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RMO-830 (rev.)

DRILLING IN THE MONUMENT VALLEY AREA OF ARIZONA AND UTAH

by

J. W. Chester

and

P. H. Donnerstag

June 4, 1952

(Grand Junction, Colorado)

Contracts AT(05-1)-120, AT(30-1)-1142 and 1258

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DEPARTMENT OF ENERGY
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U. S. DEPARTMENT OF ENERGY ISSUES MONUMENT VALLEY REPORT

The Grand Junction, Colorado, Office, U. S. Department of Energy (DOE), has issued a report entitled "Drilling in the Monument Valley Area of Arizona and Utah," dated June 4, 1952.

The report, prepared by J. W. Chester and P. H. Donnerstag, presents results of early Atomic Energy Commission investigations of the uranium-bearing channels of the Chinle Formation in the Monument Valley area, and has been placed on open file at this time because of renewed interest in the area.

The 66-page report, RMO-830 (rev.), has been placed on open file at the following locations:

UNITED STATES ATOMIC ENERGY COMMISSION

DIVISION OF RAW MATERIALS

EXPLORATION BRANCH

DRILLING IN THE MONUMENT VALLEY AREA OF ARIZONA AND UTAH

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DRILLING IN THE MONUMENT VALLEY AREA

OF ARIZONA AND UTAH

Contracts AT(05-1)-120, AT(30-1)-1142 and 1258

ABSTRACT

Drilling in the Monument Valley area totaled 50,353.1 feet and was carried out under three contracts. Two main areas were drilled: one in the vicinity of Monument No. 2 mine in Apache County, Arizona; and the other on Oljetoh Mesa in San Juan County, Utah. Contract AT(30-1)-1258 began February 1, 1952, and ended April 25, 1952; contract AT(05-1)-120 began July 17, 1951, and ended August 7, 1951; and contract AT(30-1)-1142 began August 1, 1951, and ended November 27, 1951.

The largest mine in the region is the Monument No. 2 mine owned by the Vanadium Corporation of America. Several other small mines are operating or have operated in the vicinity.

Information pertinent to drill operations and the uranium deposits were obtained.

DRILLING IN THE MONUMENT VALLEY AREA

OF ARIZONA AND UTAH

Contracts AT(05-1)-120, AT(30-1)-1142 and 1258

INTRODUCTION

Monument Valley is in the Navajo Indian Reservation, 40 to 60 miles west of the Four Corners where Utah, Colorado, Arizona, and New Mexico join. The drilling was confined to two main areas: one in the vicinity of Monument No. 2 mine owned by the Vanadium Corporation of America; and the other on Oljetoh Mesa.

The Monument No. 2 area, Apache County, Arizona, is reached from Blanding, Utah, by Utah State Highway No. 47, a graded gravel and dirt road, to about 2 miles south of Mexican Hat, Utah, where a sand road extends southeast for 20 miles to the mine workings and drilling areas (fig. 1). An alternate route exists over which most of the ore from the Monument No. 2 mine is shipped via Mexican Water, and Tes Nos Pas, Arizona, through Shiprock, New Mexico, and to Durango, Colorado. It is in an unsurveyed district.

Oljetoh Mesa is also reached by Utah State Highway No. 47 to a point just south of the Arizona border, where a secondary road to the northwest leads to Oljetoh Trading Post and Oljetoh Mesa (fig. 1). The Oljetoh area is west and north of Monument No. 2 in San Juan County, Utah. It is in T. 43 S., R. 15 E., Salt Lake meridian.

The nearest towns by road mileages are Mexican Hat, Utah, which is 22 miles northwest; Bluff, Utah, which is 49 miles north; and Kayenta, Arizona, which is 62 miles southwest of the Monument No. 2 area. Mexican Hat is only a trading post, but both Bluff and Kayenta have a telephone, post office, and a few other facilities.

Description of Area

The Monument No. 2 area has been subdivided into three main parts: South Ridge, south of the Monument No. 2 workings; Main Ridge, which includes the Monument No. 2 mine, the Cato Sells Monument mine, and the Jessie Black mine; and Yazzie Mesa, north of Monument No. 2 mine (fig. 2).

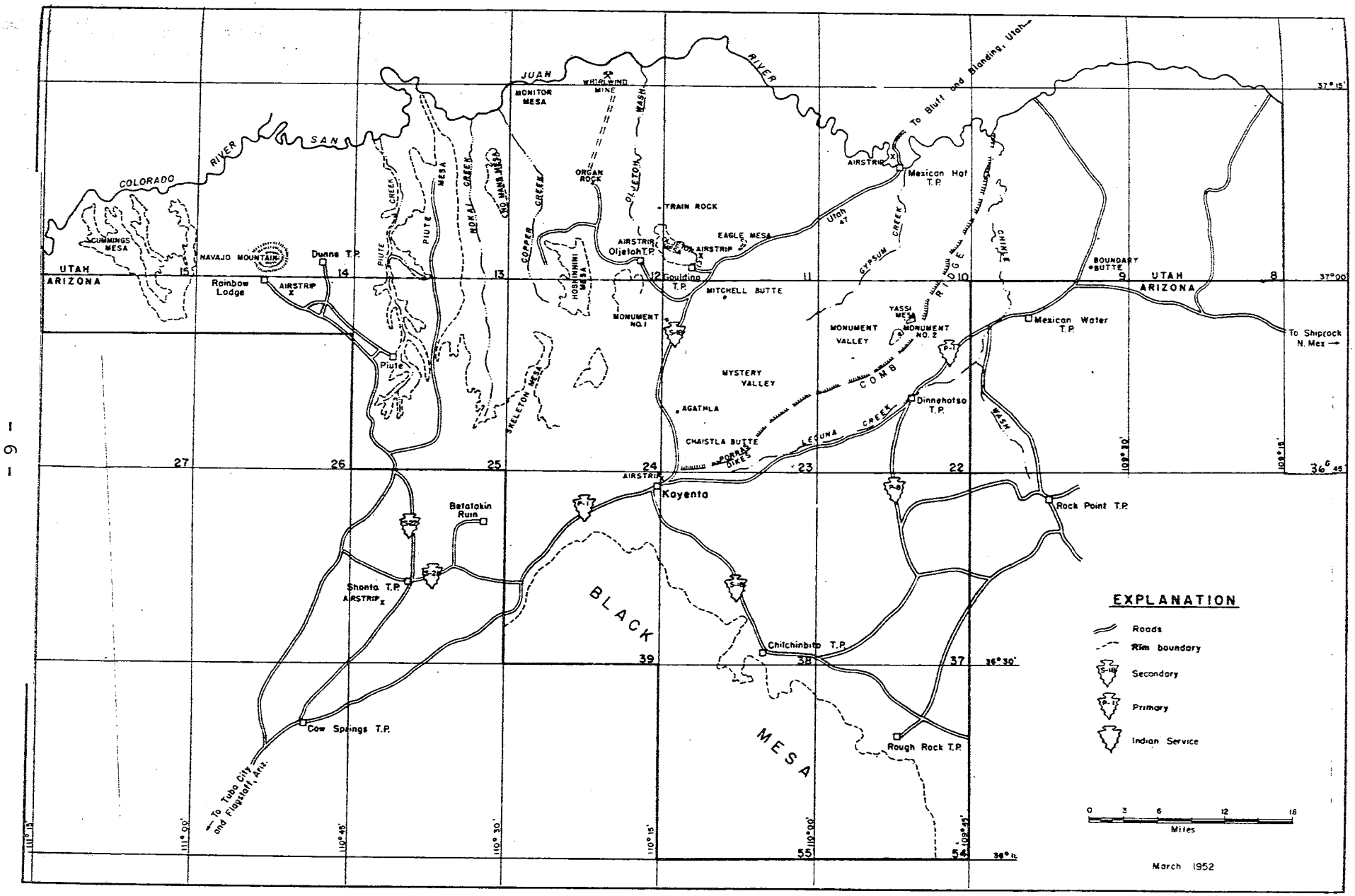

Figure 1. Location map of Monument Valley area

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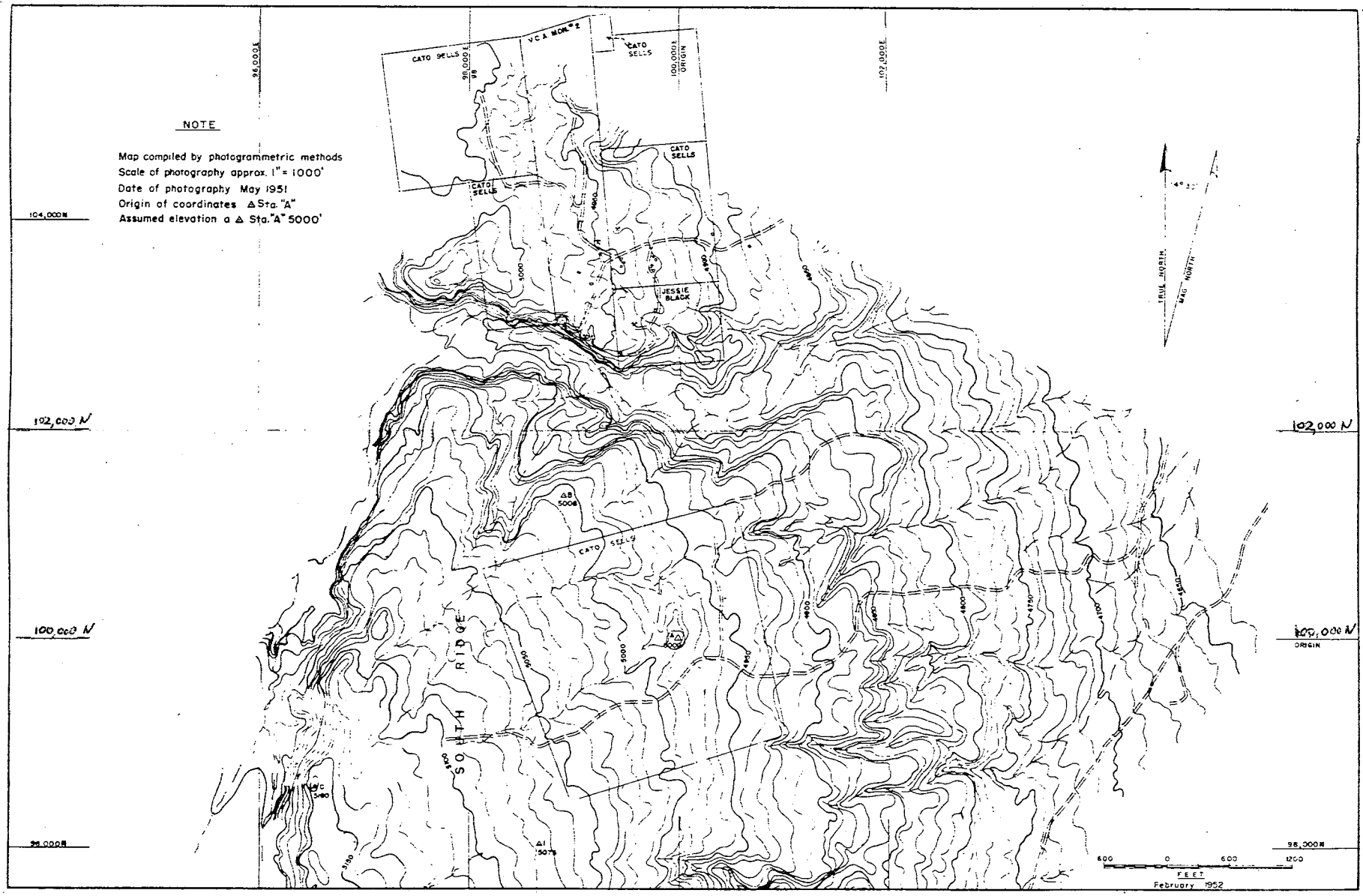

Figure 2. Claim map of Monument No.2 and South Ridge areas, Apache County, Arizona

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South Ridge is a roughly elongated rectangular ridge, extending north and containing approximately 900 acres (fig. 2).

Monument No. 2 mine is located on the dip slope of the cuesta. The claim is 2,800 feet by 600 feet (fig. 2).

The Cato Sells Monument mine includes an area of 57.793 acres situated east of and adjoining the Monument No. 2 lease.

The Jessie Black mine consists of a plot 900 feet by 750 feet, east of Monument No. 2, south of Cato Sells, and adjoining both.

Yazzie Mesa is a deeply dissected ridge elongated north. The Shinarump is exposed on about 50 acres.

Oljetoh Mesa is about 6 miles long and a mile wide and is elongated northwest. The area is approximately 3,000 acres of which some 350 acres were included in the part drilled (fig. 3).

Claim Ownership

Information on ownership is very incomplete. Claim corners are frequently missing or obscure. With the exception of the leases held by the Vanadium Corporation and Climax Uranium Company, none of the claims have been surveyed.

The following list of claim owners is the best available:

South Ridge--Vanadium Corporation of America lease, 3 acres; and Cato Sells claim, 160 acres.

Main Ridge--Vanadium Corporation of America lease; Cato Sells claim leased to Climax Uranium Company; and Harvey and Jessie Black claim.

Yazzie Mesa--John M. Yazzie claim; and the C. Tso claim.

Oljetoh Mesa--Tom Holliday claim; B. Cockburn, a lease of 40 acres; claim recently staked, no owner's name.

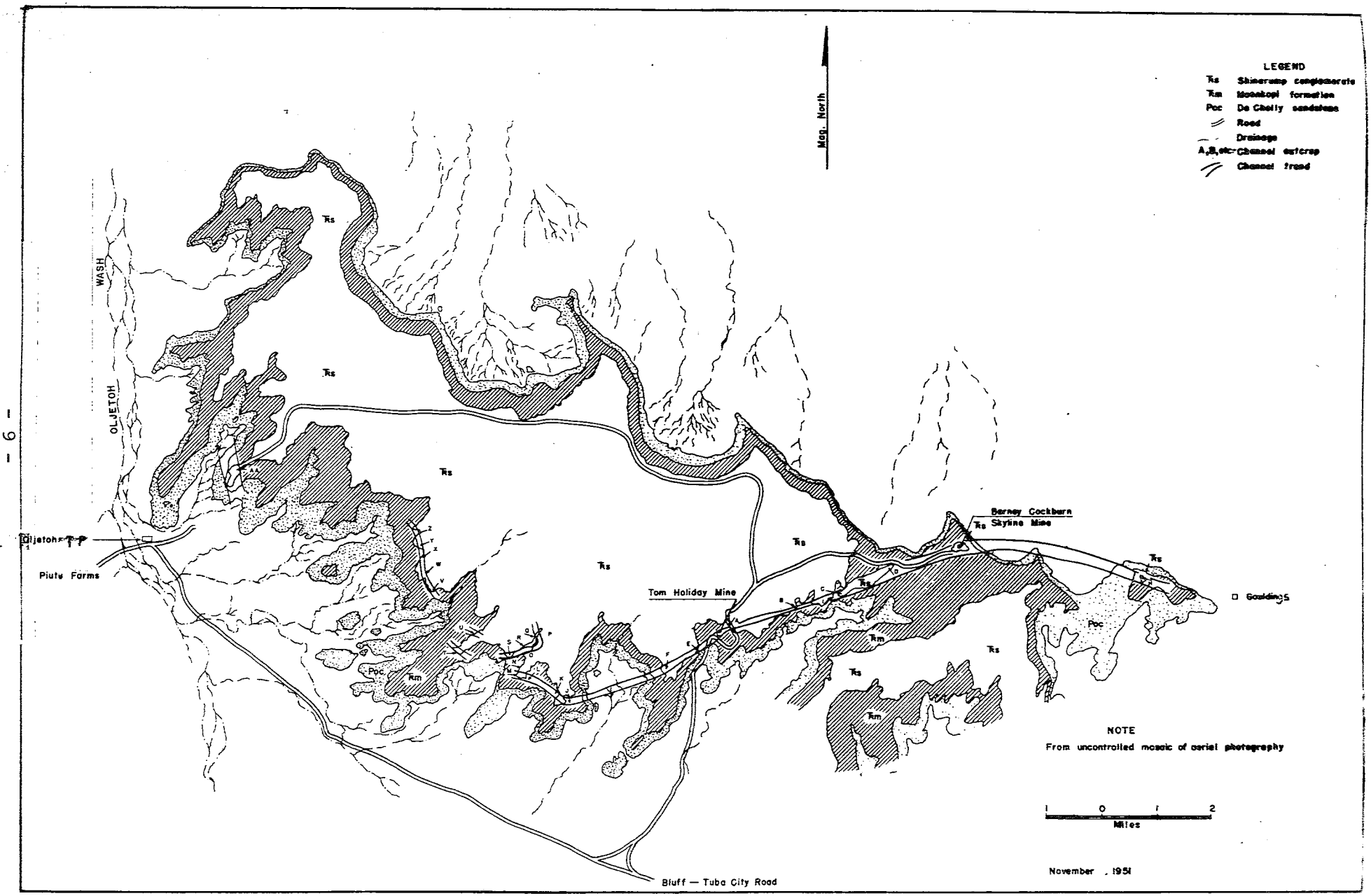

Figure 3. Geologic map of Oljeto Mesa, San Juan County, Utah

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Acknowledgments

The cooperation and assistance of the Vanadium Corporation of America, Climax Uranium Company, and H. R. Goulding greatly facilitated drilling operations.

Acknowledgment is due to J. D. Shaw for his work in supervising diamond drills, spotting hole locations, logging core, and in keeping structure contour maps up to date.

