

DISTRICT	Burkerville
DIST_NO	0840
COUNTY	Clark
If different from written on document	
TITLE	Hughes Series Administrative Records - Nickel Deposit Reports
If not obvious	
AUTHOR	Bunker L; Needham A, Soule, J; Trengrove R Anderson, A.; Bolster, S
DATE OF DOC(S)	1970
MULTI_DIST Y / N?	
Additional Dist_Nos:	
QUAD_NAME	Virgin Peak 15'
P_M_C_NAME	Nevada Nickel and Copper Co; Key West Mine; (mine, claim & company names) Great Eastern Mine; Great Eastern; Magnetite; Great Eastern Extension Nos. 1-3; Vulcan; Vulcan No. 2; Great Eastern Extension
COMMODITY	Nickel; copper; cobalt; platinum;
If not obvious	
NOTES	Correspondence; U.S. Bureau of Mines Report of Investigations 4679; geology; assays; geologic map; mine map; claim map; handwritten notes  NOTE: Scan folder front  17p.

Keep docs at about 250 pages if no oversized maps attached  
(for every 1 oversized page (>11x17) with text reduce  
the amount of pages by ~25)

Revised: 1/22/08

SS: DD 12/22/08  
Initials Date

DB: \_\_\_\_\_  
Initials Date

SCANNED: MT 1/11/08  
Initials Date



LHIA ~~2419~~ Nickel Deposit  
15 March, 1970 report b

HUGHES SERIES  
ADMINISTRATIVE RECORDS  
NICKEL DEPOSIT REPORTS  
15  
MARCH 1970

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April 24, 1970

TO: Mr. A. J. Anderson - Mining Division

FROM: L. Bunker

SUBJECT: Report on the Nickel-Copper-Cobalt-Platinum  
Deposits in the Key West and Great Eastern  
Mines in the Virgin Mountains Southeast of  
Bunkerville, Nevada about 12 Miles.

Report: Information from Bulletin 63  
Nevada Bureau of Mines  
Geology and Mineral Deposits of the Bunkerville  
Mining District, Clark County, Nevada, by  
Laurence H. Beal, written in 1965.

This bulletin treats the whole area in relation to mines, roads, climate, water, geology, and a complete history of the area and minerals with some maps in the back of the bulletin.

Detailed information on the nickel, copper, platinum deposits are given on the following pages:

Pages 3 and 4 - Location and History of Mining in the area. .  
Midsection of the bulletin discussed the  
geology of the area in separate blocks.

Pages 61 and 62 - Discussed the Copper-Nickel Deposits and  
the Great Eastern Nickel Deposit.

Pages 63 to 76 - A detailed report on the Key West Mine  
showing maps and assay reports.

In the back of the bulletin are some maps relative to the  
Key West area.

NOTE: Owner of the Key West Mine, which is a block of  
7 patented claims, is:

Nevada Nickel and Copper Company  
c/o Mr. Stanley Bolster  
50 Congress Street  
Room 925  
Boston, Massachusetts 02109

Respectfully,

---

L. Bunker

LB:it



MEMORANDUM

TO: Mr. A. J. Anderson  
Mining Division

FROM: L. Bunker

DATE: March 30, 1970

SUBJECT: Information on an area that has values in Nickel

Location: Northwesterly from the Virgin Peak in the Virgin Mountains and about 20 miles Southwesterly from Bunkerville, Clark County, Nevada.

There are two mines in this area, the Great Eastern and the Key West. They are about 4 miles apart on an East-West fault and they have values in nickel, copper and platinum. Both mines have water in them. The value of the ore, the depth of the workings, the extent of the development and the owners are unknown to me.

These are old diggings. Before World War I some of the ore from the Key West was shipped to Germany for processing. It is supposedly a complex ore.

About 20 years ago the U.S. Bureau of Mines drilled this area and found a large deposit of nickel ore, (it was several miles long). The nickel content was low grade. This information comes from one of the local boys that worked on the project.

The Great Eastern and the Key West are supposed to be patented, but we have no information to verify this. Supposedly there is a large area covering the low grade ore bodies that is open ground.

NOTE: Mr. Anderson, you mentioned that a contact of yours was interested in locating a nickel deposit in the State. The above meager information might be checked out to determine the worthiness of a field trip.

Respectfully,

*L. Bunker*

L. Bunker

LB/st



April 24, 1970  
Mining Division

To Mr. A. J. Anderson

From L. Bunker

Subject - Report on the Nickel-Copper-Chalc. Platinum Deposits in the Key West and Great Eastern mines in the Virgin Mountains Southeast of Bunkerville, Nevada about 12 miles.

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Geology and Mineral Deposits of the  
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bulletin

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block of 7 patented claims is =  
Nevada Nickel and Copper Company  
/s/ Mr Stanley Bolster  
50 Congress St.  
Boston, Mass. 02109.  
Room 925.

Respectfully,



INVESTIGATION OF THE GREAT EASTERN NICKEL DEPOSIT,  
CLARK COUNTY, NEV.

by

A. B. Needham,<sup>1/</sup> John H. Soule,<sup>1/</sup> and Russell R. Trengove<sup>2/</sup>

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<sup>1/</sup> Mining engineer, Bureau of Mines.

<sup>2/</sup> Mining engineer, Bureau of Mines, Reno, Nev.



