Inmet Ming Corp.
Ore Knob Superfund Site

**Ore Knob Mine**
**Structural Analysis**
**By**
**Jack A. James, Consulting Geologist**
(Report 1 and 3)

10543-0003

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# ORE KNOB MINE
# STRUCTURAL ANALYSIS

JACK A. JAMES, CONSULTING GEOLOGIST

# ORE KNOB MINE

# STRUCTURAL ANALYSIS

REPORT NO 1

JACK A. JAMES
CONSULTING GEOLOGIST

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211 BELLAIR ROAD
RIDGEWOOD, NEW JERSEY

December 20, 1962

Mr. C. O. Ensign, Jr.
Copper Range Company
White Pine, Michigan

Dear Chet:

I submit herewith my report of the structural investigation at the Ore Knob Mine, Ashe County, North Carolina.

The available data, as I interpret them, did not reveal the structural control for ore at Ore Knob, but it did illuminate the geologic setting of the deposit. The sulphide mineralization is an epigenetic feature distributed in response to local forces. The ground preparation created by these forces is more likely to continue downward than laterally. The predominant component of force acted vertically, or nearly so, and the component acting laterally was dissipated in the foliation of the country rock. The structures of response merge laterally into the gneissosity, but they can be expected to have continuity downward.

The causative geologic event for the structural development and the sulphide emplacement is not exhibited in the geology evident in the vicinity of Ore Knob. The geophysical reflections, especially magnetics, measured there may permit speculation on a causative event.

The main vein exists beyond the boundaries of the ore shoot, but without the benefit of sulphide concentration in a keel area the standards for ore will be difficult to meet. This study failed to define a reason or control for the concentration of sulphides in the keel area and does not predict the existence of another.

Respectfully submitted,

Jack A. James

Jack A. James

# ORE KNOB MINE

## Structural Analysis

An analysis of the structural information assembled by the geological staff at Ore Knob failed to reveal the structural control for the emplacement of the sulphide mineralization, and consequently, no additional sites can be indicated as especially favorable for ore mineralization. The information reviewed does provide reasonable evidence for some conclusions as to the structural setting of the deposit, but unfortunately, none of the conclusions can be translated into pinpoint targets to be tested for ore.

The geology of the ore body, as mined, has been recorded with considerable attention to economic mineralization. The adjacent geologic elements have been recorded with less assiduity. The opportunity to recover the latter information is gone with the disposal of core from the hanging and foot walls, and is lost in the inaccessibility of the mine workings.

The ore-bearing structure is identified essentially by the presence of sulphide mineralization. Where, and if, the structure is not so mineralized, it

is doubtful that it would be or has been recognized either in the outcrop or in drill core. The raw material for a structural study is the distribution of sulphide mineralization.

Observations of structural features recorded by the geological staff were compiled by Mr. Ben Morgan on vertical sections that accompany this report. The observations were brought together from notations on sections, plans, drillhole logs, and sketches of walls and faces in the workings. The compilation which was made on sections at each 100 feet from 00 through 3000W shows

a) the attitude of regional gneissosity,

b) slips in the hanging wall that dip NW,

c) slips at depth in the westernmost sections that intersect the line of section at a low angle,

d) that the regional gneissosity is deformed locally at the margins of sulphide mineralization and along the planes of slippage,

e) that the ore-bearing structure has been offset by later faulting.

The distribution of sulphides is shown in Plate I by a series of vertical sections from 100W through 2900W. This presentation illustrates

a) a marked bend in the ore structure above the keel area,

b) that the dip of the ore structure decreases at depth with the most pronounced flattening below the keel area,

c) a multiple vein pattern at depth in the sections west of 2100W where the keel area disappears.

The configuration of the footwall of the ore structure was reconstructed to test its relationship to the position of the ore shoot. This configuration is illustrated by contours in Plate II. The reference plane is parallel to the base line at the property, i.e., N 60° E; it dips SE and migrates 35 feet per 100 feet of vertical depth; it passes through the baseline at elevation 2600. The contour values are the distance from the reference plane to the footwall. Where the figures are positive, the ore structure is southeast of the reference plane, and where the figures are negative, the ore structure lies northwest of the plane. The presentation in Plate II shows

a) a nearly horizontal axis of bend in the ore structure above the keel area,

b) a coincidence of position for the base of the ore shoot and the pronounced flattening of dip on the ore structure,

c) an interruption of the axis of bend from section 00 to 1000W,

d) the rake of the ore shoot and that it crosses the folding pattern on the ore structure where the axis of bend is interrupted,

e) minor folding that is oriented in the direction of the rake of the ore shoot, but at a steeper angle.

The points outlined above include all the

structural elements recognized by the review and compilations. The absence of a datum or reference plane for unraveling the structural history is a severe deterrent to a structural analysis.

The ore structures at Ore Knob are local features that have been imposed upon the regional metamorphism. They align with the structural grain of the metamorphic background and weakly contrast with it; they dissipate strength as formal features by separating into multiple planes and laterally merge into the pre-existant gneissosity. The sulphide mineralization distributed along the ore structure is epigenetic.

The weak and local structures at Ore Knob contrast markedly with the strong through-going structures produced by the Appalachian orogeny, and the stress that produced them surely contrasts just as markedly with the stress of the orogeny. The orogeny was overwhelming of a large rock mass, but the stress at Ore Knob was of sufficient magnitude only locally to induce relief by rupture. The stress active at Ore Knob need not be associated with the Appalachian orogeny.

It is generally conceded that the forces of the orogeny were compressional from the SE toward

the NW, non-rotational, and supplemented by a significant gravitational force acting vertically. A strong structural grain was developed. It is not surprising that local forces active at Ore Knob would be resolved along the same directions, as indeed, they were.

The problem is to correlate the reaction that produced the ore structures to a causative geologic event, and preferrably, to an event that also can account for the sulphide emplacement. An examination of the gross geologic features in the vicinity of Ore Knob fails to reveal reasonable tangible evidence of such an event. Geophysical evidence, however, may provide an intangible clue.

An anomalous magnetic pattern is situated some 1000 feet southeast of the outcrop of the ore structure. Although this feature probably does not reflect sulphide mineralization, it may reflect a geologic event related to that mineralization.

If we speculate on the possibility of a basic intrusive, say gabbroic in kind, many of the aspects of the setting at Ore Knob can be rationalized rather easily. A small intrusive would be expected to gain access along the structural grain and to assume a tongue or sill-like shape. The anomalous

magnetic pattern conforms to the structural grain.

The forces produced by a small intrusive would have a large component acting vertically; they would be focused into a zone of maximum intensity upward from the intrusive, and the intensity would diminish laterally. Relief of the stresses would form splay structures upward that would fade or merge laterally into the gneissosity. Such a speculation fits the circumstances at Ore Knob.

Sulphide mineralization associated with basic intrusives is a common geologic phenomenon, and the apparent lack of an alteration halo to such mineralization, especially in a high grade metamorphic background, is not uncommon. No unusual circumstances are demanded by this speculation to rationalize the Ore Knob occurrence.

The actual existence of a basic intrusive at depth southeast of Ore Knob is not verified by the evident geology. The possibility is permitted by the geology, and it may be permitted also by the geophysical evidence. The magnetic data should be processed to check this point.

The evidence of this structural analysis is not definitive to the search for additional ore at Ore Knob, but it does emphasize some probabilities.

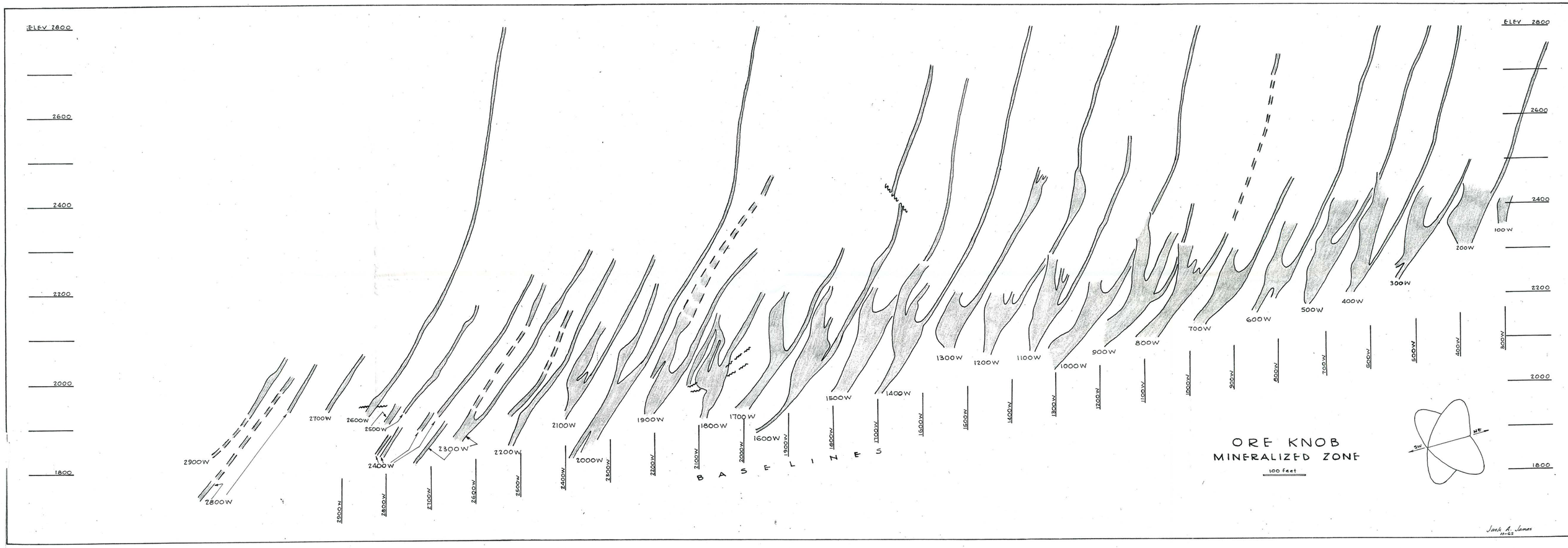
The ore structures at Ore Knob are local phenomena, and the forces responsible for them likely were applied locally at depth. They dissipate strength laterally and merge into the gneissosity, but they are likely to continue as formal structures downward toward the source of deforming forces. The distribution of sulphide mineralization is apt to conform to the formal structures, and thus, to have continuity downward rather than laterally.

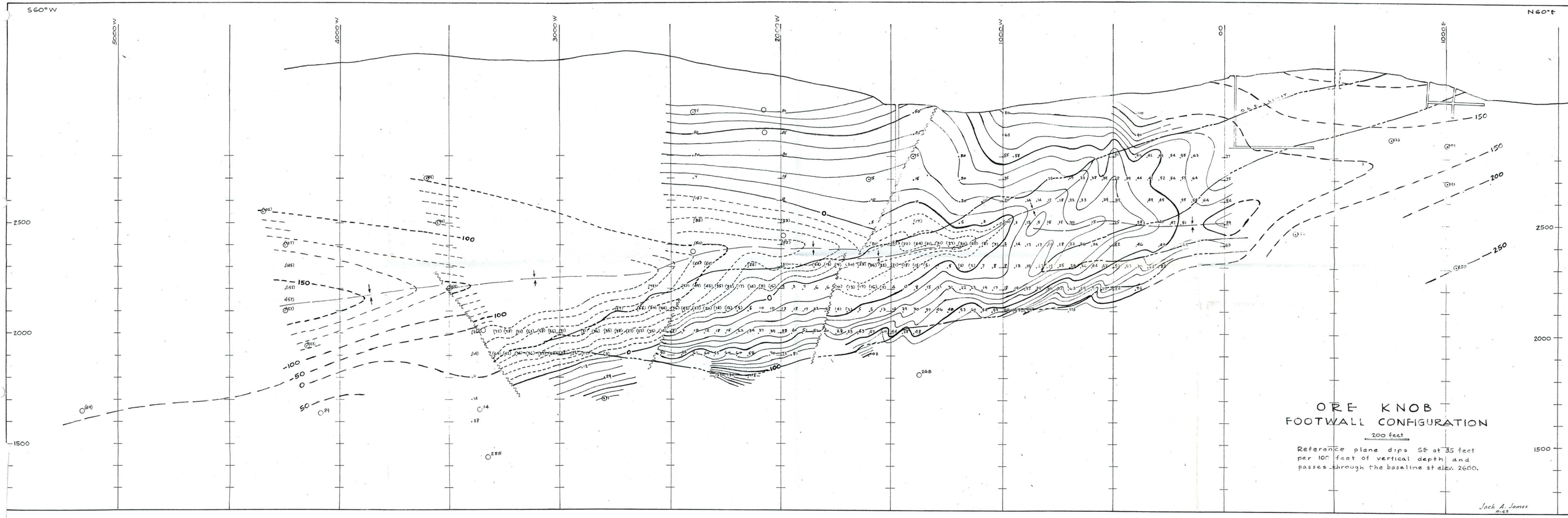
The keel area yielded a large part of the tonnage taken at Ore Knob. This analysis fails to define a reason or control for the concentration of sulphides in the keel area, and consequently, does not predict the existence of another. The main vein exists beyond the boundaries of the ore shoot, and it is mineralized, but without the benefit of sulphide concentration in a keel area the standards for ore will be difficult to meet.

The concept speculated upon in this report perhaps is of limited value in the search for additional ore at Ore Knob, but the concept may be of considerable value as a working hypothesis in the search for another Ore Knob. The mathematical processing of magnetic data at Ore Knob could change the status of the concept from permissive to probable.

The application of forces locally speaks itself for the repetition of these circumstances at other locales. If these forces are created by intrusives basic in kind and their presence at depth can be detected by magnetic methods, then a workable technique is available for that important first step of selecting from the region the specific locales for further exploration attention. Induced polarization methods used at Ore Knob responded clearly to the sulphide deposit, and IP in this region should give a reasonable check for sulphide mineralization in sufficient volume to be a potential ore deposit to a depth below the surface in the order of 1500 feet. Where sulphides are suggested by IP, geochemistry may add a significant clue to the presence of valuable metals in the sulphides.

This analysis identifies the Ore Knob deposit as an epigenetic feature that is locally imposed on a background of high grade metamorphic effects, and which has a better probability for continuity downward than laterally. It permits speculation on the geologic event that may be the parent for Ore Knob, and hints at a working hypothesis that may be valuable in exploring this geologic province for other deposits similar to Ore Knob.


ELEV 2800
2600
2400
2200
2000
1800
2900W
2800W
2700W
2600W
2500W
2400W
2300W
2200W
2100W
2000W
1900W
1800W
1700W
1600W
1500W
1400W
1300W
1200W
1100W
1000W
900W
800W
700W
600W
500W
400W
300W
200W
100W
BASELINES
ORE KNOB
MINERALIZED ZONE
100 feet
SW
NE
Jack A. James
11-62


S60°W
N60°E
5000 W
4000 W
3000 W
2000 W
1000 W
0
1000 E
2500
2000
1500
150
200
250
100
50
0
ORE KNOB
FOOTWALL CONFIGURATION
200 feet
Reference plane dips SE at 35 feet per 100 feet of vertical depth and passes through the baseline at elev. 2600.
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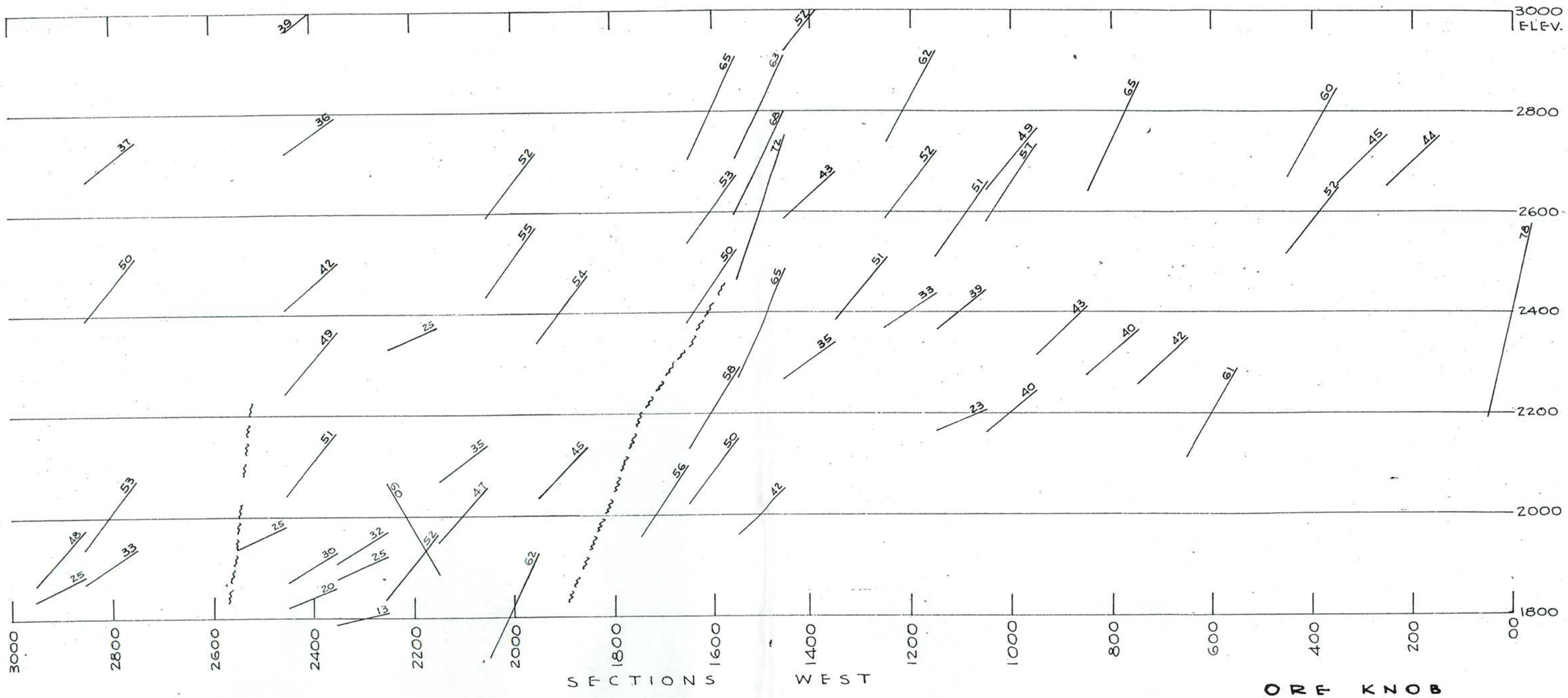
11-63




**ORE KNOB**

Dip of gneissosity in hanging wall

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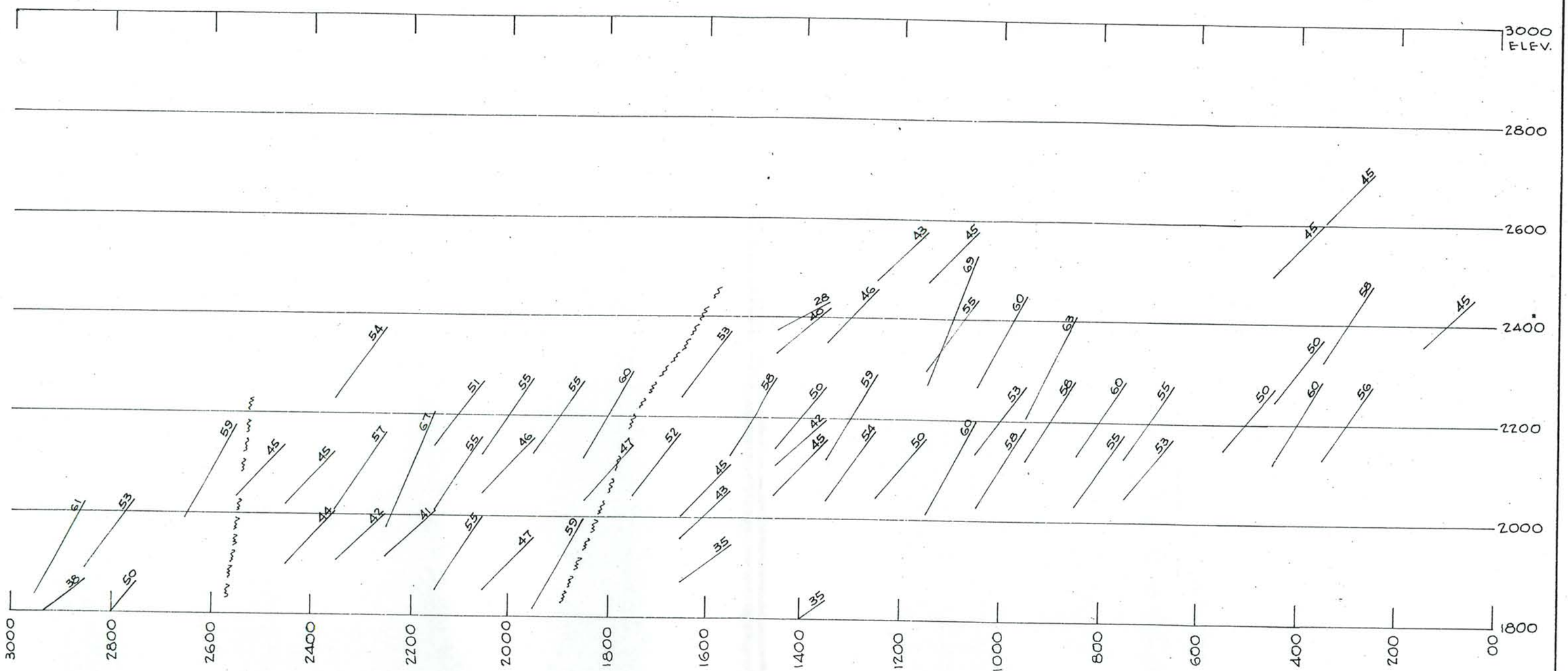
11-62