HISTORY AND PRODUCTION

The largest mine in the area is the Monument No. 2 owned by the Vanadium Corporation of America. It is operated under a lease obtained directly from the Navajo Indian Tribal Council and has been in operation since 1949. It is one of the largest producers of uranium ore in the Plateau. Climax Uranium Company is operating a small mine known as the Cato Sells Monument mine. Jessie Black owns another small mine in the vicinity. There has been some production from the Barney Cockburn or Skyline mine. Vanadium Corporation of America produced some uranium ore from their Monument No. 1 mine located on a mesa southeast of Oljetoh Mesa. This mine was abandoned as exhausted in June 1950.

TABLE 1.--Production of uranium-vanadium ore from Monument Valley

Property	Short Tons	Average grade, percent		Date
		U_3O_8	V_2O_5	
Monument No. 1, VCA	615.76	0.20	1.20	1948-50
Monument No. 2, VCA	81,572.13	0.47	1.76	1948-51
Cato Sells Monument	2,194.75	0.42	1.29	1951
Blackwater	1,987.33	0.18	0.97	1950-51
Skyline	1,470.00	0.17	0.30	1949-50
Total	87,145.81	0.45	1.71	

GEOLOGY

General Geology

The following geologic section is from a preliminary report on geologic studies in Monument Valley, Arizona, by Witkind and others. 1/ The areas drilled are on the fringe of the area discussed in Witkind's paper so the thickness of strata measured by Witkind and party may not necessarily agree with those disclosed by drilling.

Generalized Section

Period	Formation	Thickness, feet
Lower Jurassic	Navajo sandstone	500
	Kayenta formation	165
	Upper Wingate sandstone	200-350
	Lower Wingate (?) sandstone	185
- - - - - - - - - - - - - - - -	Unconformity	- - - - - - - - - - - - - - - -
Triassic	Chinle formation	900-1,000
	Shinarump conglomerate	100
- - - - - - - - - - - - - - - -	Unconformity	- - - - - - - - - - - - - - - -
	Moenkopi formation	145
Permian	Cutler formation	
	Hoskinnini tongue	34
	De Chelly sandstone	440
	Organ Rock tongue	700

No attempt was made in the field to distinguish between Moenkopi and the Koskinnini Tongue. The general appearance of the two is quite similar and the drilling program did not require a separation of the two formations.

Drilling disclosed less thickness for the strata in both drilling areas than that shown in the generalized column. The maximum thickness of Shinarump in the Monument No. 2 area was about 60 feet. This was in the channel. The normal thickness found outside the channel in this

area was 25 to 30 feet. This is only an apparent thickness, as in the areas drilled, the Chinle formation has been eroded and probably some of the Shinarump also. The Shinarump is thinning in this area and is absent 10 miles to the north.

The maximum thickness of Shinarump drilled on Oljetoh Mesa was about 90 feet, which was in a channel and not capped with Chinle. Therefore, the true thickness of the Shinarump could not be determined (fig. 3).

Visual inspection indicated the thickness of the Moenkopi in the Monument No. 2 area is about 30 to 40 feet. In the Oljetoh area, it is about 100 feet thick. The Moenkopi thickens rapidly in this area, and about 10 miles west, the combined thickness of Moenkopi-Hoskinnini Tongue is about 300 feet.

The Comb Ridge monocline is the major structural feature. It can be traced from the vicinity of Kayenta, Arizona, to Elk Ridge in Utah. Other smaller folds are present in the Monument Valley area. The fold axes generally trend north.

In the Monument No. 2 drill area the dips average 3 degrees slightly north of east. A short distance away the beds are more sharply tilted with dips ranging up to 40 degrees. Oljetoh Mesa is on the east flank of the Oljetoh syncline and the Shinarump dips gently west.

Lithology

The Chinle formation underlies the Wingate sandstone and according to Gregory 2/ consists of (in descending order): red shale and shaly sandstone; lenses of limestone conglomerate containing red shale; purple, lavender, green, and light-colored variegated shales with limestone conglomerate lenses; and chocolate colored arenaceous shales at the base.

The Shinarump conglomerate should be called a conglomeratic sandstone. Sandstone and conglomerate lenses interfinger and a few clay lenses can be seen. Fluviatile crossbedding is characteristic. Silicified wood is abundant and ranges from small fragments to large logs. In most places this formation is light gray, although there is

local staining by iron and manganese. The contact with the Chinle is gradational, but the lower contact is an unconformity.

The Moenkopi formation is a dark chocolate brown shale with fine-grained sandstone to siltstone interbeds. Ripple marks are common. In areas where mineralized material is present, the upper beds of the Moenkopi have been altered to a yellow to green clay. The thickness of the altered zone can often be used as a guide to overlying mineralized material.

The De Chelly is a fine- to medium-grained sandstone. The color is normally pink to red although it may be bleached to white or light gray. Cross-bedding is common.

Geology of Deposits

The ore bodies are generally small tabular lenses confined to the lower slopes or the bottom channels in the Shinarump with their long axes parallel to the channel direction. In the Monument No. 2 area, where the Moenkopi has been removed completely by scouring, the upper part of the De Chelly has been mineralized.

Ore of the Monument No. 2 channel is similar in appearance to the carnotite ores of the Uravan Mineral Belt. The principal ore minerals are carnotite, metahewettite, farnandinite, and several hydrated vanadium oxides that have not been identified. Trace amounts of pitchblende have been identified by the trace elements laboratory of the U. S. Geological Survey (fig. 11).

Copper minerals are present in the Oljetoh Mesa area. The vanadium content of the Oljetoh Mesa ore is low. Only trace amounts of copper have been found in the Monument No. 2 area.

Ore Controls

It is believed that sedimentary structures are one of the major controlling factors for uranium deposition in the Monument Valley area. No mineral deposits have been observed in this area outside of channels. In the majority of the deposits the mineralized material is confined to the bottom or lower sides of the channel and most often in scours or potholes in the channel.

The structure contours drawn on the base of the Shinarump indicate a confluence on South Ridge. Cross-bedding, fore-set bedding and scours at the base of the channel indicate a stream flow from south to north. This apparently resulted in a deep scour extending from the northern part of South Ridge across the Main Ridge and becoming more shallow on Yazzie Mesa. The ore is confined to this deep scour.

On Oljetoh Mesa a structure contour map drawn at the base of the Shinarump demonstrated that the ore deposits were localized in scours and low spots within the channel. It was noted that bends in the paleochannel were especially favorable loci for ore deposition. Bryan 3/ suggests, in discussing present-day stream channels, that scour depressions are most likely to form on the outside bend of streams where the force of the current and erosive force are greatest.

Tertiary dikes and intrusives are present, and an examination of these shows that they contain above normal quantities of uranium. Chemical assays indicate that the uranium may be as high as 0.02 percent U_3O_8.

It might be inferred from this that circulating ground waters have leached these intrusives and carried the uranium solution through the formations (the Shinarump is recongnized as a good aquifer) and redeposited the uranium in the scours of the most favorable channels.

PROJECT ACTIVITIES

The objectives of drilling in the Monument Valley area were to locate and delineate paleochannels at the base of the Shinarump formation and to block out ore bodies in any mineralized area found.

The core drilling under contract AT(30-1)-1258 was designed to complete the work started under the previous contracts AT(05-1)-120 and AT(30-1)-1142 and also to do a small amount of drilling on the lease of Vanadium Corporation of America, on Cato Sells' claim, and on the Jessie Black claim as a guide for these mining operations in their exploration work.

South Ridge and Yazzie Mesa were considered barren or unprofitable to mine previous to the drilling by the Atomic Energy Commission.

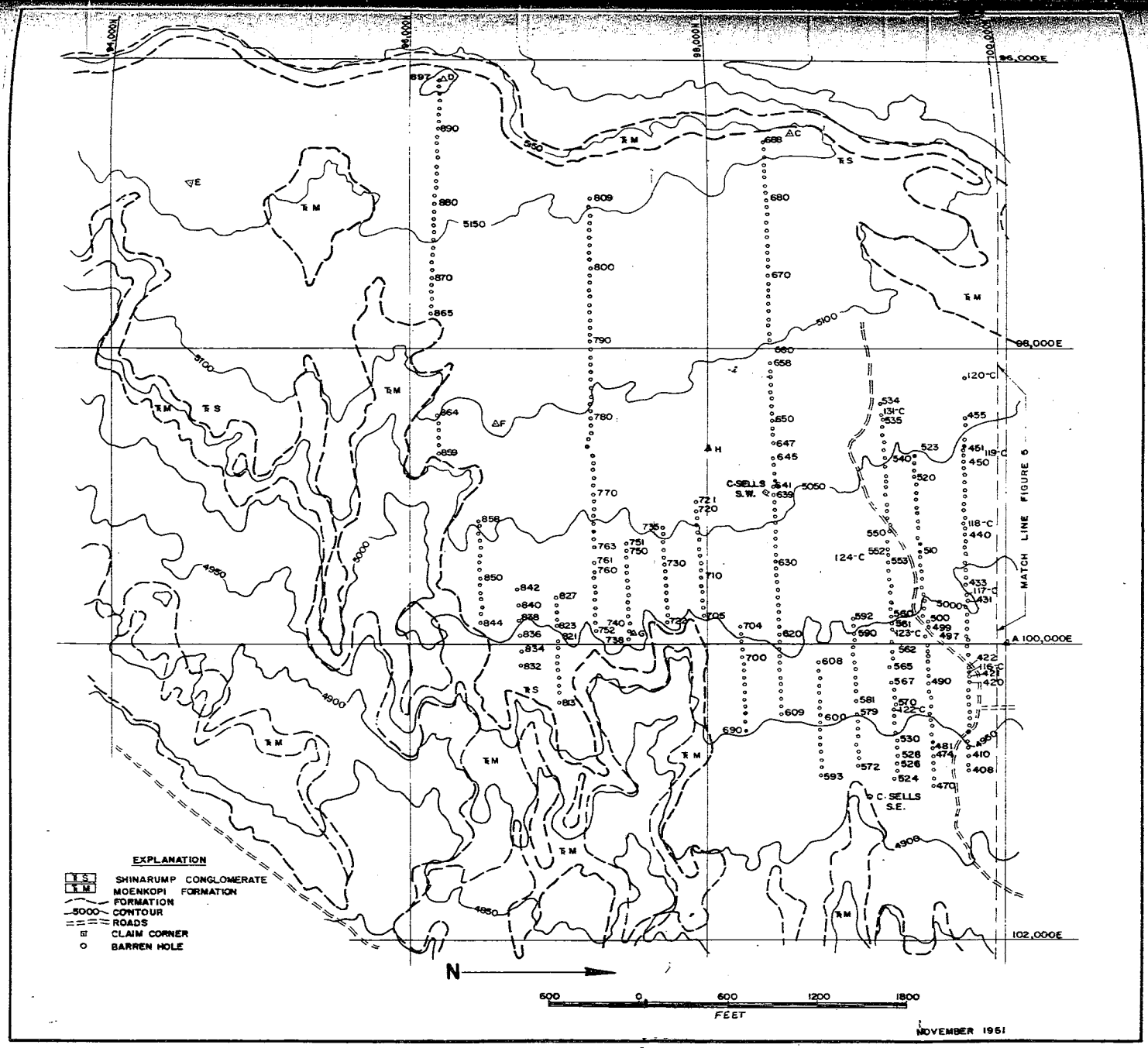

Figure 4. South part of South Ridge drilling area, Apache County, Arizona

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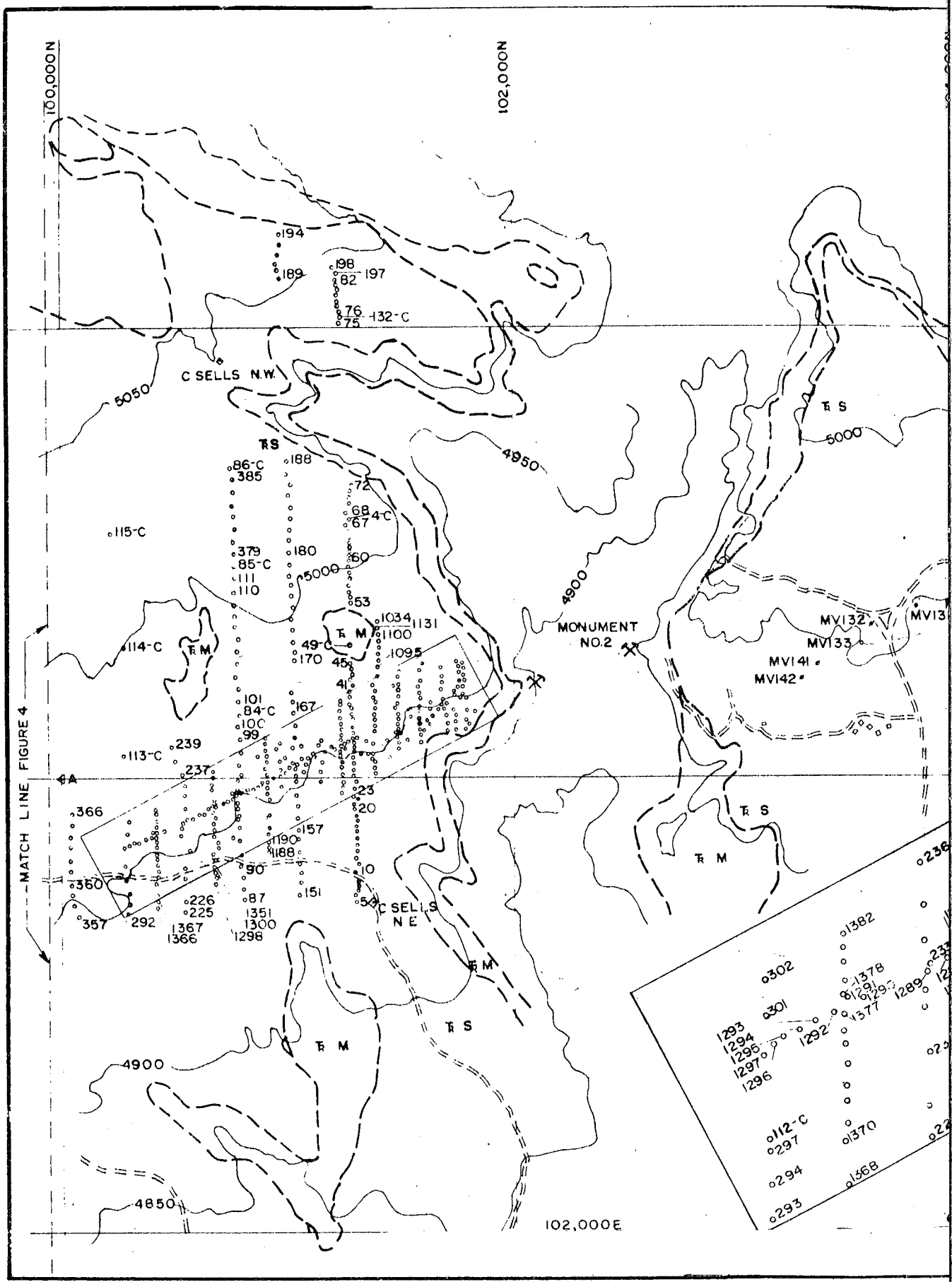

Figure 5. North part of South Ridge and Monum

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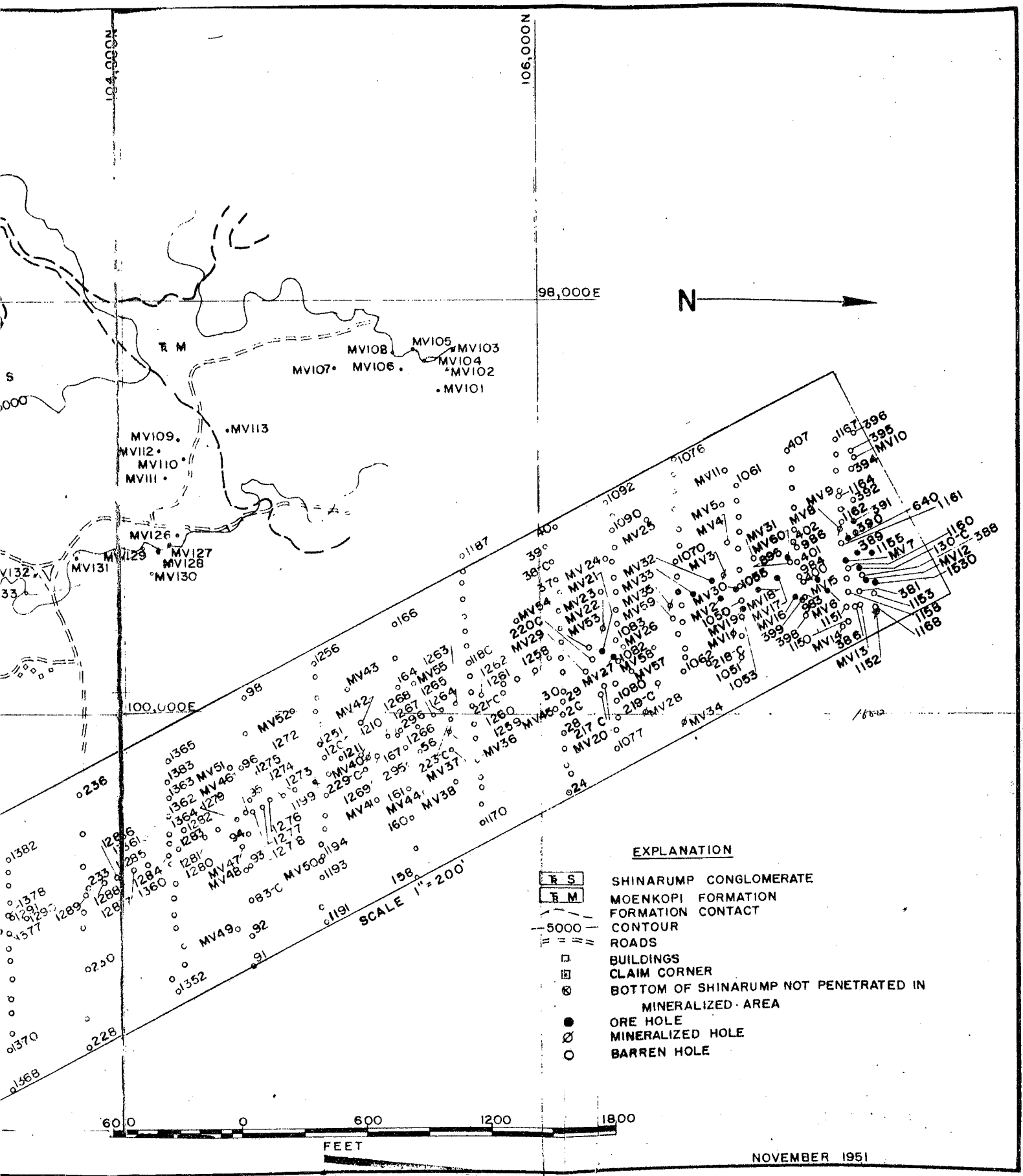

