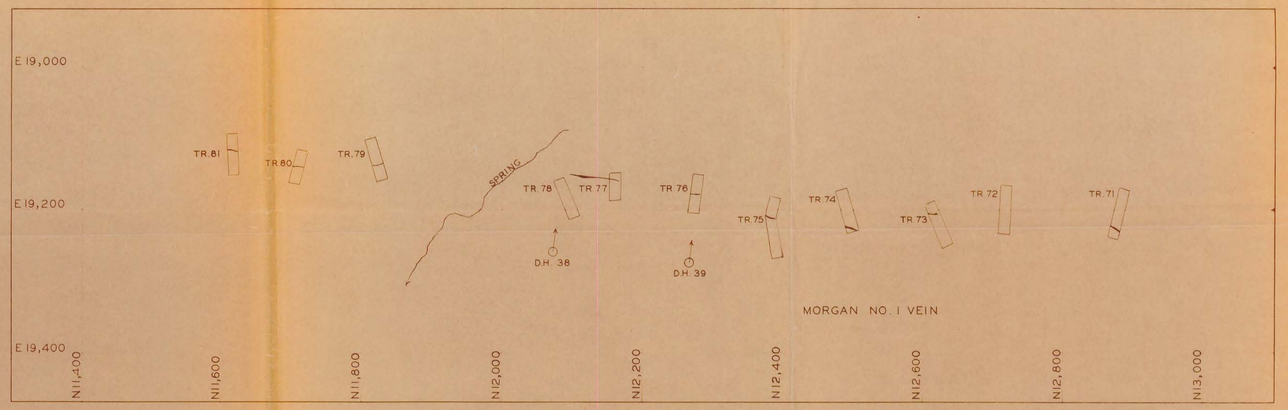
LONGITUDINAL PROJECTION FACING N51°W

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

PROJECT 753: HAMME TUNGSTEN AREA

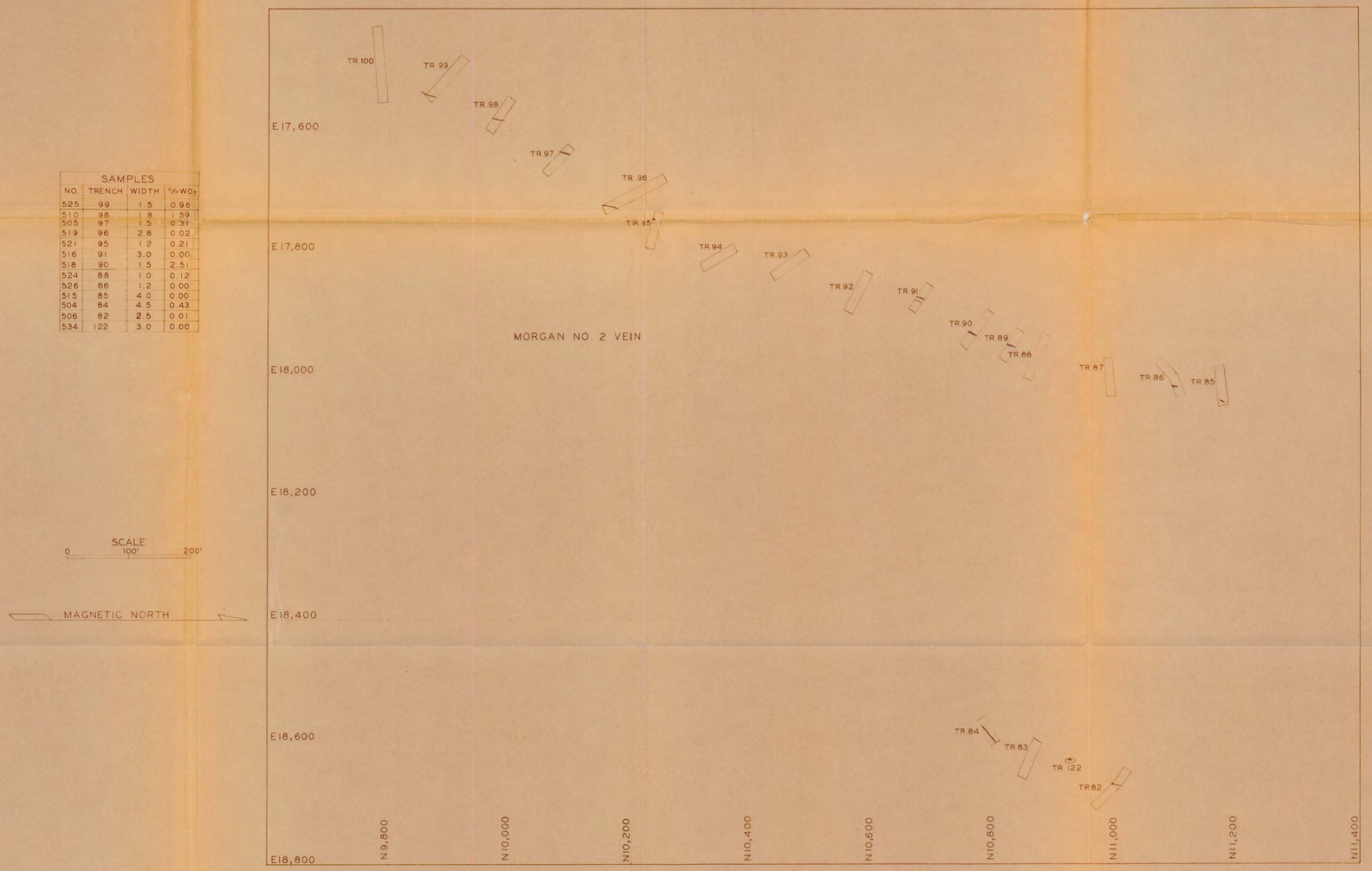
PLAN WITH TRENCH ASSAYS AND LONGITUDINAL SECTION OF SNEED NO. 2 VEIN

FIG. NO. 11



SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
503	81	2.8	0.03
517	80	3	0.03
512	79	1.5	0.07
509	78	3	0.10
513	77	6	0.70
511	76	3.5	0.08
508	75	4	0.01
520	74	2	0.17
523	73	2.5	0.08
522	71	2	0.94

FIG. NO. 14-A



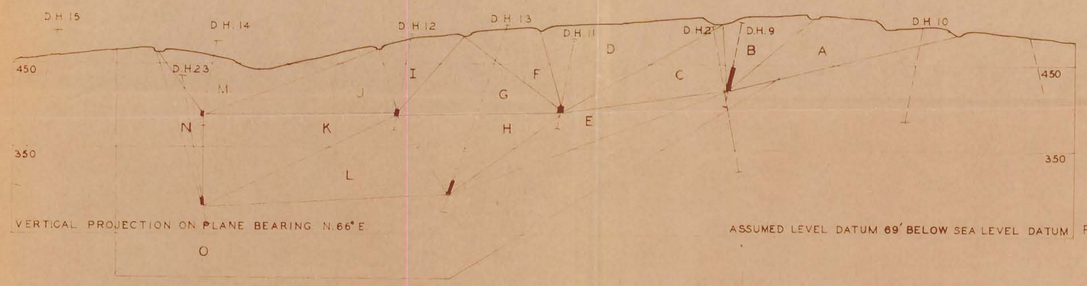
SAMPLES			
NO.	TRENCH	WIDTH	%WO₃
525	99	1.5	0.96
510	98	1.8	1.59
505	97	1.5	0.31
519	96	2.8	0.02
521	95	1.2	0.21
516	91	3.0	0.00
518	90	1.5	2.51
524	88	1.0	0.12
526	86	1.2	0.00
515	85	4.0	0.00
504	84	4.5	0.43
506	82	2.5	0.01
534	122	3.0	0.00

SCALE
0 100' 200'

MAGNETIC NORTH

FIG. NO. 14-B

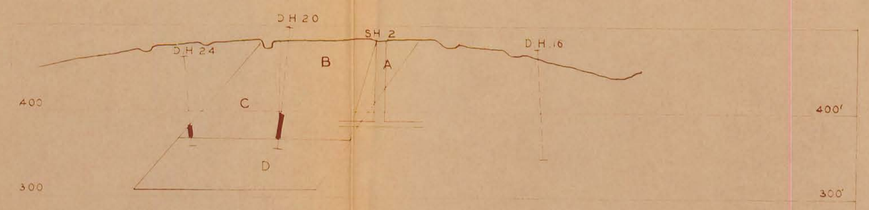
PROJECT 753: HAMME TUNGSTEN AREA; PLAN WITH TRENCH ASSAYS OF MORGAN VEINS



VERTICAL PROJECTION ON PLANE BEARING N.66°E

ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM FIG. 17-A

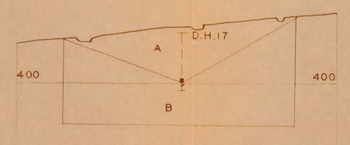
WALKER NO.3 VEIN



VERTICAL PROJECTION ON PLANE BEARING N. 3°E.

ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL FIG. 17-B

WALKER NO. 2 VEIN



DATUM 69' BELOW SEA LEVEL

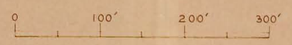
VERTICAL PROJECTION ON PLANE BEARING N.70°E FIG. 17-C

WALKER NO. 7 VEIN

PROJECT 753: HAMME TUNGSTEN AREA

WALKER VEINS NOS. 2, 3, & 7.

LONGITUDINAL SECTIONS SHOWING ORE BLOCKS



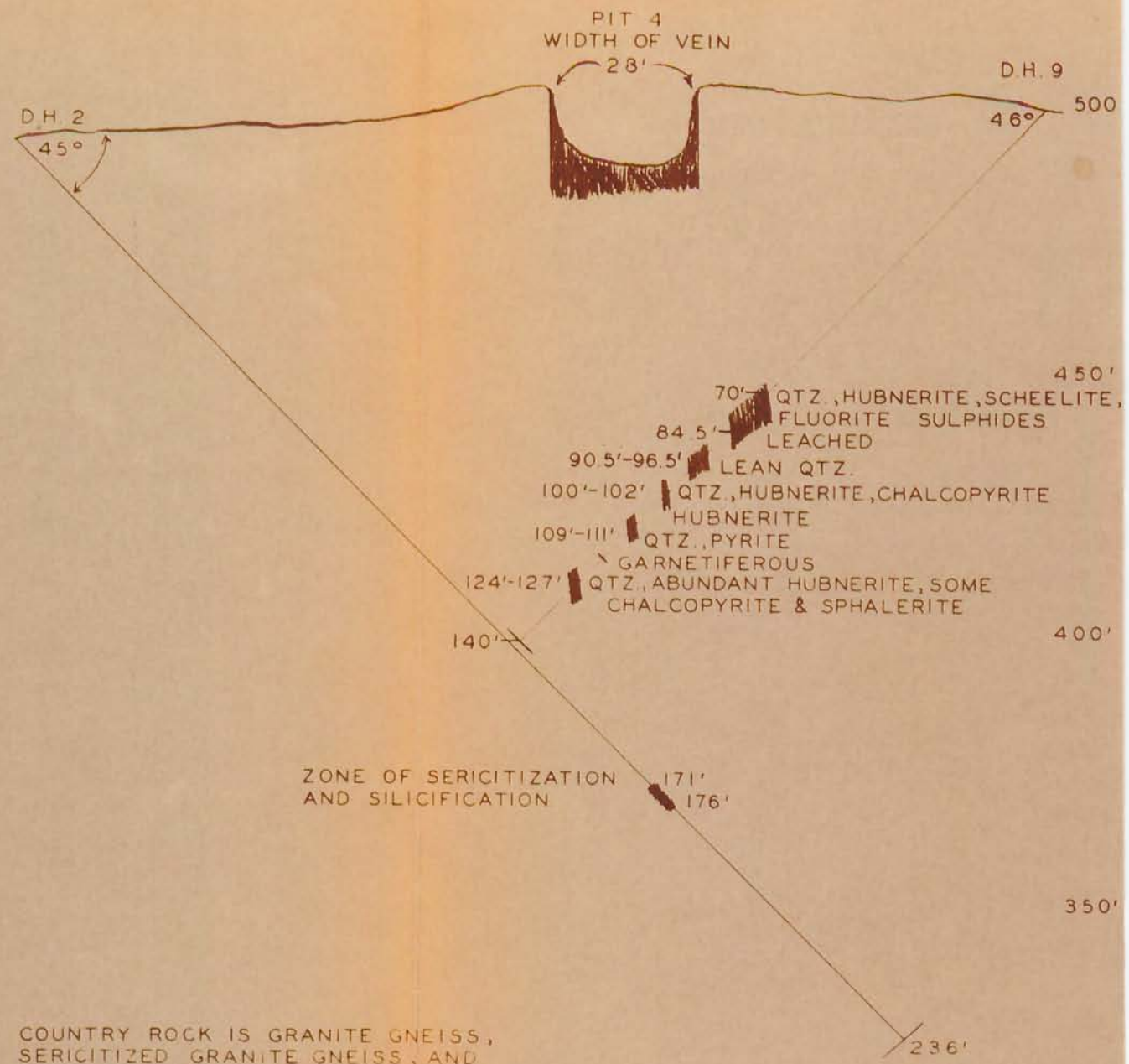
SCALE

FIG. NO. 17

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV
DRILL HOLE 2				
173	176	0 06		
DRILL HOLE 9				
70	73.5	0 00		
73.5	75	0 00		
70	75		0.00	
75	79	0.31	0.16	0.23
79	83	0.67	0.60	0.62
83	84	2 49		2 05
84	87	0.00		
83	87		0.42	
87	90	0 00		
90	92	0.00		
87	92		0.12	
92	96	0 00	0.06	
96	97	0.10	0.00	
97	100	0 00		
100	102	0.00		
97	102		0.00	
102	105.4	0.00		
105.4	106	0 00		
102	106		0.00	
106	110	0.00	0.08	
110	111	0 00		
111	114	0.00	0.00	
119	123	0.00	0.00	
123	124.5	0.00		
124.5	126	1.51		
123	126		0.57	0.61
126	130	0.00	0.06	

SCALE
0 30' 60'

PROJECT 753



COUNTRY ROCK IS GRANITE GNEISS, SERICITIZED GRANITE GNEISS, AND SOME CHLORITE SCHIST

	DRILL HOLE 2	DRILL HOLE 9
ELEVATION:	494 5'	500.7'
LOCATION:	N 20,755 E 20,143	N 20,591 E 20,253
BEARING:	N 34° E	N 34° W

ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM

WALKER NO 3 VEIN

SECTION OF DRILL HOLES 2 AND 9, HAMME TUNGSTEN PROSPECT

FIG. NO. 20

NORTH

SOUTH

450'

400'

74'
82'
QTZ. VEIN WITH MINOR HUBNERITE
SCHEELITE, CHALCOPYRITE, GALENA, FLUORITE;
DIP ABOUT 71° N., 6' CORE RECOVERED

350'

960' 1" QTZ, FLUORITE, GRAIN SPHALERITE, & GALENA

300'

129'

168'

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
DRILL HOLE 3				
75	77.5	0.02		
77.5	81.5	1.16		
81.5	85	0.02		
79	85		0.30	
DRILL HOLE 5				
71	76	0.03		
76	81	0.03		
86	91	0.03		
96	101	0.05		

SCALE

0 30' 60'

PROJECT 753

COUNTRY ROCKS ARE GRANITE GNEISS, SERICITIC QTZ., & CHLORITE SCHIST

ELEV. AT COLLAR 419.5' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 21,520 - E 20,202
BEARING: SOUTH