## INTRODUCTION AND SUMMARY

The Great Eastern nickel deposit is located in the western foothills of the Virgin Mountains in the Copper King or Bunkerville district situated in the southeastern part of Clark County, Nev. It is covered by a group of eight claims that can be reached by turning south from U. S. Highway 91 at Riverside, Nev., and driving about 12.6 miles southeast over a winding mountain road, which rises from about 3,000 feet to 4,000 feet in elevation.

The climate is dry, with only a small amount of rainfall throughout the year. The temperature ranges from hot during the summer to short periods of freezing weather during the winter months. The vegetation is of the desert variety, and no timber is available for mining. Water for mining purposes would have to be pumped from lower areas.

A granitoid gneiss comprises the largest part of the rock outcrops. It has a steeply dipping foliation that strikes about N. 75° E. The gneiss was intruded by basic dikes, which in turn were intruded by pegmatite dikes. The ore occurs as lenticular bodies formed by the convergence of several pegmatite dikes within the main dike. The principal sulfide minerals are pyrite, pyrrhotite, and chalcopyrite, which contain a small amount of nickel.

Late in the year of 1939, the Bureau of Mines undertook an exploration project on the Great Eastern property to extend or delimit the known mineralization. Underground work, consisting of 590 feet of drifting and cross-cutting, was completed in September 1940, and 1,091 feet of diamond drilling for downward extension of an ore body in the Lower adit, which was completed in February 1941.

## ACKNOWLEDGMENTS

The exploration work was started and completed under Charles F. Jackson, chief of the former Mining Division, and E. D. Gardner, supervising engineer for the Western States. The diamond drilling was under the direct supervision of C. H. Johnson, assistant chief, former Mining Division. Acknowledgment is due to the Rare and Precious Metals Station, Reno, Nev., E. S. Leaver, supervising engineer, where the samples were analyzed.

Acknowledgment is also due to W. Howard Myers, resident geologist for the Federal Geological Survey, who logged the cores, advised on geological problems and cooperated in every way. Unpublished reports and maps of other Geological Survey geologists were also made available for this report.

The final project reports, Underground Exploration Work, by A. B. Needham, project engineer, and Diamond-Drill Work, by John H. Soule, project engineer, have been combined in this report, which was prepared under the supervision of A. C. Johnson, chief, Reno Branch, former Mining Division.



## LOCATION AND PHYSICAL FEATURES

The Great Eastern group of eight claims lies in the extreme southeastern part of Clark County in what is commonly known as the Copper King or Bunkerville District. (Fig. 1) The claims are on the western foothills of the Virgin Mountains, a comparatively short range of mountains trending north-south, that can be reached by automobile by turning south from Highway 91 at Riverside, Nev. The property is 12.6 miles from Riverside, Nev., over a fair, winding mountain road which ascends 3,000 feet to an elevation of 4,300 feet at the property. Virgin Peak to the east, the highest point in the range, attains a height of 7,750 feet.

Clark County has very little rainfall, abundant sunshine, and is one of the driest areas in the western United States. Weather conditions are favorable for mining operations the year around.

The two adits on the property yield approximately 55 gallons of water per hour. As stated, water used in quantity would have to be hauled or pumped.

Sheep and cattle raising, with some farming, comprise the principal industries in the fertile Virgin river valley.

## PROPERTY AND OWNERSHIP

Copper ore was discovered in the Copper King district in the late nineties. The Nevada Copper & Nickel Co. explored primarily for copper and nickel from 1900 to 1903, but very little ore was produced. After this company ceased operations, various other attempts were made to open this district, the last being made in 1936 by the International Smelting & Refining Co. of Salt Lake City, Utah.

The Great Eastern group, consisting of eight claims (fig. 2) was located about 35 years ago by the present owners, S. M. Darling and A. M. Thompson of Bunkerville, Nev. Development work by hand methods comprised three main adits, Upper, Lower, and Vulcan, each ranging from 400 to 500 feet in length, with total workings of about 1,600 feet. No commercial shipments of ore were made. A. T. Moore and associates of Phoenix, Ariz., held an option on the property when the exploratory work by the Bureau of Mines was in progress.

## GEOLOGY AND ORE DEPOSITS

The topographic and geologic map (fig. 3) shows that the greater part of the rock outcrops in a granitoid gneiss. The foliation of the gneiss is almost vertical, dipping slightly to the southwest, and the strike is about N. 75° E. Intruded into the gneiss are basic dikes (hornblendite), which in turn have been intruded by pegmatite dikes. The general trend of the main hornblende dike in the district is about N. 70° E. and varies in width from 6 to 60 feet, averaging probably 27 feet. Numerous granite pegmatite dikes converge with the main dike at various angles and at various places. There are also numerous faults. As a general rule, the ore bodies occur as lenticular masses or pods.



In the Upper adit, elevation 4,342 feet, the hornblendite dike is exceptionally hard and black and is clearly defined by distinct walls at the contact of pegmatite and gneiss. It is in this rock that the sulfides are found. They consist principally of pyrite, pyrrhotite, and chalcopyrite which contain small percentages of nickel. No nickel-bearing sulfides are noted in the pegmatite or country gneiss.

In the Lower adit, 92 feet lower in elevation and 230 feet southwest along the strike, no distinct walls are in evidence to distinguish a line between ore and gneiss; the sulfides carry nickel values and are found in what might be called altered "dike" material. Both adits reveal a high concentration of sulfides at points of main north-south faults.