Monument No.2 drilling areas, Apache County, Arizona

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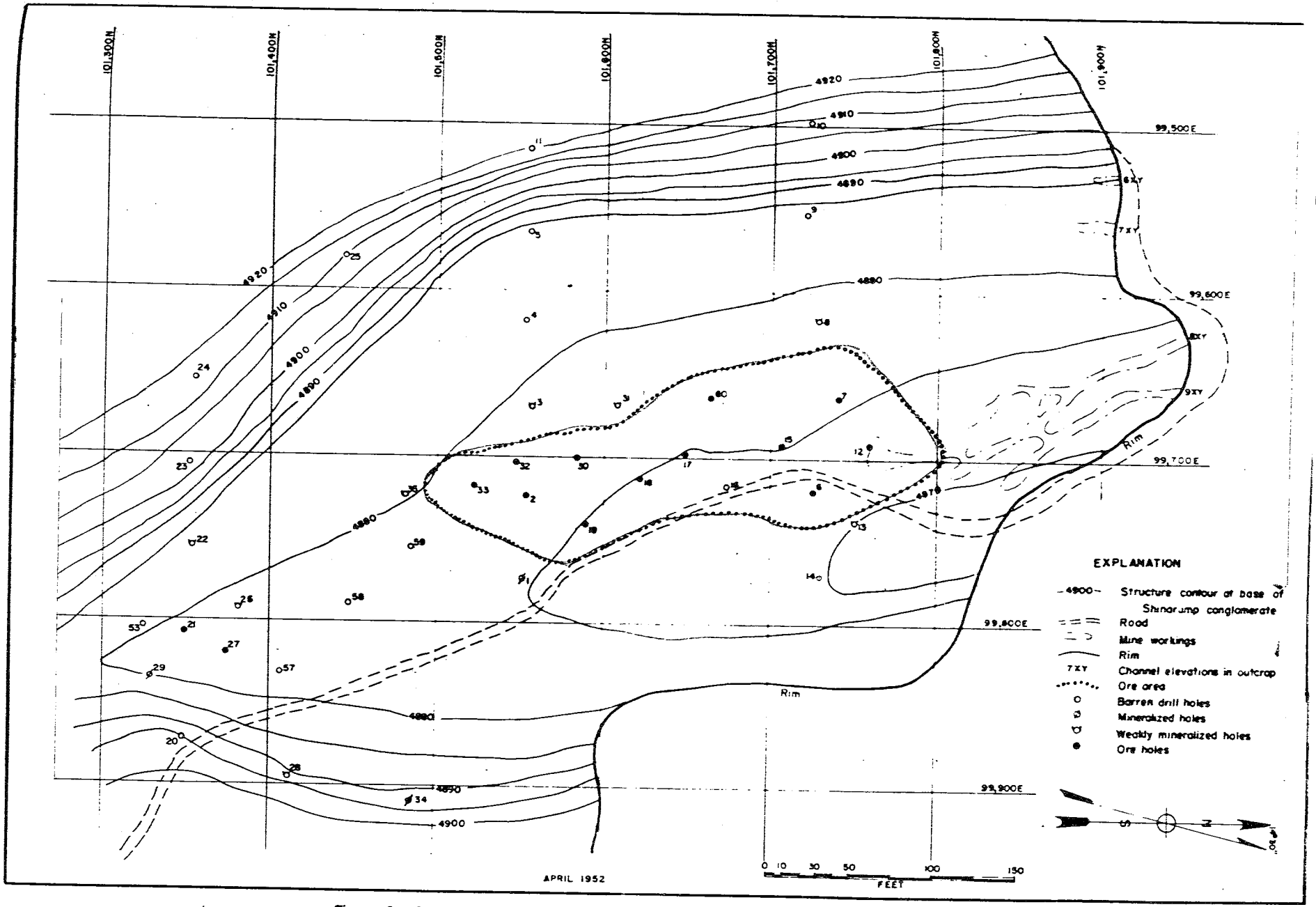

Figure 6. Contour map at base of Shinarump conglomerate — South Ridge area
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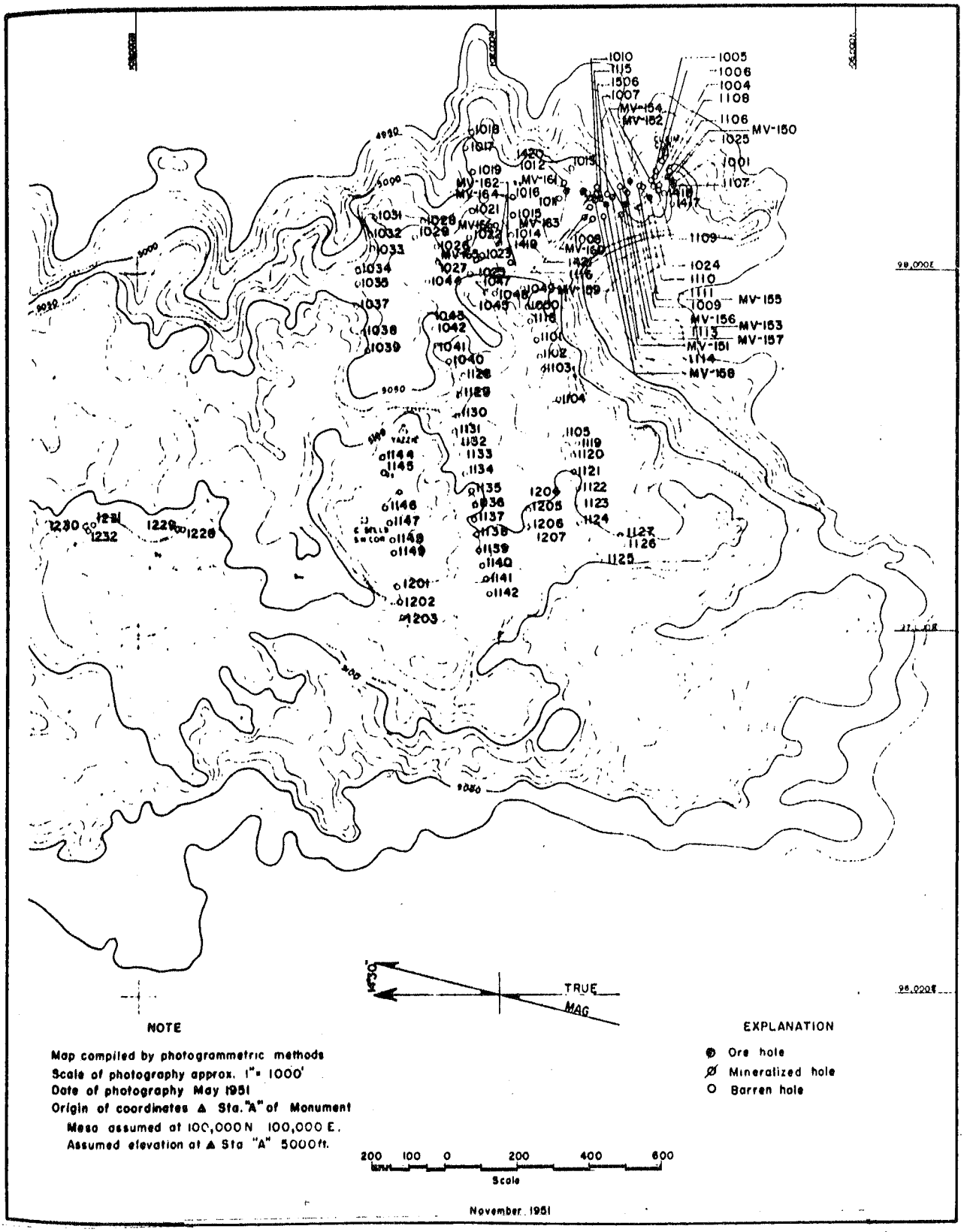

Figure 7. Drill hole map--Yazzie, Mesa, Apache County, Arizona

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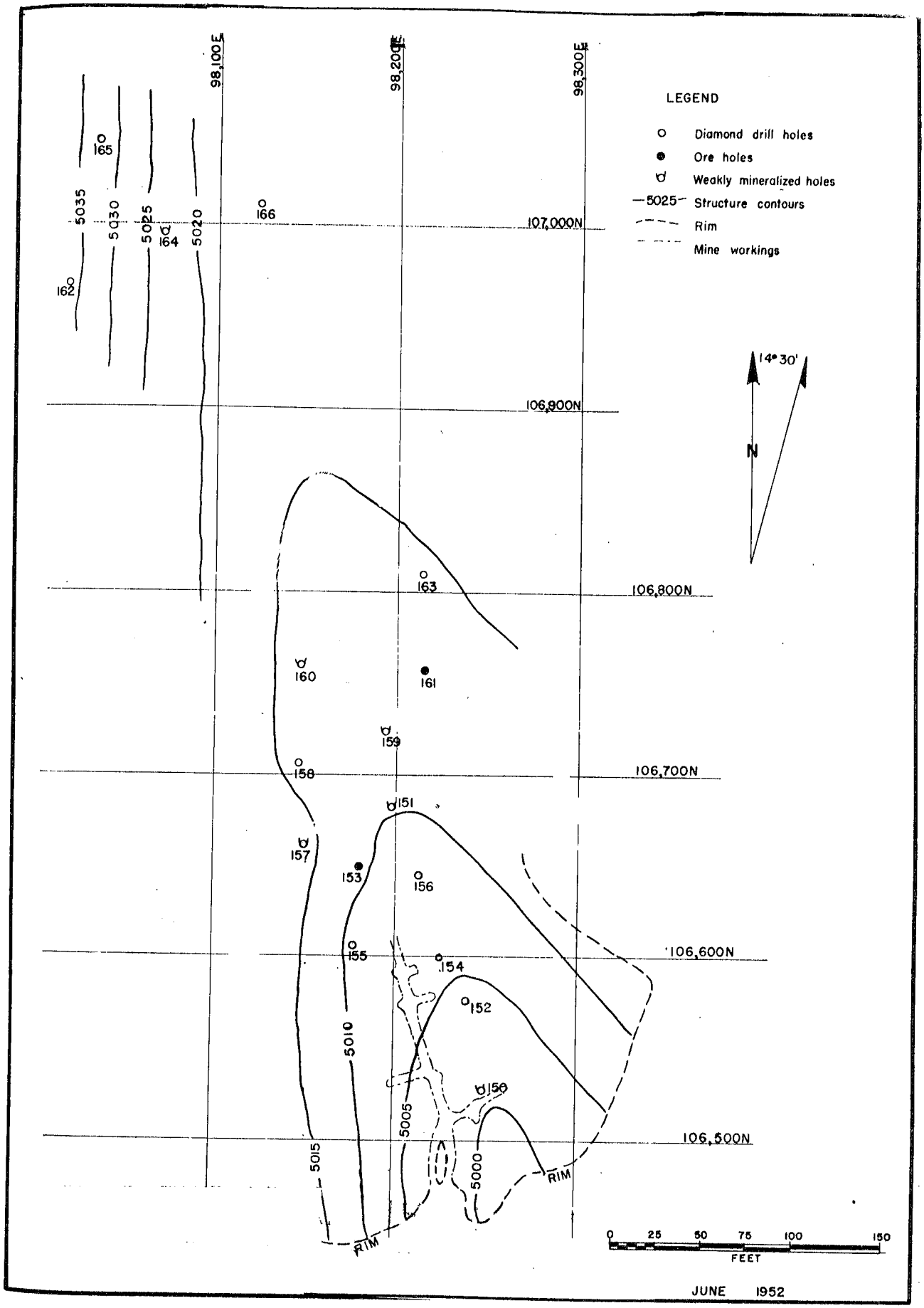

Figure 8. Contour map at base of Shinarump conglomerate at Yazzie Mesa Apache County, Arizona