**ORE KNOB**

Dip of gneissosity in foot wall

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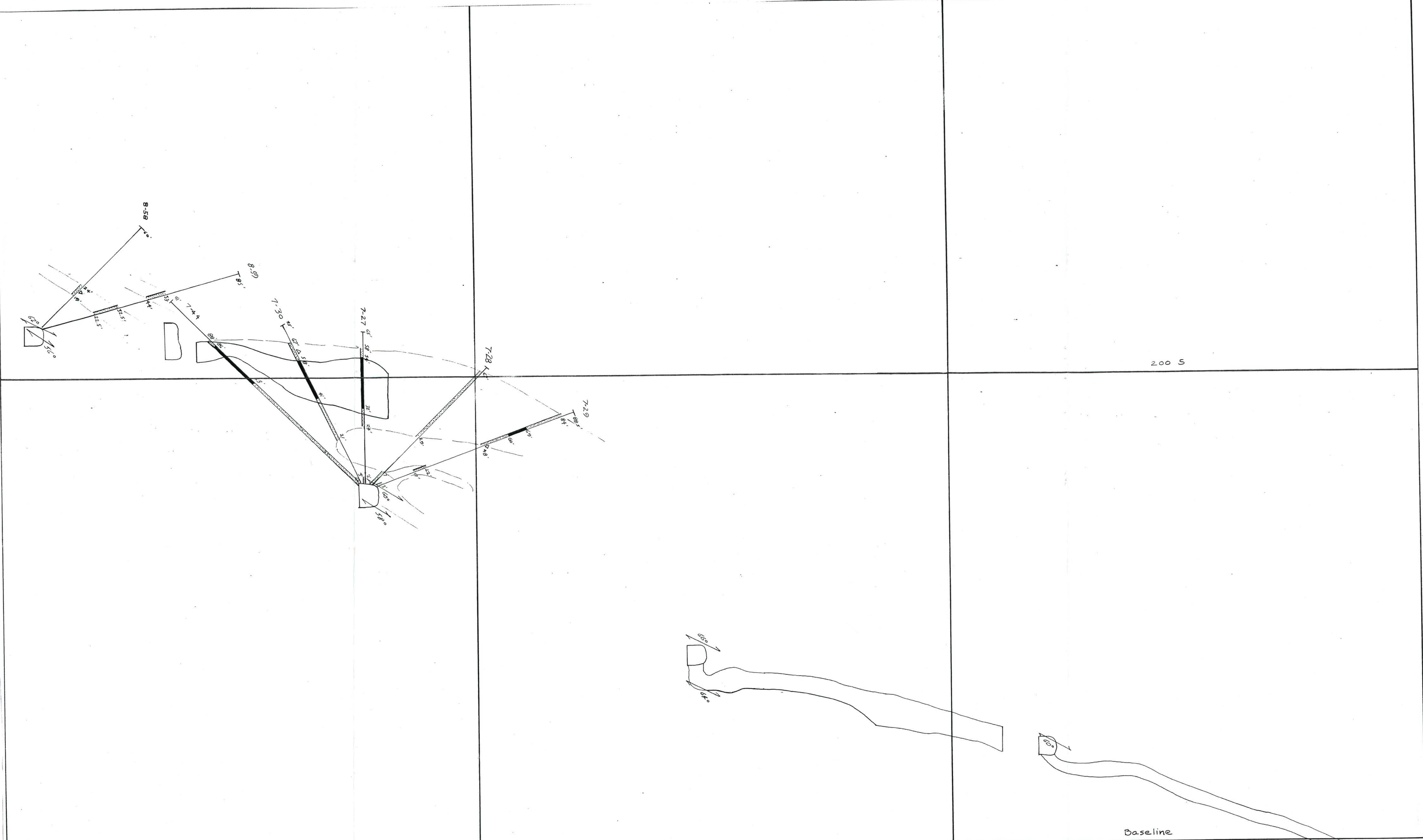
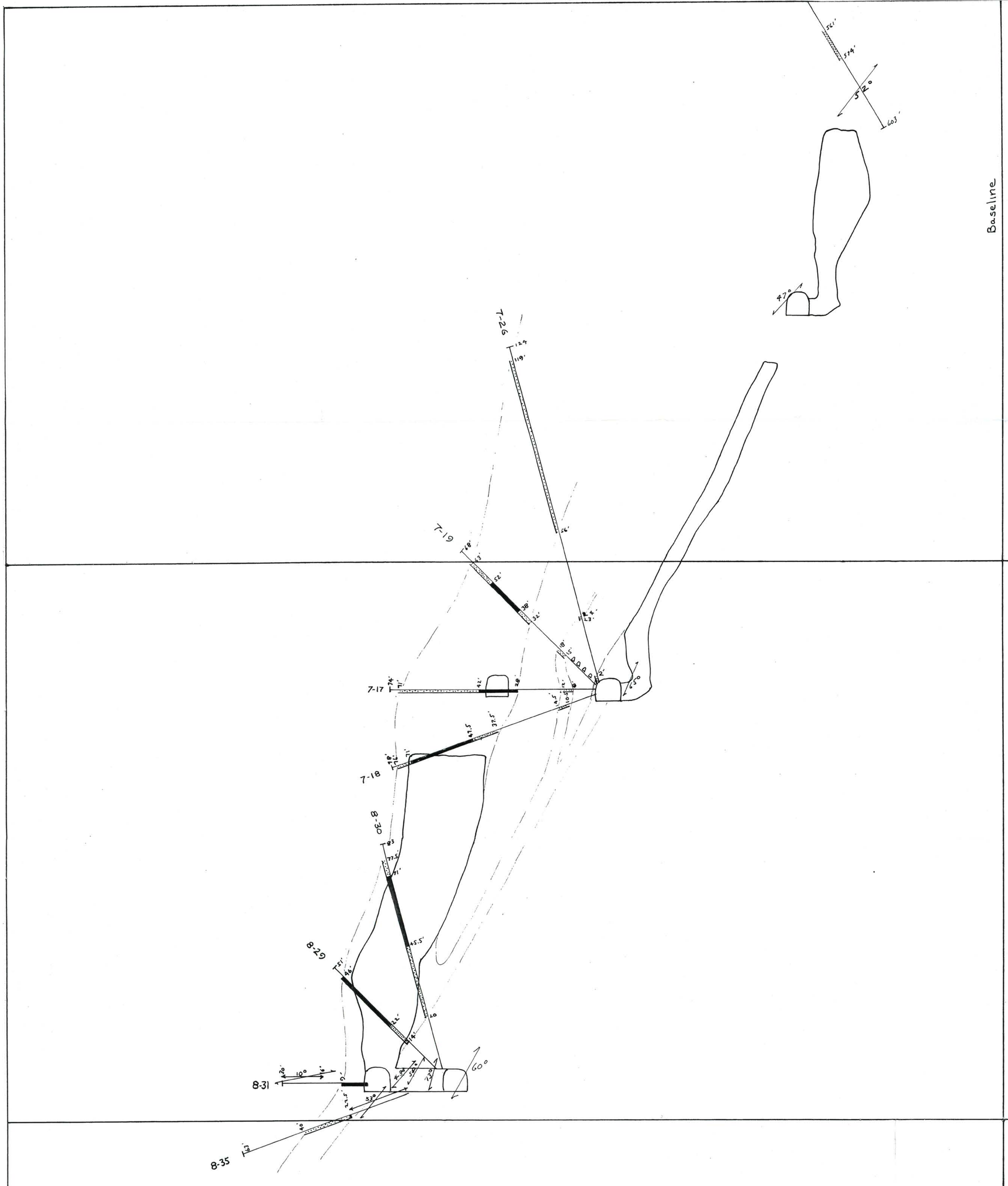
46°
58°
Elev. 2600
Baseline
Elev. 2400
7-50
43°
125'
120.2'
43°
114.4'
93.0'
45°
7-49
85.0'
62.0'
78°
38.9'
33°
31.2'
43°
78°
35°
14.1'
33°
60°
14.0'
63°
67
30'
48°
ORE KNOB
SEC 00
20'



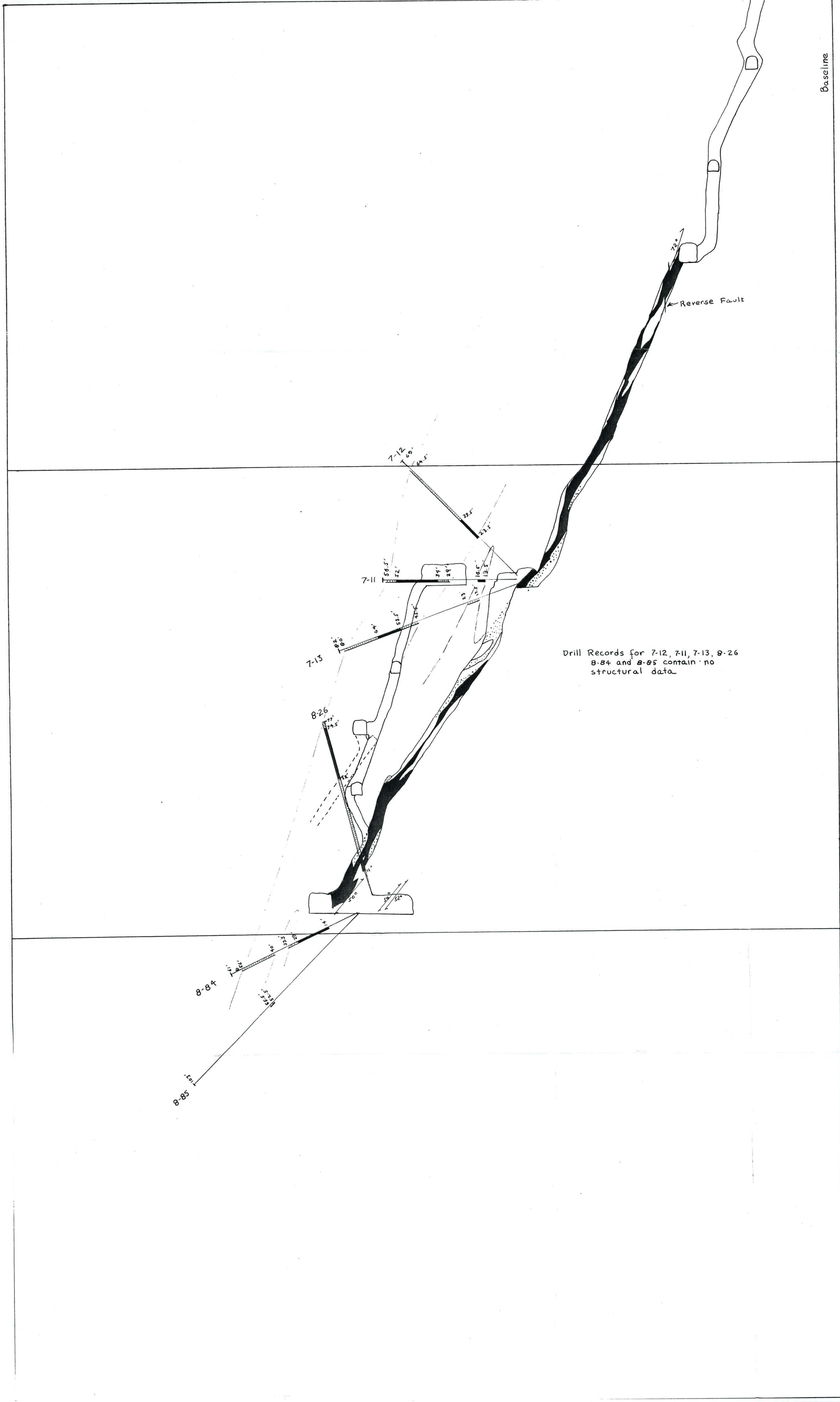

Elev. 2400

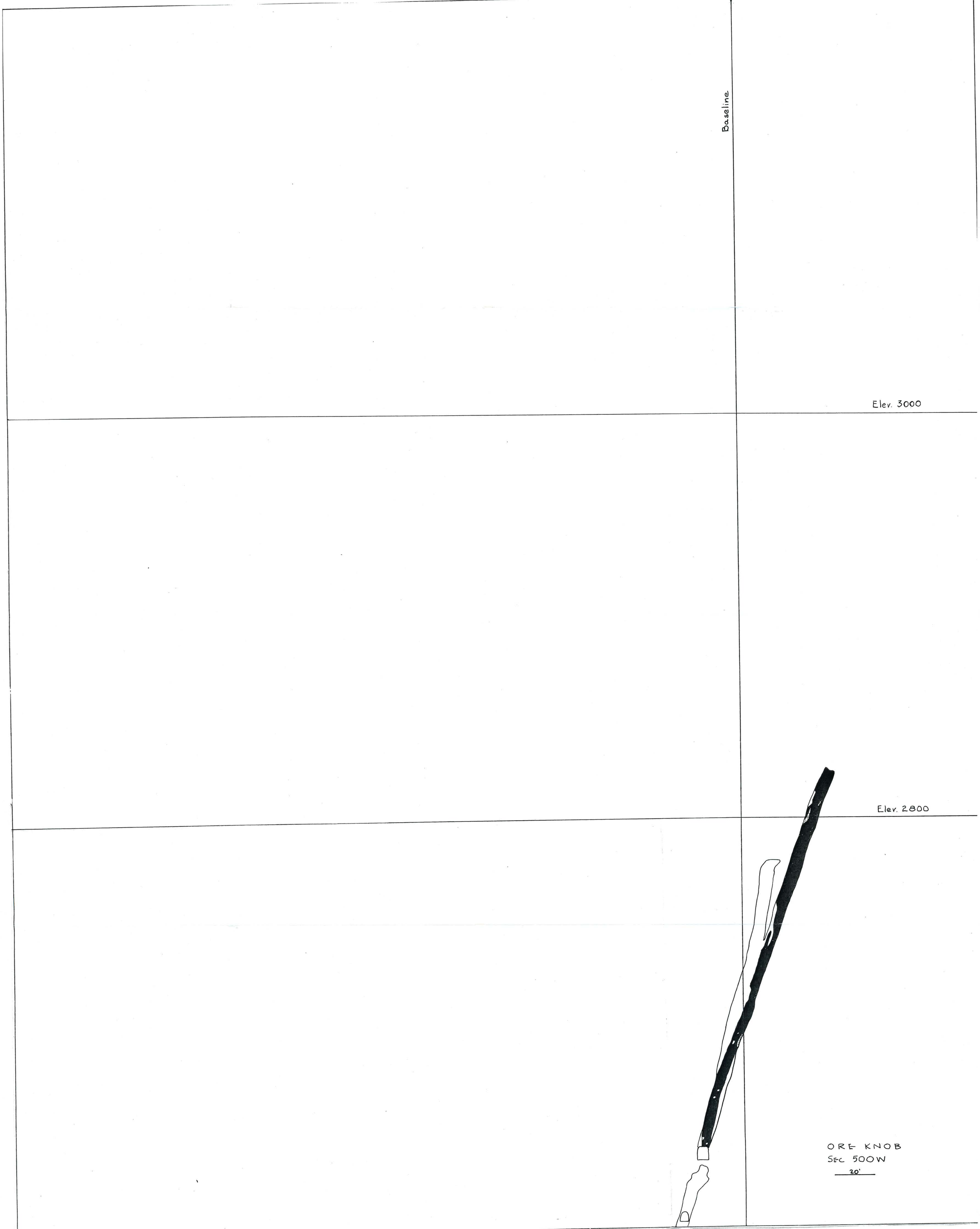
Elev. 2600

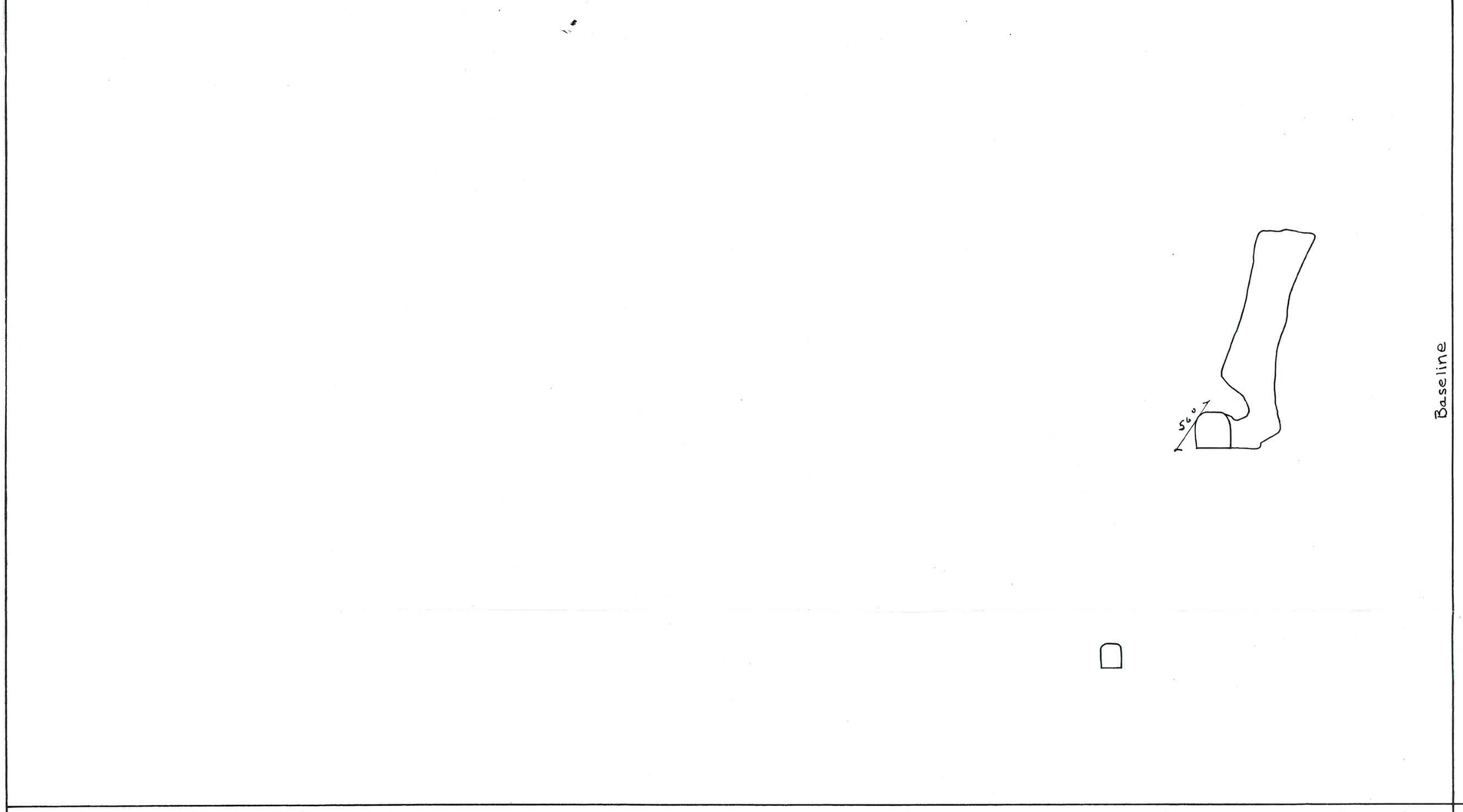
ORE KNOB
SEC 300W
20'



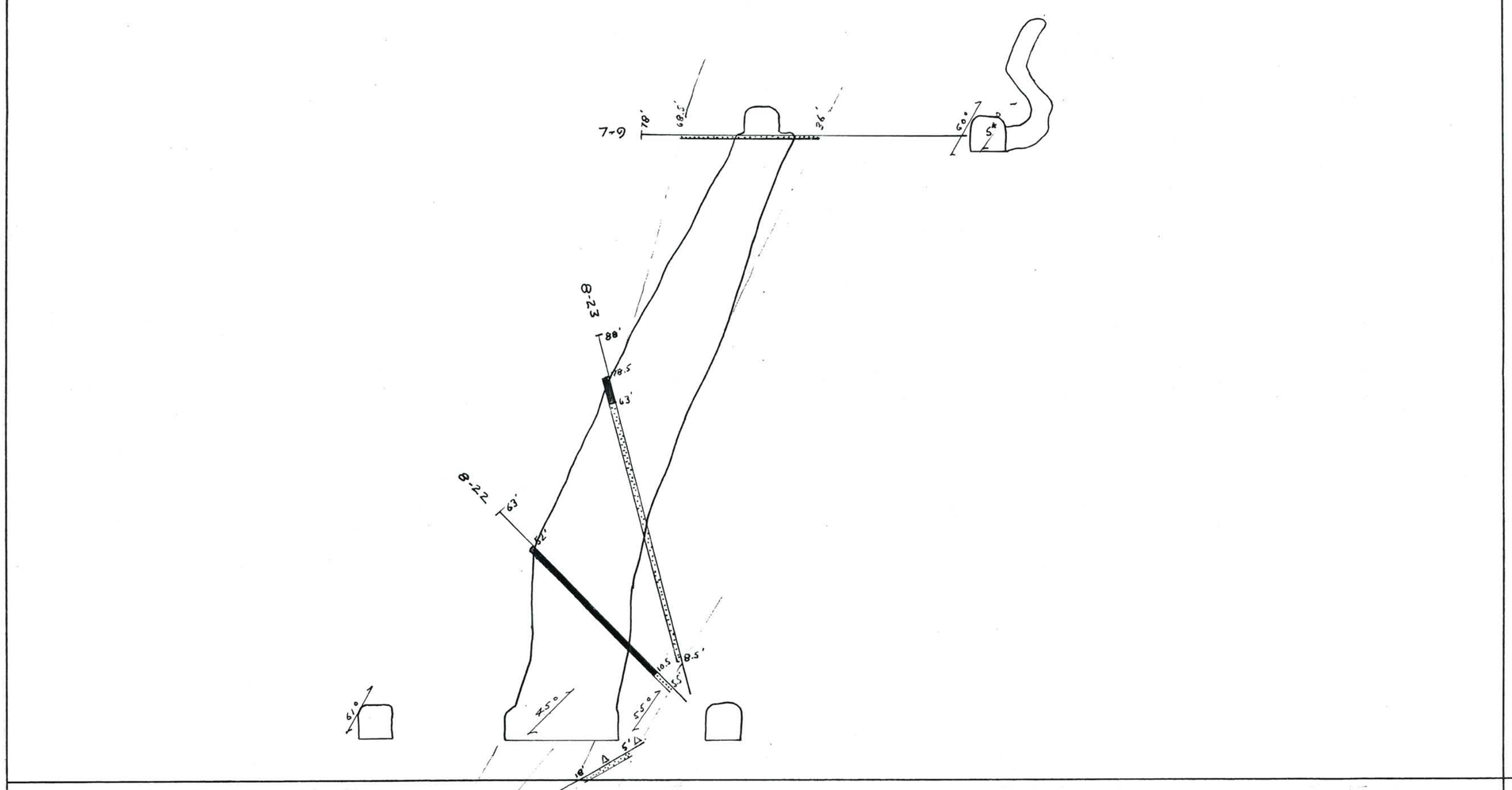

ORE KNOB
SEC 400W
20'


Baseline
Reverse Fault
Elev. 2400
Elev. 2200
7-12
7-11
7-13
8-26
8-84
8-85
Drill Records for 7-12, 7-11, 7-13, 8-26
8-84 and 8-85 contain no
structural data
ORE KNOB
SEC 500W
20'


Baseline
Elev. 3000
Elev. 2800
ORE KNOB
SEC 500W
20'