#### DEVELOPMENT WORK BY BUREAU OF MINES

The work of moving the necessary equipment for underground work to the deposit was started on December 5, 1939. After the equipment was assembled considerable time was spent in rehabilitation work. Channel samples were taken every 5 feet in certain parts of all three adits. Analyses of these samples indicated that two headings, the Upper adit and the left branch of the Lower adit, offered the most promising possibilities of finding ore. The Upper adit has previously been driven 305 feet from its portal to a point of faulting before exposing the ore. Drifting was begun on January 24, 1940, with a crew of four men working on two shifts. The drift was advanced along the hornblende dike, which strikes N. 70° E. for a distance of 110 feet; crosscuts were then driven from the drift north and south on 50-foot centers well into the country rock. A 100-pound sample was taken from the broken material, for every foot of advance by casting aside every tenth shovelful. This material was coned and quartered for the final sample. A close study of the ground and analyses of samples indicated a high concentration of sulfides, together with a relatively high nickel content at the point of faulting with a gradual decrease of sulfides and corresponding nickel value as the drift advanced away from the fault.

In the Upper adit, the contact between the dike and pegmatite and country gneiss was well-defined. The ore was very black and exceptionally hard, with numerous joints and slips. No evidence of sulfides in the pegmatite or gneiss was noted. The pod or lens was proved to be more or less wedge-shaped, with end widths of 4 feet and 35 feet; the length of the lens was 80 feet. The drift was stopped on March 27, 1940, 30 feet beyond the last indications of sulfides. Project work was held in abeyance from March 27, 1940, to May 10, 1940, when the equipment was moved to the Lower adit. After the Lower adit had been rehabilitated, channel samples were taken. These samples indicated that ore was encountered at the north-south fault, 391 feet from the portal and continued to the end of the drift, a distance of 96 feet. Drifting and crosscutting started May 24, 1940. Crosscuts were driven at specified intervals both north and south well into country rock to determine the width of the ore body. The main drift advanced 125 feet beyond the face of the old workings to a point 23 feet beyond the sulfides. Similar to conditions in the Upper adit, analyses indicated a high concentration of sulfides with high nickel content at the faults and a decrease in sulfides and nickel values



as the drift advanced from the north-south fault. A change in rock texture was also noted, with a gradation from well-broken, soft, gray rock to a darker gray, much harder rock formation similar to the rock formation found in the upper tunnel. The face of the left branch of the Lower adit when drifting was terminated was almost directly below the portal of the Upper adit. Different from the rock in the Upper adit, the Lower adit ground was finely disseminated with sulfides, well-broken, gray in color, and very soft. No distinct walls were evident, and the pegmatite and gneiss contained sulfides. This pod or lens proved to be carrot- or wedge-shaped, with end widths of 6 feet and 60 feet and a total length of 200 feet. Drifting and crosscutting totaling 590 feet were completed August 31, 1940.

The Vulcan adit is approximately 500 feet, S. 70° W. of the Upper adit and 67 feet higher. Channel sampling across the floor of the adit showed some mineralization, but the downward extension of this ore lens was not intercepted by the right branch of the Lower adit. This leads to the assumption that the lens is not extensive. No work was done in the right branch of the Lower adit. See accompanying maps figures 2 and 6, inclusive, for relative locations, geology and analyses of samples.

A diamond-drill program based upon the results obtained by the underground exploratory work was begun December 28, 1940. The nickel-bearing lens in the Lower adit was selected for drilling because conditions seemed more favorable for ore deposition than the Upper adit. Seven holes totaling 1,091 feet were drilled. 401 samples were taken. The rock formations drilled were highly fractured and caved easily, which resulted in small fragments of the rock rolling under the bits, causing high bit wear and diamond loss. Core and sludge recoveries were poor. The location of the holes, cross sections, longitudinal projections and analyses are shown on figures 7 and 8.

Hole 1 was started in the center of the nickel-bearing lens and the mineralization continued to a depth of 63 feet.

Hole 2 showed a small percentage of nickel from 26 to 31 feet.

Hole 3 penetrated the mineralized lens from 5 to 95 feet.

Hole 4 was in the mineralized lens from 5 to 50 feet.

Hole 5 did not encounter mineralization.

Hole 6 did not encounter mineralization.

Hole 7 was in mineralization from 50 to 75 feet and from 135 to 165 feet.