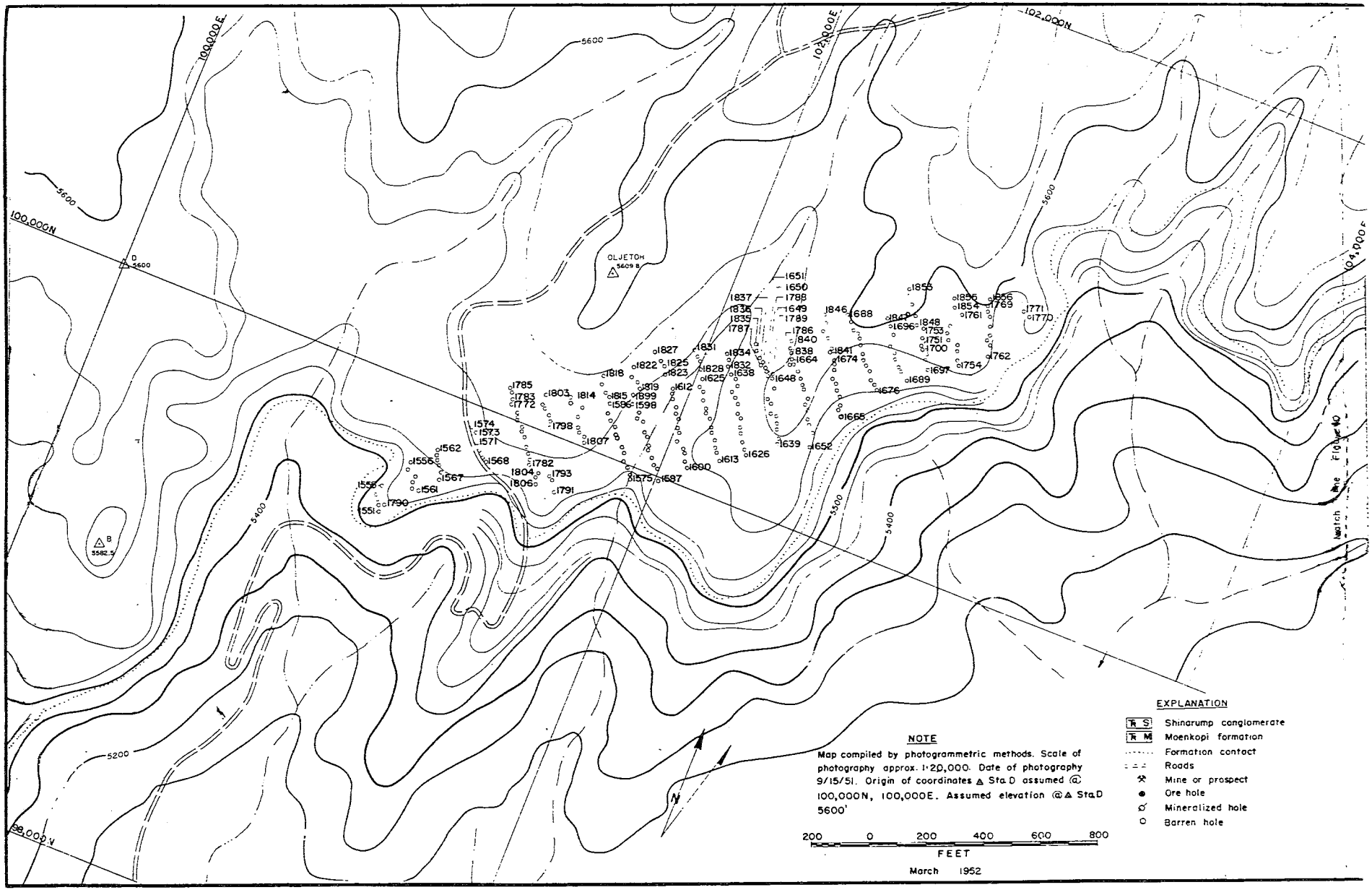

Figure 9: Drill hole map, Oljetoh Mesa, San Juan County, Utah

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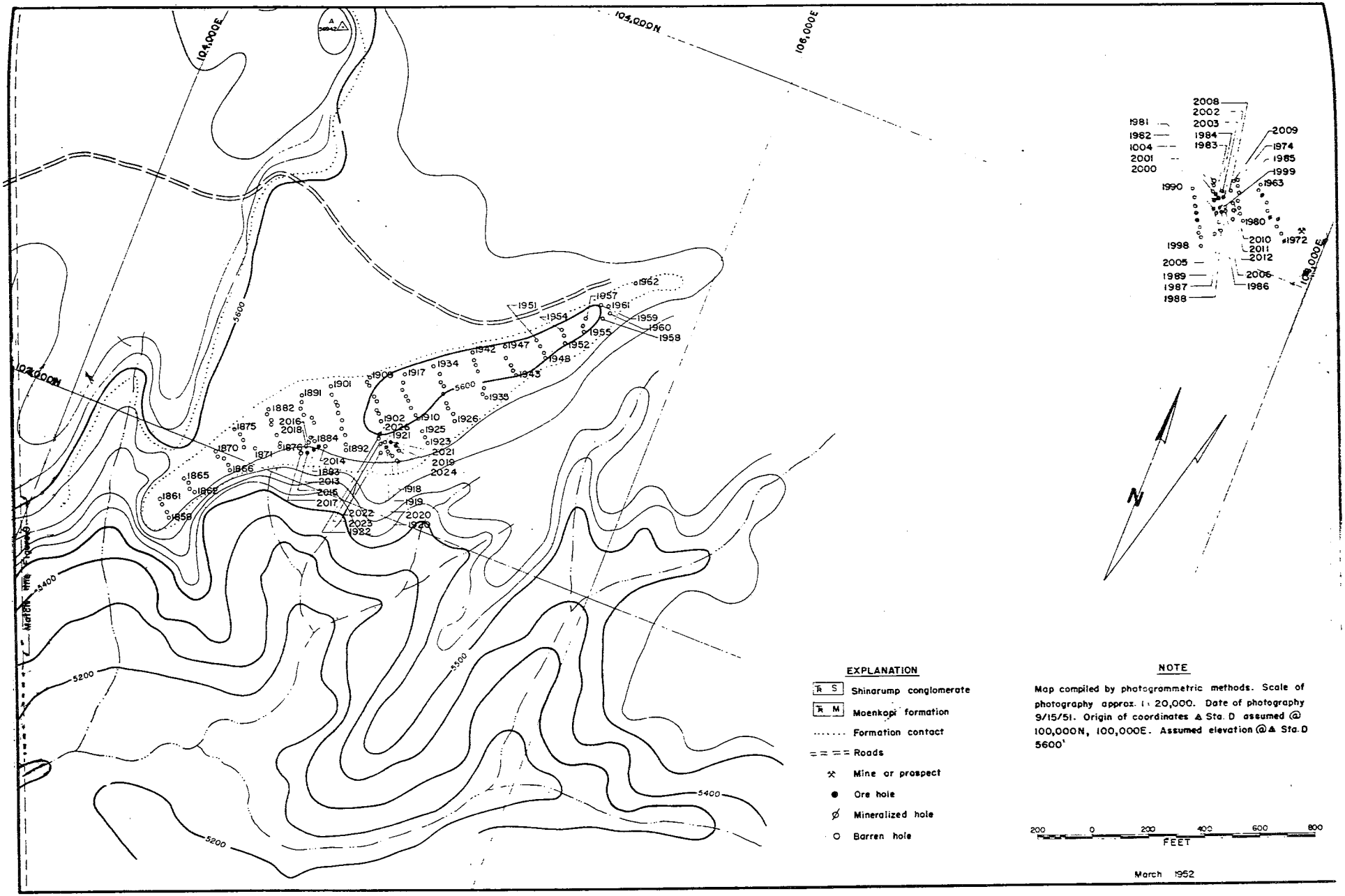

Figure 10: Drill hole map, Oljetoh Mesa extension, San Juan County, Utah

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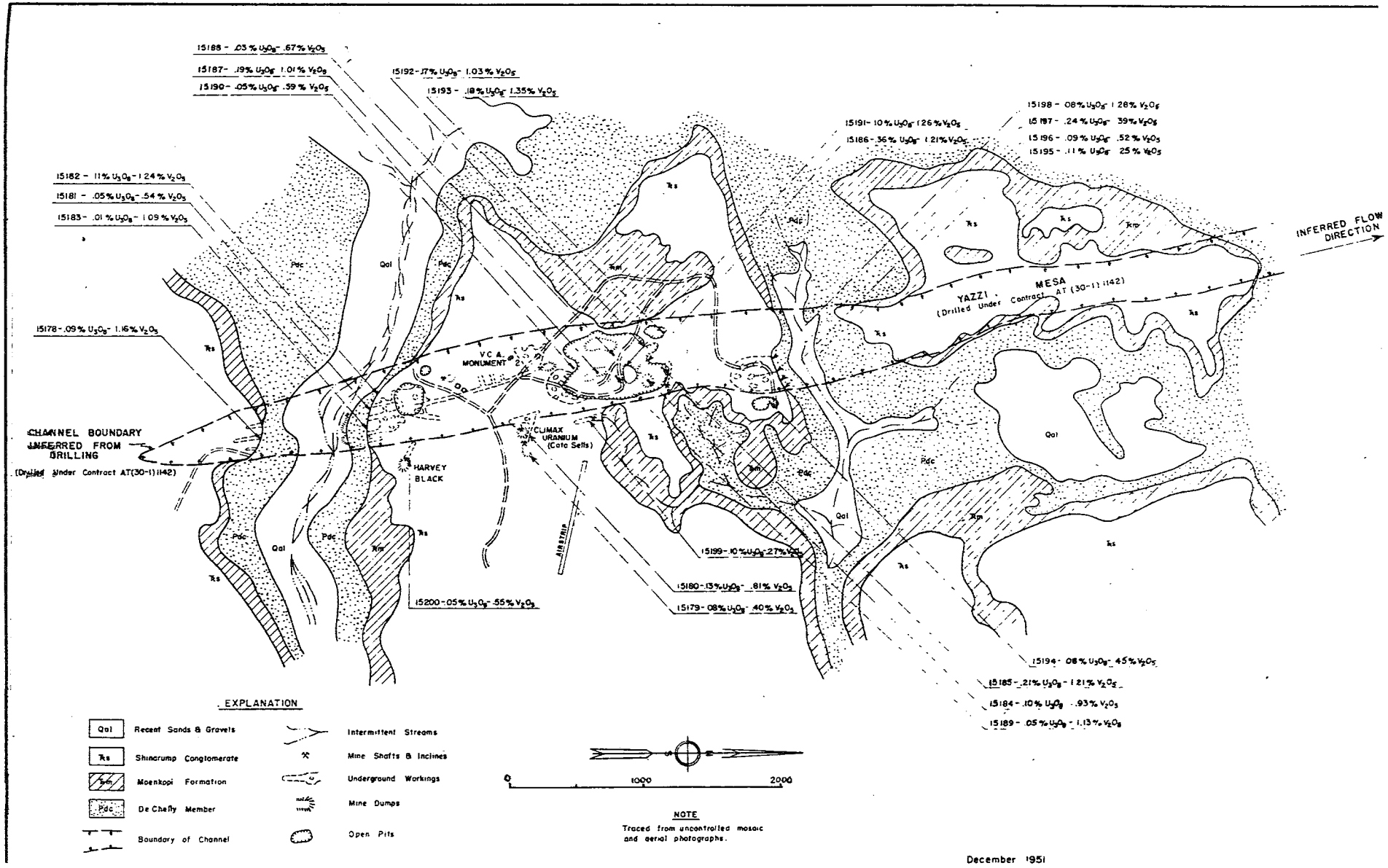

Figure II. General geology, Monument No.2 area, Apache County, Arizona

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Drilling

Non-Core Drilling

The drilling patterns suggested by the Geological Section were followed except for minor changes.

On South Ridge a "picket fence" pattern was used to trace the main channel (figs. 4 and 5). Parallel lines of drill holes 250 feet apart were laid out normal to the expected trend of the channel. With a few exceptions, drill holes on these lines were spaced 50 feet apart. Once the channel boundaries were found, additional rows of holes on 25-foot centers were laid out between the main grid lines (fig. 6).

The drilling pattern on Oljetoh Mesa was similar. The channel to be drilled had been fairly well defined by the preliminary geologic work, so that it was possible to confine drilling to the channel. Rows of holes normal to the channel trend were spaced 125 feet apart with holes on 25-foot centers. Behind the Barney Cockburn or Skyline mine, row spacing was reduced to 75 feet in order to increase hole coverage (figs. 9 and 10).

The drilling pattern was modified on Yazzie Mesa due to the topography. Wherever practicable, however, the "picket fence" pattern was maintained (figs. 7 and 8).

The offset pattern used around mineralized holes in all three drilling areas was a conventional square "five spot". The mineralized hole was at the intersection of the diagonals of the square, and the offset holes were placed 25 feet from the mineralized hole along the diagonals. If topography permitted, orientation of the square was with one diagonal normal to the channel trend and the other parallel to the channel.

Preliminary Core Drilling

In order to obtain information on the thickness of the Shinarump to guide the non-core drilling, 34 diamond drill holes were laid out on South Ridge on 500-foot centers.

Investigational Core Drilling

No definite pattern was used in the investigational diamond drilling. Prior to drilling, the outcrop and mine workings were mapped with a plane table, and from this information a fence of holes was laid out south of the mine workings across the channel. Upon completion of a hole, the location, collar elevation, and elevation of the base of the Shinarump were determined and plotted on the map, and a structure contour map of the channel was made. This map was kept up to date and the information used as a guide to the locations of subsequent holes.

Offset holes were not drilled in a definite pattern, but were located to give the desired hole density to adequately block out the ore.

Characteristics of Drill Core and Cuttings

It was relatively easy to pick the Shinarump-Moenkopi contact. The top of the Moenkopi is either a red mudstone, or (more often) an altered mudstone of a clayey consistency which ranged from yellow to light tan in color. The base of the Shinarump is usually a light-colored sandstone, sometimes conglomeratic, and the sudden change in the drill action and color of the cuttings was sufficient to indicate the contact had been penetrated. In areas where the entire Moenkopi section has been eroded by paleostreams, the contact between the Shinarump and underlying De Chelly was difficult to recognize. There usually was no color change at the contact because the normally red De Chelly had been bleached to white or light gray by the mineralizing solutions. Fortunately, the area of complete Moenkopi erosion was small and only found at the north end of South Ridge. Grain size was an important guide to the Shinarump-De Chelly contact; the De Chelly is fine-grained while the base of the Shinarump is usually conglomeratic. In doubtful holes the drillers were instructed to drill to the distinguishable red color of the unbleached De Chelly.

The lower Shinarump contact could be determined more readily from the core than was possible with the wagon drills. Locally, the Shinarump contains lenses of green or red mudstone. It is very easy to mistake these lenses for the Moenkopi in wagon drill cuttings. In areas where the Moenkopi is absent and the De Chelly is bleached, it is very difficult to pick the contact from wagon drill cuttings. However, the contact could be determined readily from the core.

Drilling Statistics

Pertinent drilling data are given in the following tables 2 to 5:

TABLE 2. - Drilling statistics, core drilling Contract No. AT(05-1)-120

Total core drilling, feet	1,158.0
Core recovery, percent	83.2
Total drill holes	51
Pattern holes	51
Offset holes	0
Average depth, feet	22.7
Mineralized holes	0
Mineralization, average depth, feet	33
Ore holes	1
Drills per shift	1 of 1
Feet per drill shift	64.3
Personnel, AEC	1
Personnel, service contractor	2
Personnel, drill contractor	1
Total working shifts	18

TABLE 3. - Drilling statistics, wagon drill Contract No. AT(30-1)-1142

	South Ridge	Yazzie Mesa	Oljetoh Mesa	Total
Total non-core drilling, feet	20,813.7	7,382.0	16,834.7	45,030.4
Total drill holes	930	316	417	1,663
Pattern holes	912	300	389	1,601
Offset holes	18	16	28	62
Average depth, feet	22.3	23.4	40.4	27.1
Mineralized holes	10	9	28	47
Mineralization, average depth, feet	34.4	20.6	36.3	30.4
Ore holes	3	6	14	23
Drills per shift	1.4	1.2	2	1.7
Feet per drill shift	253.8	279.6	295.3	228.7
Drill and access roads, feet	48,000	14,000	17,000	79,000
Drill sites prepared	926	312	429	1,667
Personnel, AEC	2	2	3	
Personnel, service contractor	3	3	4	
Personnel, drill contractor	7	7	7	
Total working shifts	65	22	53	140

TABLE 4. - Drilling statistics, core drilling Contract No. AT(30-1)-1258

	South Ridge	Main Ridge	Yazzie Mesa	Total
Total drilling	2,523.5	1,091.8	549.4	4,164.7
Total drill holes	60	23	17	100
Average depth, feet	42.1	47.5	32.3	41.7
Offset holes	---	---	---	---
Weakly mineralized holes	13	12	6	31
Ore holes	15	11	2	28
Average depth of mineralization	32.07	26.95	15.0	
Drills per shift	2	2	2	2
Footage per drill shift	35.0	32.1	30.5	33.6
Personnel, AEC	1	1	1	1
Personnel, contractor	2	2	2	2
Personnel, drilling	4	4	4	4
Total work days	36	17	9	62
Total drill shifts	72	34	18	124

TABLE 5. - Composite of drilling statistics

	Table 2	Table 3	Table 4	Total
Total drill, feet	1,158	45,030.4	4,164.7	50,353.1
Total holes	51	1,663	100	1,814
Average depth, feet	22.7	27.1	41.7	27.8
Mineralized holes	0	47	59	106
Ore holes	1	23	28	52
Drills per shift	1 of 1	1.7 of 2	2	1.8 of 2
Footage per drill shift	64.3	288.7	33.6	132.5
Total working shifts	18	140	62	220

Engineering

As there were no maps of the Monument No. 2 area or the Oljetoh area, it was necessary to prepare maps from aerial photographs. A triangulation net was established in each of the areas and this net was used as control for all horizontal and vertical surveys.

In the Monument No. 2 area, arbitrary datum and co-ordinate systems were established with no tie-in to an established point. This was necessary because the nearest verifiable datum point was about 30 miles distant. The same co-ordinate system was used for both South Ridge and Yazzie Mesa.

On Oljetoh Mesa, it was also necessary to establish an arbitrary datum and co-ordinate system.

Radiometric Hole Logging

In logging non-core holes, Geiger-Mueller counters with detachable tube housings were used to check the cuttings.

The channel at the north end of South Ridge and some of the holes on Oljetoh Mesa were logged by a subsurface Scherbatskoy gammaray logging unit mounted on a jeep station wagon. This unit was equipped with Geiger-Mueller tubes of different sensitivities which were used interchangeably, depending on the amount of radioactivity indicated. In some instances this logging showed radioactive trends which had not been detected by the hand counters.

Core drill hole sludges and core were checked with a Geiger-Mueller counter with the tube built into the case. It was found satisfactory.

None of the core drill holes were logged by the subsurface logging units as they were not abailable. Attempts to use a hand logging unit were not successful.

Sampling

Drill cuttings from non-core holes were blown to the surface by compressed air. A sample catcher, consisting of a slotted tub

made from an oil drum and a slotted wooden cover with a rubber flap over the slot, was used to collect the sample. This method of catching the sample was not satisfactory. Drill runs were limited to 5 feet unless radioactivity was indicated by the counter checks, in which case they were reduced to one foot.

During most of the core drilling on South Ridge, sludge as well as core samples were taken. Later sludge samples were kept where core recovery was poor.

Equipment

Two drilling units were used inthe non-core drilling. Each consisted of an Ingersoll-Rand drifter, Model 71 WD, with a 4 1/2 inch hammer mounted on a 20-foot steel boom which pivoted on a steel framework built on a Model D-4 caterpillar tractor. Air was supplied by a 500 c.f.m. Chicago-Pneumatic compressor mounted on a four-wheel chassis.

Drill steel used was 15-foot lengths of 1 1/4-inch hexagonal section with No.2 threads. Most drill bits were 1 7/8-inch gauge with four rectangular tungsten carbide inserts which extend above the bit shoulders. These protruding inserts allowed the bit to cut as it was withdrawn, thus, preventing sticking of the steel. The bits had two airports at the side and at the bottom. The bottom hole wasusually pre-plugged to prevent plugging by clay during drilling.

In core drilling two diamond drills with hydraulic feed and mounted on jeeps were used. A demountable steel boom extendible to 20 feet was fixed to the jeep. Myers water pumps and an "M" type barrel with non-rotating inner shell were used. A 300-gallon water tank mounted on a trailer provided water which flowed by gravity to a two compartment steel sump.

CONCLUSIONS AND RECOMMENDATIONS

Wagon drilling in the Monument Valley area was not satisfactory due to loss of air, caving fround, and wet clay.

Diamon drilling was quite successful and should be used in any future work in these particular areas.