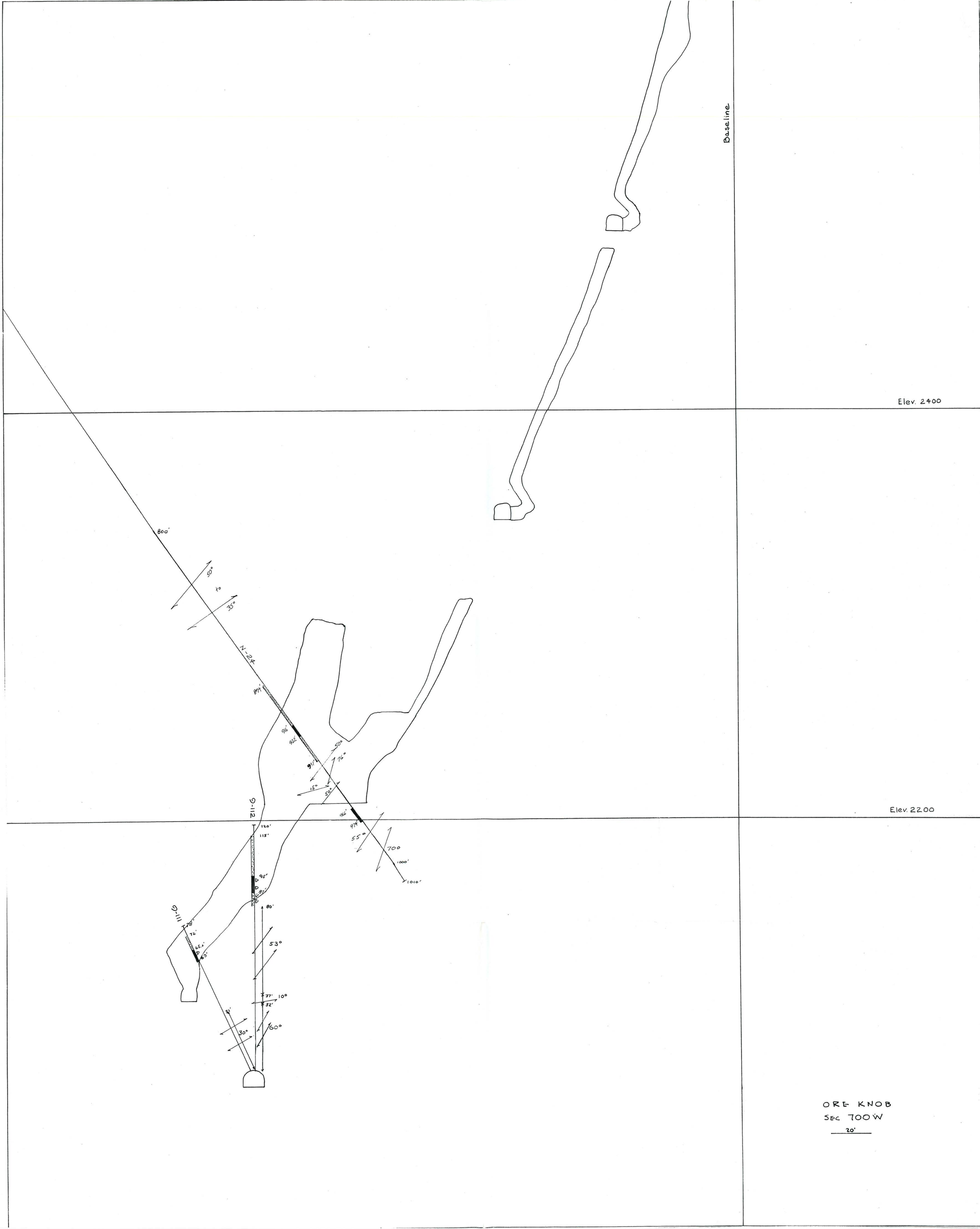


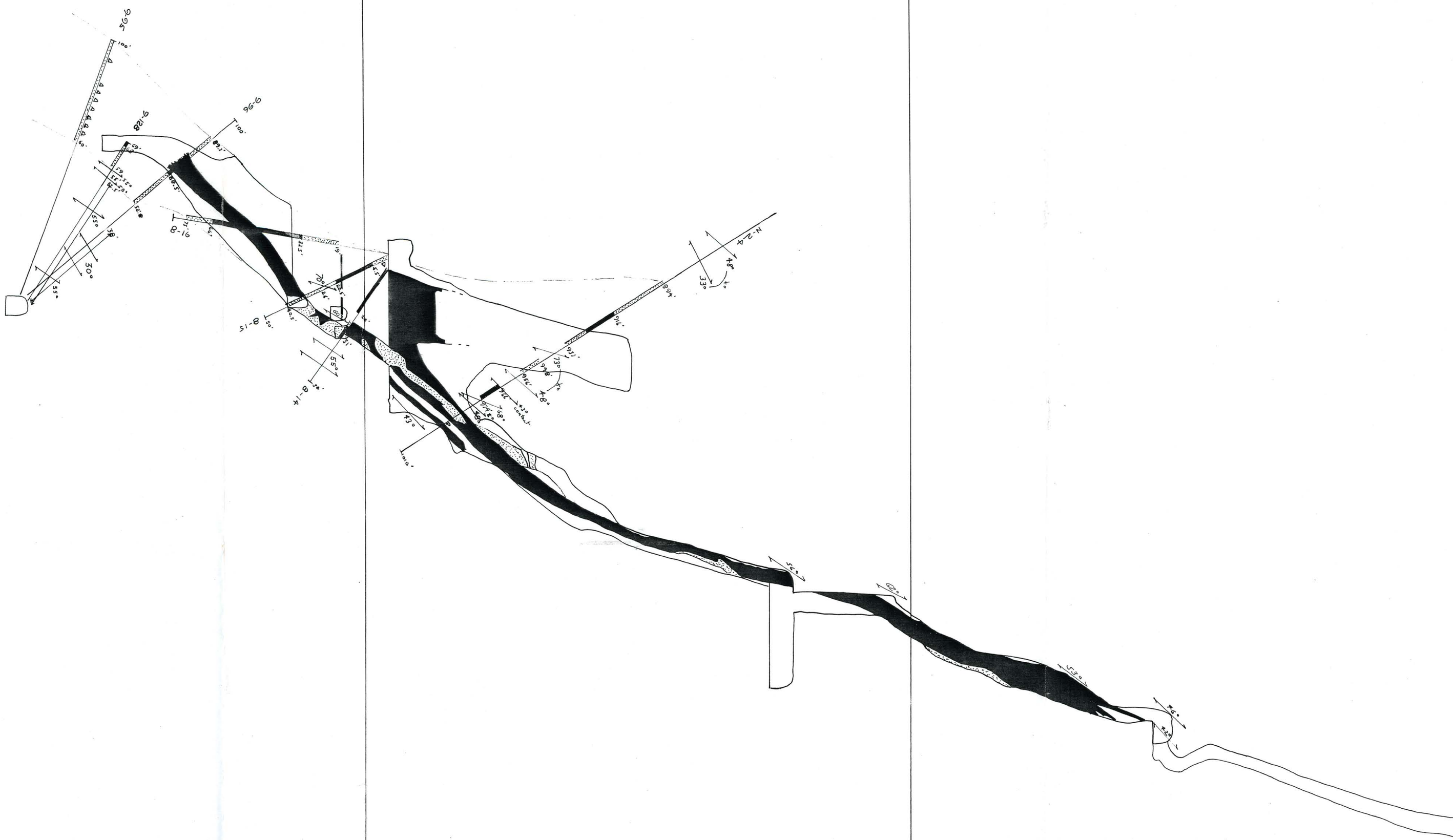

Elev. 2400




Elev. 2200

ORE KNOB
SEC. 600W
20'

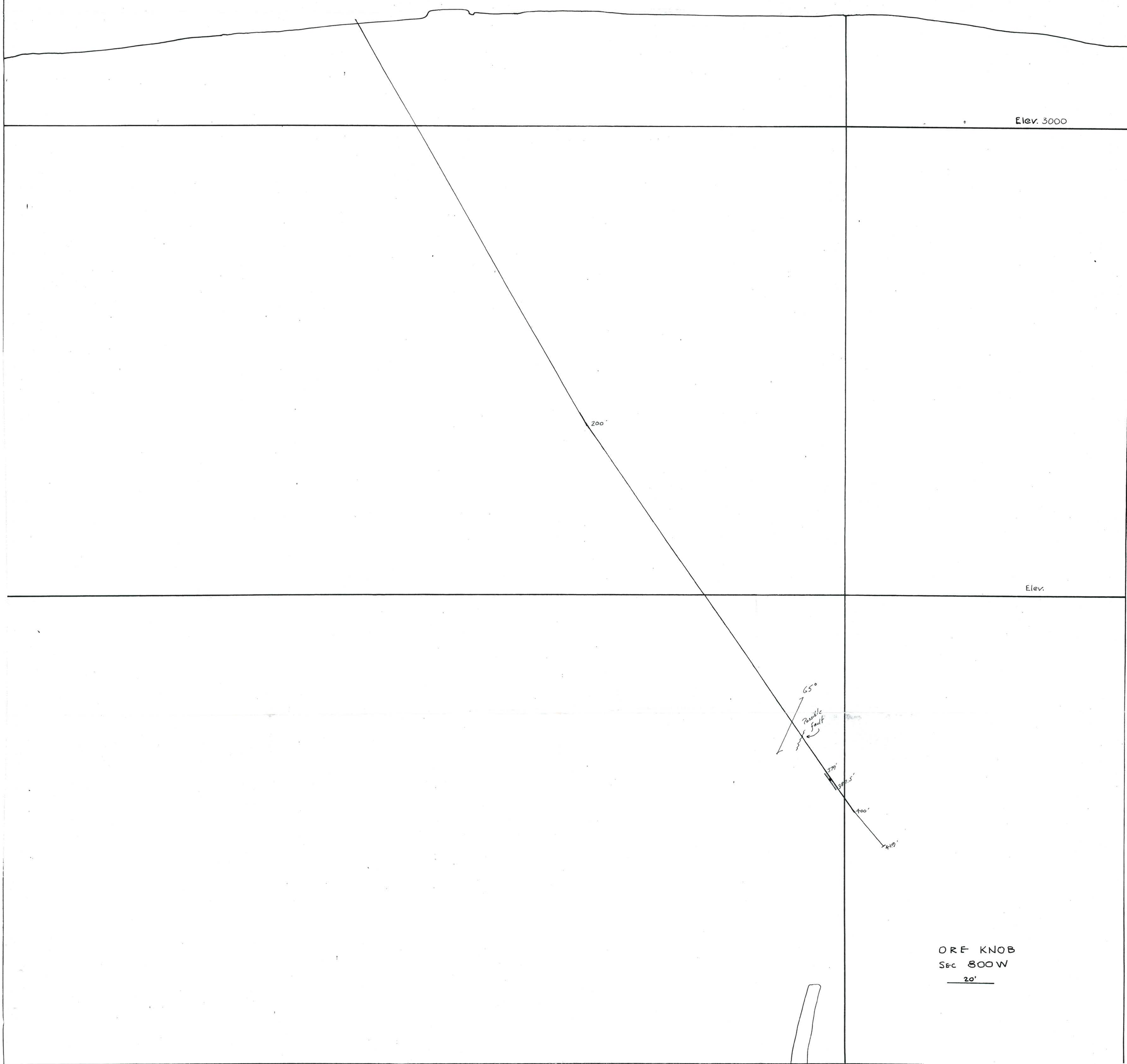

Baseline
Elev. 2400
Elev. 2200
800'
50°
to
35°
N-24
50°
76°
15°
50°
55°
700
1000'
1010'
9-112
120'
115'
95'
80'
53°
10°
60°
30°
9-111
ORE KNOB
SEC 700W
20'

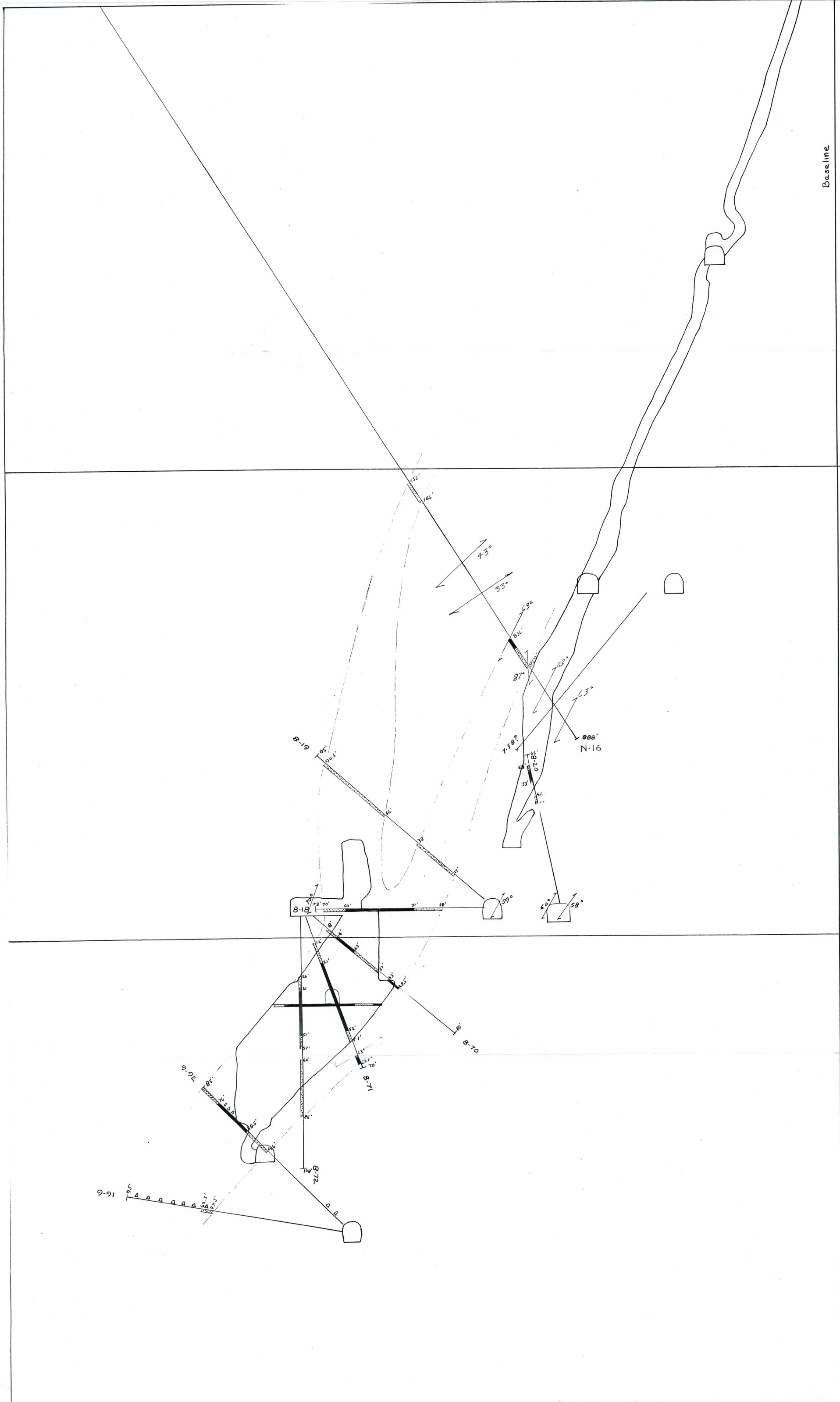


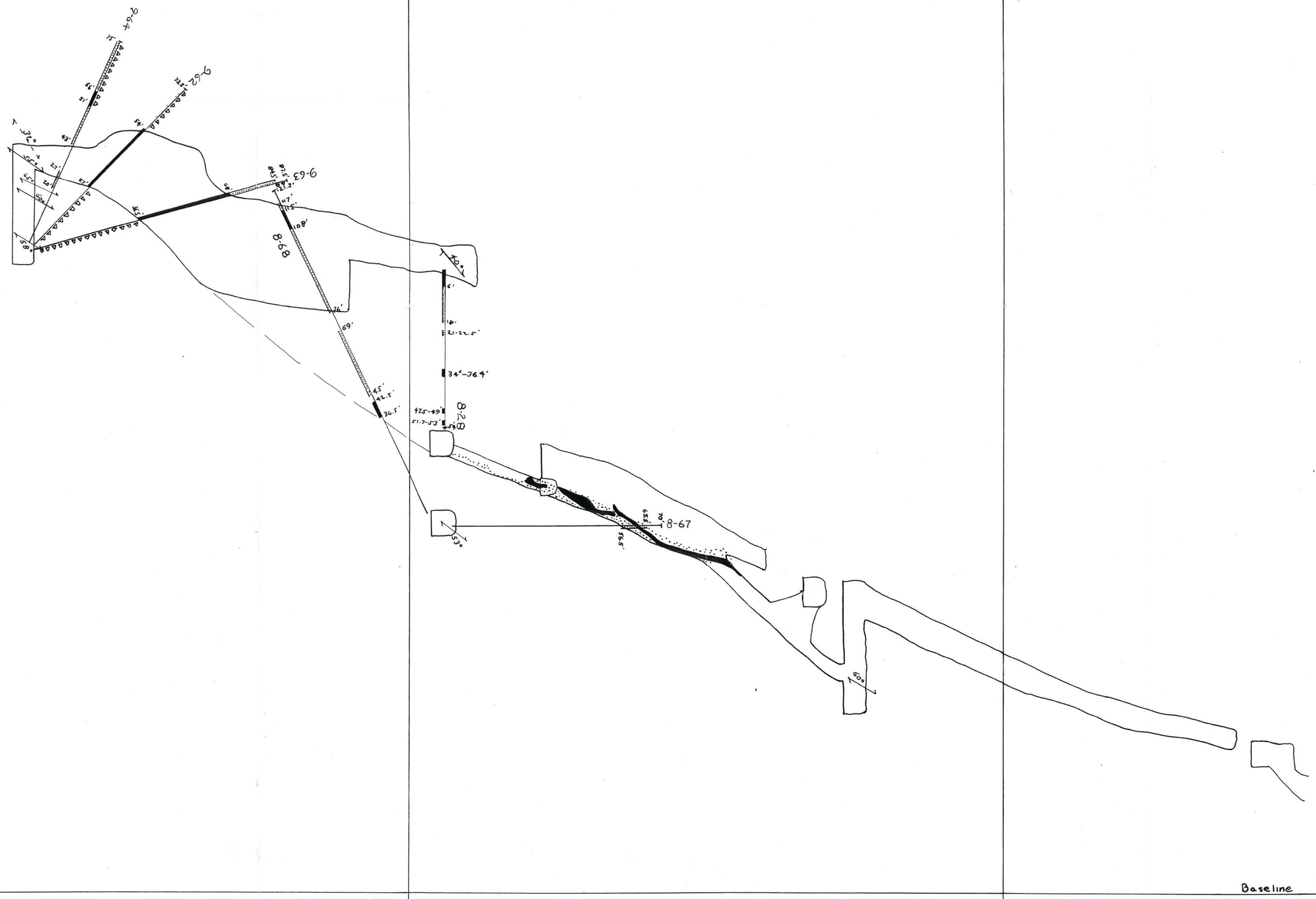

Elev. 2400

Elev. 2200

ORE KNOB
Sec 800W
20'


Elev. 3000
200'
Elev.
65°
Possible fault
379'
392.5'
400'
419'
ORE KNOB
SEC 800W
20'

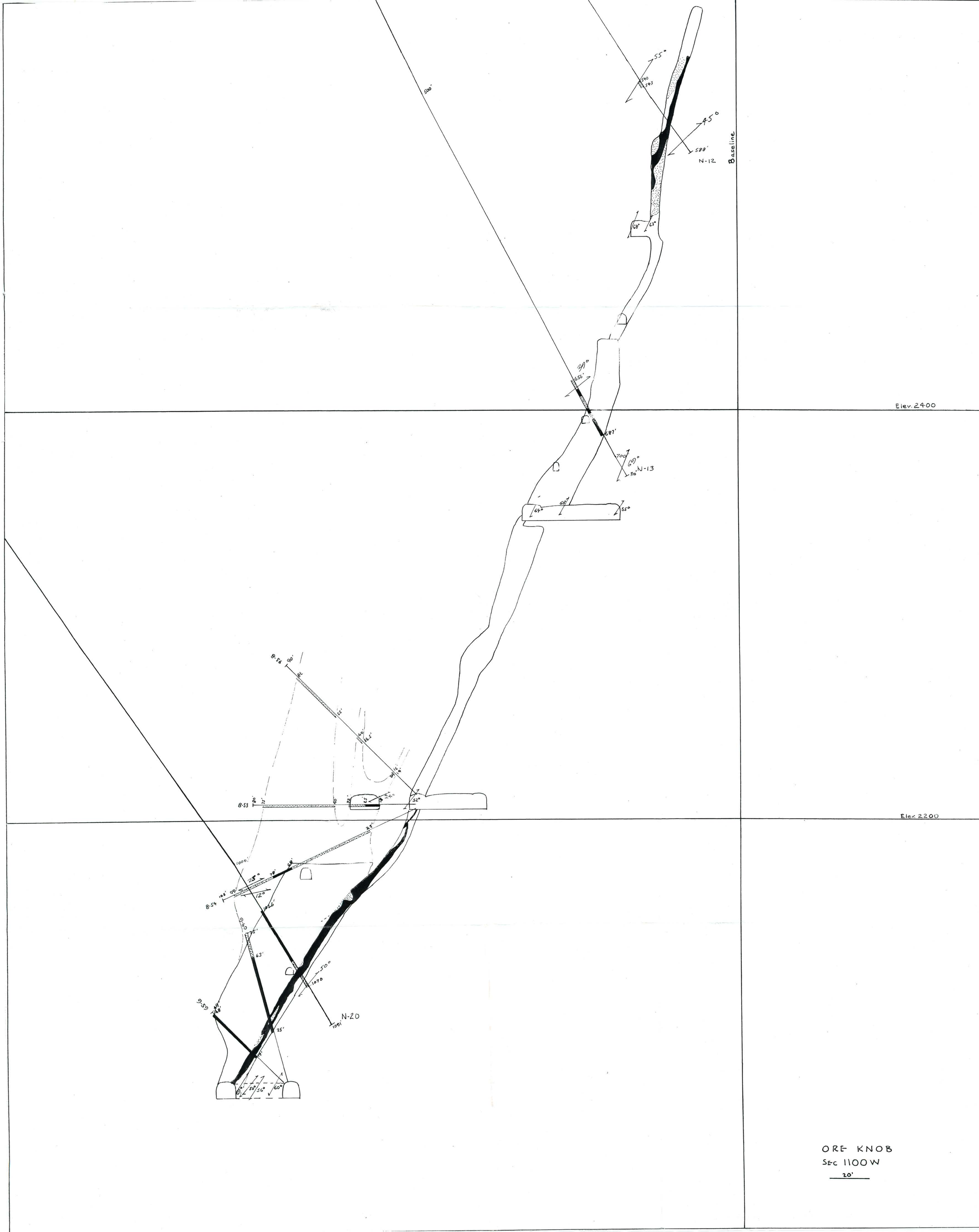

Baseline
Elev. 2400
Elev. 2200
Elev. 2000
N-16
B-19
B-20
B-18
B-70
B-71
B-72
B-92
B-91
43°
33°
63°
87°
58°
59°
60°
ORE KNOB
SEC 900 W
20'