MORTON NO. 1 VEIN

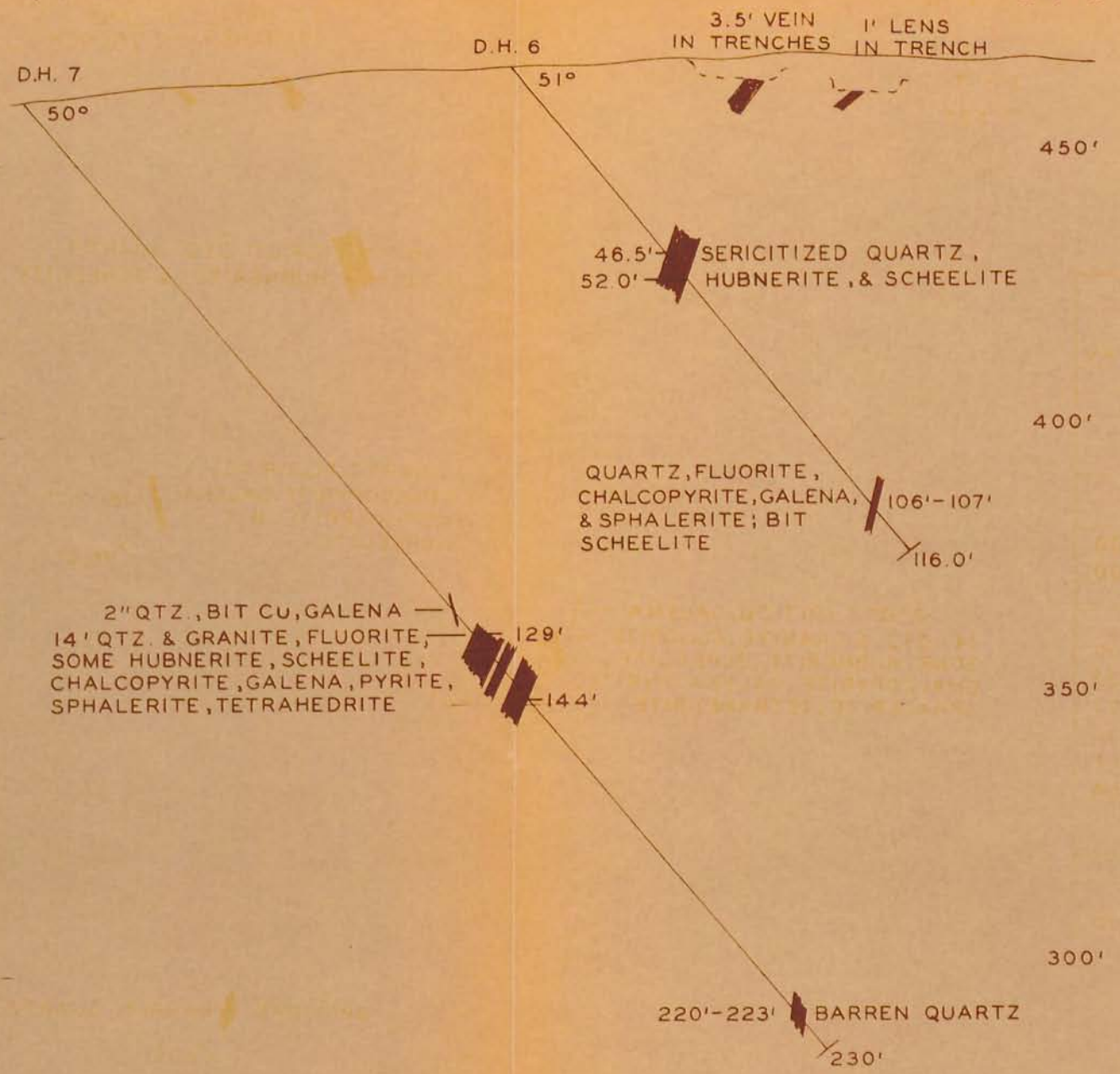
SECTION OF DRILL HOLES 3 AND 5, HAMME TUNGSTEN PROSPECT

FIG. NO. 21

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
DRILL HOLE 6				
45	50	0.93	0.47	
50	53.5	0.03		
100	105		0.00	
105	110	0.03	0.00	
DRILL HOLE 7				
120	125	0.00	0.00	0.00
125	130		0.00	0.00
125	129	0.00		
129	130	0.00		
130	130.8	0.00	0.00	0.00
130.8	134	1.69	1.20	1.33
134	137	0.05	0.00	0.01
137	140	0.00	0.00	0.00
140	142	0.30	0.03	0.11
142	144	0.75	0.45	0.54
144	146	0.00		
219	223		0.00	
219	219.8	0.00		
219.8	223	0.00		
223	227	0.00	0.00	0.00

SCALE

0 30' 60'



PROJECT 753

COUNTRY ROCKS ARE GRANITE, CHLORITE SCHIST, QUARTZ SERICITE ROCK, AND SERICITIZED GRANITE.

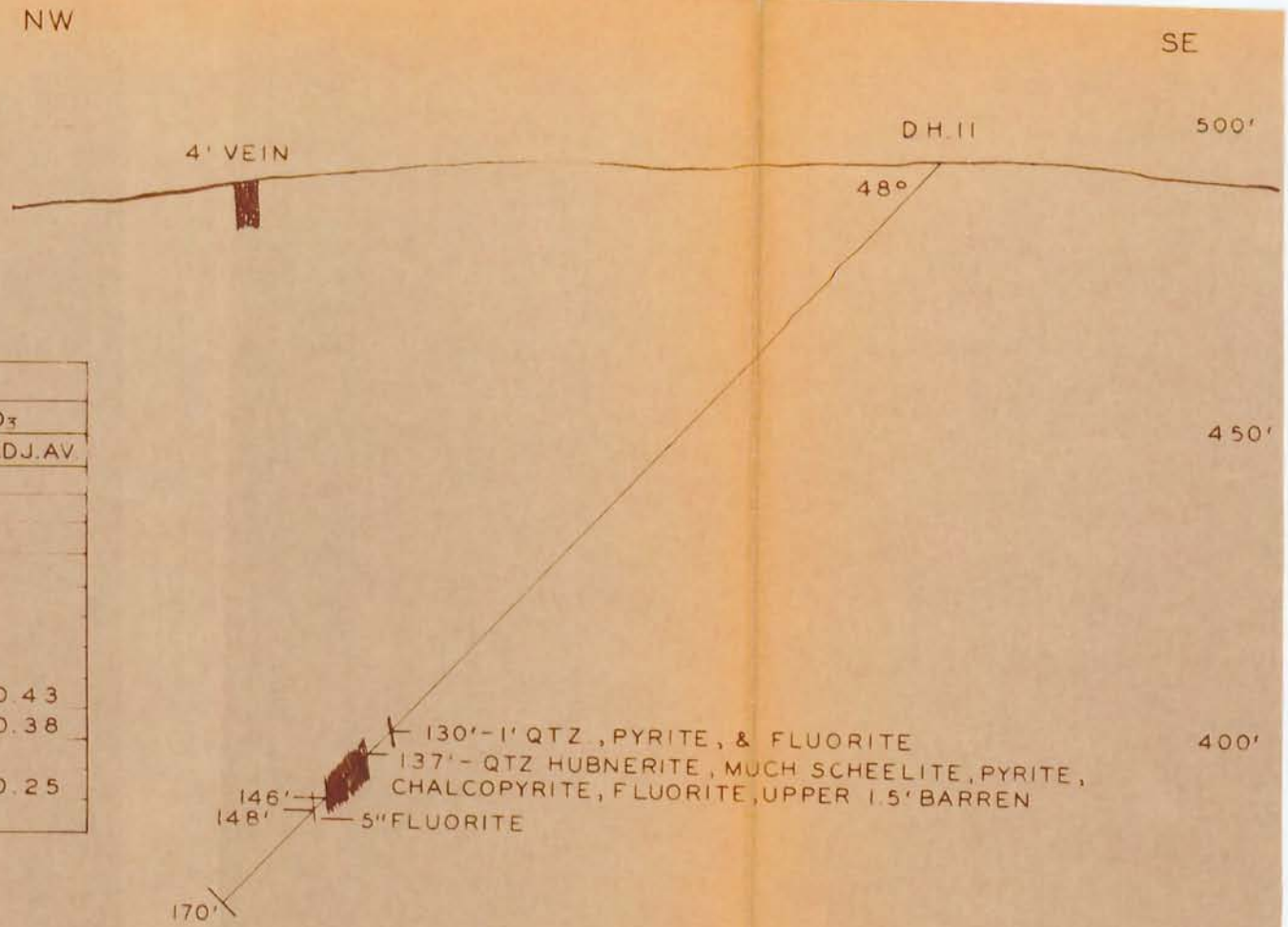
	DRILL HOLE 7	DRILL HOLE 6
ELEVATION:	461.0'	468.6'
LOCATION:	N 21,563	N 21,449
	E 20,563	E 20,562
BEARING:	SOUTH	S 4° E

ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM

MORTON NO. 1 VEIN

SECTION OF DRILL HOLES 6 AND 7, HAMME TUNGSTEN PROSPECT

FIG. NO. 22



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV.
129	130.5	0.02		
130.5	134	0.02		
129	134		0.01	
134	136.5	0.03		
136.5	139	0.05		
134	139		0.00	
139	140	0.02	0.02	
140	144	0.60	0.35	0.43
144	146	0.55		0.38
146	147	0.00		
144	147		0.19	0.25
147	151	0.00	0.00	

SCALE
0 30' 60'

PROJECT 753

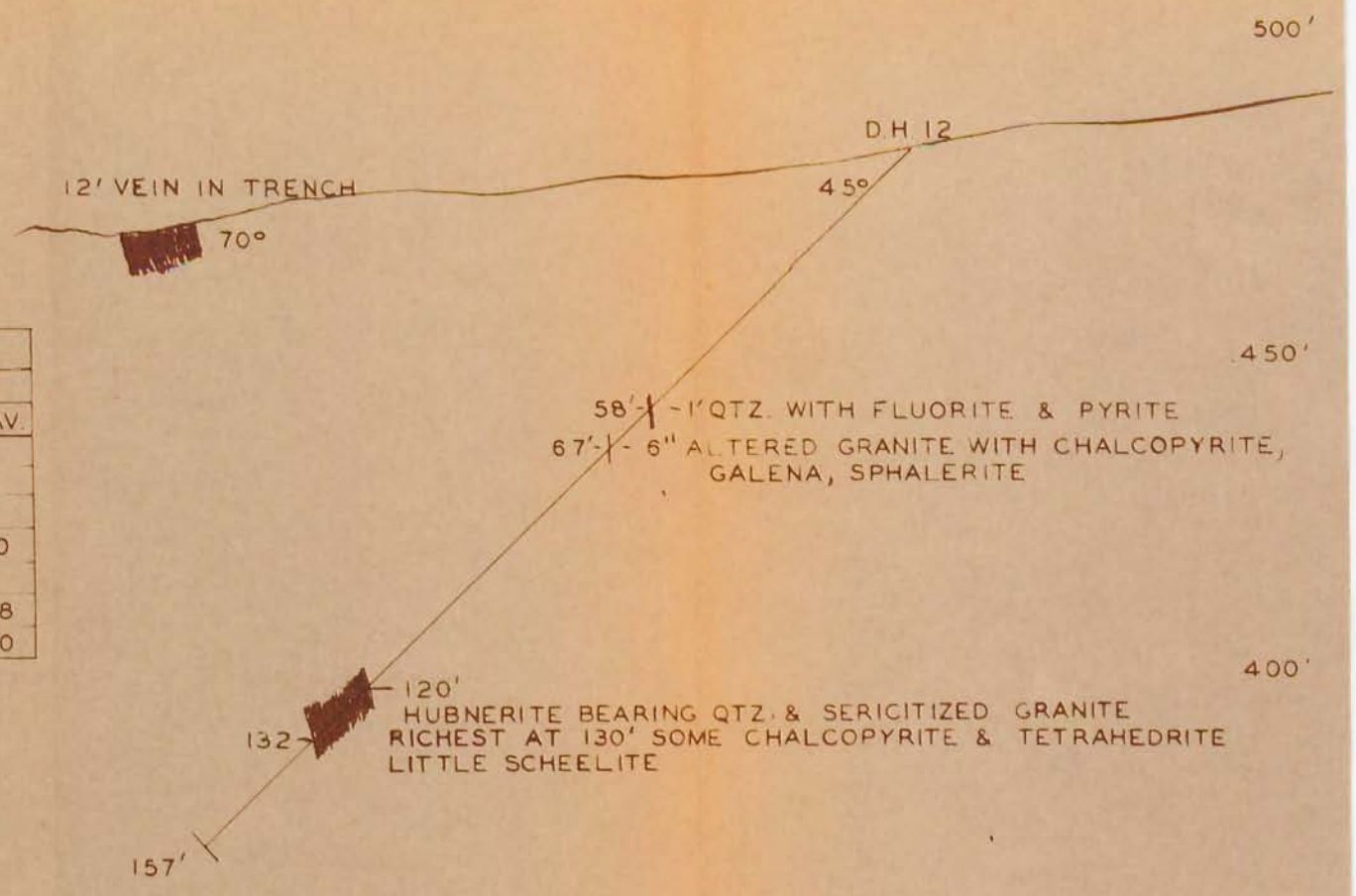
ELEV AT COLLAR 497' - ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,499 - E 20,073
BEARING: N 32° W

WALKER NO. 3 VEIN

SECTION OF DRILL HOLE 11, HAMME TUNGSTEN PROSPECT

FIG. NO. 25

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
57.5	58	0.00		
67	68.5	0.00		
115	120	0.00	0.00	
120	125	0.53	0.83	0.80
125	128	0.00	0.00	
128	130.2	1.52	0.20	0.38
130.2	132.2	0.65	0.71	0.70



SCALE
0 30' 60'

ELEV AT COLLAR 484' – ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,399 - E 19,912
BEARING N 36° W