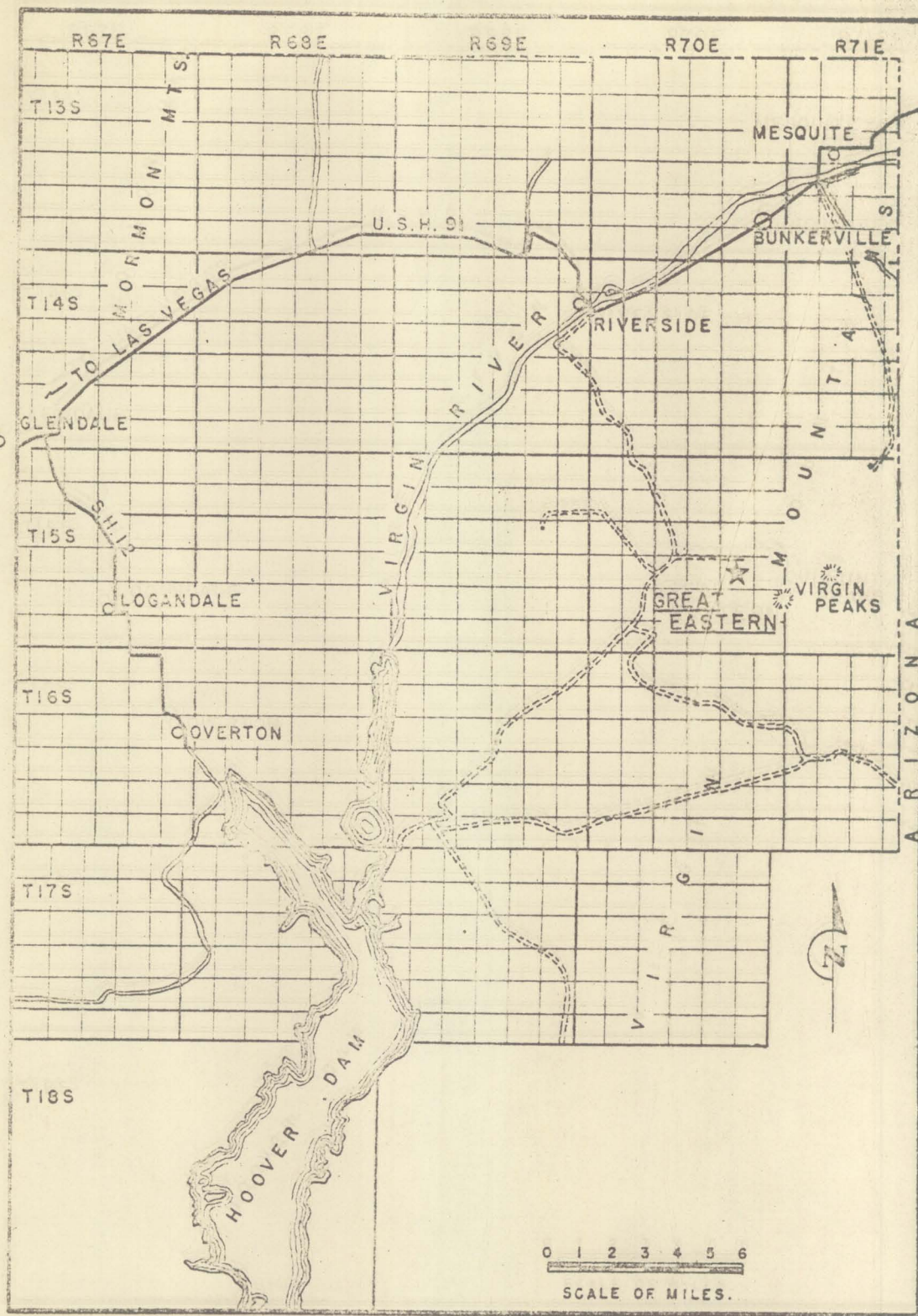


Figure 1. - Location map, Great Eastern nickel deposit, Clark County, Nev.