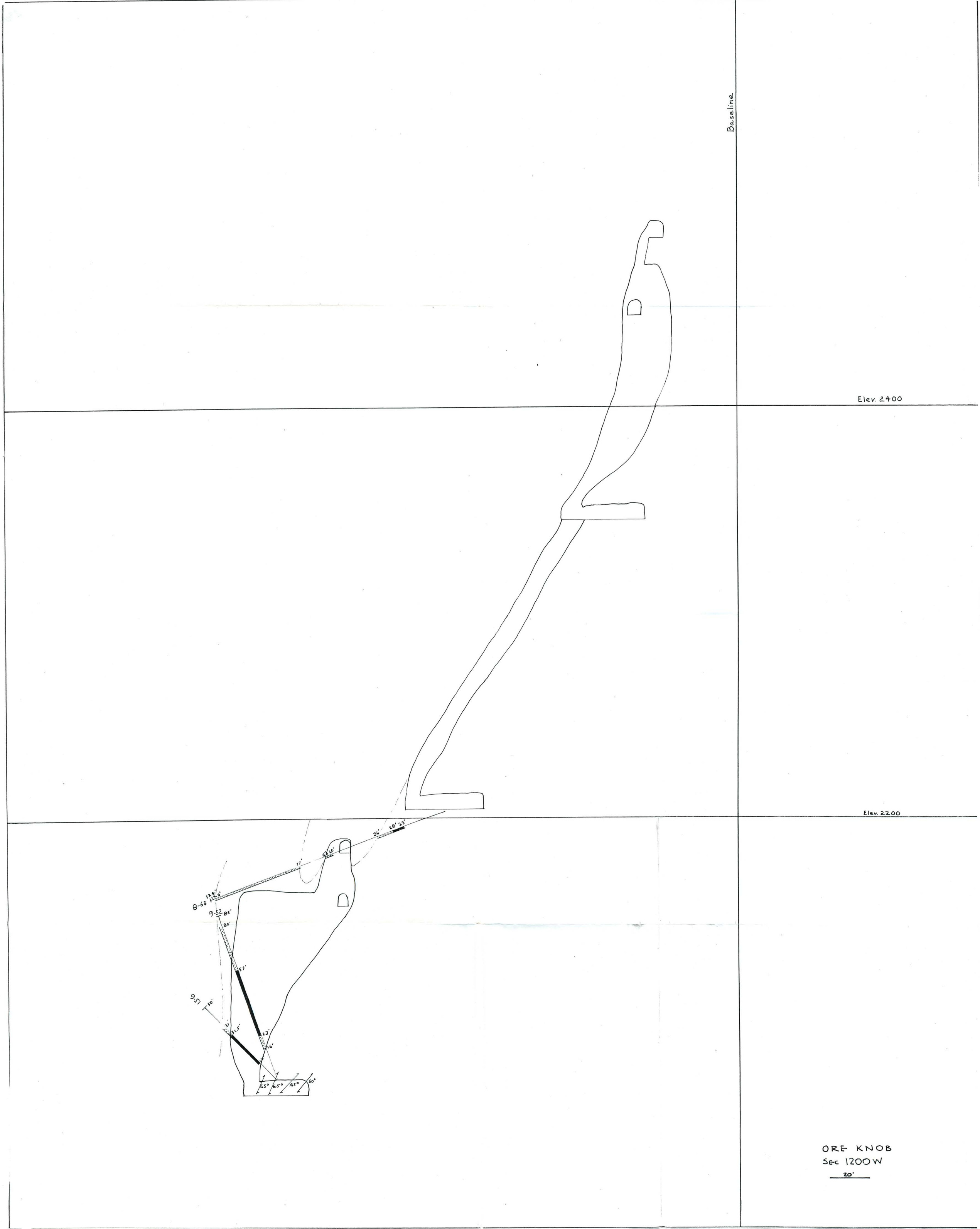


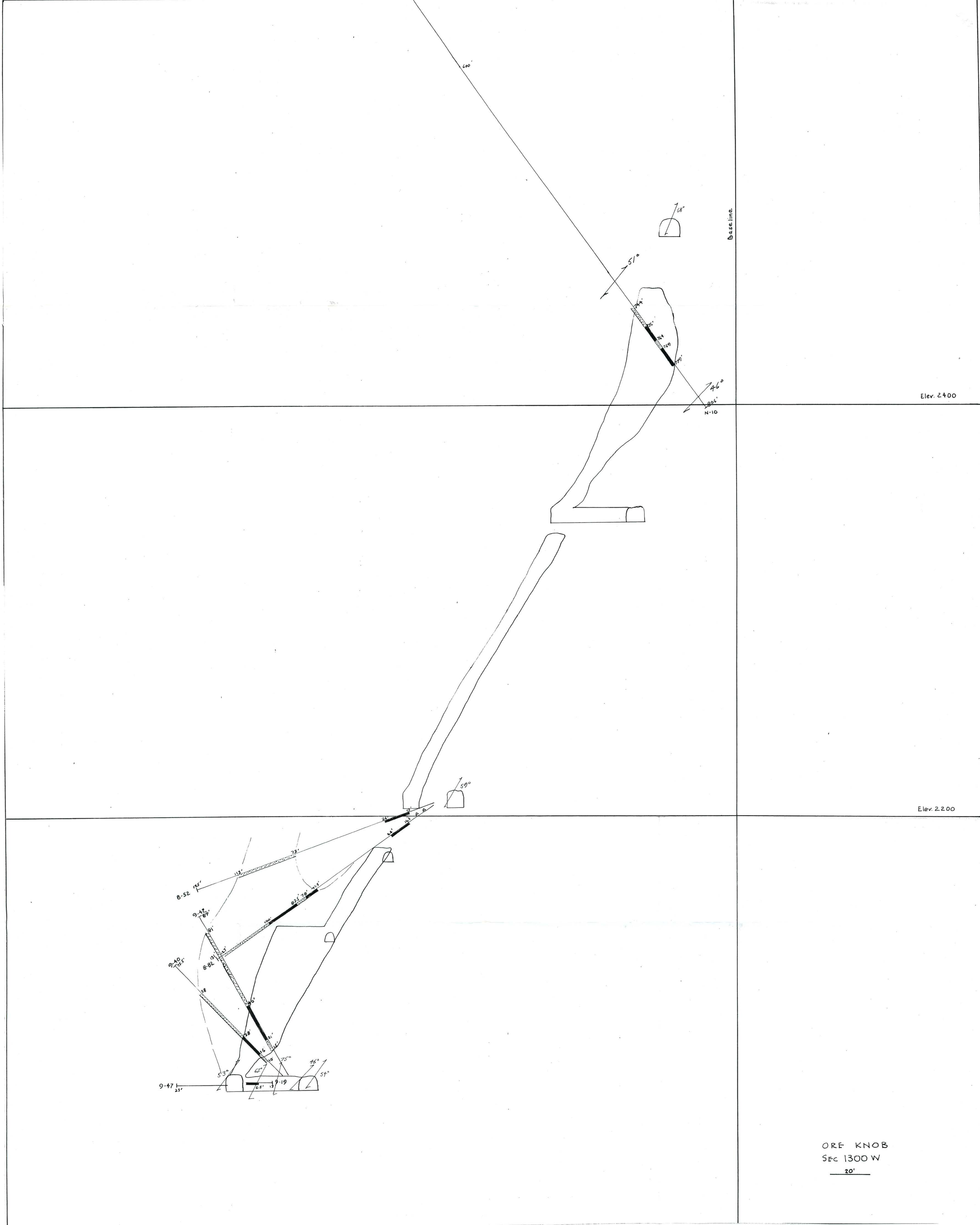

Elev. 2400

Elev. 2200

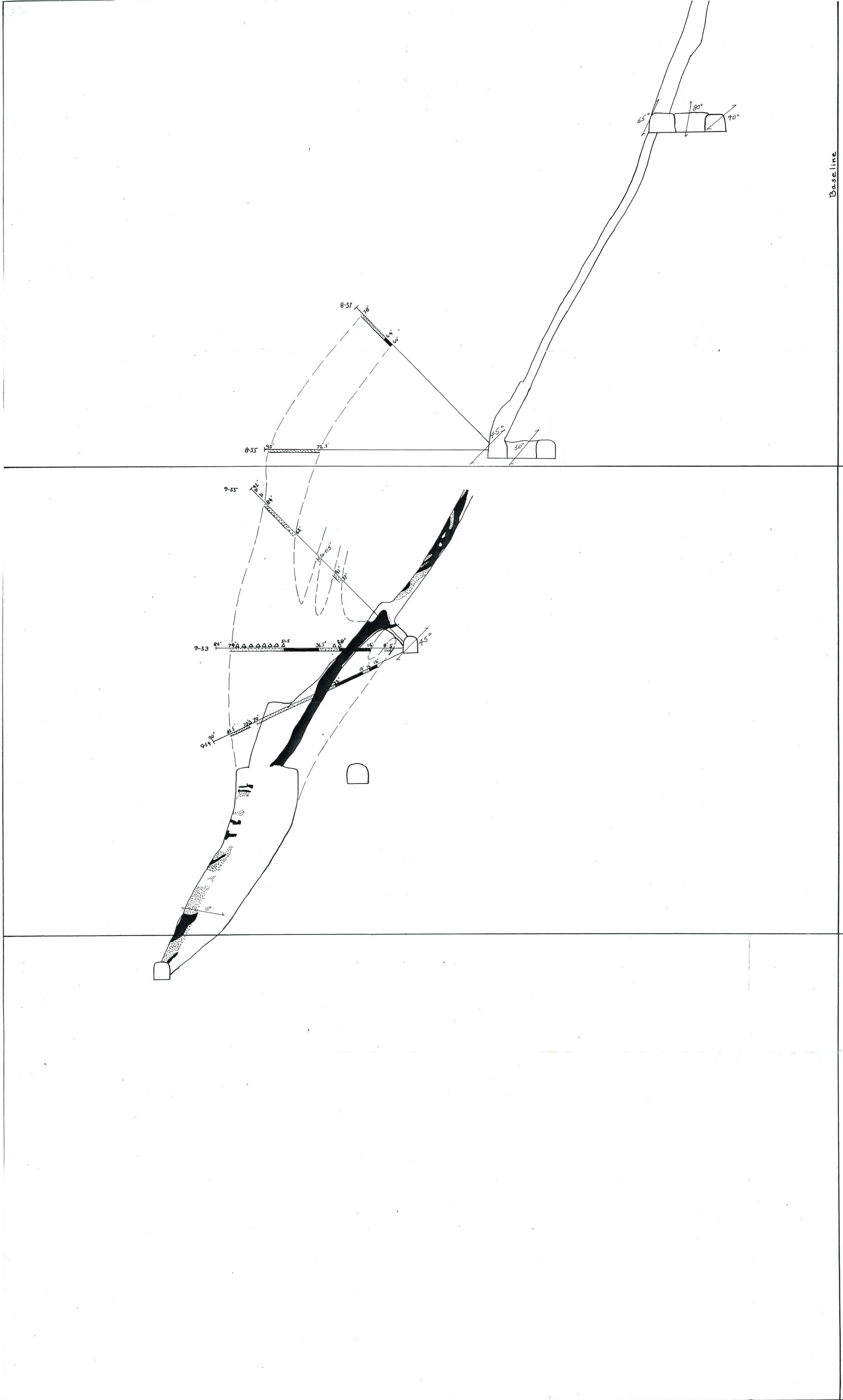
ORE KNOB
Sec 1000 W
20'

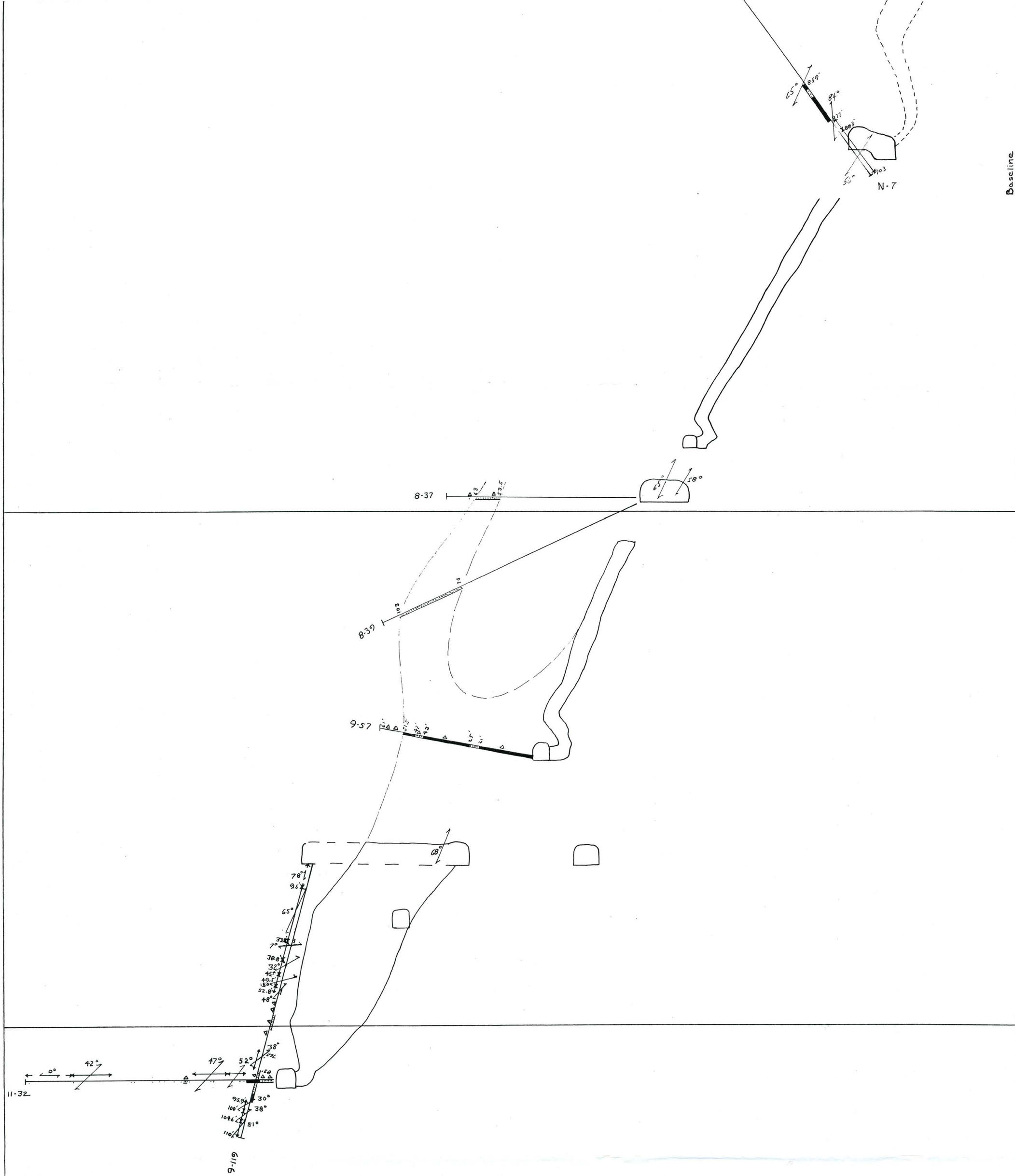

Baseline
Elev. 2400
Elev. 2200
N-12
N-13
N-20
B-53
B-54
B-59
500'
588'
656'
687'
710'
1070
1091'
55°
45°
39°
60°
55°
64°
68°
63°
52°
50°
56°
60°
ORE KNOB
SEC 1100W
20'


Baseline
Elev. 2400
Elev. 2200
36'
28'
23'
62'
60'
17'
13.5'
12.5'
8-63
9-52
85'
80'
57'
9-51
50'
31'
32.5'
23'
16'
65°
65°
45°
50°
ORE KNOB
SEC 1200W
20'

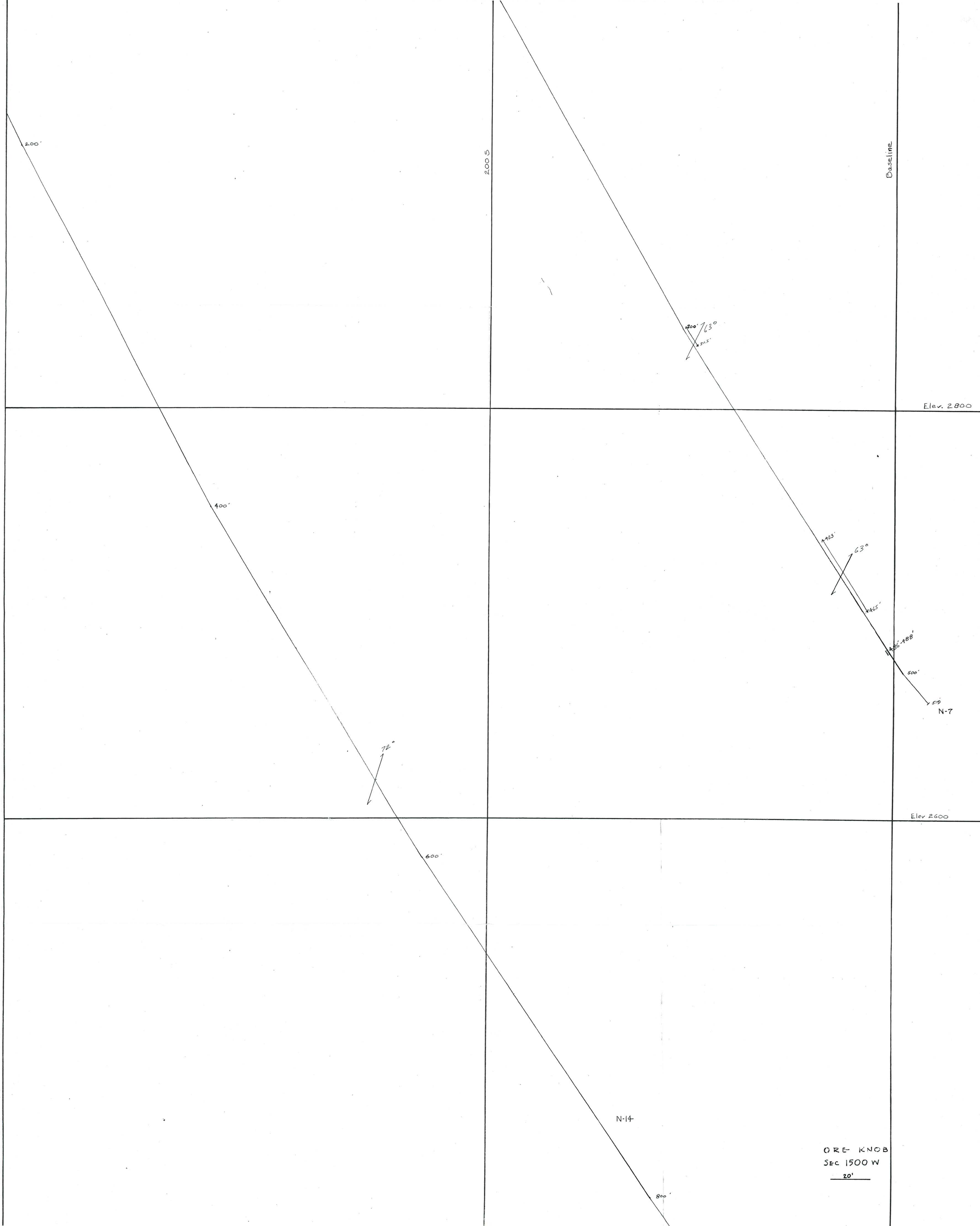


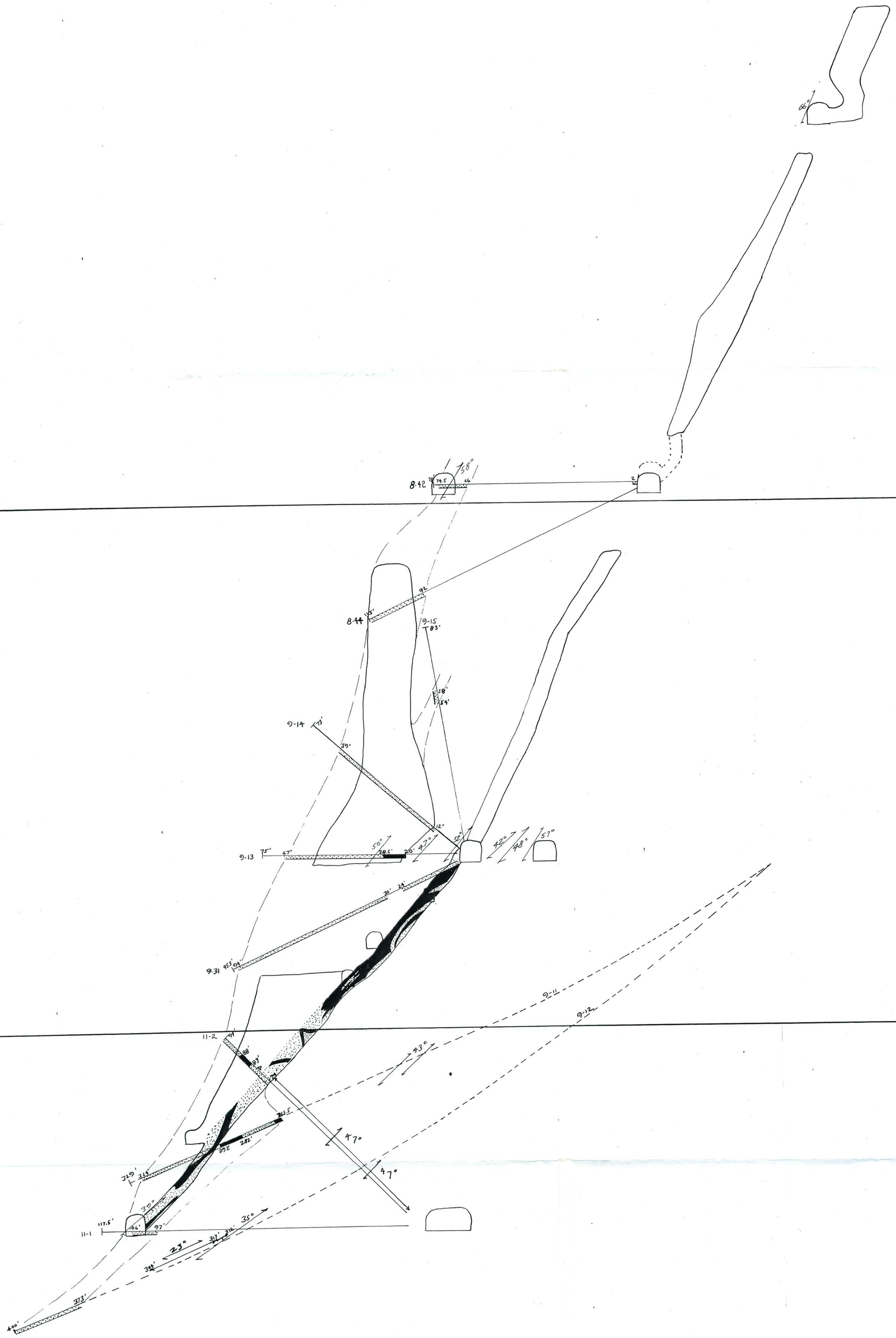
600'
68°
Base line
51°
46°
806'
N-10
Elev. 2400
59°
Elev. 2200
8-52
9-42
8-82
9-40
9-47
9-19
53°
62°
75°
46°
54°
ORE KNOB
SEC 1300 W
20'