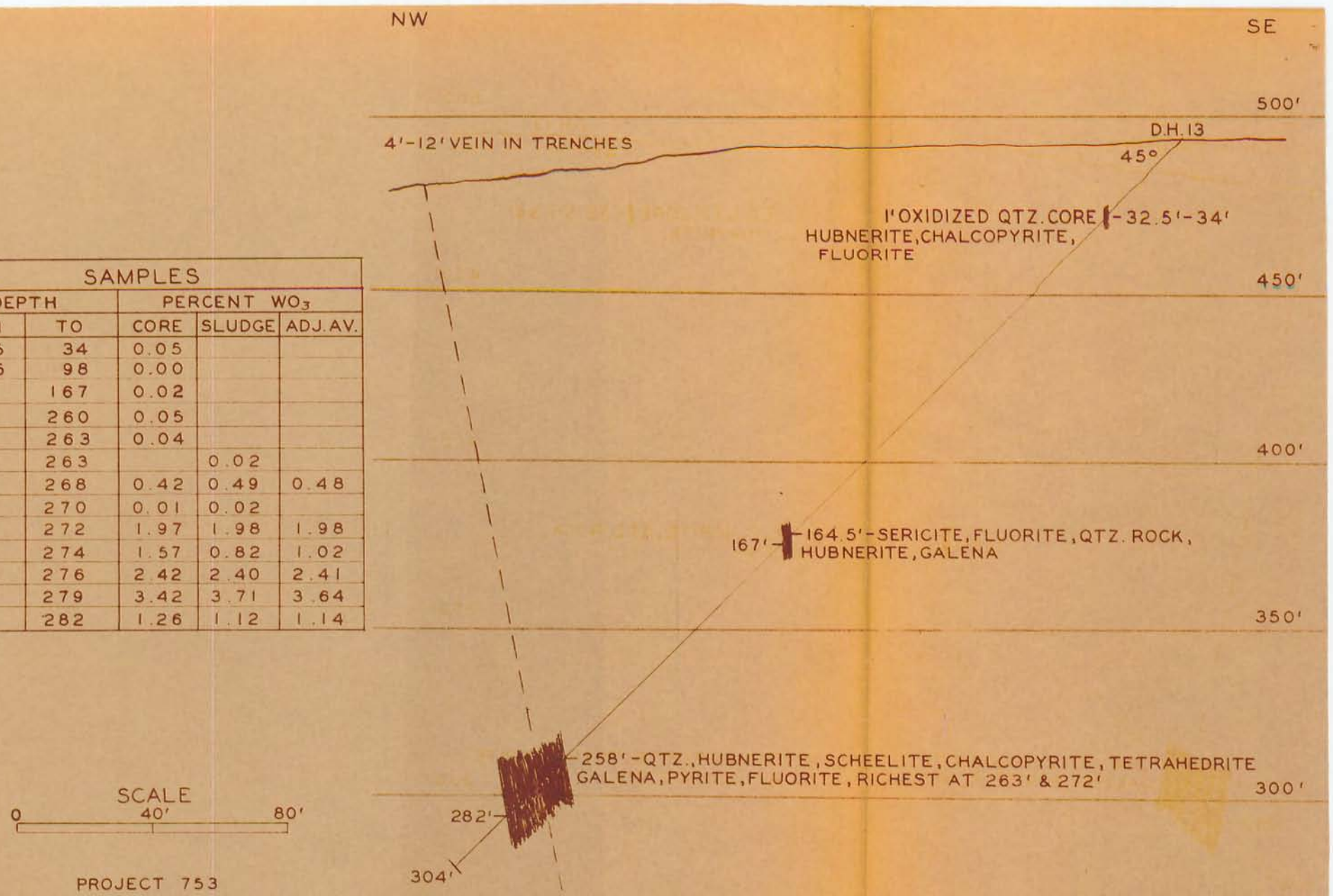
PROJECT 753

WALKER NO. 3 VEIN

SECTION OF DRILL HOLE 12, HAMME TUNGSTEN PROSPECT

FIG. NO. 26

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
32.5	34	0.05		
97.5	98	0.00		
164	167	0.02		
258	260	0.05		
260	263	0.04		
258	263		0.02	
263	268	0.42	0.49	0.48
268	270	0.01	0.02	
270	272	1.97	1.98	1.98
272	274	1.57	0.82	1.02
274	276	2.42	2.40	2.41
276	279	3.42	3.71	3.64
279	282	1.26	1.12	1.14



SCALE
0 40' 80'

PROJECT 753

ELEV. AT COLLAR: 494'— ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,363 - E 20,051
BEARING: N 43° W

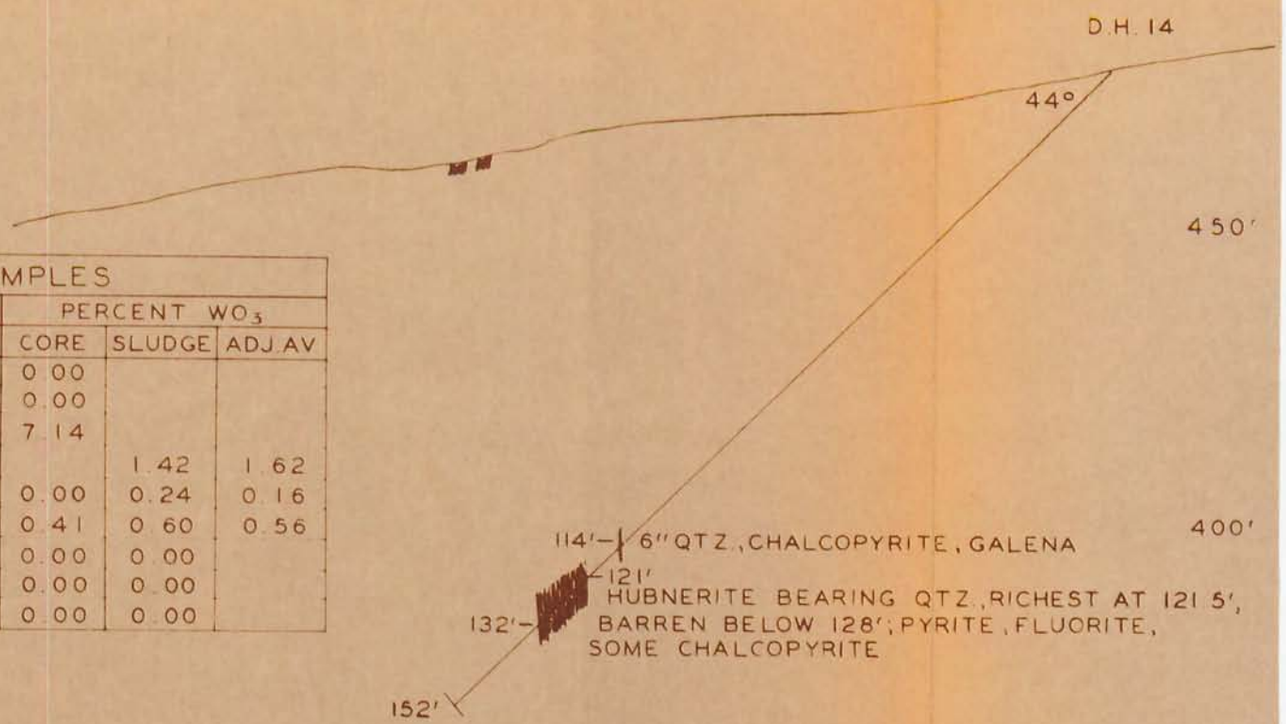
WALKER NO. 3 VEIN

SECTION OF DRILL HOLE 13, HAMME TUNGSTEN PROSPECT

FIG. NO. 27

NW

SE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV
113.8	114.3	0.00		
119	121	0.00		
121	122	7.14		
119	122		1.42	1.62
122	125	0.00	0.24	0.16
125	128	0.41	0.60	0.56
128	130	0.00	0.00	
130	132	0.00	0.00	
132	134	0.00	0.00	

COUNTRY ROCKS ARE GRANITE GNEISS AND SERICITIZED GRANITE

ELEV AT COLLAR 478'- ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,261-E 19,720
BEARING N 32 5°W

WALKER NO 3 VEIN

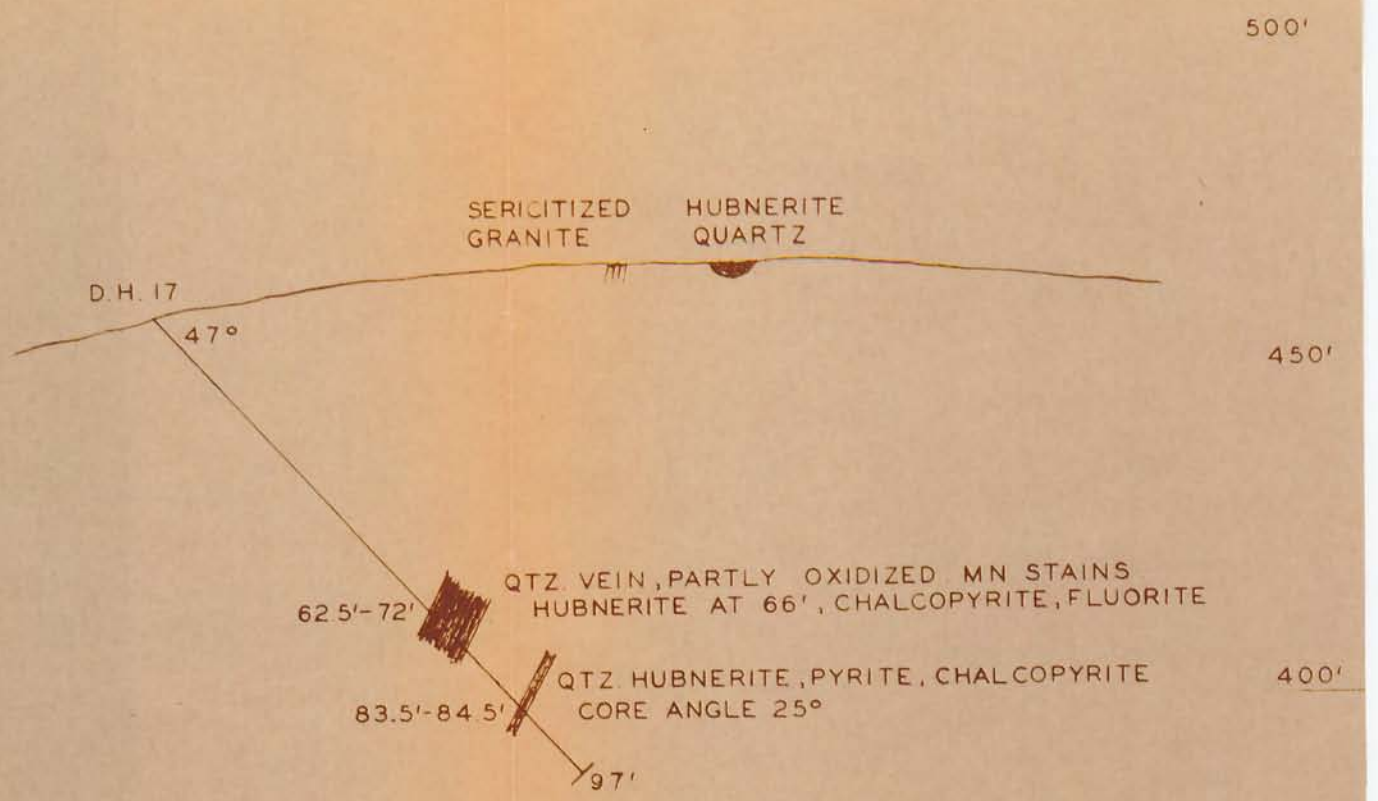
SCALE
0 30' 60'