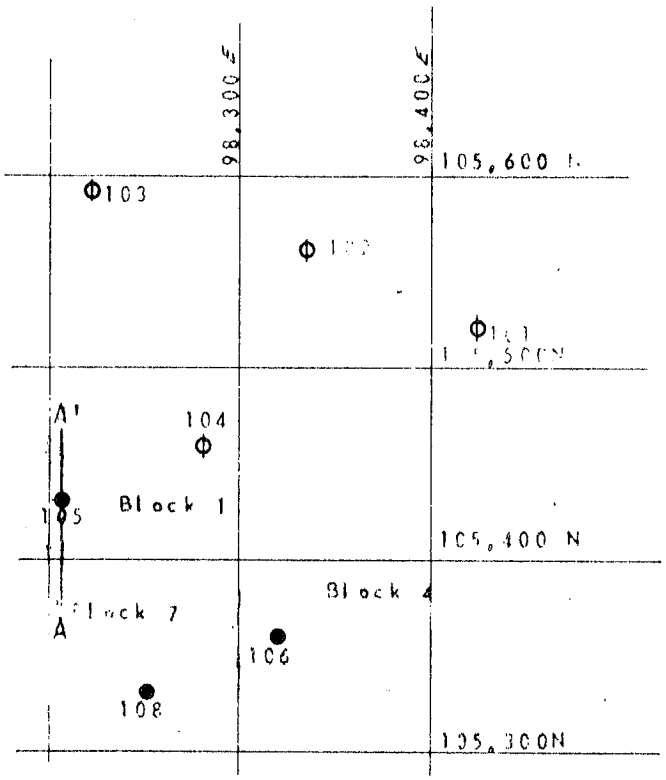
No further drilling is recommended in the immediate areas investigated.

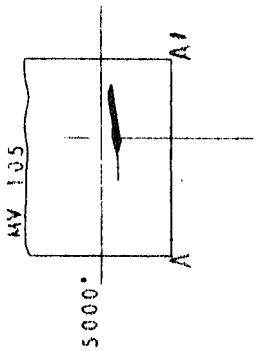
REFERENCES

1/ Witkind, I. J., McKay, E. J., Johnson, D. H., Finnel, T. L., Claus, R. J., and Johnson, D. L., Preliminary report on geologic studies in the Monument Valley area, Arizona: U. S. Geological Survey, TEMR318 (open filed report), October 1951.

2/ Gregory, H. F., Geology of Navajo County: U. S. Geological Survey, Prof. Paper 93, 1917.

3/ Bryan, Kirk, Rock banks and charcos: Am. Jour. Sci., 4th ser., Vol. 50, NO. 297, pp. 188-206, 1920.





○ Barren hole

Φ Mineralized hole

● Ore hole

⊕ Hole not bottomed

U S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE EXPLORATION DIVISION

MONUMENT VALLEY MAIN RIDGE
Block M-1

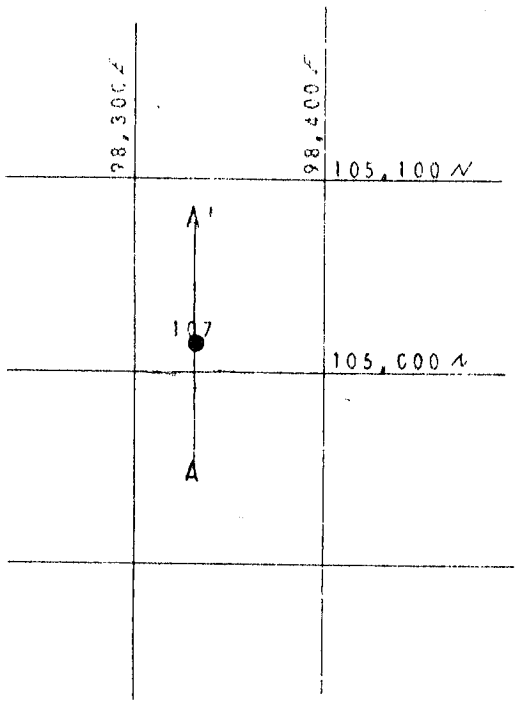
Hor. 1" : 100'
Vert.

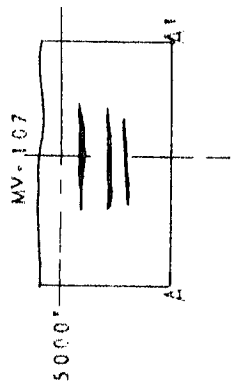
Dec. 1952

TABLE OF DRILL HOLE DATA

M 1

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-105	60.2	5039		38.0	41.8	3.8	0.02	0.10
				41.8	46.8	5.0	0.03	0.15
				46.8	48.0	1.2	0.11	0.14
			II	48.0	49.0	1.0	0.16	0.14
				49.0	50.0	1.0	0.08	0.22
				50.0	51.8	1.8	0.02	0.25





○ Barren hole

⌀ Mineralized hole

● Ore hole

⊕ Hole not bottomed

N

U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE EXPLORATION DIVISION

MONUMENT VALLEY MAIN RIDGE
BLOCK M-2

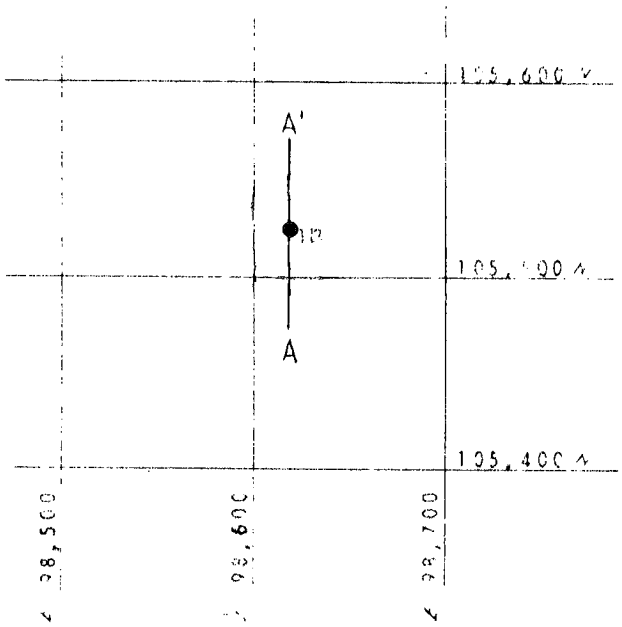
SCALE Hor. 1" : 100'
Vert.

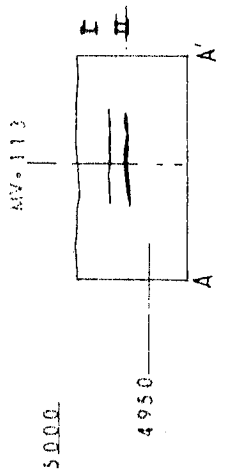
DATE Dec. 1952 DRAWN B

TABLE OF DRILL HOLE DATA

M 2

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-107	46.2	5010		17.9	21.9	4.0	0.01	0.19
				21.9	22.9	1.0	0.15	0.39
				22.9	23.9	1.0	0.06	0.46
			I	23.9	24.9	1.0	0.11	0.44
				24.9	25.9	1.0	0.06	0.35
				35.0	35.5	0.5	0.07	0.78
				35.5	36.0	0.5	0.56	2.36
			II	36.0	37.0	1.0	0.22	1.33
				37.0	38.0	1.0	0.05	0.66
				46.3	46.8	0.5	0.02	0.41
			III	46.8	47.3	0.5	3.04	3.42
				47.3	48.0	0.7	0.02	0.90





○ Barren hole

⌀ Mineralized hole

● Ore hole

⊕ Hole not determined

U.S. ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE EXPLORATION DIVISION

MONUMENT VALLEY MAIN RIDGE

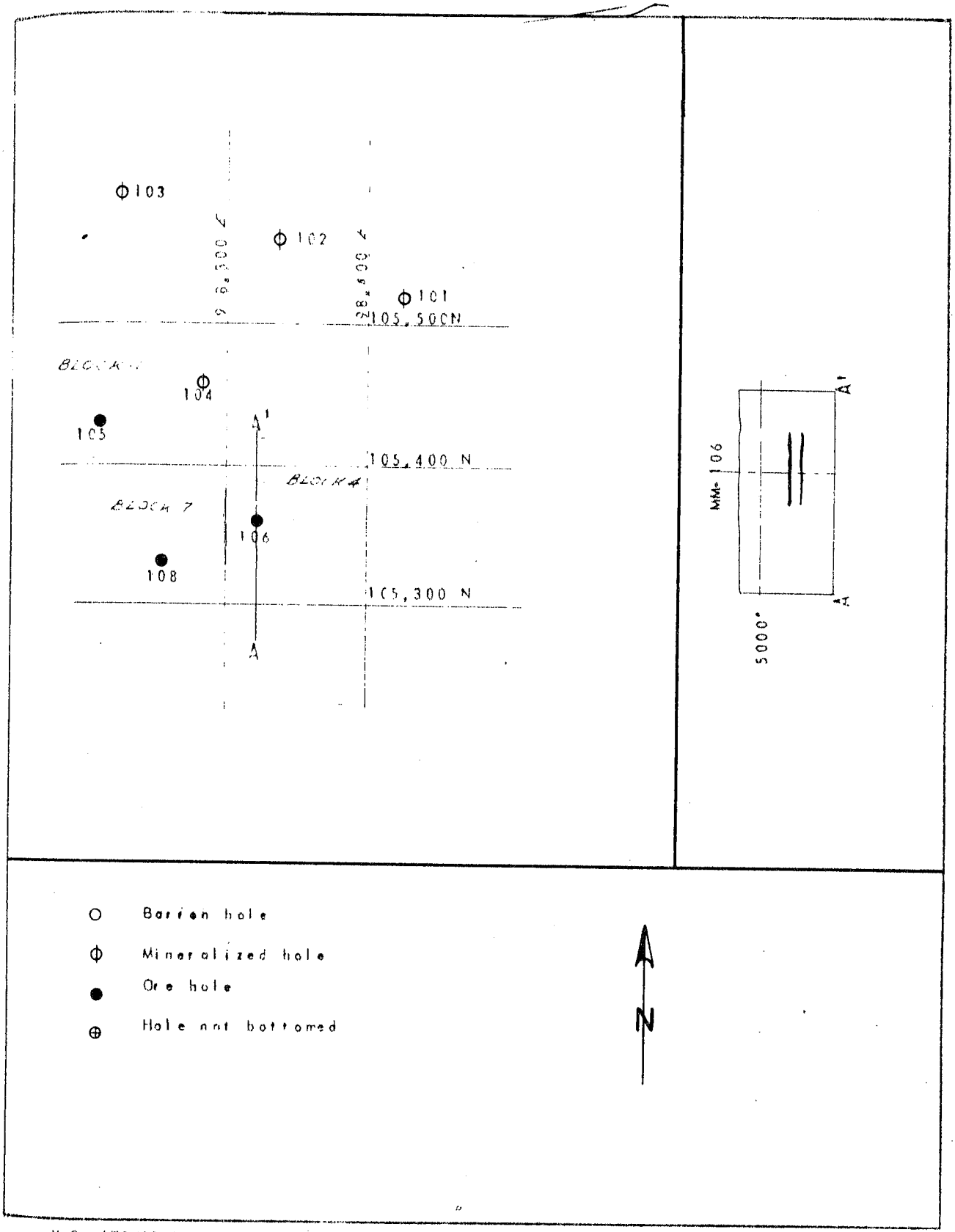
BLOCK B-3

Hor. } 1" = 100'
Vert. } 1" = 100' Dec. 1952

TABLE OF DRILL HOLE DATA

M 3

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-113	47.0	4989	I	19.2	20.2	1.0	0.14	1.18
				20.2	22.0	1.8	0.03	0.57
				22.0	26.0	4.0	0.04	0.84
			II	26.0	27.0	1.0	0.34	0.69
				27.0	28.0	1.0	0.07	0.32



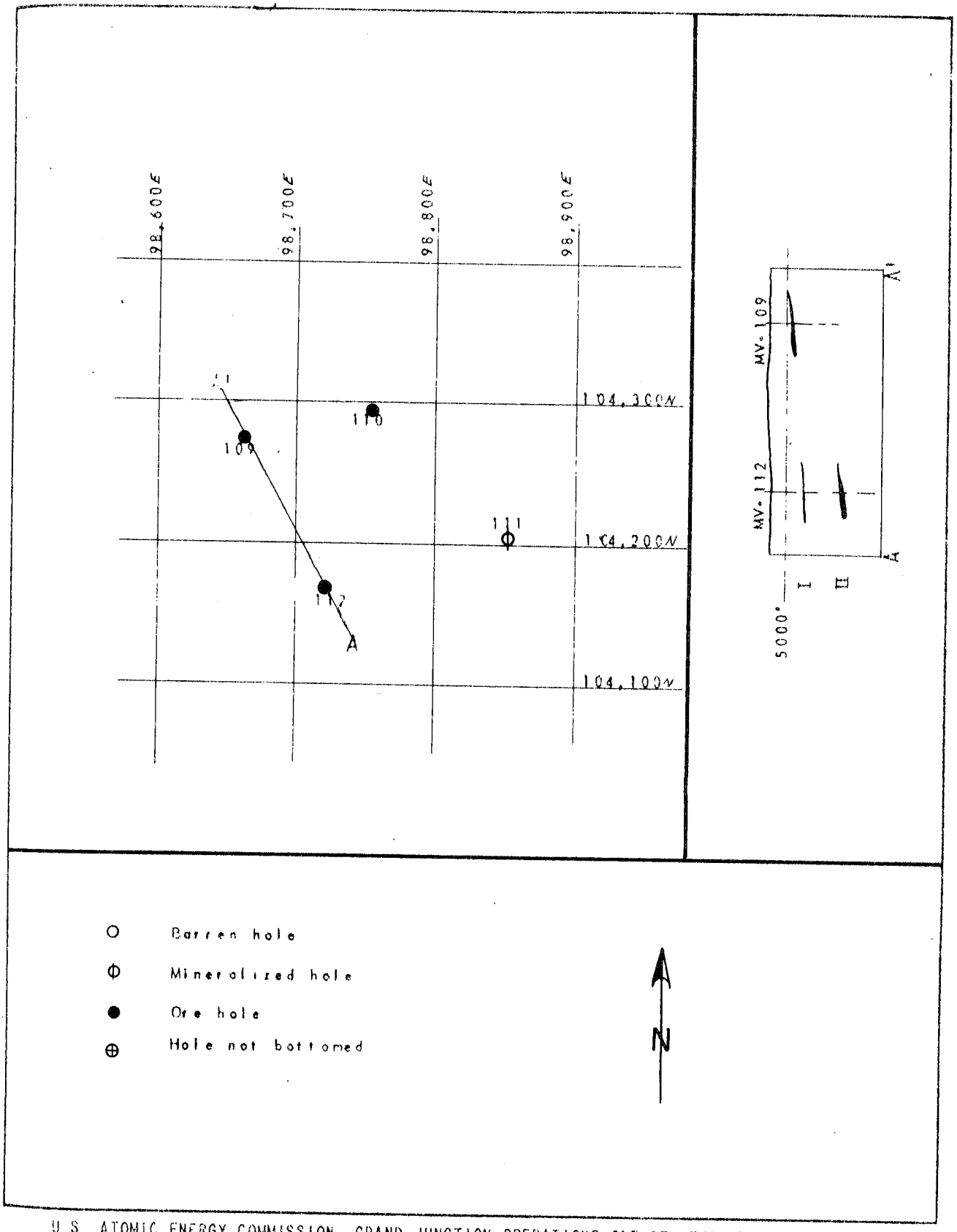
U S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION
MONUMENT VALLEY MAIN RIDGE
BLOCK M-4

Hor. 1" : 100'
Vert.
DATE Dec. 1952 DRAWN B

TABLE OF DRILL HOLE DATA

M 4

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-106	57.5	5017		32.0	36.2	4.2	0.03	0.29
			I	36.2	37.4	1.2	0.29	1.39
				37.4	39.5	2.1	0.03	0.34
				39.5	42.0	2.5	0.03	0.93
			II	42.0	43.0	1.0	0.16	0.69



U S ATOMIC ENERGY COMMISSION. GRAND JUNCTION OPERATIONS OFFICE EXPLORATION DIVISION

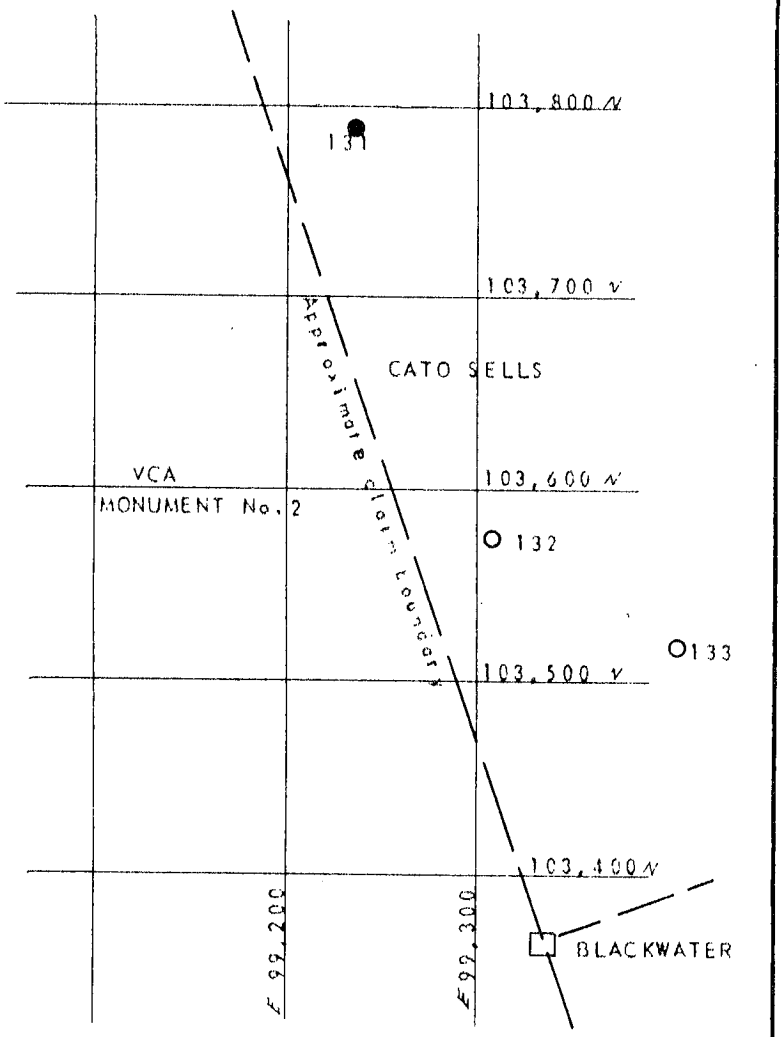
MONUMENT VALLEY MAIN RIDGE
BLOCK M-5

Hor. 1" = 100'
Vert. 1" = 100' DATE Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 5