Baseline
65°
80°
70°
8-57
78'
64'
60'
8-55
95'
72.5'
45°
50°
Elev. 2200
9-55
92'
84'
65'
57.5'
51'
9-53
90'
79'
51.5
36.5'
28'
14'
8'
45°
19'
16'
12'
9-54
90'
81.5'
74'
70'
11°
Elev. 2000
ORE KNOB
SEC 1400W
20'

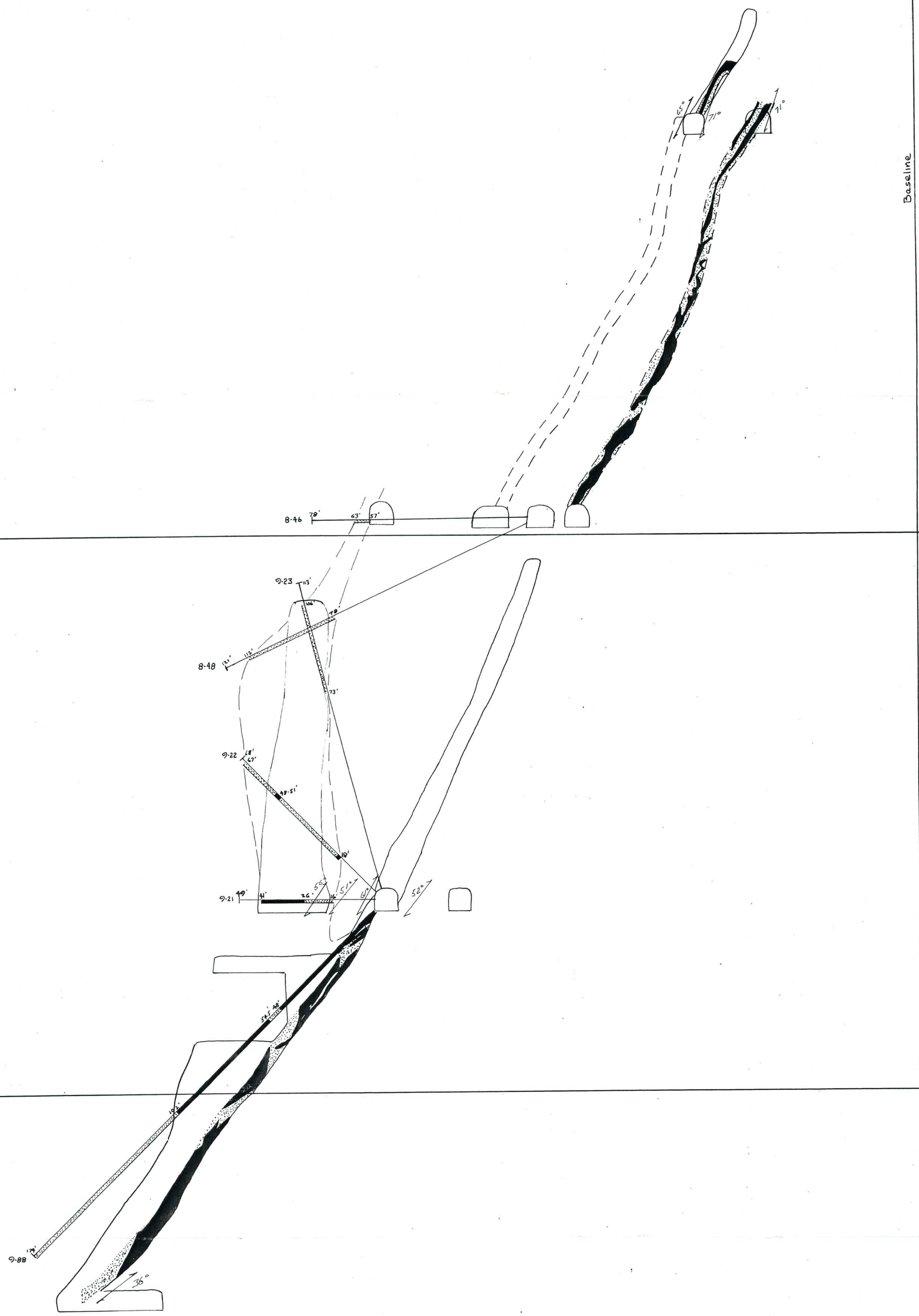



ORE KNOB
SEC 1500 W
20'


200'
200 S
Baseline
200'
63°
311.5'
Elev. 2800
400'
423'
63°
465'
486'-488'
500'
519'
N-7
72°
Elev 2600
600'
N-14
800'
ORE KNOB
SEC 1500 W
20'



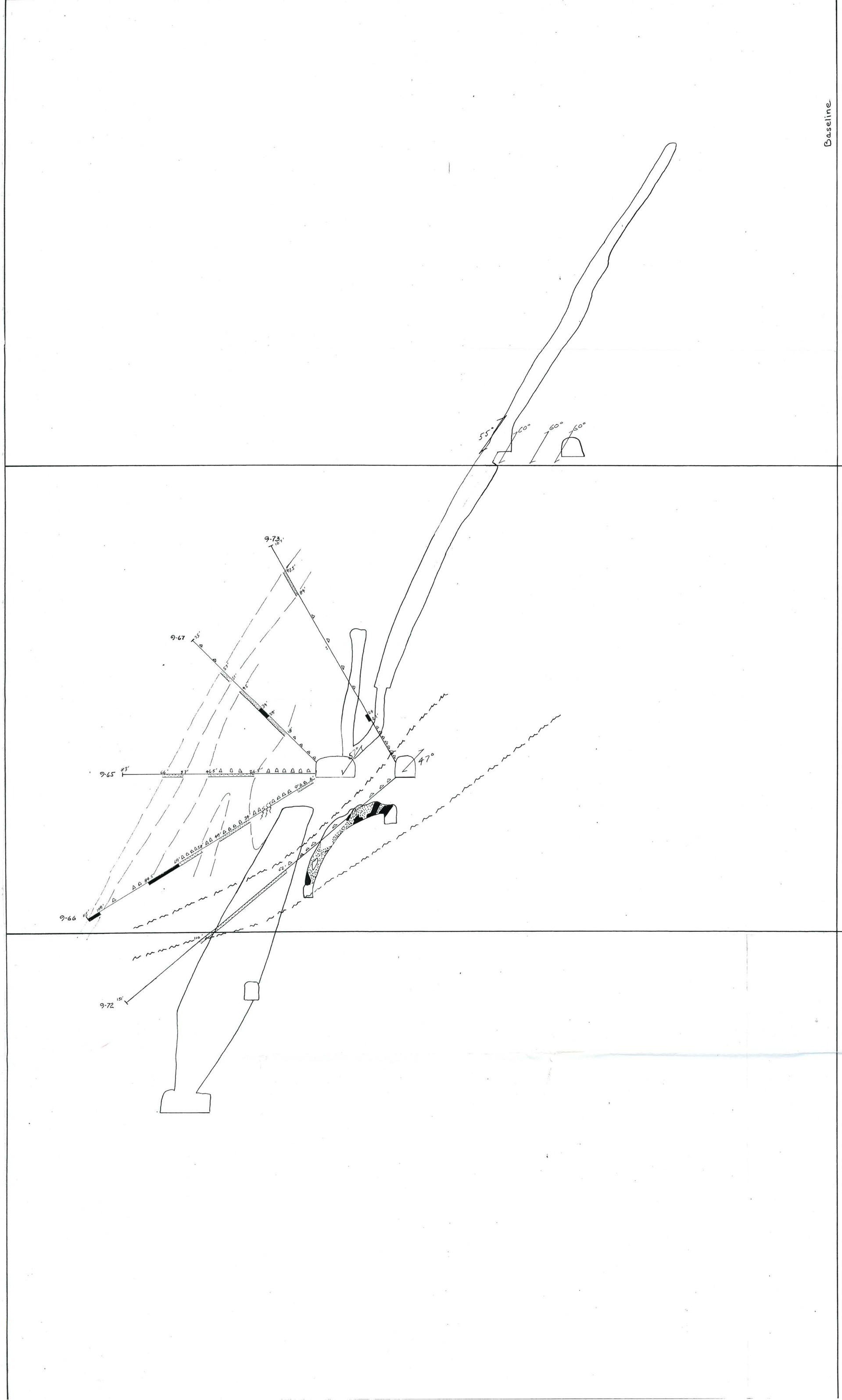

ORE KNOB
SEC 1600W
20'



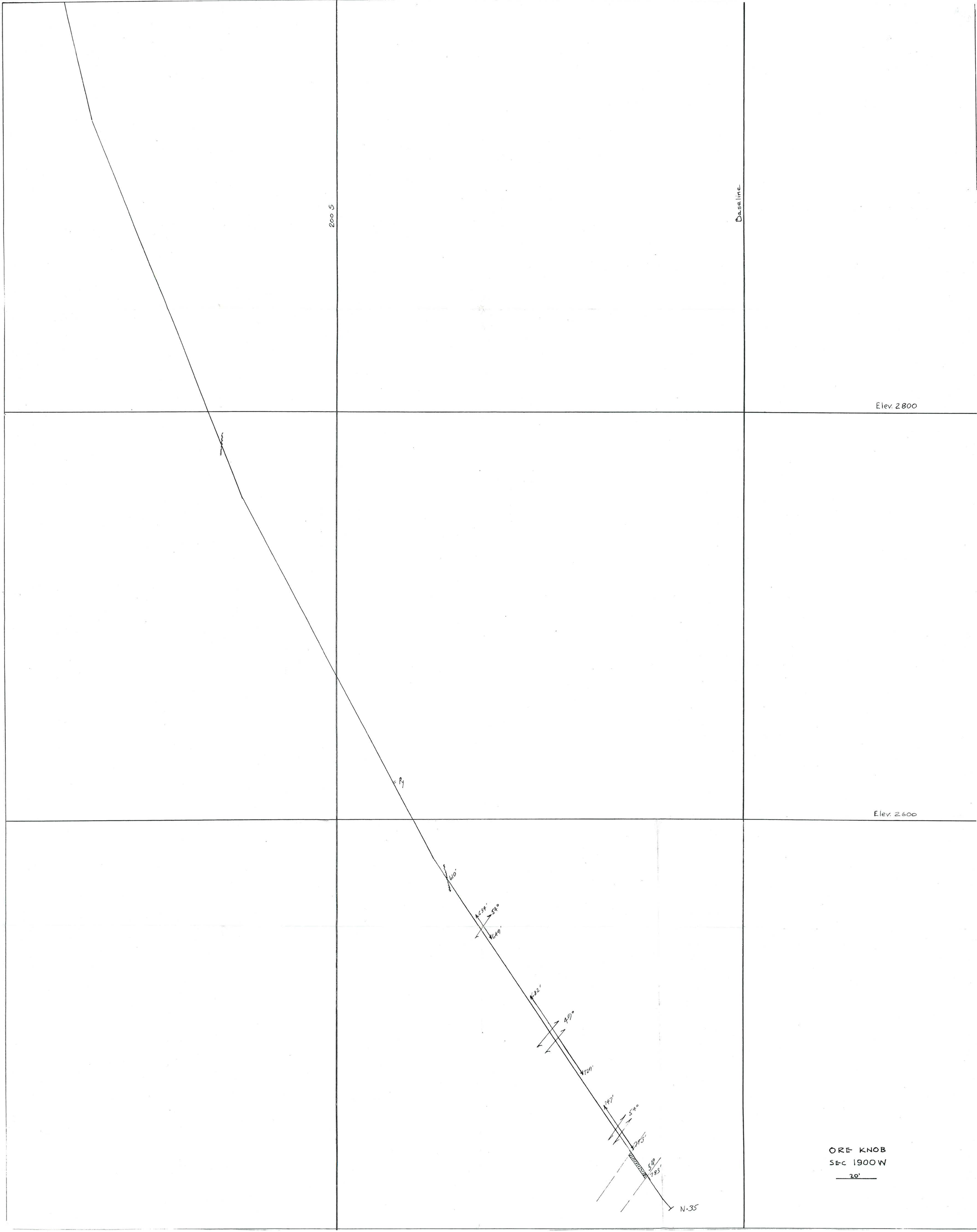

Elev. 2200

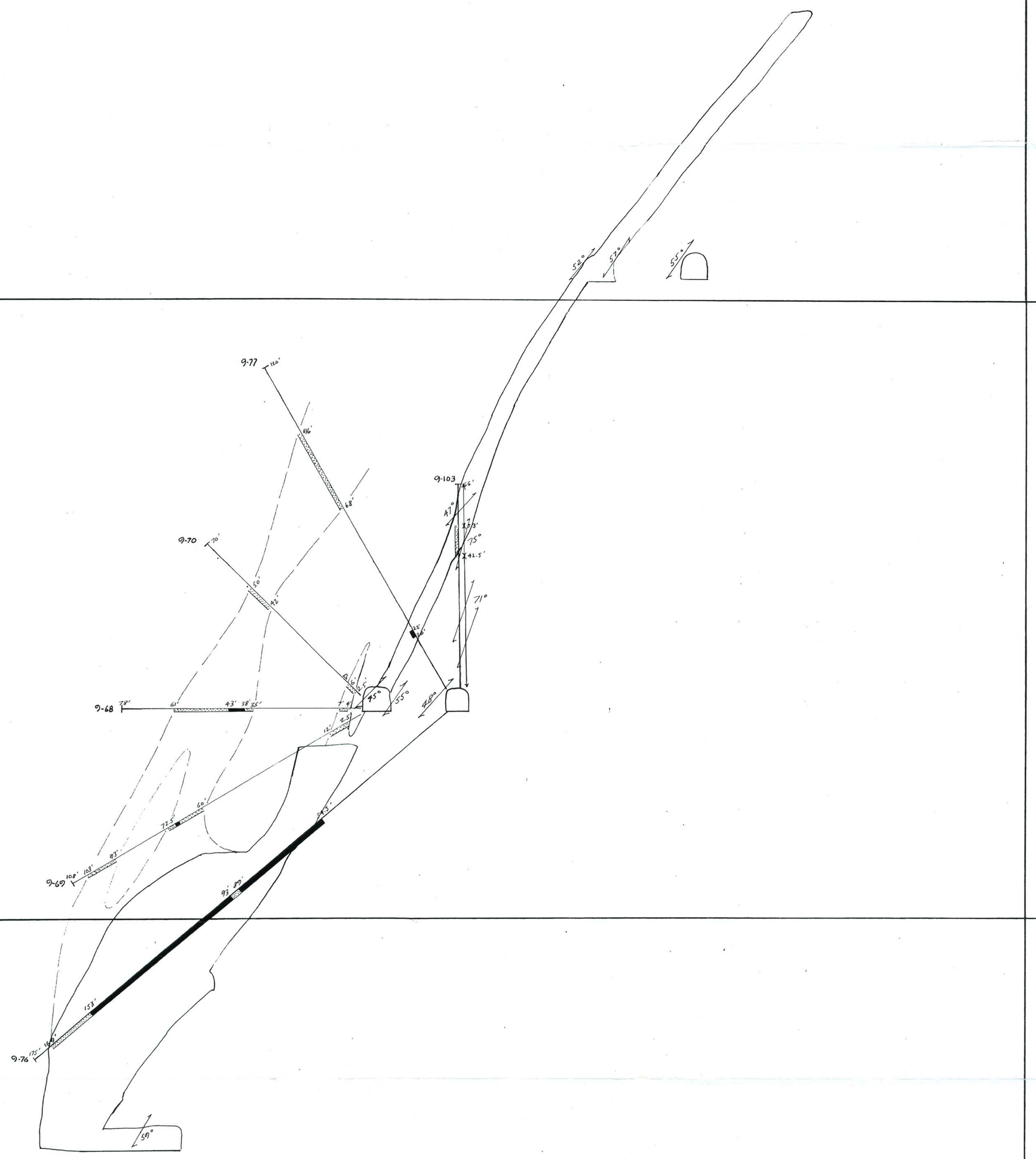
Elev. 2000

ORE KNOB
SEC 1700 W
20'

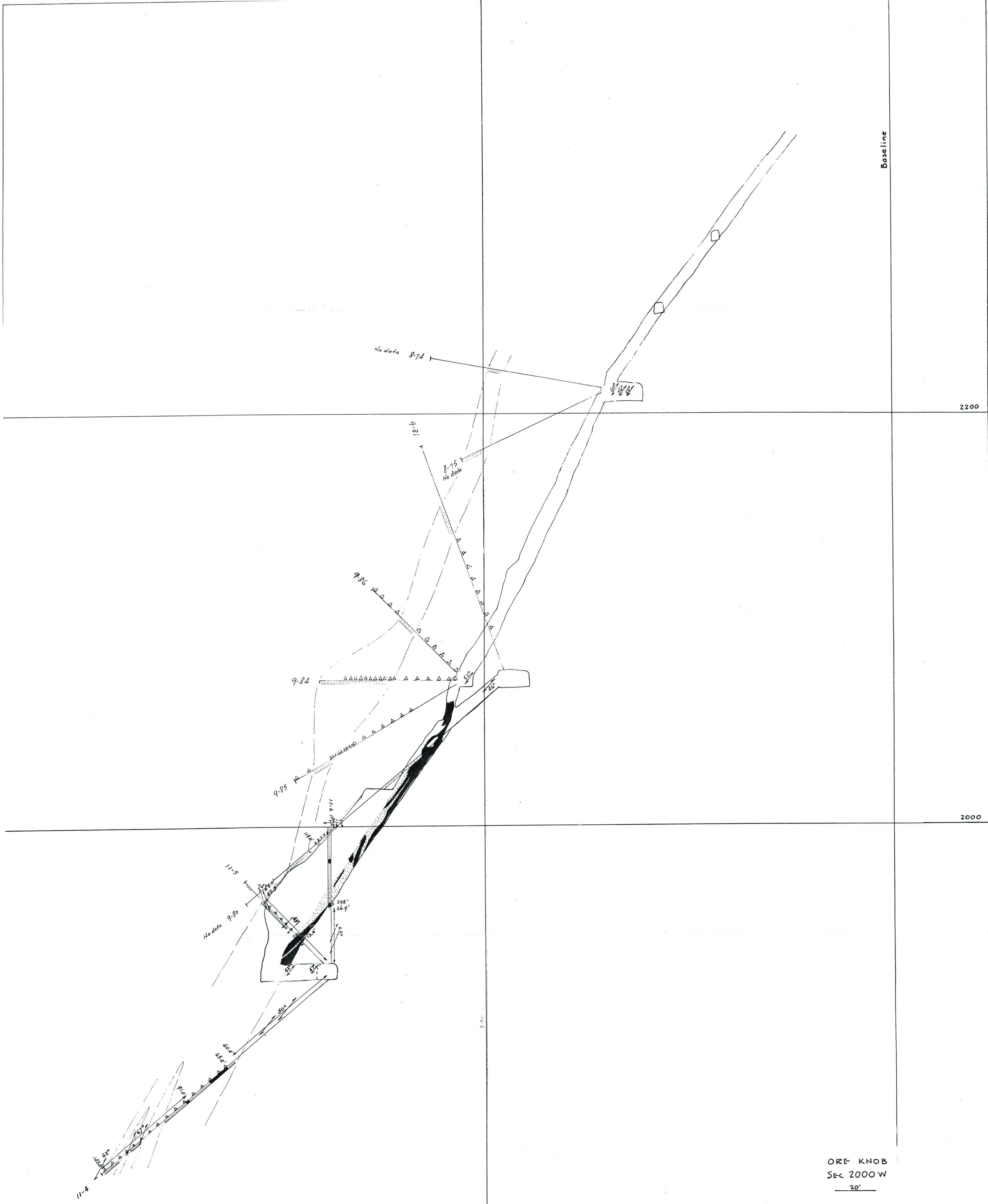


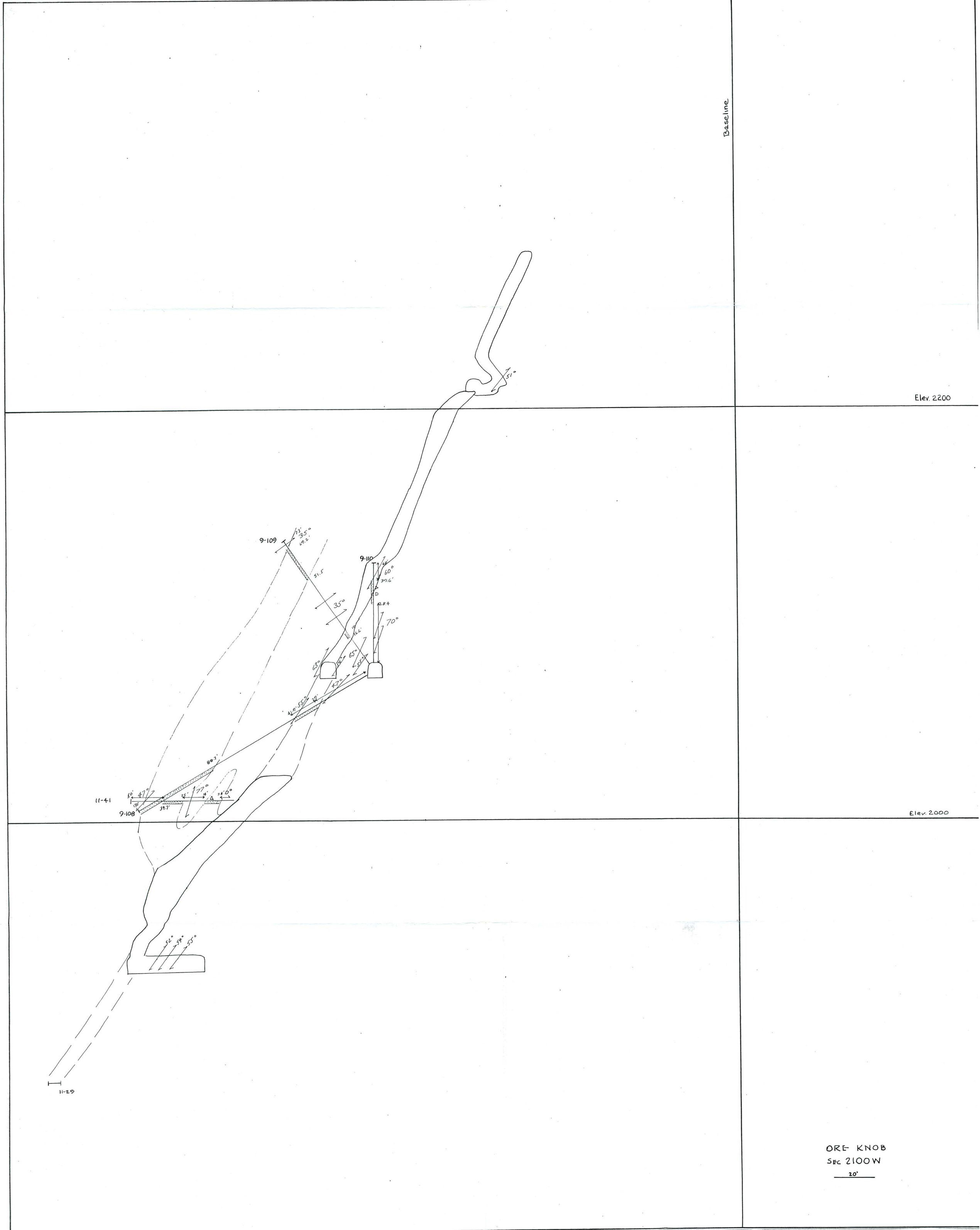

ORE KNOB
SEC 1800W
20'