PROJECT 753

SECTION OF DRILL HOLE 14, HAMME TUNGSTEN PROSPECT

FIG. NO. 28

NW SE



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ AV
61	62 5	0 00		
62 5	66	0 46		
61	66		0 32	0 32
66	68	0 08	1 66	1 02
68	69	0 48	0 71	0 61
69	70	0 00	0 08	0 05
70	73	0 00	0 16	0 09
73	78	0 05		
78	81 7	0 07	0 09	0 08
81 7	87	0 05	0 01	

WALKER NO. 7 VEIN

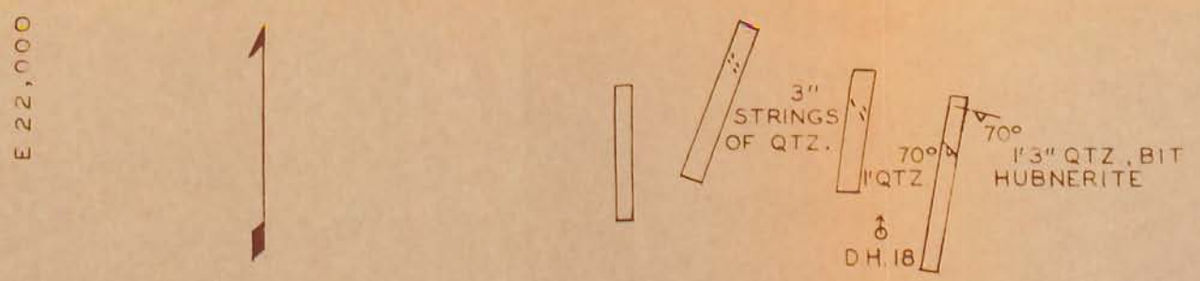
ELEV. AT COLLAR: 460'-ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,090 - E 19,241
BEARING: S 15° E

SCALE
0 30' 60'

PROJECT 753

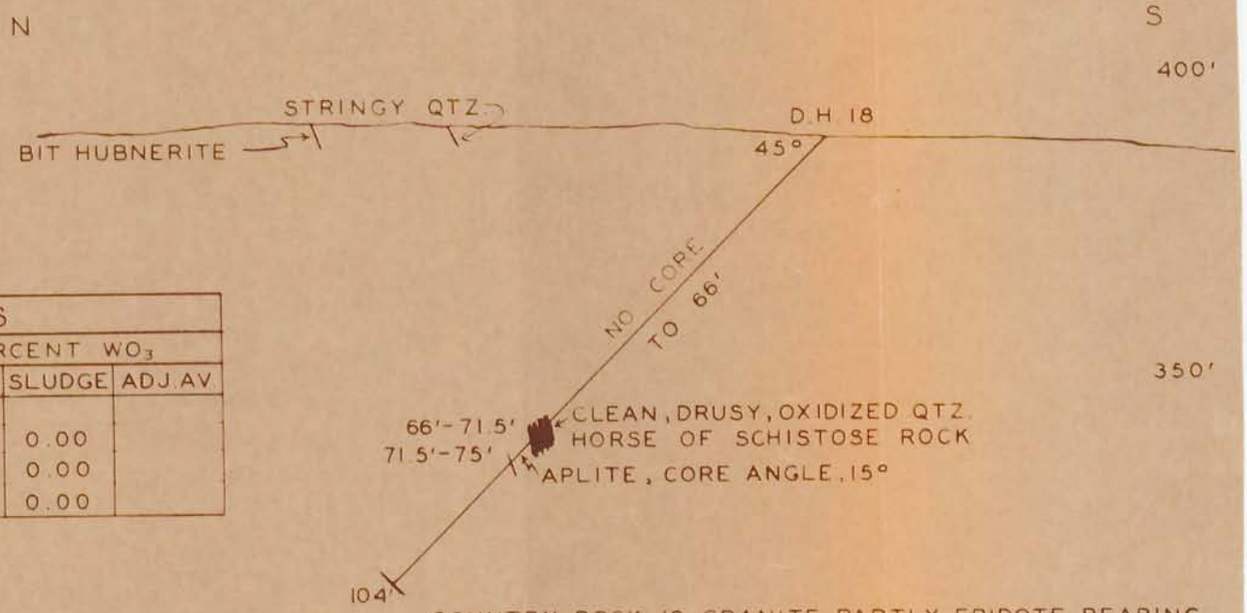
SECTION OF DRILL HOLE 17, HAMME TUNGSTEN PROSPECT

FIG. NO. 31



SCALE
0 100' 200'

PLAN OF TRENCHES



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
66	68	0.00		
68	69.5	0.00	0.00	
69.5	72	0.00	0.00	
72	74.4	0.00	0.00	

ELEV. AT COLLAR: 3919'-ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 17,829 - E 22,467
BEARING: N 4°30' E

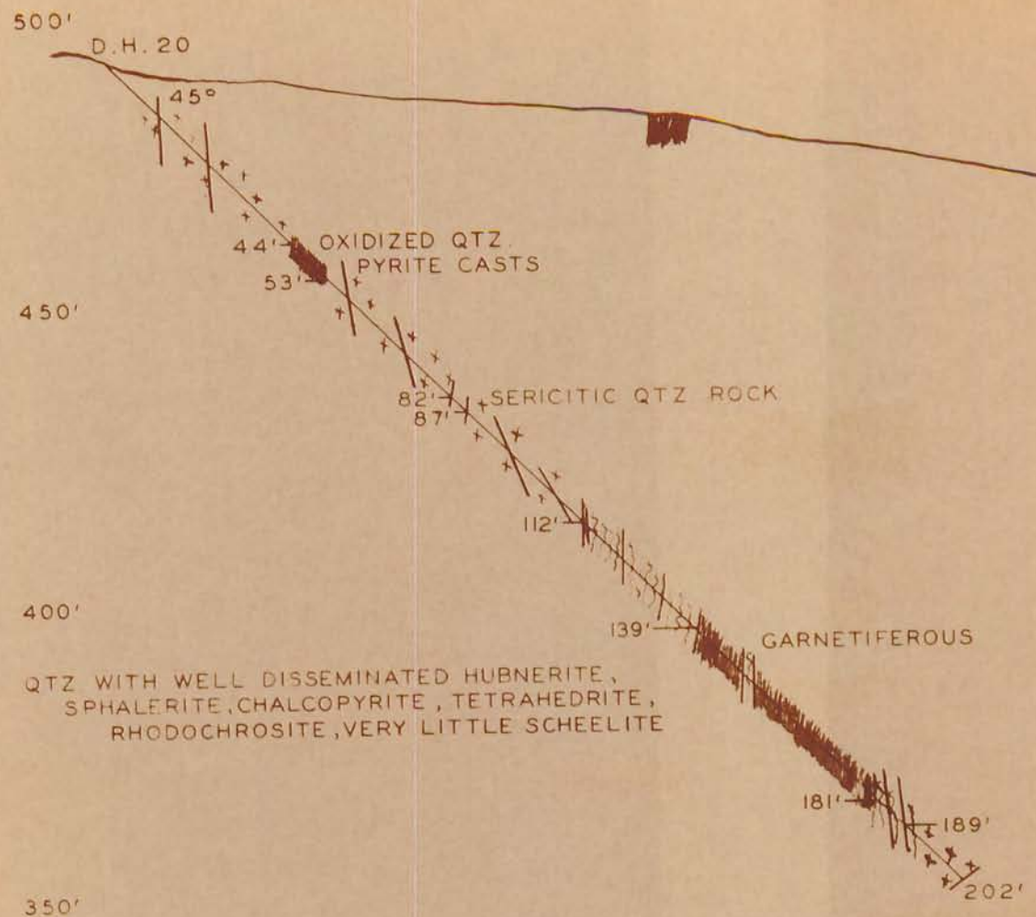
SCALE
0 30' 60'