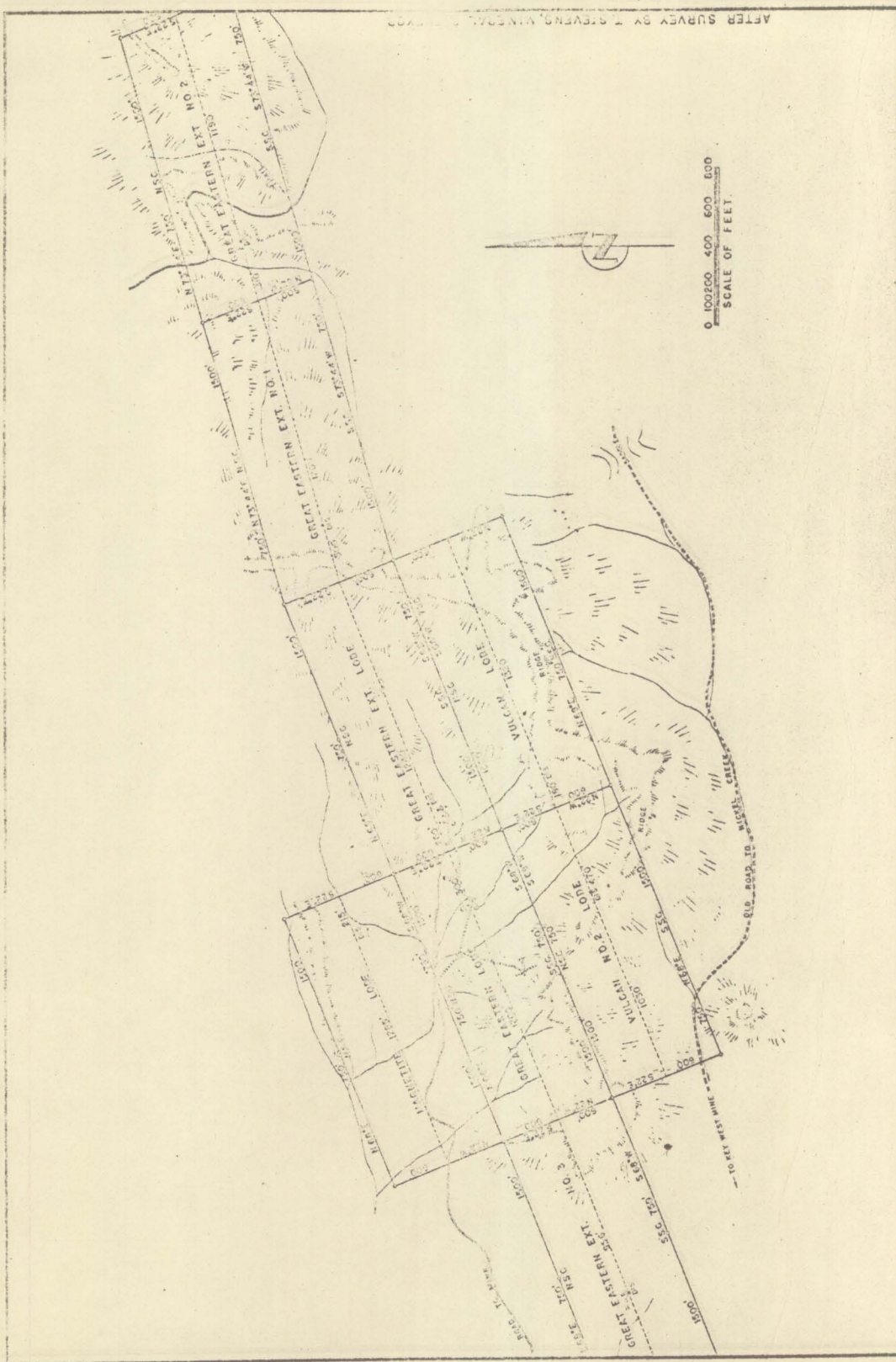
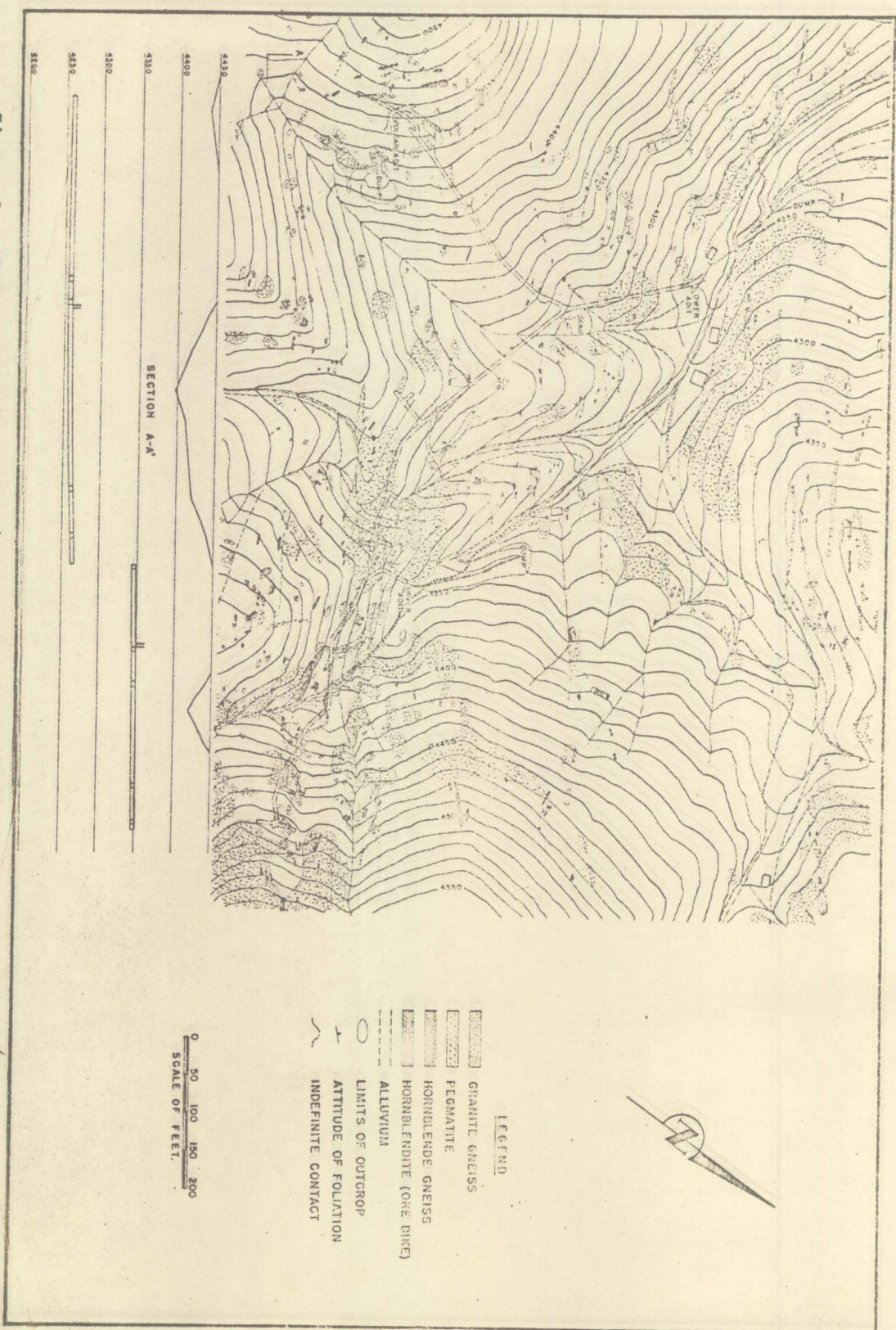


Figure 2. - Claim map.