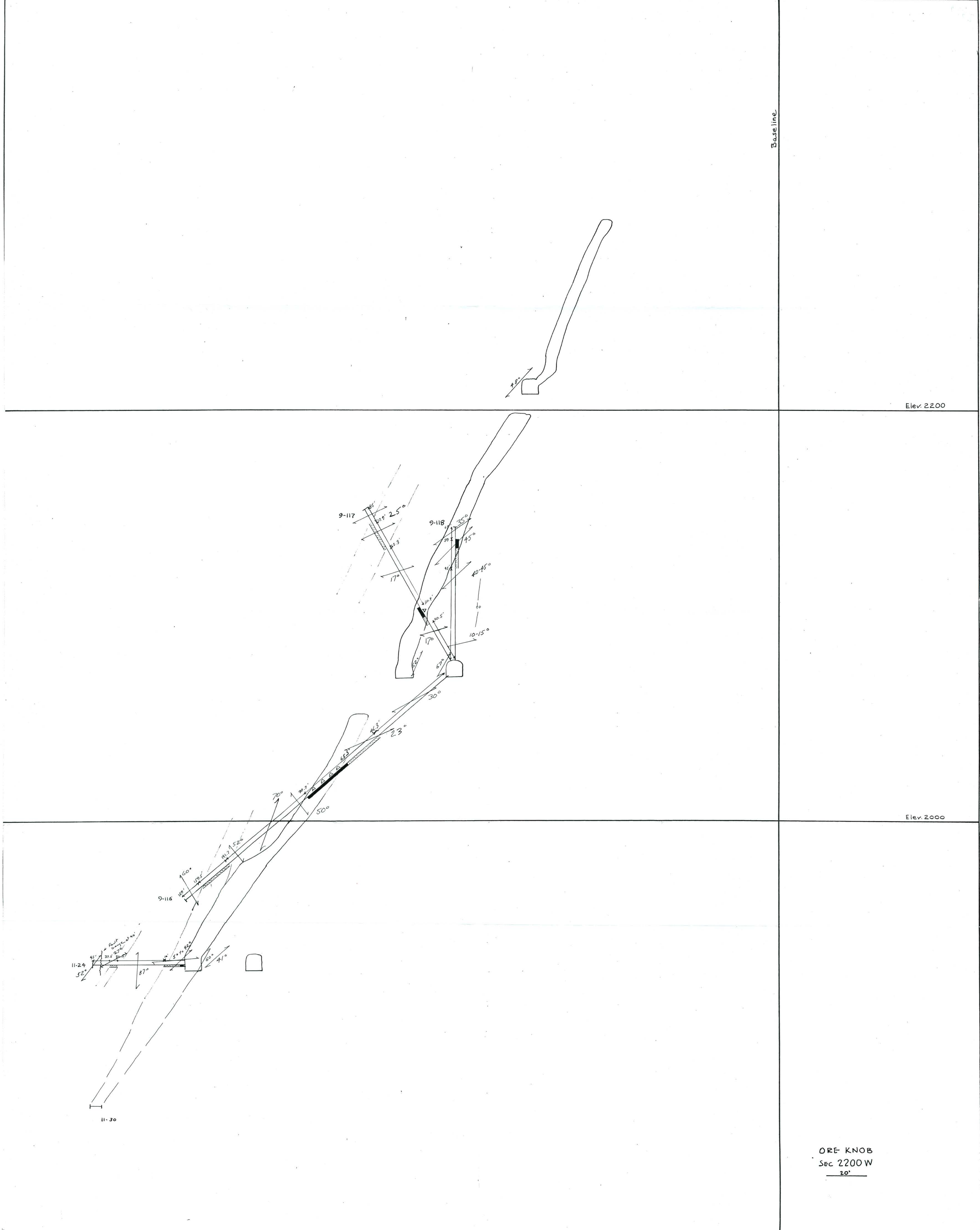

200 S
Baseline
Elev. 2800
Elev. 2600
Py
610'
634'
54°
649'
682'
49°
729'
747'
54°
773'
54°
783'
N-35
ORE KNOB
SEC 1900W
20'

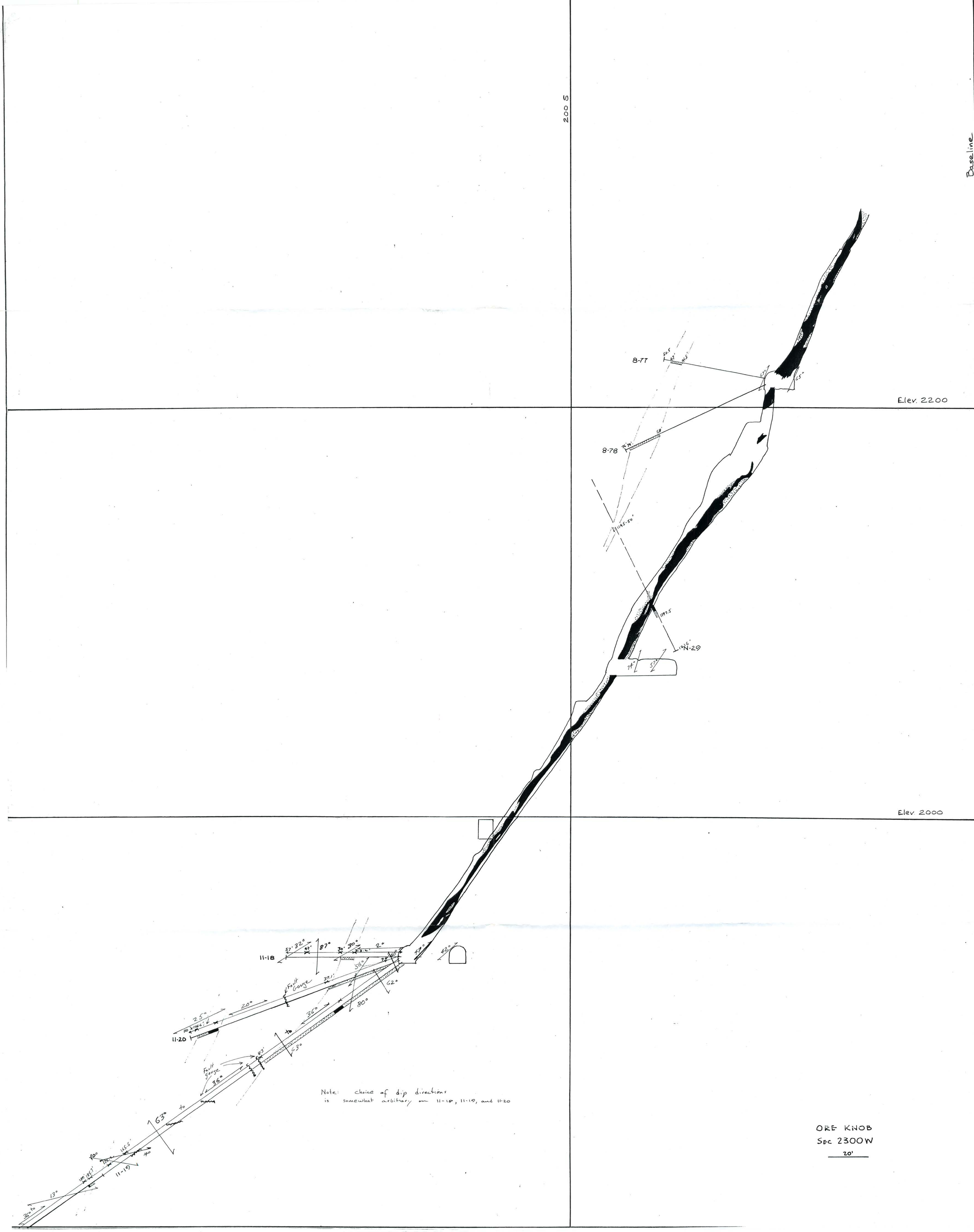


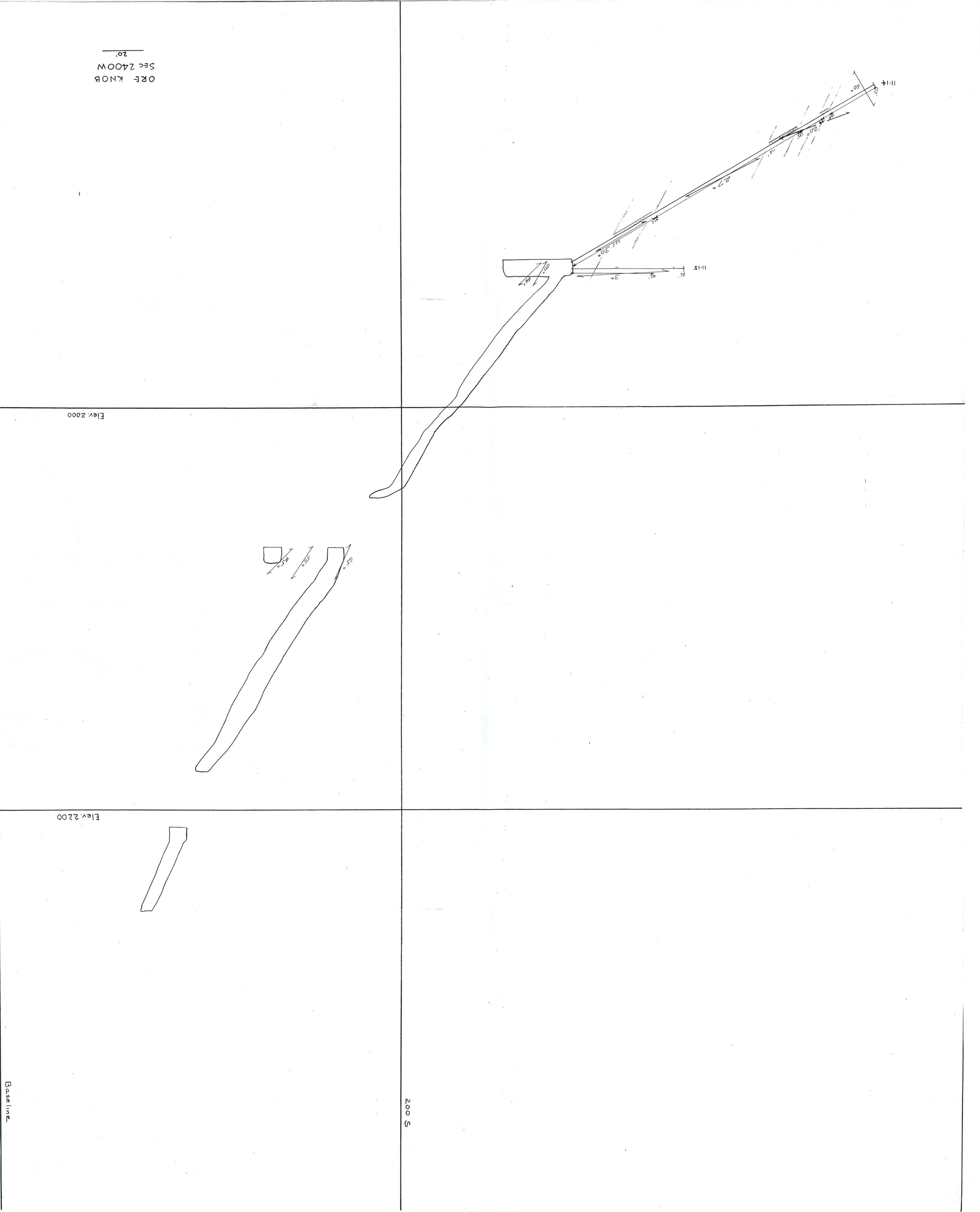

ORE KNOB
SEC 1900 W
20'

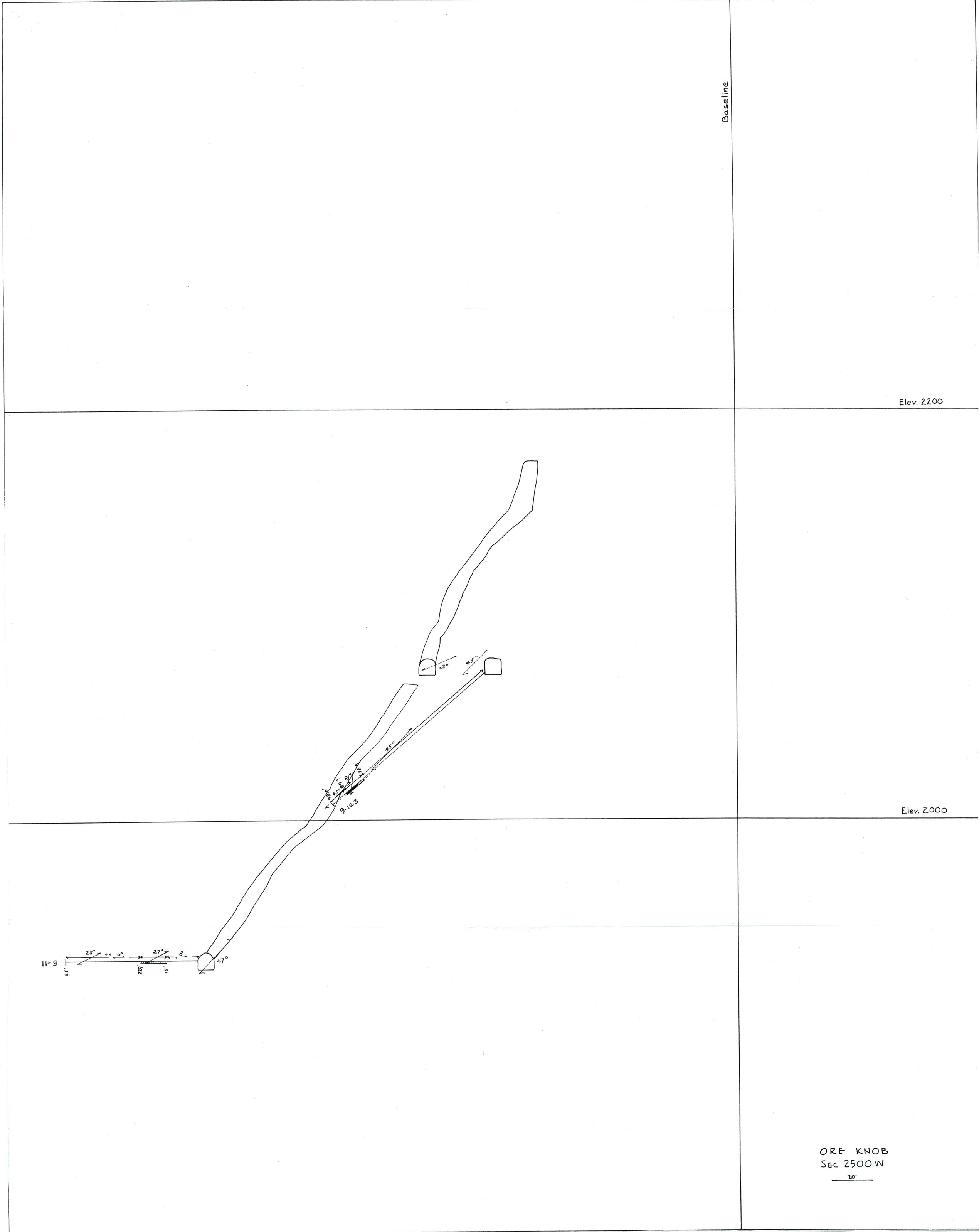

Baseline
2200
2000
No data 8-74
9-81
8-75
No data
9-86
9-84
9-85
9-11
11-5
No data 9-80
11-4
ORE KNOB
SEC 2000 W
20'

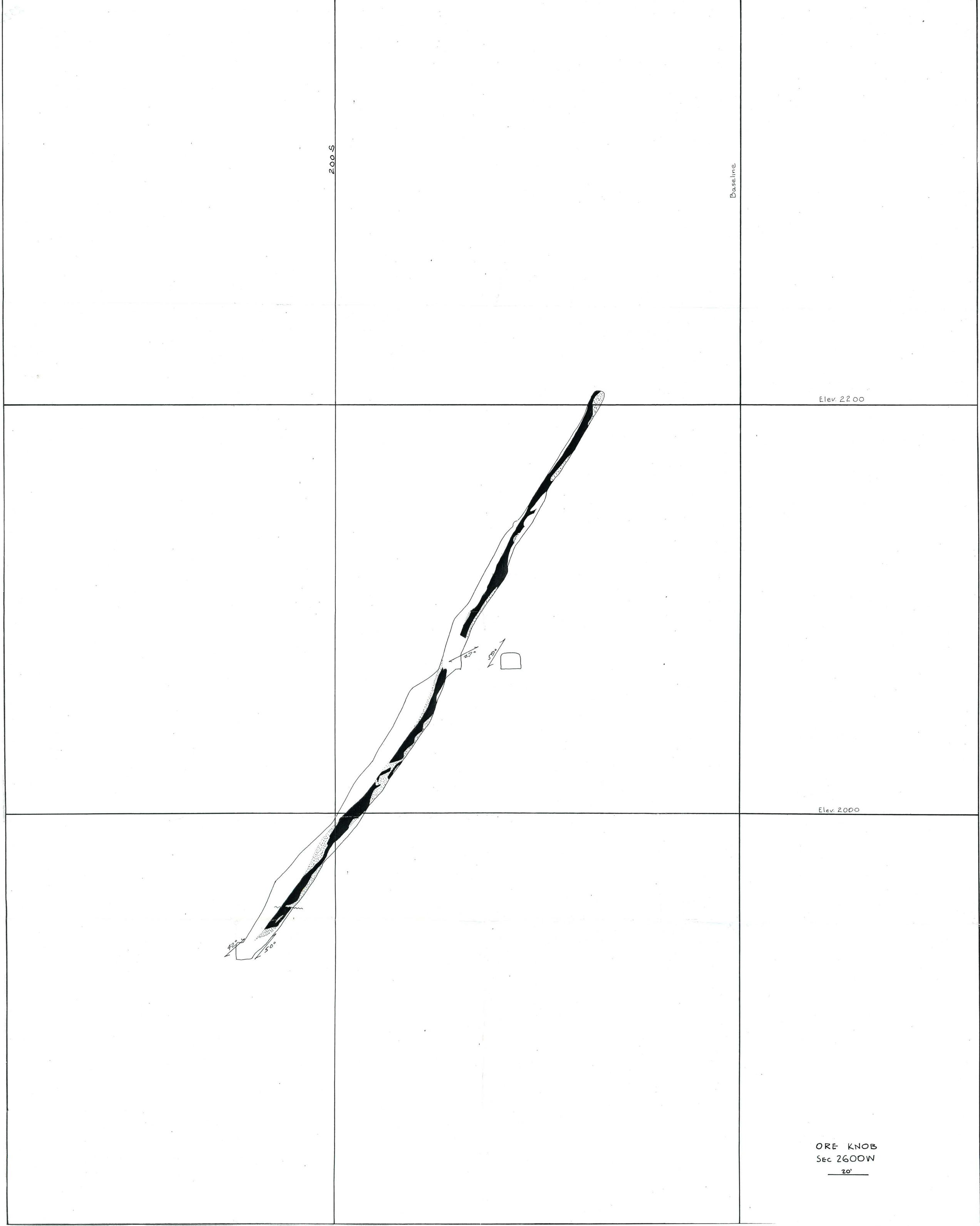

Baseline
Elev. 2200
Elev. 2000
51°
9-109
73'
35°
69.2'
51.5
35°
9-110
60°
307.6'
288.4
70°
63°
65°
47°
55°
88.7'
11-41
9-108
50'
47°
77°
0°
39.7'
52°
54°
55°
11-29
ORE KNOB
SEC 2100W
20'