SECTION OF DRILL HOLE NO 18

PROJECT 753

MORGAN NO. 3 VEIN, HAMME TUNGSTEN PROSPECT

FIG NO. 32



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
132	137	0.02	0.01	0.01
137	140	0.78	0.32	0.36
140	142	0.03	0.12	0.10
142	144	3.55	1.86	2.30
144	147	0.70	2.43	1.94
147	150	3.83	1.30	1.86
150	152	0.05	0.64	0.47
152	155	0.75	0.91	0.87
155	157.5	1.58	1.48	1.50
157.5	158.5	0.23		
158.5	161.5	0.01	2.37	2.12
161.5	163.5	0.14	0.92	0.76
163.5	166.5	0.02	0.71	0.63
166.5	168.5	0.02	0.04	0.03
168.5	169	0.01		
169	172	0.26	0.26	0.26
172	175	0.33	0.19	0.22
175	178	0.68	0.92	0.85
178	181	0.02	0.13	0.11

ELEV. AT COLLAR: 495.5' – ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 20,034 – E 20,194
BEARING: S 50° E

GRANITE GNEISS
SCHIST

SCALE
0 30' 60'

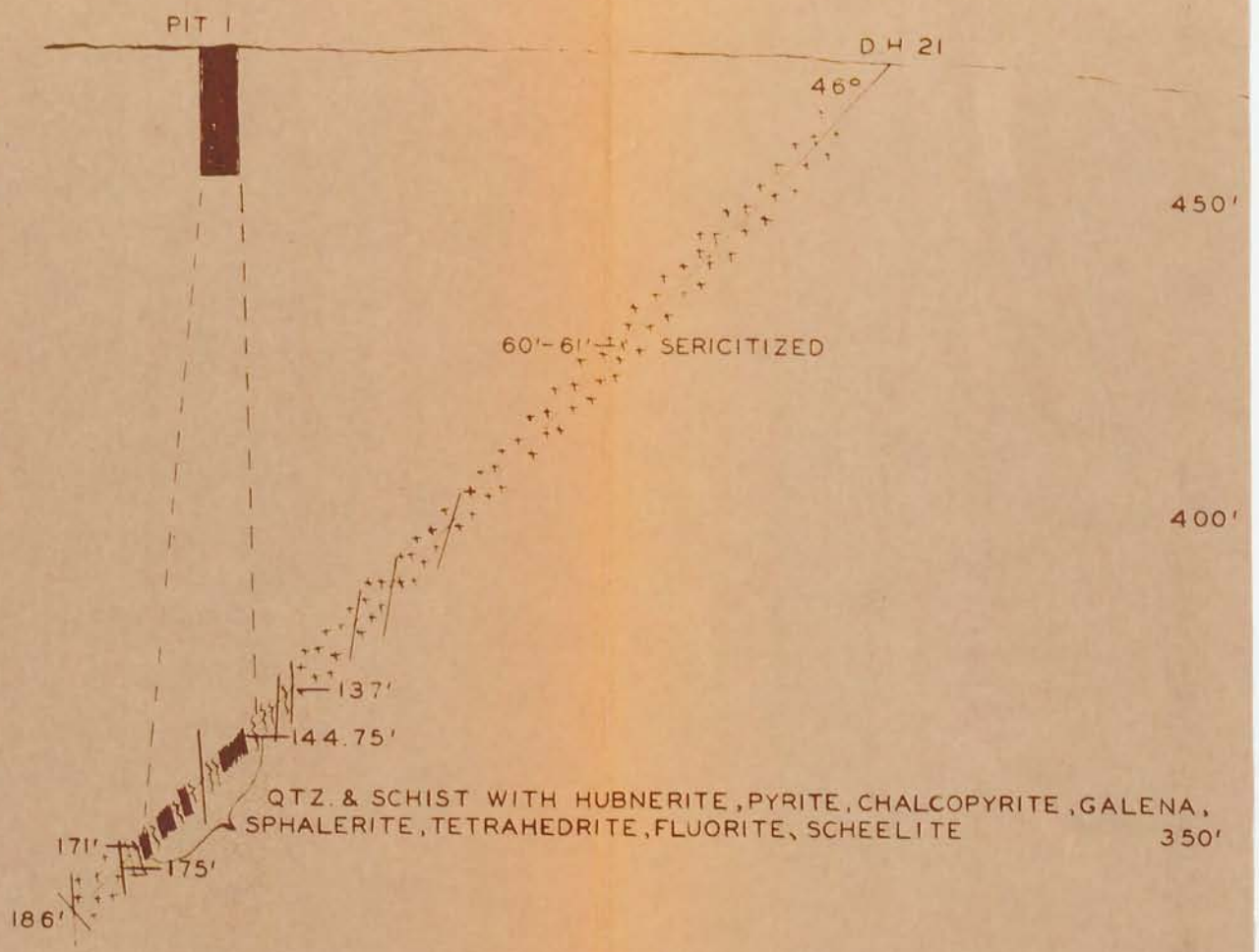
WALKER NO. 2 VEIN

PROJECT 753

SECTION OF DRILL HOLE 20, HAMME TUNGSTEN PROSPECT

FIG. NO. 34

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
141	146	0.38	0.00	0.17
146	149	0.067	0.067	0.067
149	150.3	0.17	0.13	0.15
150.3	153.3	0.26	0.27	0.27
153.3	156	0.15	0.17	0.16
156	159	0.00		
159	164	0.27	0.08	0.16
164	167	0.00	0.00	0.00
167	170	0.00	0.13	0.09
170	175	0.77	0.09	0.13



LEGEND:

GRANITE GNEISS

SCHIST

SCALE

0 30' 60'