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-109	86.5	5011		4.0	11.7	7.7	0.01	0.46
				11.7	13.7	2.0	0.07	0.27
			I	13.7	14.7	1.0	0.53	1.55
				14.7	16.7	2.0	0.05	0.15
				16.7	21.7	5.0	0.03	0.14
				21.7	26.0	4.3	0.08	0.49
				26.0	32.0	6.0	0.02	0.47
				40.1	42.7	2.6	0.05	1.51
				46.8	59.0	12.2	0.03	1.28
				59.0	60.8	1.8	0.05	1.54
				60.8	72.0	11.2	0.02	0.63
MV-110	63.0	4964		11.3	17.5	6.2	0.02	0.22
			II	17.5	18.3	0.8	0.11	0.14
				18.3	37.5	19.2	0.02	0.29
				37.5	43.0	5.5	0.08	0.39
				43.0	49.0	6.0	0.03	0.46
				49.0	50.0	1.0	0.07	1.05
				50.0	55.5	5.5	0.03	0.45
MV-112	86.8	5012		16.6	21.6	5.0	0.02	0.08
				21.6	23.6	2.0	0.05	0.10
			I	23.6	26.6	3.0	0.12	0.39
				26.6	38.6	12.0	0.02	0.36
				38.6	41.6	3.0	0.05	0.28
				41.6	51.6	10.0	0.02	0.59
			II	51.6	55.6	4.0	0.10	1.58
				55.6	64.3	8.7	0.06	1.11



O Barren hole

Φ Mineralized hole

● Ore hole

⊕ Hole not bottomed

N

U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

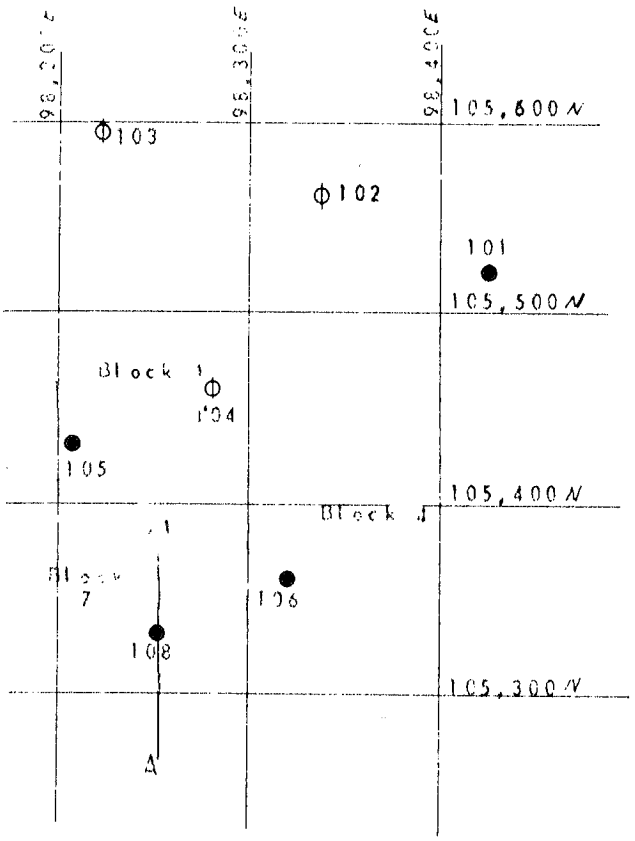
PROJECT MONUMENT VALLEY MAIN RIDGE
BLOCK M-6

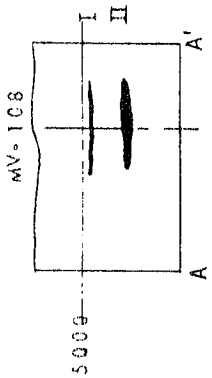
SCALE Hor. 1" = 100' DATE Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 6

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-131	31.5	4957		14.7	16.7	2.0	0.02	0.22
				16.7	18.7	2.0	0.05	0.78
				18.7	19.7	1.0	0.61	3.62
				19.7	20.5	0.8	0.25	2.82
				20.5	21.5	1.0	0.03	1.13
				22.5	26.5	4.0	0.02	0.17





○ Barren hole

Φ Mineralized hole

● Ore hole

⊕ Hole not bottomed

N

U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

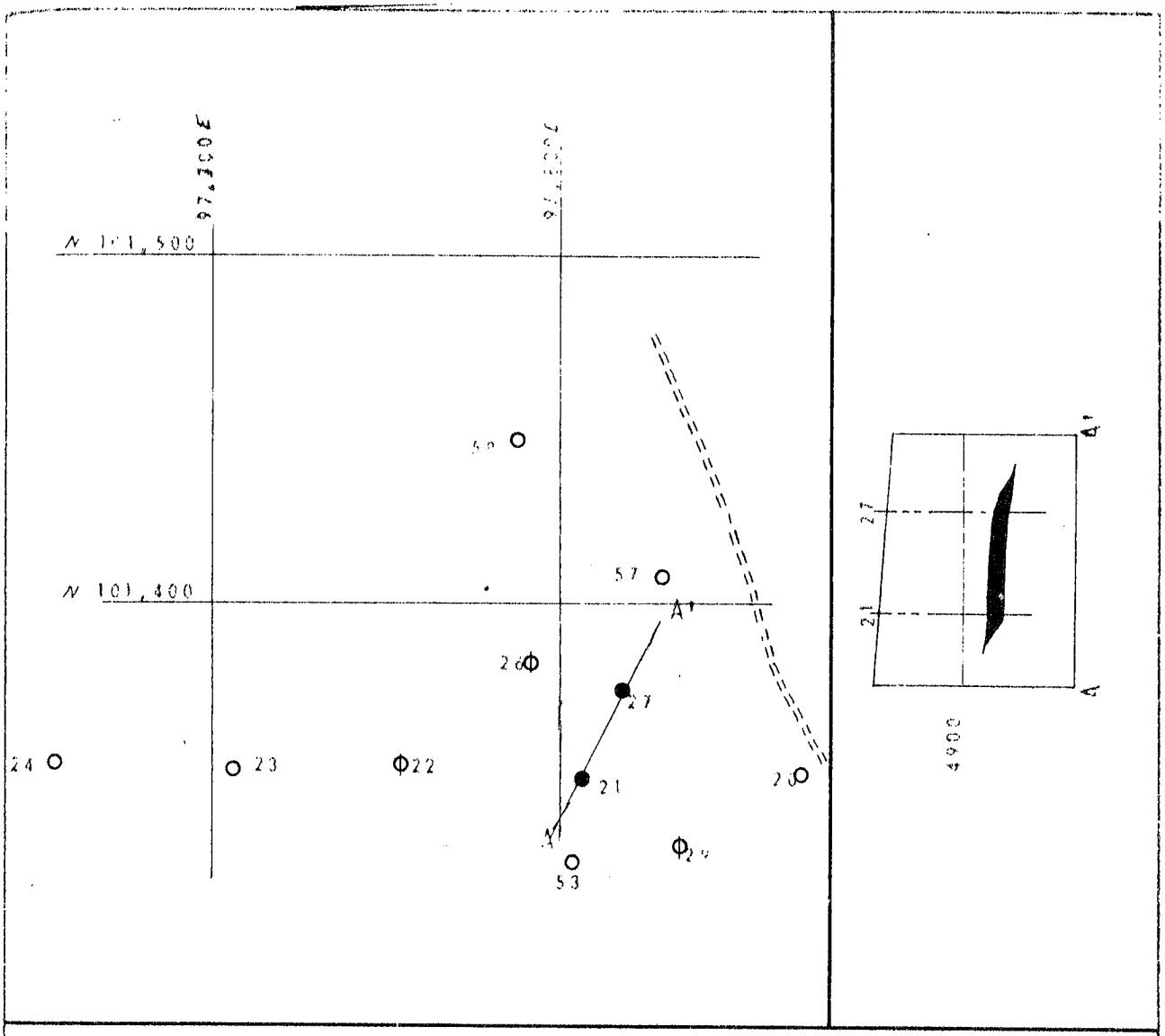
MONUMENT VALLEY MAIN RIDGE
BLOCK M-7

SCALE Hor., 1" 100' DATE Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 7

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
			ORE HOLES					
MV-108	57.5	5028		27.0	31.0	4.0	0.05	0.10
			I	31.0	32.0	1.0	0.51	0.32
				32.0	37.0	5.0	0.05	0.14
				37.0	42.0	5.0	0.03	0.15
				42.0	47.0	5.0	0.04	0.56
			II	47.0	52.0	5.0	0.31	0.47



○ Barren hole

Φ Mineralized hole

● Ore hole

⊕ Hole not bottomed

N

U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

PROJECT MONUMENT VALLEY SOUTH RIDGE

Block M-8

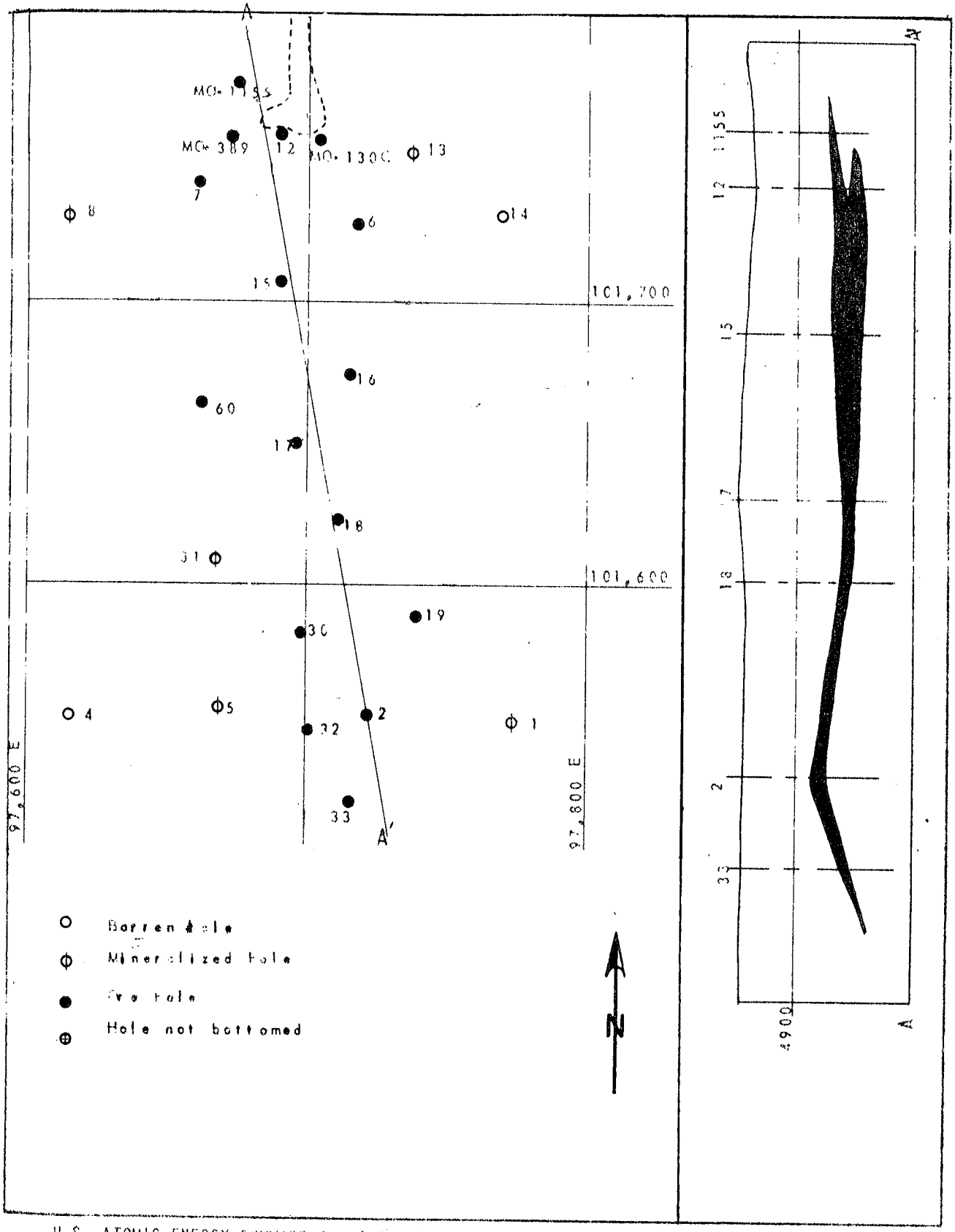
SCALE Hor. } 1" = 50' DATE Dec. 1952 DRAWN BY

Vert }

TABLE OF DRILL HOLE DATA

M 8

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-21	44.9	4924.1		22.5	25.0	2.5	0.01	0.02
			I	31.0	35.0	4.0	1.09	12.66
				35.0	36.0	1.0	0.13	2.39
				36.0	37.0	1.0	----	----
				37.0	39.0	2.0	0.07	0.49
MV-27	46.0	4921.8	I	31.7	35.5	3.8	0.10	1.46
				35.5	36.0	0.5	0.08	0.37
				MINERALIZED HOLES				
MV-29	46.0	4923.1		31.7	35.4	3.7	0.05	0.05
MV-26	47.2	4922.9		11.0	16.4	5.4	tr.	0.00
				BLANK HOLES				
MV-53	18.8	4928.6						
MV-57	47.5	4921.1						



U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

MONUMENT VALLEY
BLOCK M-9

SOUTH RIDGE

Hor. 1" = 50'
Vert. 1" = 50'

Dec. 1952

TABLE OF DRILL HOLE DATA

M 9-1

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-2	50.0	4919.0		0.0	25.0	25.0	0.01	0.01
			I	25.0	30.0	5.0	0.13	0.08
				30.0	39.0	9.0	0.02	0.08
				39.0	42.0	3.0	0.05	0.69
MV-6	51.0	4915.8		25.0	30.0	5.0	0.02	0.10
			I	30.0	36.0	6.0	0.25	1.34
				36.0	37.0	1.0	0.08	1.54
				37.0	37.5	0.5	0.21	5.68
				37.5	41.0	3.5	0.05	2.32
				41.0	43.0	2.0	0.02	0.15
MV-7	47.0	4916.7		10.0	38.0	28.0	0.01	0.54
			I	38.0	39.0	1.0	0.03	1.15
				39.0	41.0	2.0	0.03	0.52
MV-12	45.0	4914.5		20.0	28.0	8.0	0.02	0.02
			I	28.0	30.0	2.0	0.05	1.32
				30.0	31.0	1.0	0.10	1.00
				33.0	34.0	1.0	0.02	0.90
				34.0	35.0	1.0	0.13	1.09
			II	35.0	36.0	1.0	0.07	1.46
				36.0	38.0	2.0	0.03	1.57
				38.0	41.6	3.6	0.03	0.50
MV-15	46.0	4917.6		10.0	20.0	10.0	0.02	0.02
			I	30.0	35.0	5.0	0.23	1.56
				35.0	36.0	1.0	0.06	1.51
				36.0	42.5	6.5	0.03	1.87
MV-16	47.0	4916.2		21.0	27.0	6.0	0.03	0.02
				33.0	35.0	2.0	0.02	0.39
			I	35.0	37.0	2.0	1.13	1.88
				37.0	38.0	1.0	0.16	15.07
				38.0	39.0	1.0	0.02	3.46
				39.0	40.0	1.0	0.15	3.45
				40.0	42.0	2.0	0.06	2.25