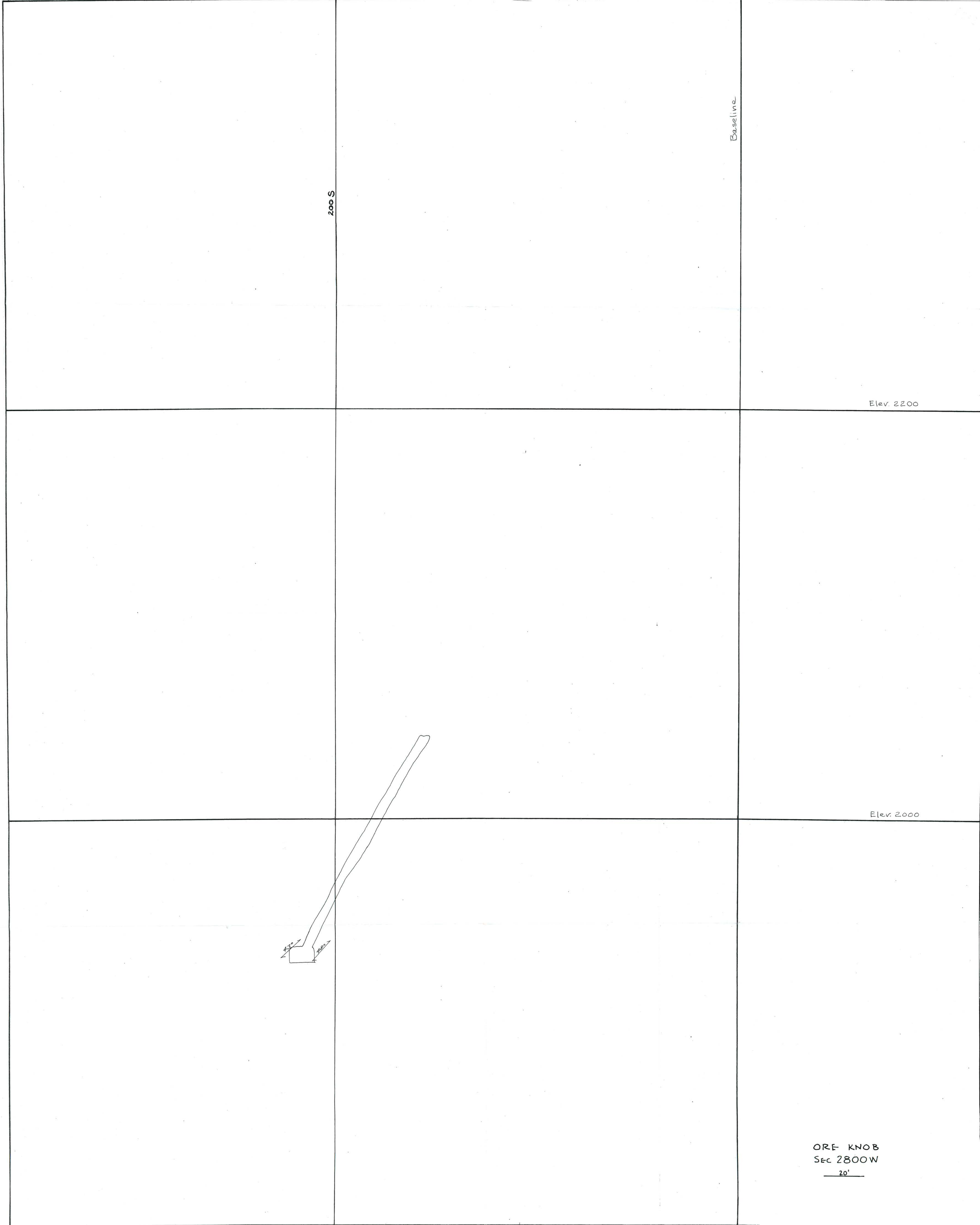

Baseline
Elev. 2200
Elev. 2000
9-117
9-118
9-116
11-24
11-30
25°
35°
45°
40-45°
10-15°
17°
30°
23°
50°
70°
60°
41°
87°
52°
ORE KNOB
SEC 2200 W
20'

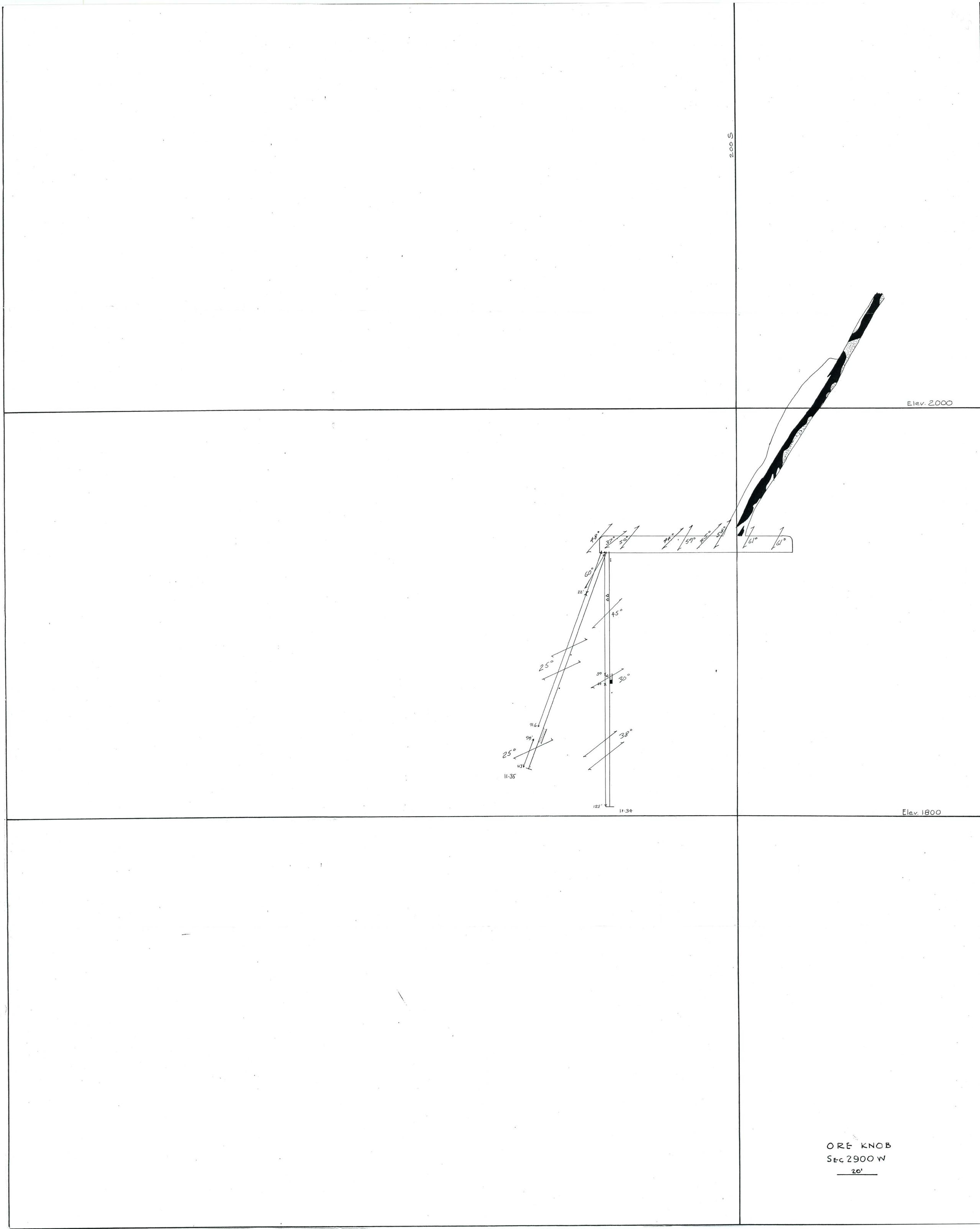

200 S
Baseline
8-77
50.5
67'
24.5'
63°
65°
Elev. 2200
8-78
74.74'
58'
1145.50'
1197.5
1216'
N-29
74°
57°
Elev. 2000
11-18
57.32°
47'
87°
70'
30°
3.2'
2°
73°
60°
47°
42°
56°
62°
Fault Gouge
37.1'
20°
25°
110
106.6'
11-20
36°
70
80°
63°
83'
Fault Gouge
36°
63°
to
10°
165.5'
140
189
185.7'
11-19
13°
36° to
Note: choice of dip directions is somewhat arbitrary on 11-18, 11-19, and 11-20
ORE KNOB
SEC 2300W
20'


ORE KNOB
Sec 2400W
20'
11-14
60°
20°
27°
11-15
56'
42'
30°
44°
60°
65°
35°
45°
Elev. 2000
Elev. 2200
200 S
Baseline


Baseline
Elev. 2200
23°
45°
45°
9-123
Elev. 2000
11-9
25°
0°
27°
0°
47°
65'
279'
15'
ORE KNOB
SEC 2500 W
20'

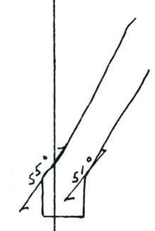

200S
Baseline
Elev. 2200
27°
50°
Elev. 2000
42°
50°
ORE KNOB
SEC 2600W
20'


200 S
Baseline
Elev. 2200
Elev. 2000
43°
48°
ORE KNOB
SEC 2800W
20'


200 S
Elev. 2000
48°
30°
50°
44°
59°
45°
50°
61°
61°
60°
22'
45°
25°
59
44
30°
71.6
99'
25°
43'
11-35
38°
125'
11-34
Elev. 1800
ORE KNOB
SEC 2900 W
20'

200 S

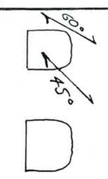
Elev. 2000




Elev. 1800

ORE KNOB
SEC 3000W
20'

200 S




Elev 2000

Elev 1800

ORT KNOB
Sec 3100 W
20'

# ORE KNOB MINE

# STRUCTURAL ANALYSIS

JACK A. JAMES, CONSULTING GEOLOGIST

# ORE KNOB MINE

# STRUCTURAL ANALYSIS

REPORT NO 3

JACK A. JAMES
CONSULTING GEOLOGIST

TELEPHONE: GILBERT 5-0566

211 BELLAIR ROAD
RIDGEWOOD, NEW JERSEY

December 20, 1962

Mr. C. O. Ensign, Jr.
Copper Range Company
White Pine, Michigan

Dear Chet:

I submit herewith my report of the structural investigation at the Ore Knob Mine, Ashe County, North Carolina.

The available data, as I interpret them, did not reveal the structural control for ore at Ore Knob, but it did illuminate the geologic setting of the deposit. The sulphide mineralization is an epigenetic feature distributed in response to local forces. The ground preparation created by these forces is more likely to continue downward than laterally. The predominant component of force acted vertically, or nearly so, and the component acting laterally was dissipated in the foliation of the country rock. The structures of response merge laterally into the gneissosity, but they can be expected to have continuity downward.

The causative geologic event for the structural development and the sulphide emplacement is not exhibited in the geology evident in the vicinity of Ore Knob. The geophysical reflections, especially magnetics, measured there may permit speculation on a causative event.

The main vein exists beyond the boundaries of the ore shoot, but without the benefit of sulphide concentration in a keel area the standards for ore will be difficult to meet. This study failed to define a reason or control for the concentration of sulphides in the keel area and does not predict the existence of another.

Respectfully submitted,

Jack A. James

Jack A. James

# ORE KNOB MINE

## Structural Analysis

An analysis of the structural information assembled by the geological staff at Ore Knob failed to reveal the structural control for the emplacement of the sulphide mineralization, and consequently, no additional sites can be indicated as especially favorable for ore mineralization. The information reviewed does provide reasonable evidence for some conclusions as to the structural setting of the deposit, but unfortunately, none of the conclusions can be translated into pinpoint targets to be tested for ore.

The geology of the ore body, as mined, has been recorded with considerable attention to economic mineralization. The adjacent geologic elements have been recorded with less assiduity. The opportunity to recover the latter information is gone with the disposal of core from the hanging and foot walls, and is lost in the inaccessibility of the mine workings.

The ore-bearing structure is identified essentially by the presence of sulphide mineralization. Where, and if, the structure is not so mineralized, it

is doubtful that it would be or has been recognized either in the outcrop or in drill core. The raw material for a structural study is the distribution of sulphide mineralization.

Observations of structural features recorded by the geological staff were compiled by Mr. Ben Morgan on vertical sections that accompany this report. The observations were brought together from notations on sections, plans, drillhole logs, and sketches of walls and faces in the workings. The compilation which was made on sections at each 100 feet from 00 through 3000W shows

a) the attitude of regional gneissosity,

b) slips in the hanging wall that dip NW,

c) slips at depth in the westernmost sections that intersect the line of section at a low angle,

d) that the regional gneissosity is deformed locally at the margins of sulphide mineralization and along the planes of slippage,

e) that the ore-bearing structure has been offset by later faulting.

The distribution of sulphides is shown in Plate I by a series of vertical sections from 100W through 2300W. This presentation illustrates

a) a marked bend in the ore structure above the keel area,

b) that the dip of the ore structure decreases at depth with the most pronounced flattening below the keel area,

c) a multiple vein pattern at depth in the sections west of 2100W where the keel area disappears.

The configuration of the footwall of the ore structure was reconstructed to test its relationship to the position of the ore shoot. This configuration is illustrated by contours in Plate II. The reference plane is parallel to the base line at the property, i.e., N 60° E; it dips SE and migrates 35 feet per 100 feet of vertical depth; it passes through the baseline at elevation 2500. The contour values are the distance from the reference plane to the footwall. Where the figures are positive, the ore structure is southeast of the reference plane, and where the figures are negative, the ore structure lies northwest of the plane. The presentation in Plate II shows

a) a nearly horizontal axis of bend in the ore structure above the keel area.

b) a coincidence of position for the base of the ore shoot and the pronounced flattening of dip on the ore structure.

c) an interruption of the axis of bend from section 00 to 1000W.

d) the rake of the ore shoot and that it crosses the folding pattern on the ore structure where the axis of bend is interrupted.

e) minor folding that is oriented in the direction of the rake of the ore shoot, but at a steeper angle.

The points outlined above include all the

structural elements recognized by the review and compilations. The absence of a datum or reference plane for unraveling the structural history is a severe deterrent to a structural analysis.

The ore structures at Ore Knob are local features that have been imposed upon the regional metamorphism. They align with the structural grain of the metamorphic background and weakly contrast with it; they dissipate strength as formal features by separating into multiple planes and laterally merge into the pre-existant gneissosity. The sulphide mineralization distributed along the ore structure is epigenetic.

The weak and local structures at Ore Knob contrast markedly with the strong through-going structures produced by the Appalachian orogeny, and the stress that produced them surely contrast just as markedly with the stress of the orogeny. The orogeny was overwhelming of a large rock mass, but the stress at Ore Knob was of sufficient magnitude only locally to induce relief by rupture. The stress active at Ore Knob need not be associated with the Appalachian orogeny.

It is generally conceded that the forces of the orogeny were compressional from the SE toward

the NW, non-rotational, and supplemented by a significant gravitational force acting vertically. A strong structural grain was developed. It is not surprising that local forces active at Ore Knob would be resolved along the same directions, as indeed, they were.

The problem is to correlate the reaction that produced the ore structures to a causative geologic event, and preferrably, to an event that also can account for the sulphide emplacement. An examination of the gross geologic features in the vicinity of Ore Knob fails to reveal reasonable tangible evidence of such an event. Geophysical evidence, however, may provide an intangible clue.

An anomalous magnetic pattern is situated some 1000 feet southeast of the outcrop of the ore structure. Although this feature probably does not reflect sulphide mineralization, it may reflect a geologic event related to that mineralization.

If we speculate on the possibility of a basic intrusive, say gabbroic in kind, many of the aspects of the setting at Ore Knob can be rationalized rather easily. A small intrusive would be expected to gain access along the structural grain and to assume a tongue or sill-like shape. The anomalous

magnetic pattern conforms to the structural grain.

The forces produced by a small intrusive would have a large component acting vertically; they would be focused into a zone of maximum intensity upward from the intrusive, and the intensity would diminish laterally. Relief of the stresses would form splay structures upward that would fade or merge laterally into the gneissosity. Such a speculation fits the circumstances at Ore Knob.

Sulphide mineralization associated with basic intrusives is a common geologic phenomenon, and the apparent lack of an alteration halo to such mineralization, especially in a high grade metamorphic background, is not uncommon. No unusual circumstances are demanded by this speculation to rationalize the Ore Knob occurrence.

The actual existence of a basic intrusive at depth southeast of Ore Knob is not verified by the evident geology. The possibility is permitted by the geology, and it may be permitted also by the geophysical evidence. The magnetic data should be processed to check this point.

The evidence of this structural analysis is not definitive to the search for additional ore at Ore Knob, but it does emphasize some probabilities.

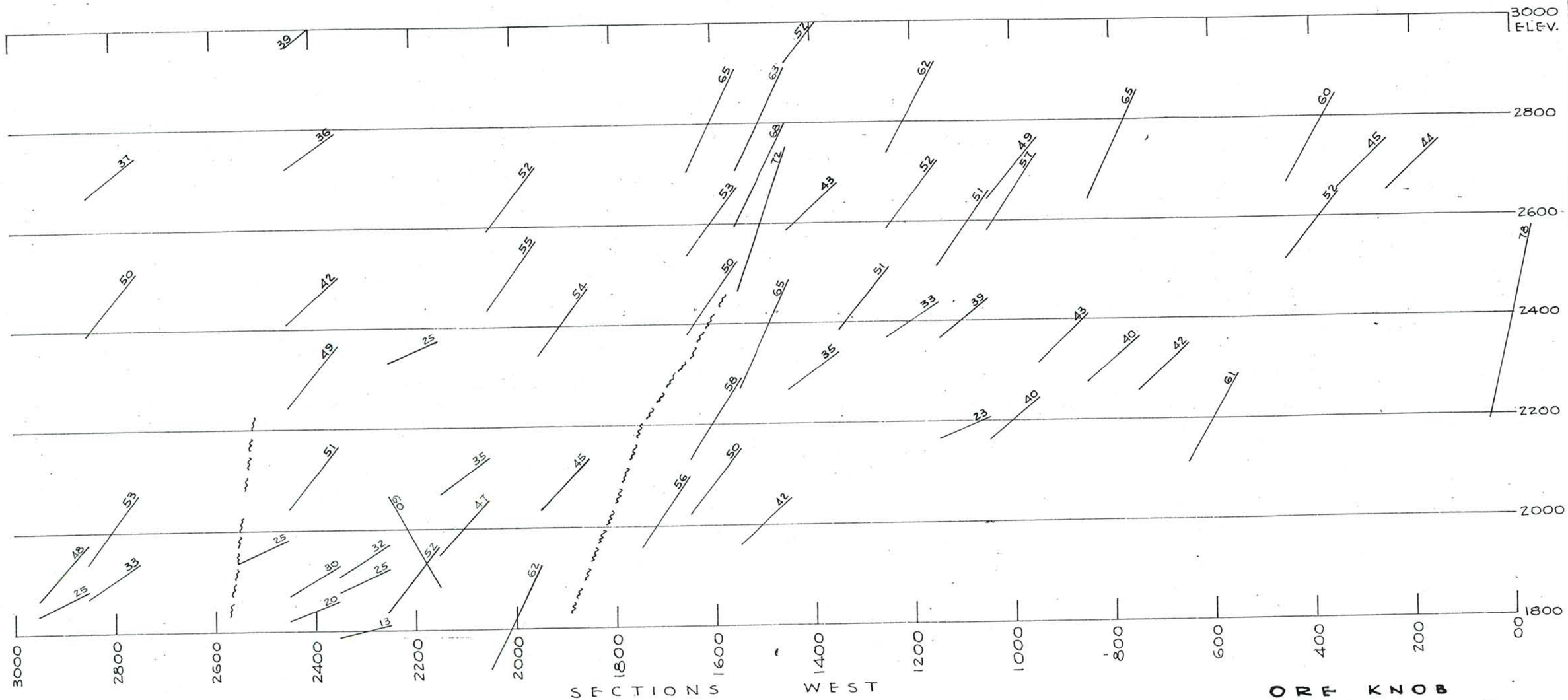
The ore structures at Ore Knob are local phenomena, and the forces responsible for them likely were applied locally at depth. They dissipate strength laterally and merge into the gneissosity, but they are likely to continue as formal structures downward toward the source of deforming forces. The distribution of sulphide mineralization is apt to conform to the formal structures, and thus, to have continuity downward rather than laterally.

The keel area yielded a large part of the tonnage taken at Ore Knob. This analysis fails to define a reason or control for the concentration of sulphides in the keel area, and consequently, does not predict the existence of another. The main vein exists beyond the boundaries of the ore sheet, and it is mineralized, but without the benefit of sulphide concentration in a keel area the standards for ore will be difficult to meet.

The concept speculated upon in this report perhaps is of limited value in the search for additional ore at Ore Knob, but the concept may be of considerable value as a working hypothesis in the search for another Ore Knob. The mathematical processing of magnetic data at Ore Knob could change the status of the concept from permissive to probable.

The application of forces locally speaks itself for the repetition of these circumstances at other locales. If these forces are created by intrusives basic in kind and their presence at depth can be detected by magnetic methods, then a workable technique is available for that important first step of selecting from the region the specific locales for further exploration attention. Induced polarization methods used at Ore Knob responded clearly to the sulphide deposit, and IP in this region should give a reasonable check for sulphide mineralization in sufficient volume to be a potential ore deposit to a depth below the surface in the order of 1500 feet. Where sulphides are suggested by IP, geochemistry may add a significant clue to the presence of valuable metals in the sulphides.

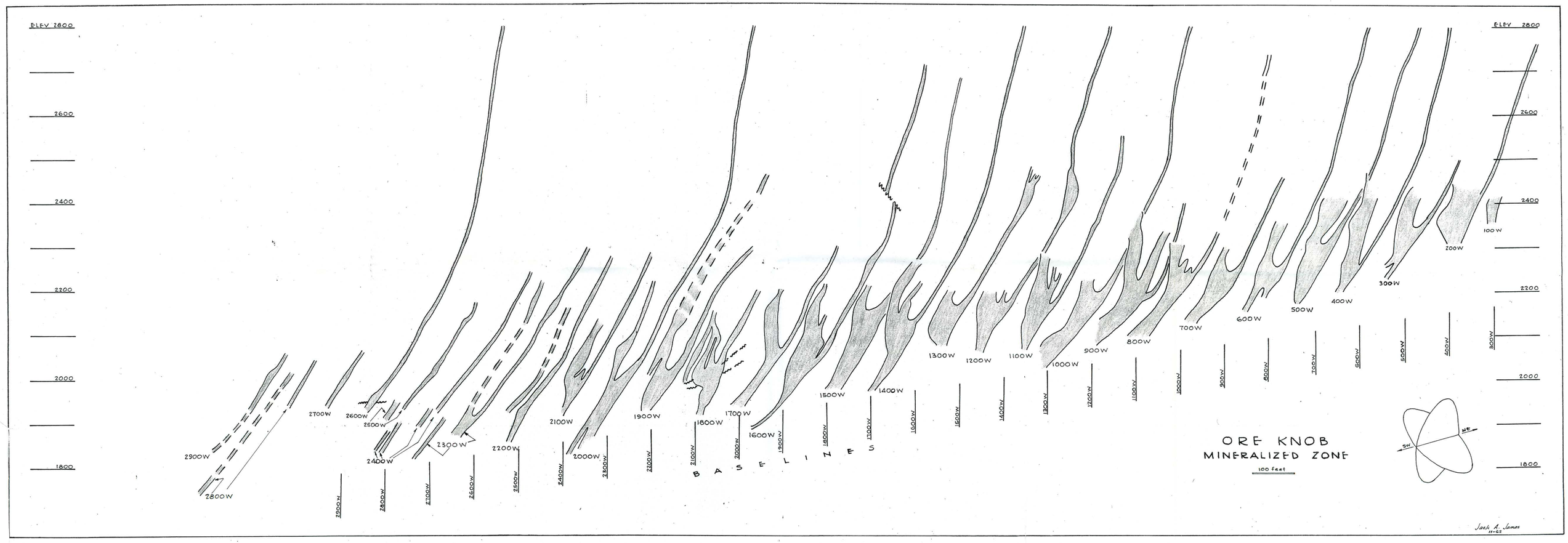
This analysis identifies the Ore Knob deposit as an epigenetic feature that is locally imposed on a background of high grade metamorphic effects, and which has a better probability for continuity downward than laterally. It permits speculation on the geologic event that may be the parent for Ore Knob, and hints at a working hypothesis that may be valuable in exploring this geologic province for other deposits similar to Ore Knob.