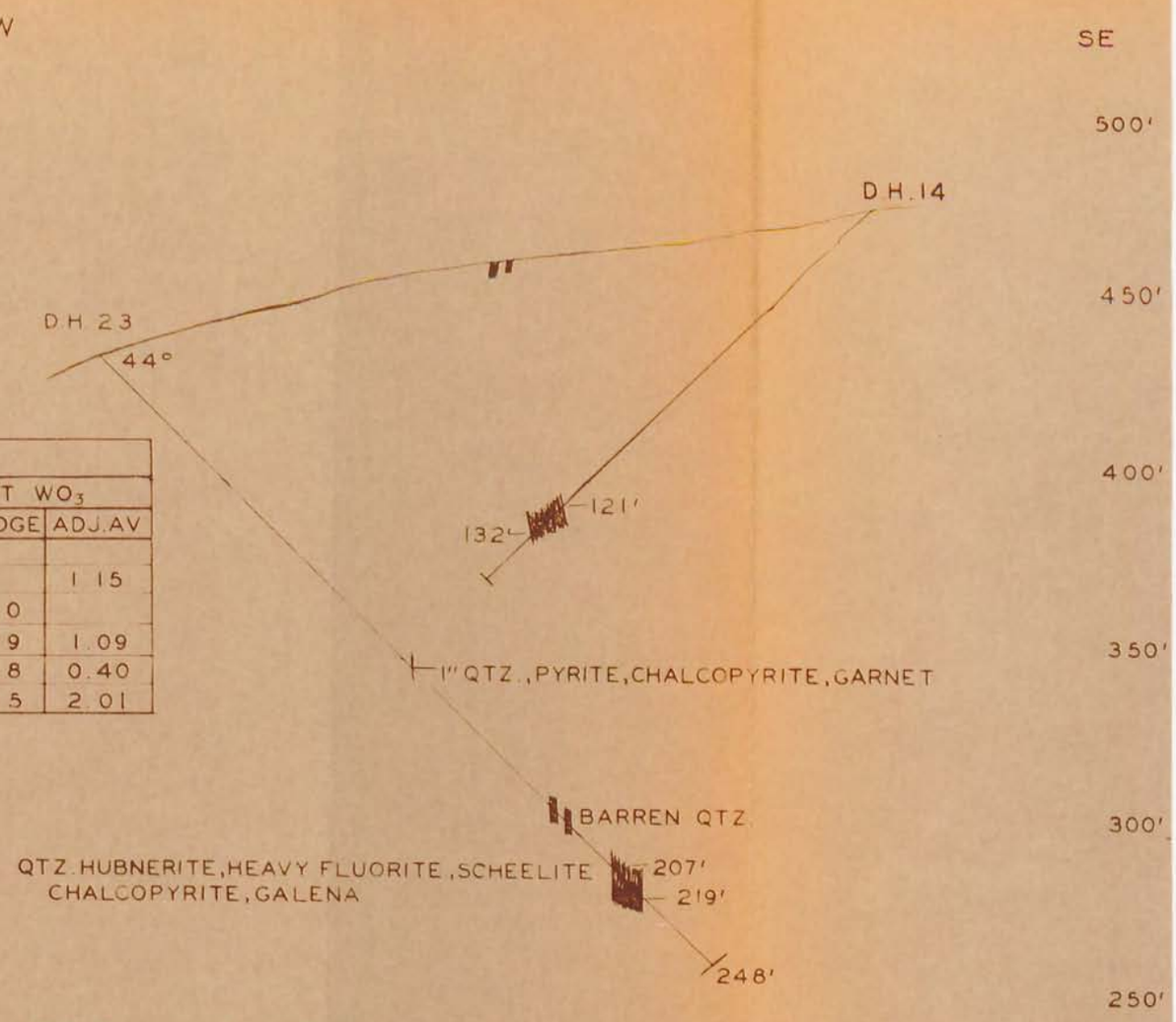
PROJECT 753

WALKER NO. 1 VEIN

ELEV. AT COLLAR: 473.7'–ASSUMED LEVEL DATUM 69' BELOW SEA LEVEL DATUM
LOCATION: N 18,990–E 19,614
BEARING: N 67° W

SECTION OF DRILL HOLE 21, HAMME TUNGSTEN PROSPECT

FIG. NO. 35



SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ.AV
204	207	0.00		
207	209	2.78		1.15
204	209		0.00	
209	213	1.21	0.99	1.09
213	217	0.00	0.68	0.40
217	221	2.27	1.85	2.01

COUNTRY ROCK IS GRANITE BELOW 370' LEVEL, MUCH APLITE & SERICITIZATION WITH FLUORITE; SOME PEGMATITE

ELEV AT COLLAR 435.4' - LEVEL DATUM ASSUMED
LOCATION N 20,442 - E 19,598
BEARING S 33°E

SCALE
0 50' 100'

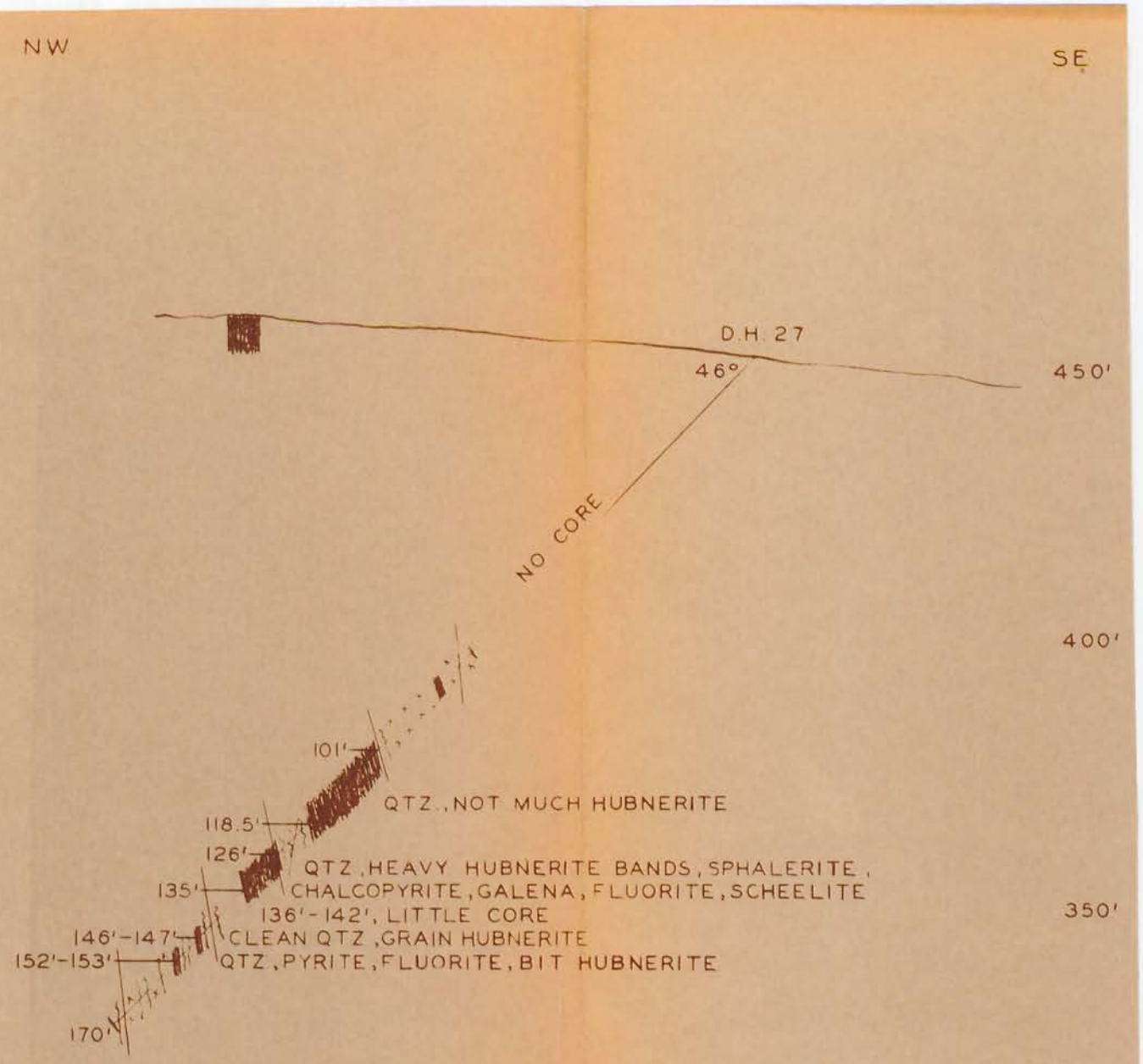
WALKER NO. 3 VEIN

PROJECT 753

SECTION OF DRILL HOLE 23, HAMME TUNGSTEN PROSPECT

FIG NO 37

SAMPLES				
DEPTH		PERCENT WO_3		
FROM	TO	CORE	SLUDGE	ADJ. AV.
82.3	84.3	0.00		
100	102.5	0.00	0.00	
102.5	104.5	0.03	0.00	
104.5	108	0.00	0.00	
108	111	0.00	0.00	
111	113	0.71	0.00	0.29
113	116	0.08	0.08	0.08
116	119	0.07	0.00	
119	124	0.10	0.00	
124	126.5	0.00	0.00	
126.5	129	8.08	5.34	6.62
129	132	1.52	1.76	1.67
132	135.5	2.15	1.21	1.54
135.5	139	5.81	1.89	2.02
139	142	0.00	0.85	0.73
145.5	146.5	0.00		
153	154	0.08		



LEGEND:

GRANITIZED SCHIST & SCHIST

GRANITE GNEISS

SCALE

0 30' 60'

PROJECT 753

ELEV AT COLLAR: 454 7'-LEVEL DATUM ASSUMED
LOCATION: N 17,623 - E 18,790
BEARING: N 57° W

SNEED NO. 1 VEIN

SECTION OF DRILL HOLE 27, HAMME TUNGSTEN PROSPECT

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

FIG. NO. 41