Figure 3. - Topographic and geological map traced from U. S. Geological Survey map prepared by P. W. Guild, S. W. Hobbs, and W. T. Pecora.





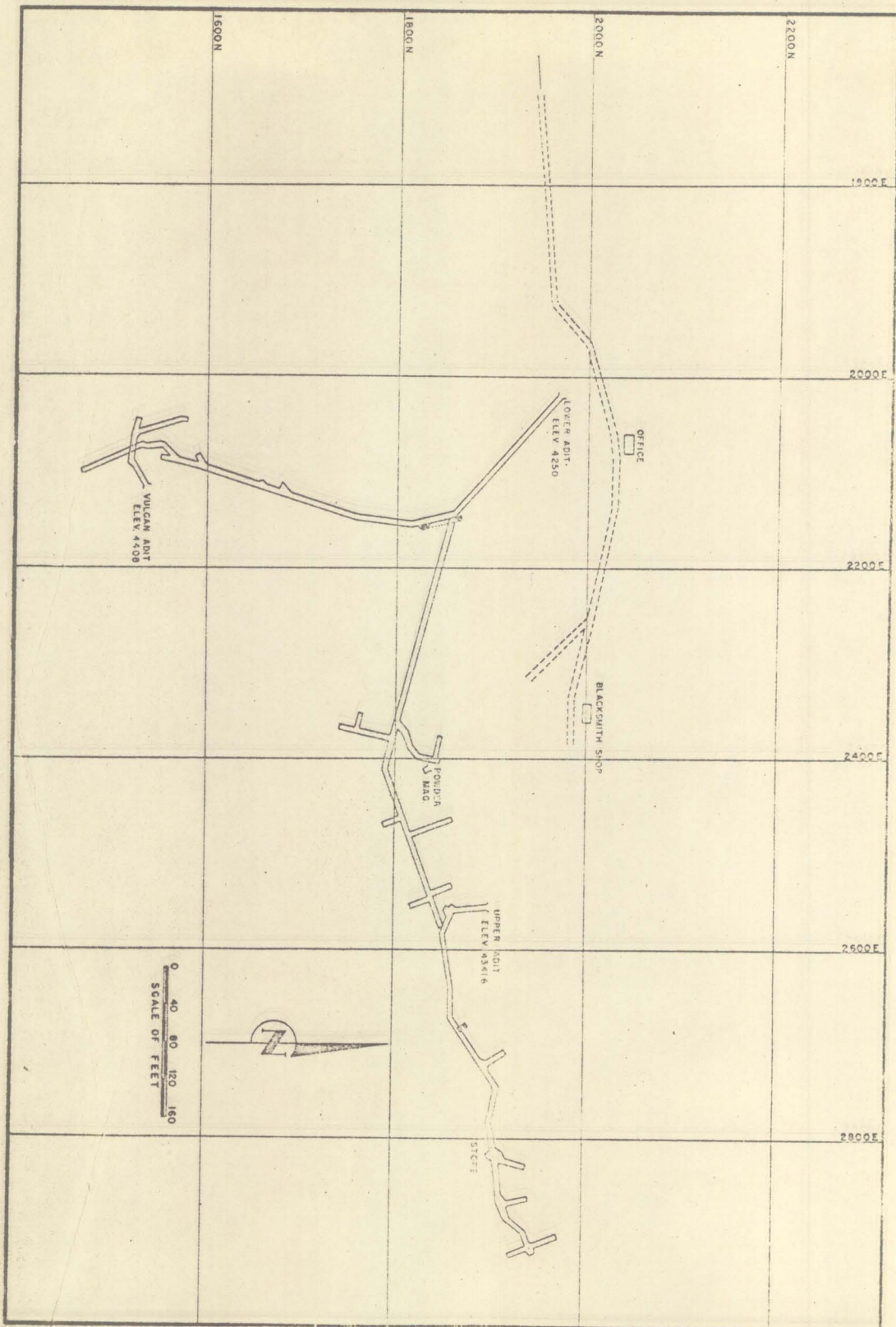


Figure 4. - Underground workings.