TABLE OF DRILL HOLE DATA

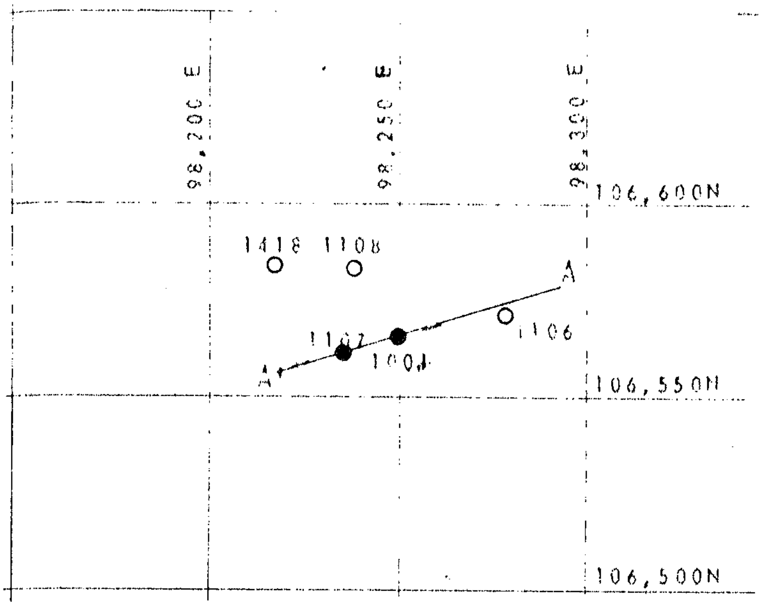
M 9-2

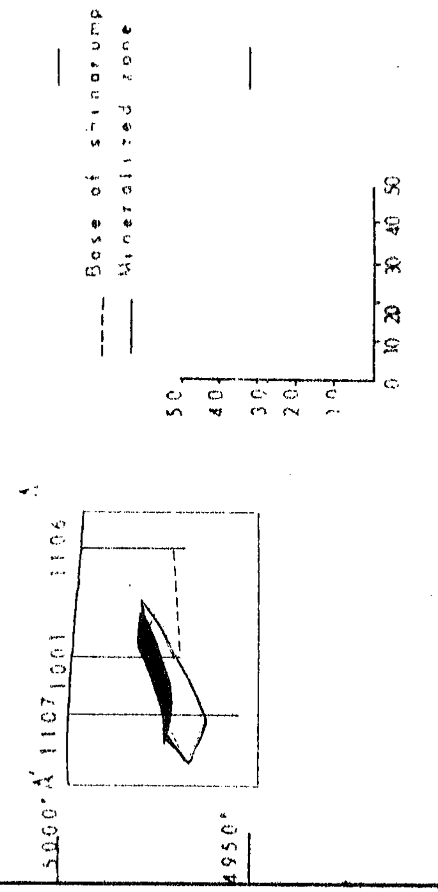
No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-17	47.0	4920.4		27.5	37.5	10.0	0.02	0.04
				37.5	38.0	0.5	14.79	11.90
			I	38.0	39.0	1.0	0.02	0.05
				39.0	40.0	1.0	1.94	0.98
				40.0	43.0	3.0	1.34	13.62
				43.0	44.0	1.0	0.29	-----
				44.0	45.0	1.0	0.03	0.71
MV-18	46.0	4917.0		24.0	26.0	2.0	0.03	0.02
				30.0	33.0	3.0	0.05	0.80
				33.0	34.0	1.0	0.05	1.11
			I	34.0	35.0	1.0	0.02	1.29
				35.0	37.0	2.0	0.35	1.42
				39.0	40.0	1.0	0.04	0.81
				40.0	41.0	1.0	0.06	0.66
				41.0	42.0	1.0	0.04	0.58
MV-19	45.0	4917.7		5.0	10.0	5.0	0.03	0.02
				30.0	40.0	10.0	0.02	0.90
			I	40.0	42.4	2.4	0.11	0.32
MV-30	46.0	4919.0		19.0	21.0	2.0	0.02	0.02
				25.0	27.0	2.0	0.02	0.03
				31.5	33.0	1.5	0.02	0.04
			I	33.0	40.0	7.0	0.35	6.83
				40.0	41.0	1.0	0.08	0.17
MV-32	47.0	4920.4		33.6	36.0	2.4	0.02	0.02
			I	36.3	39.0	2.7	0.13	0.32
				39.0	42.5	3.5	0.03	0.72

TABLE OF DRILL HOLE DATA

M 9-3

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
			ORE HOLES					
MV-33	47.0	4919.0		34.0	36.0	2.0	0.04	0.10
			I	36.0	37.0	1.0	4.33	24.62
				37.0	38.0	1.0	0.13	21.12
				38.0	39.0	1.0	0.05	1.36
				39.0	41.0	2.0	0.06	0.45
MV-60	52.0	4925.0	I	26.0	31.0	5.0	0.13	0.02
				36.0	48.5	12.5	0.02	0.01
MO-130-c	94.0	4918.0	I	32.7	37.4	4.7	0.50	2.97
				37.4	39.0	1.6	0.05	1.68
				39.0	40.2	1.2	0.26	5.38
MO-389	55.0	4919.0	I	25.0	31.0	6.0	0.28	6.55
				31.0	35.0	4.0	1.71	2.25
				35.0	42.0	7.0	0.57	2.28
				42.0	43.0	1.0	0.03	----
				43.0	45.0	2.0	0.07	0.20
			II	45.0	46.0	1.0	0.31	0.60
				46.0	47.0	1.0	0.09	0.18
MO-1155	60.0	4917.0	I	30.0	31.0	1.0	0.16	2.06
				31.0	32.0	1.0	0.05	0.48
			MINERALIZED HOLES					
MV-1	51.0	4916.0		30.0	35.0	5.0	0.02	0.05
MV-3	51.2	4924.5		30.0	35.0	5.0	0.01	Tr.
MV-8	[illegible]	----		42.0	47.0	6.0	0.02	0.35
MV-13	47.2	----		10.0	43.0	33.0	0.02	0.06
MV-31	45.0	4921.0		43.0	43.1	0.1	0.02	0.49





○ Barren hole

ϕ Mineralized hole

● Ore hole

⊕ Hole not bottomed

U S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

MONUMENT VALLEY YAZZI MESA

BLOCK M-1?

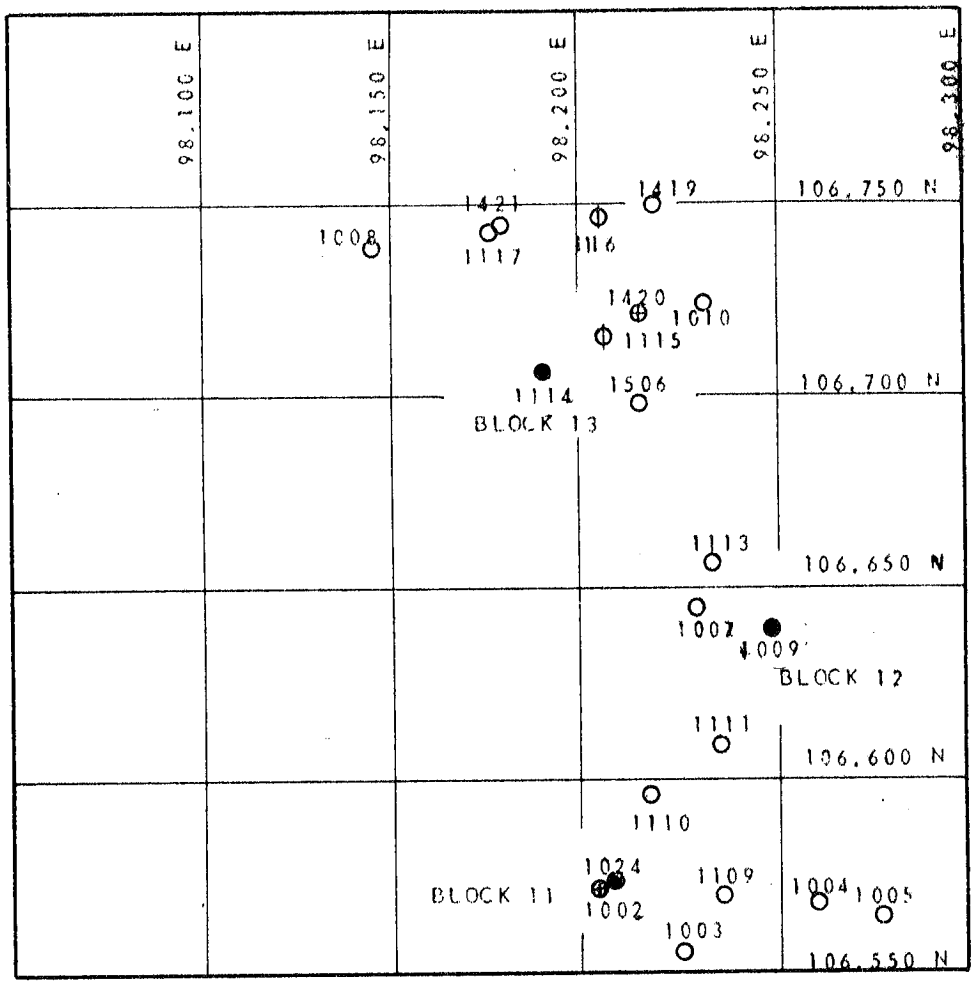
Scale Hor. Vert. 1" : 50' Date: Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 10

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-1001	27.0	4996		18.0	20.0	2.0	0.20	0.12
				20.0	21.0	1.0	0.14	0.55
				21.0	22.0	1.0	0.96	1.02
				22.0	23.0	1.0	0.22	0.53
				23.0	24.0	1.0	0.04	---
				24.0	26.0	2.0	0.03	0.27
				26.0	27.0	1.0	0.03	0.20
MO-1107	44.0	4997		25.0	28.0	3.0	0.13	0.23
				28.0	29.0	1.0	0.02	0.15
				BARREN HOLES				
MO-1106	28.0	4994						
MO-1108	28.0	4995						
MO-1418	29.0	4995						

JOHN M. YAZZI CLAIM



U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

PROJECT MONUMENT VALLEY YAZZI MESA
Block M-11-12-13

SCALE 1" = 50' DATE Dec. 1952 DRAWN B

TABLE OF DRILL HOLE DATA

M-11

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-1024	28.0	4990		11.0	12.0	1.0	0.25	0.69
				12.0	13.0	1.0	0.04	0.67
				13.0	14.0	1.0	0.06	1.02
				14.0	15.0	1.0	0.03	0.47
				BARREN HOLES				
MO-1002	15.0	5068						
MO-1003	29.0	5071						
MO-1109	26.0	4991						
MO-1110	15.0	4989						

TABLE OF DRILL HOLE DATA

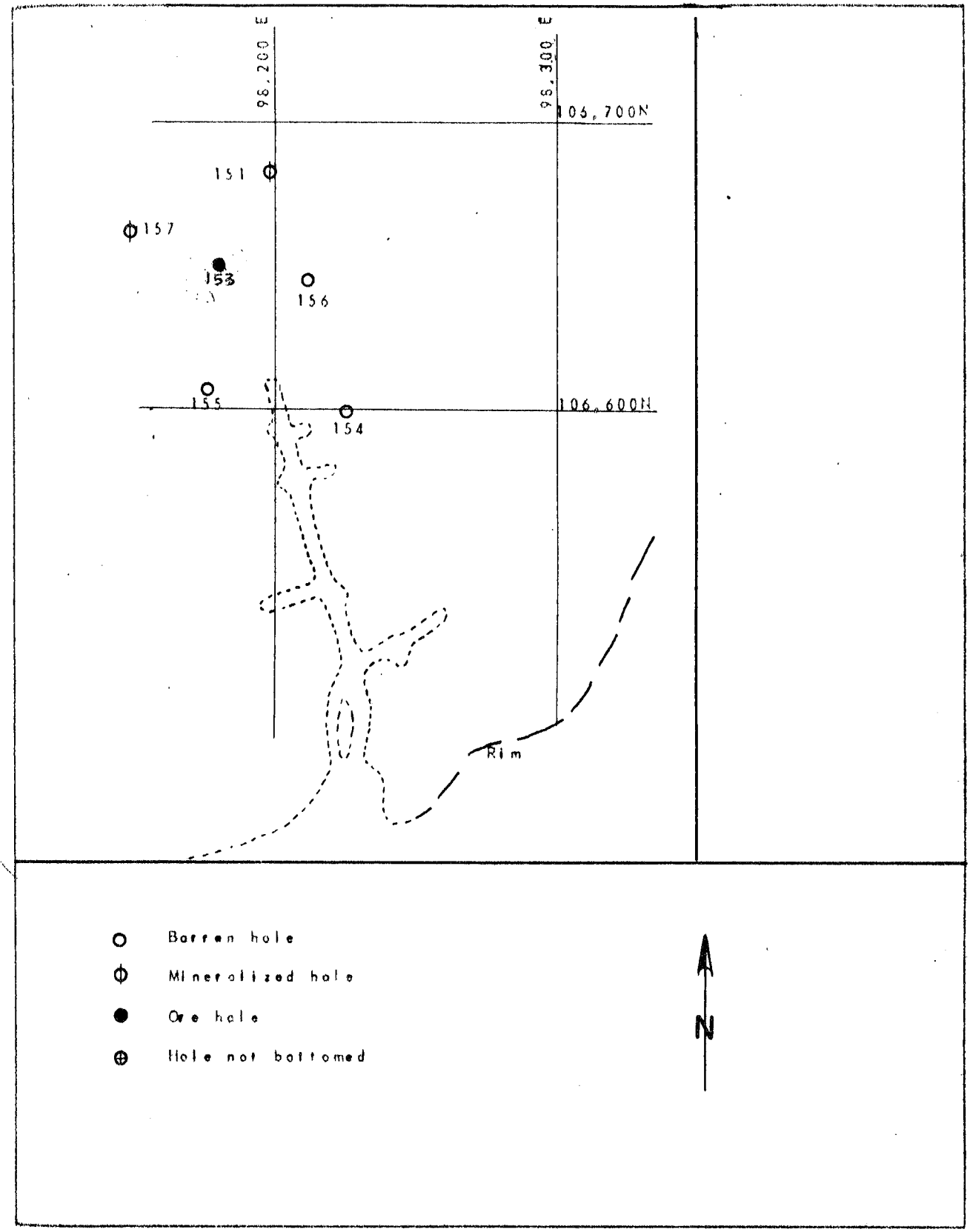
M 12

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-1009	29.0	4981		15.0	16.0	1.0	0.18	0.35
				16.0	17.0	1.0	0.14	0.12
				17.0	18.0	1.0	0.26	0.17
				20.0	21.0	1.0	0.09	0.53
				BARREN HOLES				
MO-1111	15.0	4987						
MO-1007	21.0	4988						

TABLE OF DRILL HOLE DATA

M-13

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-1114	29.0	5001		14.0	15.0	1.0	0.28	0.73
				15.0	16.0	1.0	0.08	0.18
				16.0	17.0	1.0	0.16	0.17
				MINERALIZED HOLES				
MO-1115	29.0	5000		22.0	27.0	5.0	0.05	0.15
MO-1116	29.0	5000		15.0	20.0	5.0	0.03	-----
				BARREN HOLES				
MO-1506	27.0	4997						
MO-1117	28.0	5002						
MO-1420	14.0	4999						



U.S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

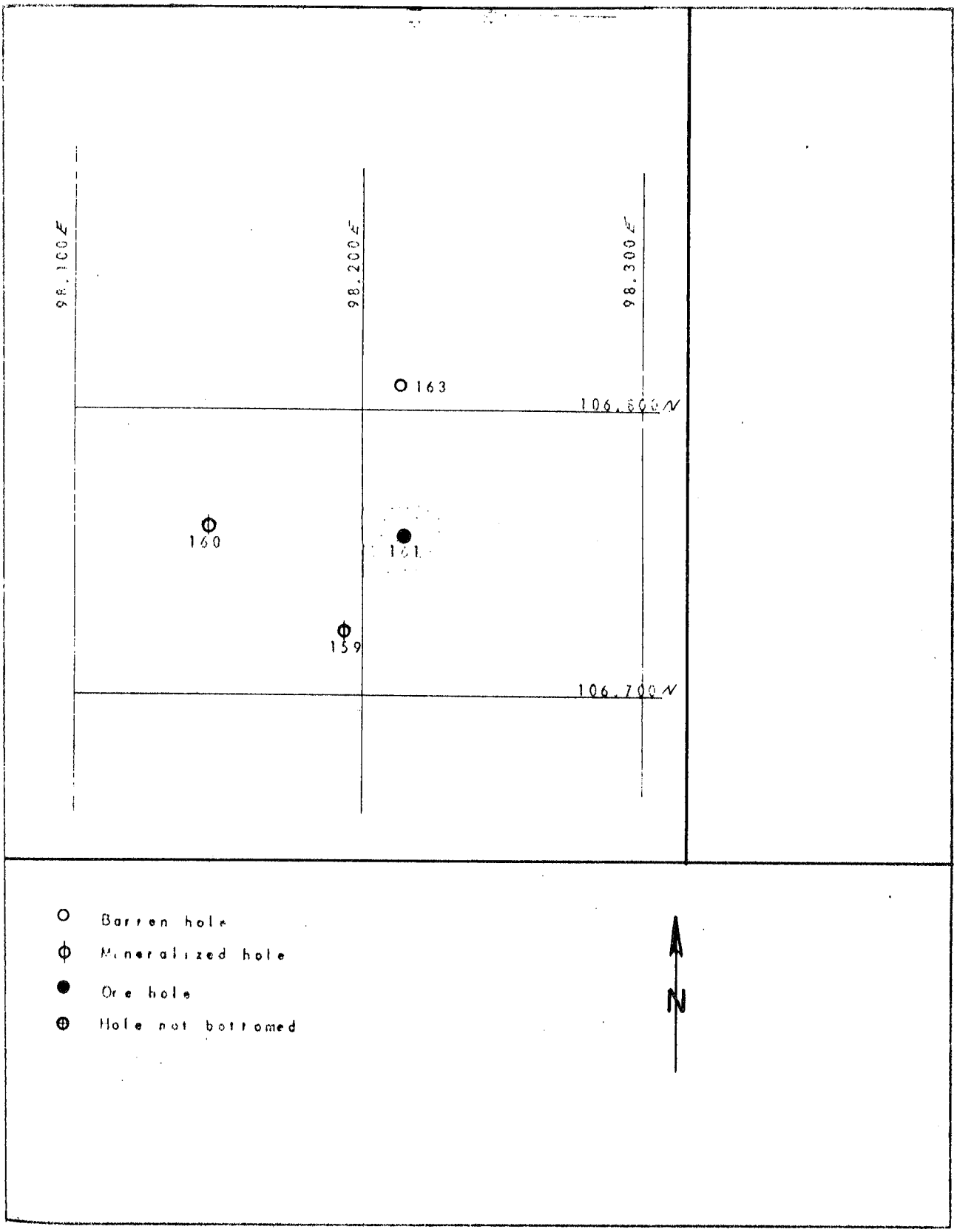
MONUMENT VALLEY YAZZI MESA
BLOCK M-14

SCALE 1" : 50' DATE Dec. 1952 DRAWN

TABLE OF DRILL HOLE DATA

M 14

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
			ORE HOLES					
MV-153	36.9	5001		10.0	14.0	4.0	0.02	0.17
				14.0	15.0	1.0	0.12	0.35
			MINERALIZED HOLES					
MV-157	27.5	-----		12.0	12.5	0.5	Carnotite Stains	
MV-151	36.3	-----		13.0	15.0	2.0	0.01	0.05
			BARREN HOLES					
MV-156	25.5	-----						