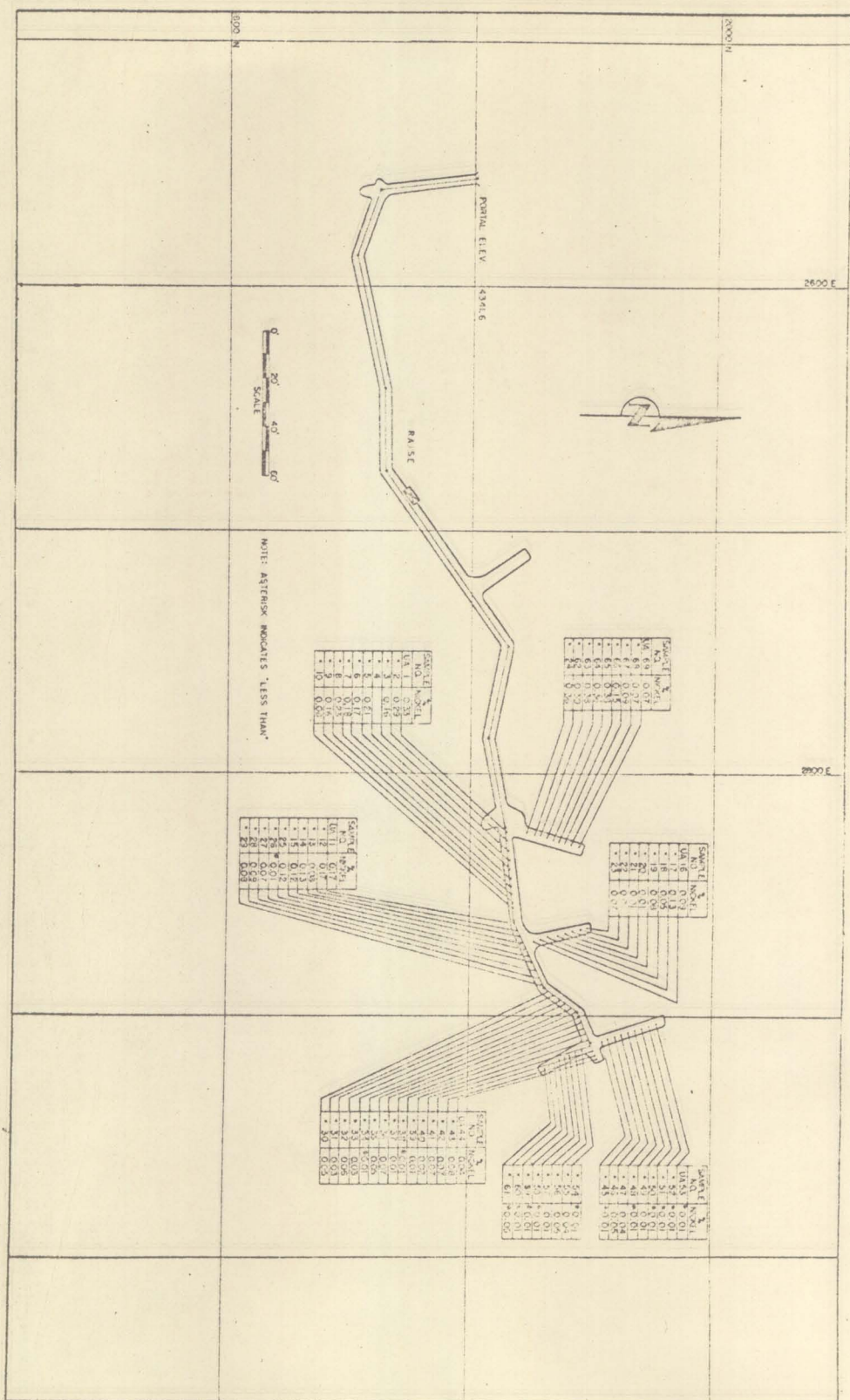


Figure 5. - Upper-adit sample analyses.