U S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

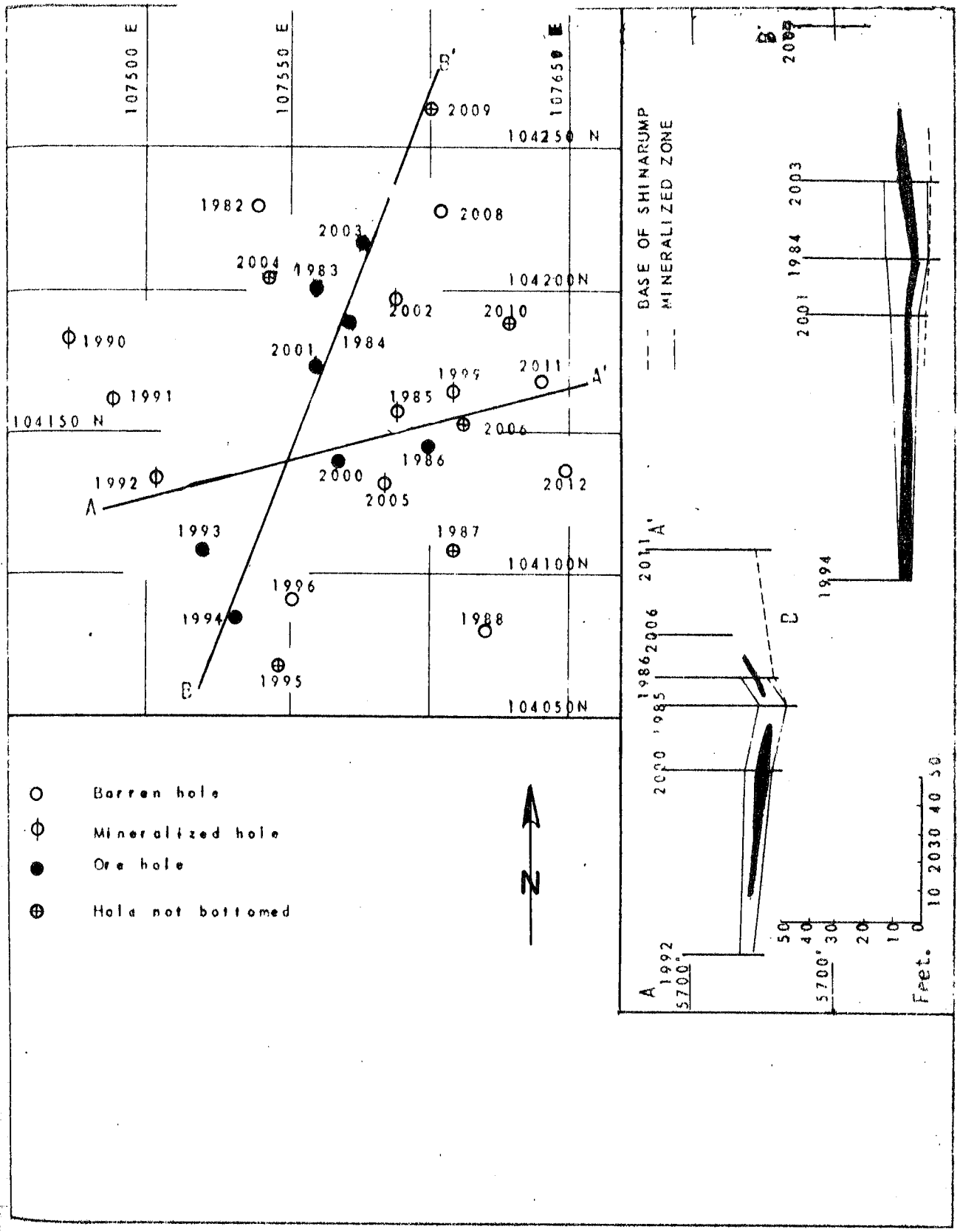
MONUMENT VALLEY YAZZI MESA
Block M-15

1" = 50' Dec. 1952 DRAWN

TABLE OF DRILL HOLE DATA

M-15

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MV-161	29.8	5009		16.0	17.0	1.0	0.33	0.18
				17.0	19.0	2.0	0.11	0.10
				MINERALIZED HOLES				
MV-159	26.9	---		21.0	22.0	2.0	0.05	0.17
160	27.0	---		23.0	24.0	Carnotite Stains		
				BLANK HOLES				
163	36.7	---						



U S ATOMIC ENERGY COMMISSION GRAND JUNCTION OPERATIONS OFFICE EXPLORATION DIVISION

MONUMENT VALLEY, OLJETO: MESA Block M-16

Hor. 1"; 50'
Vert. 1":50'

Dec. 1952

TABLE OF DRILL HOLE DATA

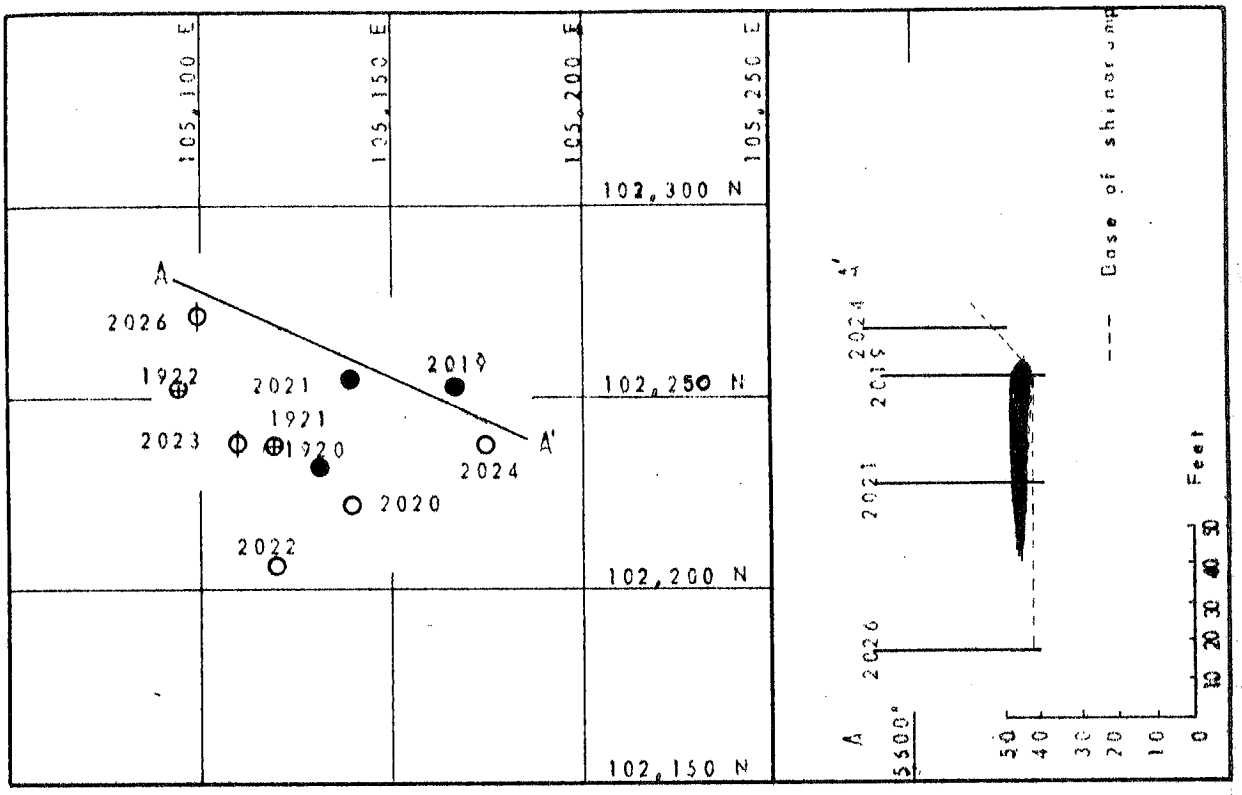
M 15-1

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
			ORE HOLES					
MO-1983	44.0	5712		35.0	37.0	2.0	0.15	0.05
1984	50.0	5712		38.0	39.0	1.0	0.11	0.07
				39.0	40.0	1.0	0.17	0.08
				40.0	41.0	1.0	0.12	0.07
1986	45.0	5713		35.0	36.0	1.0	0.13	0.05
2000	45.0	5711		35.0	38.0	3.0	0.10	0.02
				38.0	39.0	1.0	0.11	0.03
2001	45.0	5711		35.0	7.0	2.0	0.29	0.13
2003	50.0	5713		35.0	36.0	1.0	0.52	0.07
				36.0	37.0	1.0	0.46	0.05
				37.0	38.0	1.0	0.32	0.08
				38.0	39.0	1.0	0.34	0.20
1993	30.0	5703		20.0	25.0	5.0	0.12	0.00
1994	30.0	5703		25.0	30.0	5.0	0.18	0.03

TABLE OF DRILL HOLE DATA

M 16-2

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				MINERALIZED HOLES				
MO-1985	50.0	5712		37.0	38.0	1.0	0.07	0.02
				38.0	39.0	1.0	0.08	---
				39.0	40.0	1.0	0.04	---
2002	55.0	5714		45.0	50.0	5.0	0.01	---
1999	50.0	5704		30.0	35.0	5.0	0.01	0.02
				35.0	37.0	2.0	0.03	0.01
				37.0	38.0	1.0	0.09	0.02
				38.0	39.0	1.0	0.07	0.02
2005	45.0	5711		30.0	35.0	5.0	0.04	0.02
				35.0	36.0	1.0	0.04	0.04
				36.0	37.0	1.0	0.04	0.03
				37.0	38.0	1.0	0.03	0.03
				38.0	39.0	1.0	0.03	0.01
1992	30.0	5703		20.0	25.0	5.0	0.03	---
1991	30.0	5702		20.0	25.0	5.0	0.02	---
				25.0	30.0	5.0	0.02	.03
1990	30.0	5702		20.0	25.0	5.0	0.03	---
				BARREN HOLES				
1996	30.0	5704						
2008	43.0	5717						
1982	35.0	5702						



- Barren hole
- Mineralized hole
- Ore hole
- Hole not bottomed

U.S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

PROJECT MONUMENT VALLEY, OLJETOH MESA

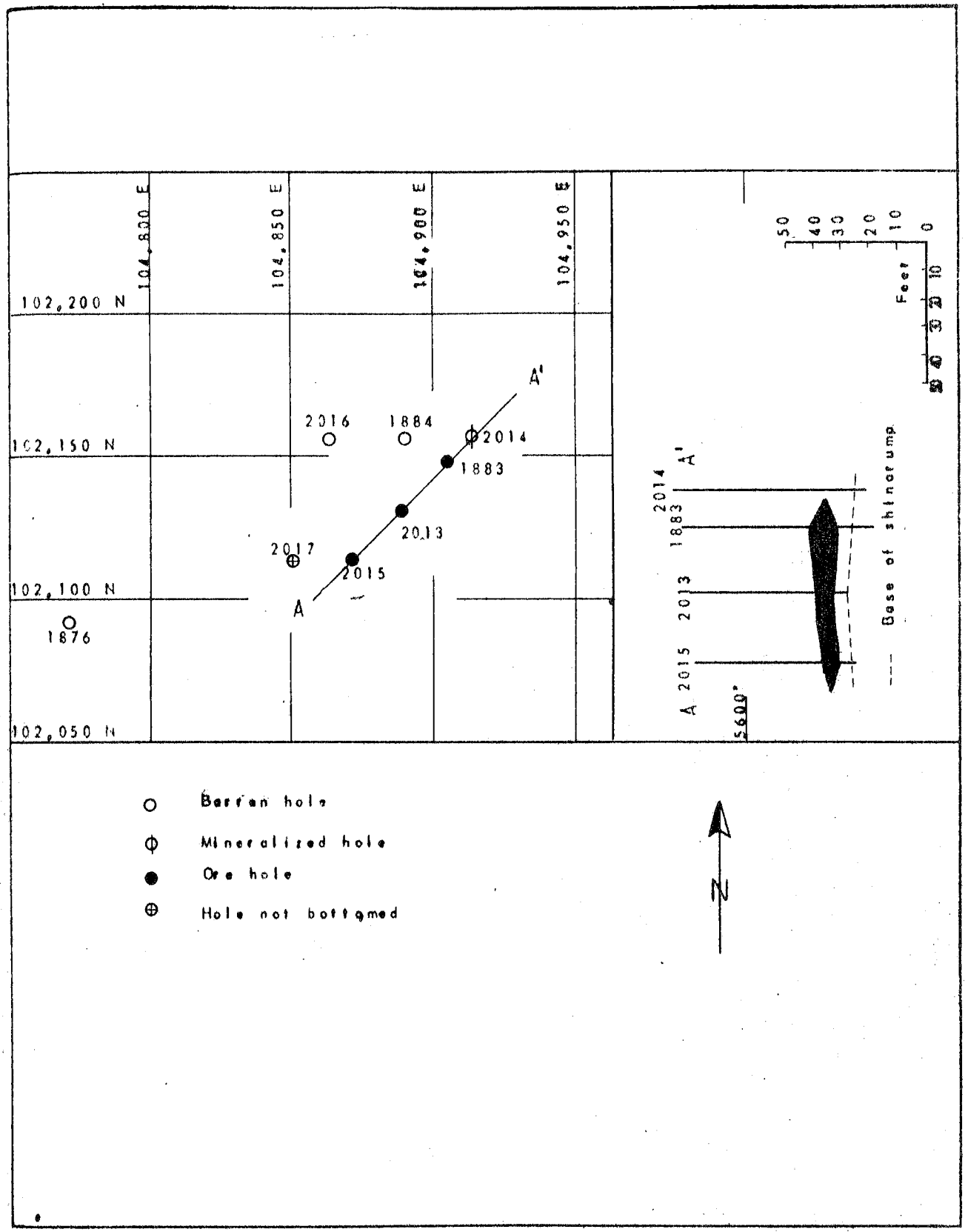
BLOCK M-17

SCALE Hor. 1" = 50' DATE Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 17

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Horizon	Interval (Ft.) From	Interval (Ft.) To	Thickness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-2021	45.0	5611		35.0	40.0	5.0	0.23	0.71
2019	45.0	5609		35.0	36.0	1.0	0.45	2.02
				36.0	37.0	1.0	4.09	4.06
				37.0	38.0	1.0	7.18	4.73
				38.0	39.0	1.0	0.37	0.25
1920	44.0	5608		35.0	37.0	2.0	0.49	0.76
				37.0	38.0	1.0	0.40	0.42
				38.0	39.0	1.0	0.13	0.15
				MINERALIZED HOLES				
MO-2023	50.0	5609		35	40	5.0	0.03	0.20
2026	45.0	5612		35	40	5.0	0.04	0.10
				BARREN HOLES				
MO-2022	45.0	5607						
2020	45.0	5611						
2024	45.0	5614						



U S ATOMIC ENERGY COMMISSION, GRAND JUNCTION OPERATIONS OFFICE, EXPLORATION DIVISION

PROJECT MONUMENT VALLEY OLJETO H MESA
BLOCK No. 18

SCALE Hor.
Vert. 1"=50' DATE Dec. 1952 DRAWN BY

TABLE OF DRILL HOLE DATA

M 18

No. of Hole	Depth of Hole (Ft.)	Collar Elev. (Ft.)	Hori-zon	Interval (Ft.) From	Interval (Ft.) To	Thick-ness (Ft.)	Percent U_3O_8	Percent V_2O_5
				ORE HOLES				
MO-2015	58.0	5619		45.0	50.0	5.0	0.10	0.61
				50.0	52.0	2.0	0.24	0.10
2013	58.0	5621		45.0	50.0	5.0	0.57	0.72
				50.0	51.0	1.0	0.68	0.49
				51.0	52.0	1.0	0.20	0.15
1883	70.0	5623		45.0	50.0	5.0	0.30	0.89
				50.0	51.0	1.0	0.07	0.79
				52.0	55.0	3.0	0.12	0.24
				MINERALIZED HOLES				
MO-2014	70.0	5626		50.0	55.0	5.0	0.03	
				BARREN HOLES				
1884	55.0	5623						
2016	55.0	5620						
2017	55.0	5616						