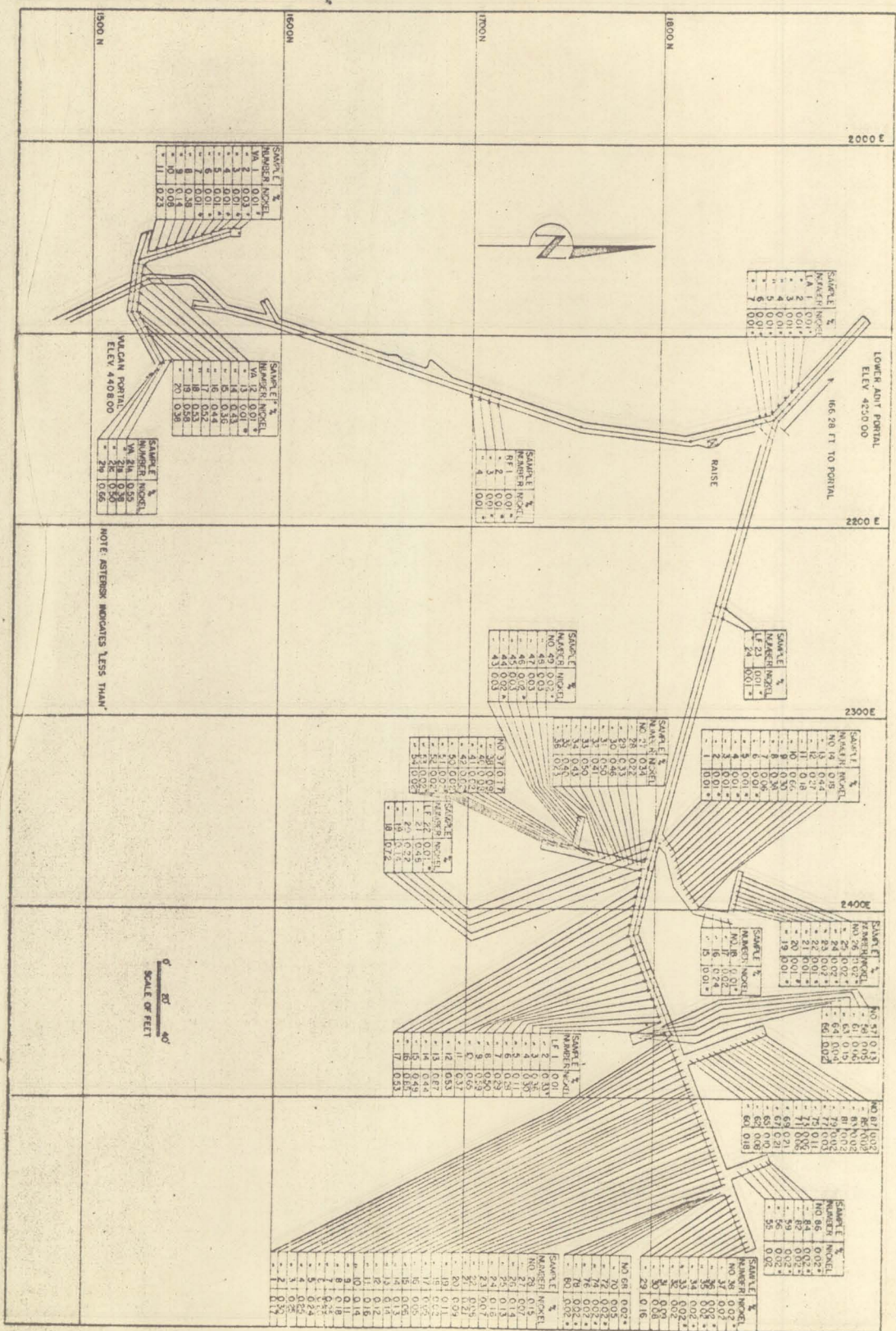


Figure 6. - Lower-adit and Vulcan-adit sample analyses.



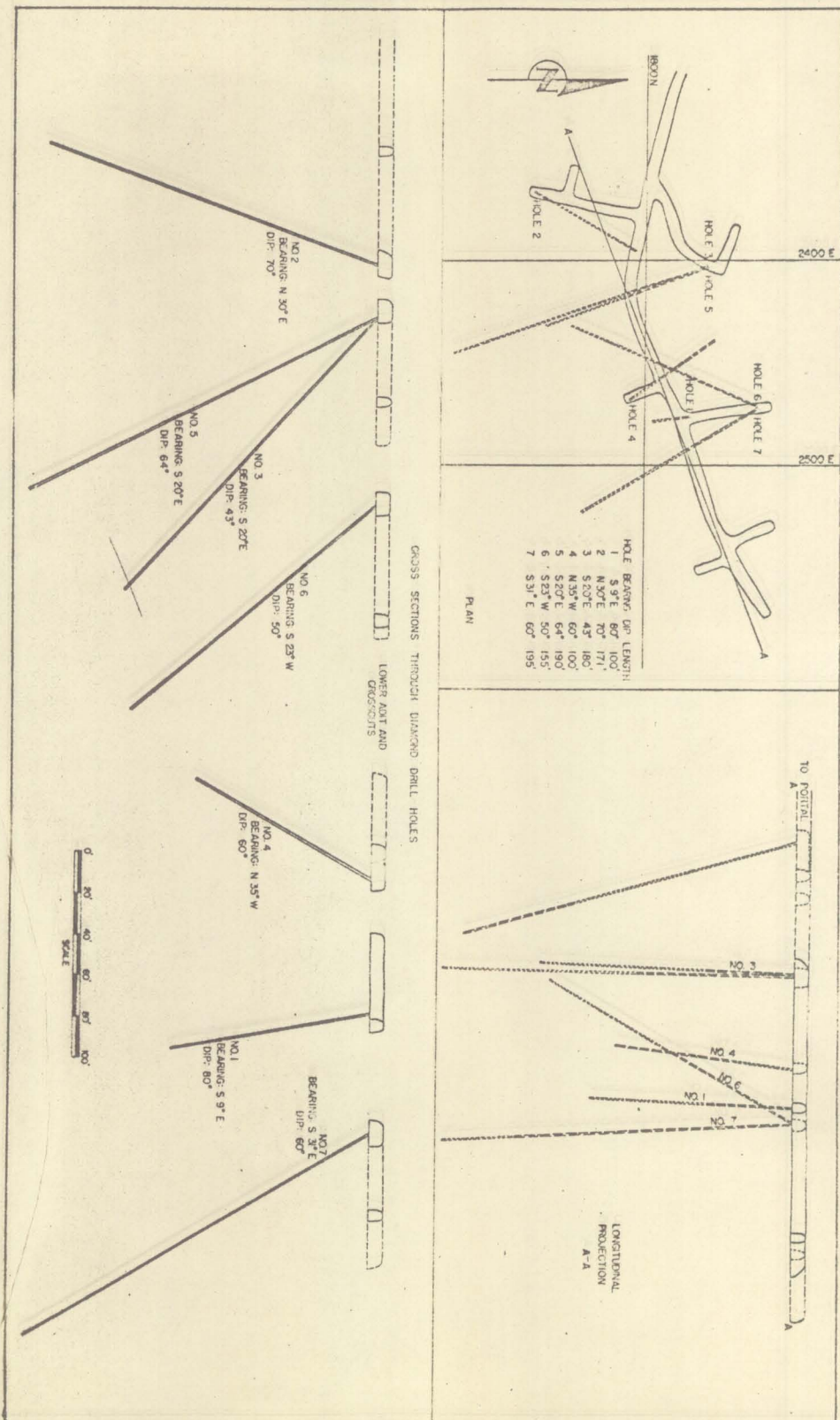


Figure 7. - Plan and sections of holes drilled in Lower adit.