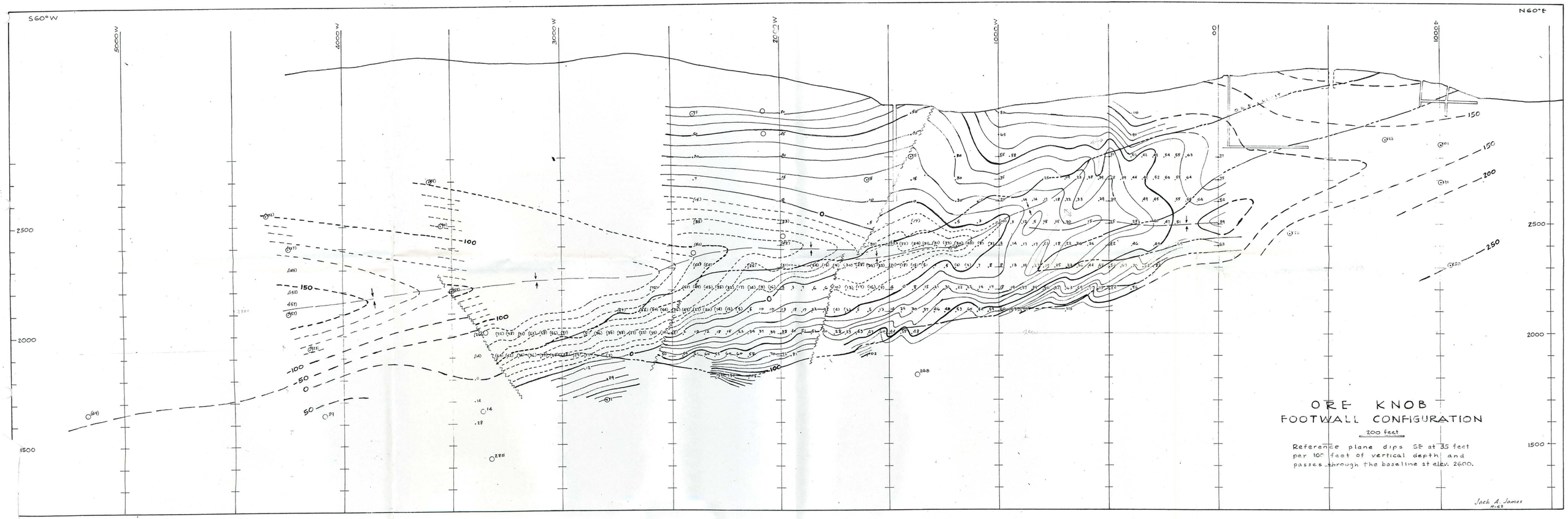


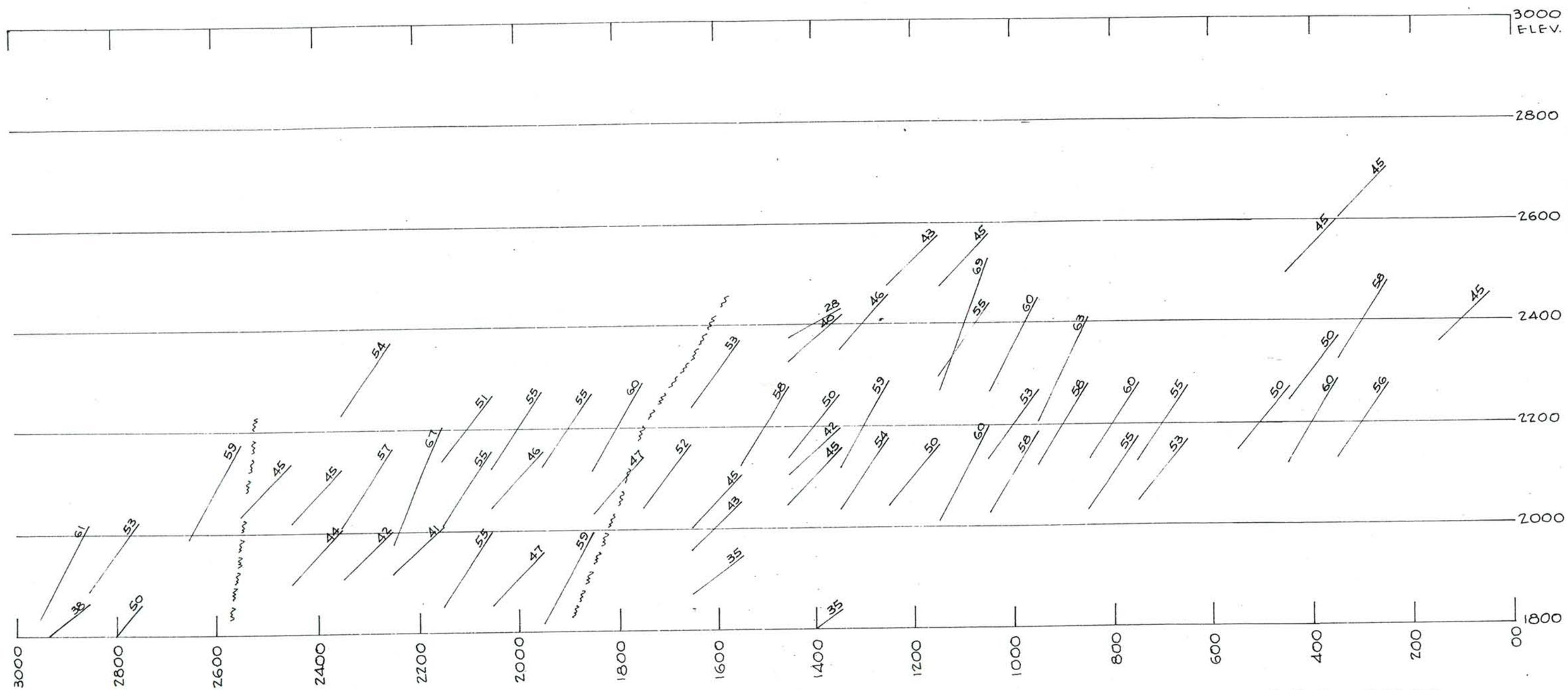

**ORE KNOB**

Dip of gneissosity in hanging wall

Jack A. James
11-62


ELEV 2800
2600
2400
2200
2000
1800
2900W
2800W
2700W
2600W
2500W
2400W
2300W
2200W
2100W
2000W
1900W
1800W
1700W
1600W
1500W
1400W
1300W
1200W
1100W
1000W
900W
800W
700W
600W
500W
400W
300W
200W
100W
BASELINE
ORE KNOB
MINERALIZED ZONE
100 feet
SW
NE
Jack A. James
11-62

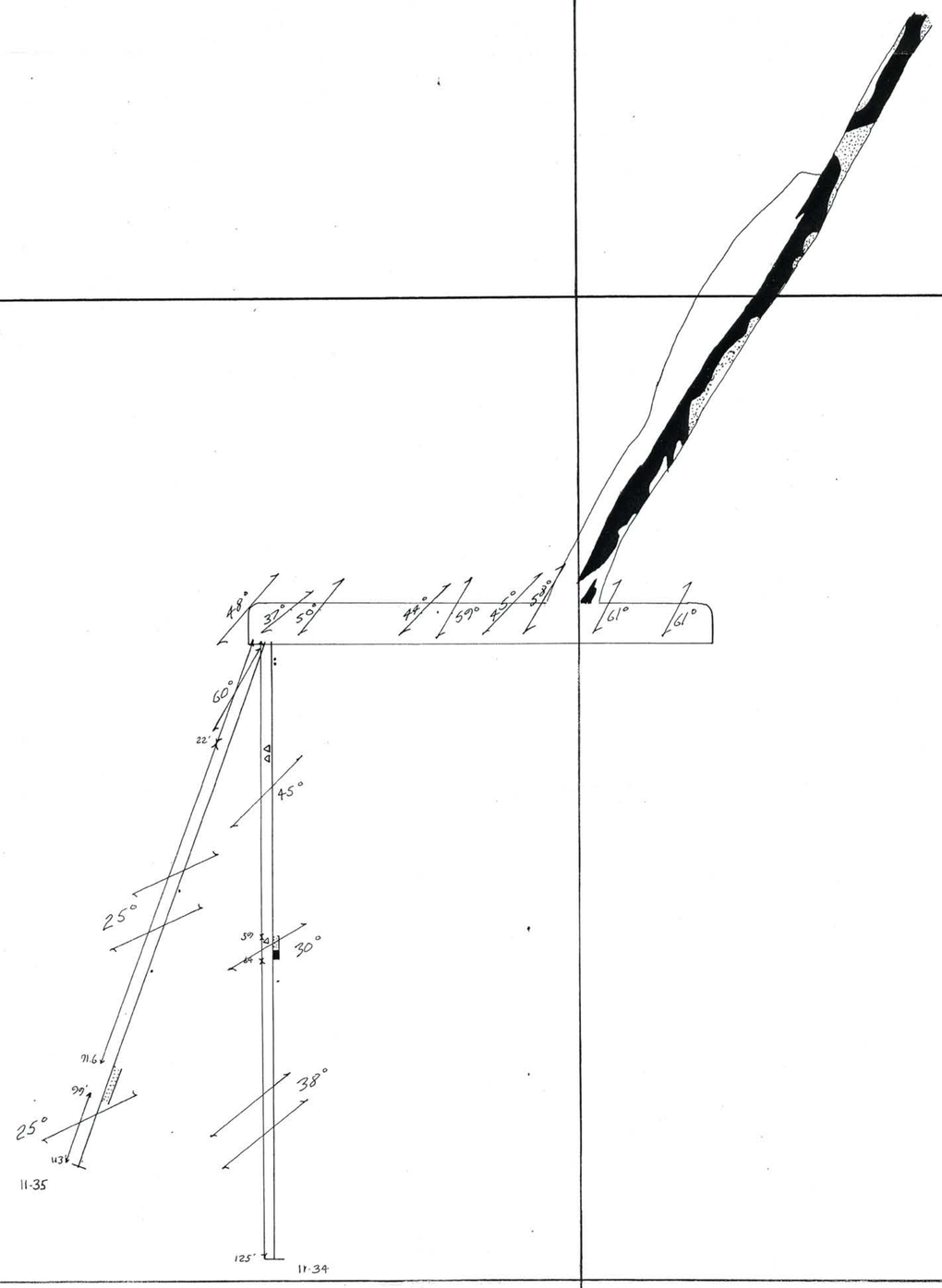

S60°W
N60°E
5000 W
4000 W
3000 W
2000 W
1000 W
0
1000 E
2500
2000
1500
ORE KNOB
FOOTWALL CONFIGURATION
200 feet
Reference plane dips SE at 35 feet per 100 feet of vertical depth and passes through the baseline at elev. 2600.
Jack A. James
11-62



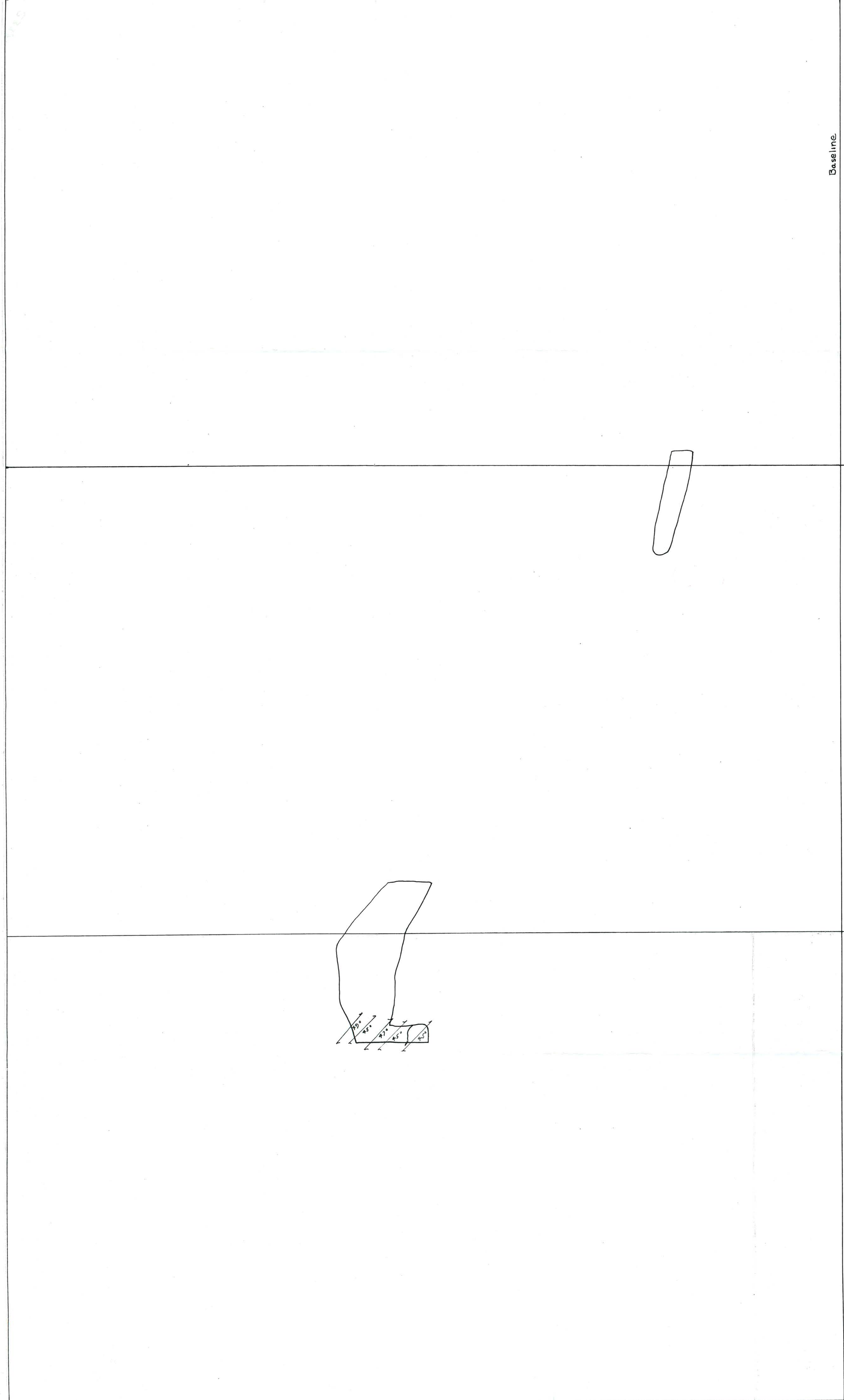

**ORE KNOB**

Dip of gneissosity in foot wall

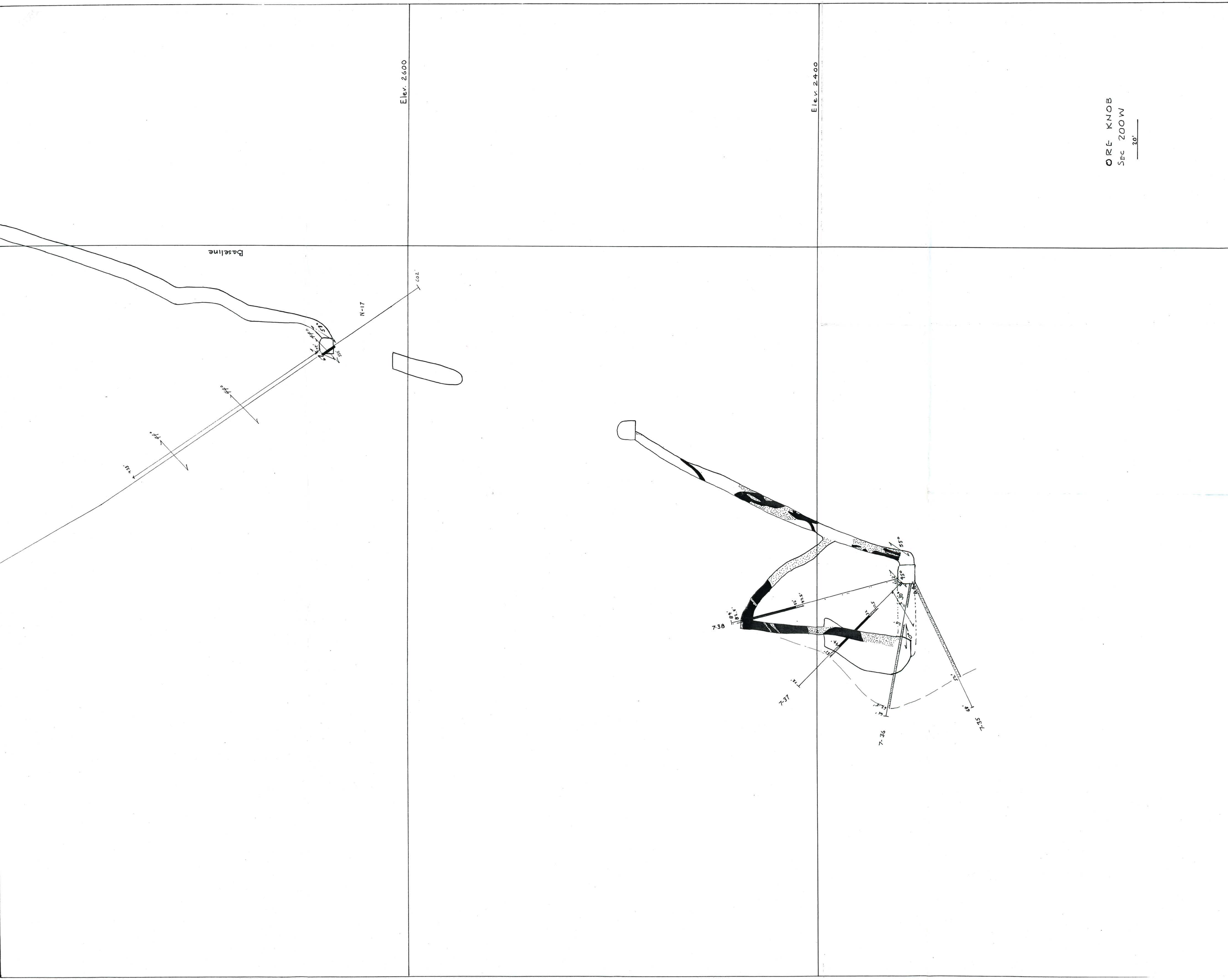
Jack A. James
11-62




ORE KNOB
SEC 2900 W
20'



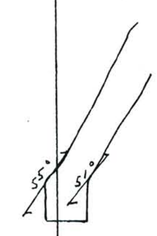

ORE KNOB
SEC 100 W
20'


ORE KNOB
SEC 200W
20'
Elev. 2600
Elev. 2400
Baseline
N-17
200'
7-38
7-37
7-36
7-25

Baseline
Elev. 3200
Elev 3000
N-17 on 300 W at surface; drift eastward ~ 60-80'
N-17
ORE KNOB
SEC 200W
20'

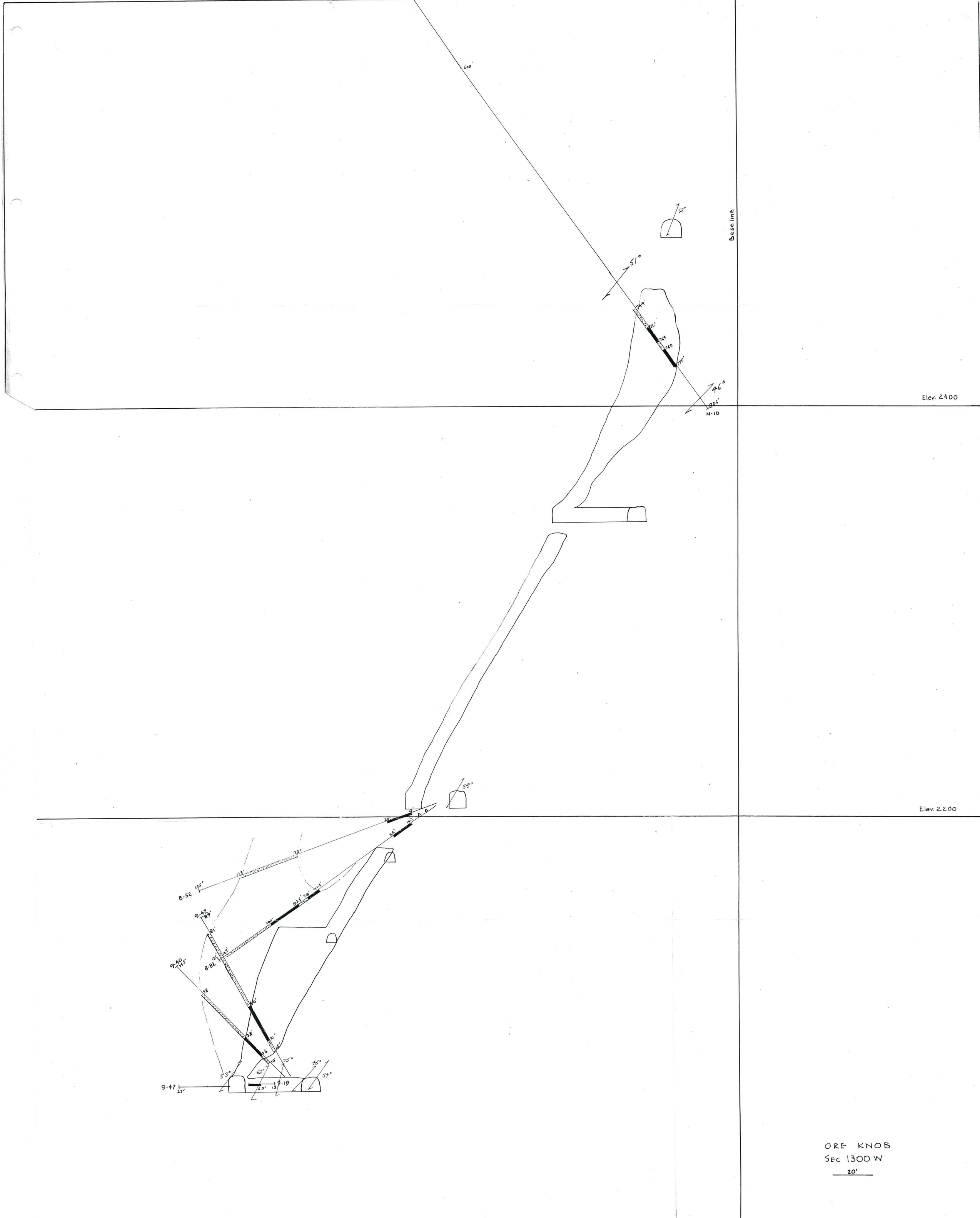
200 S

Elev. 2000

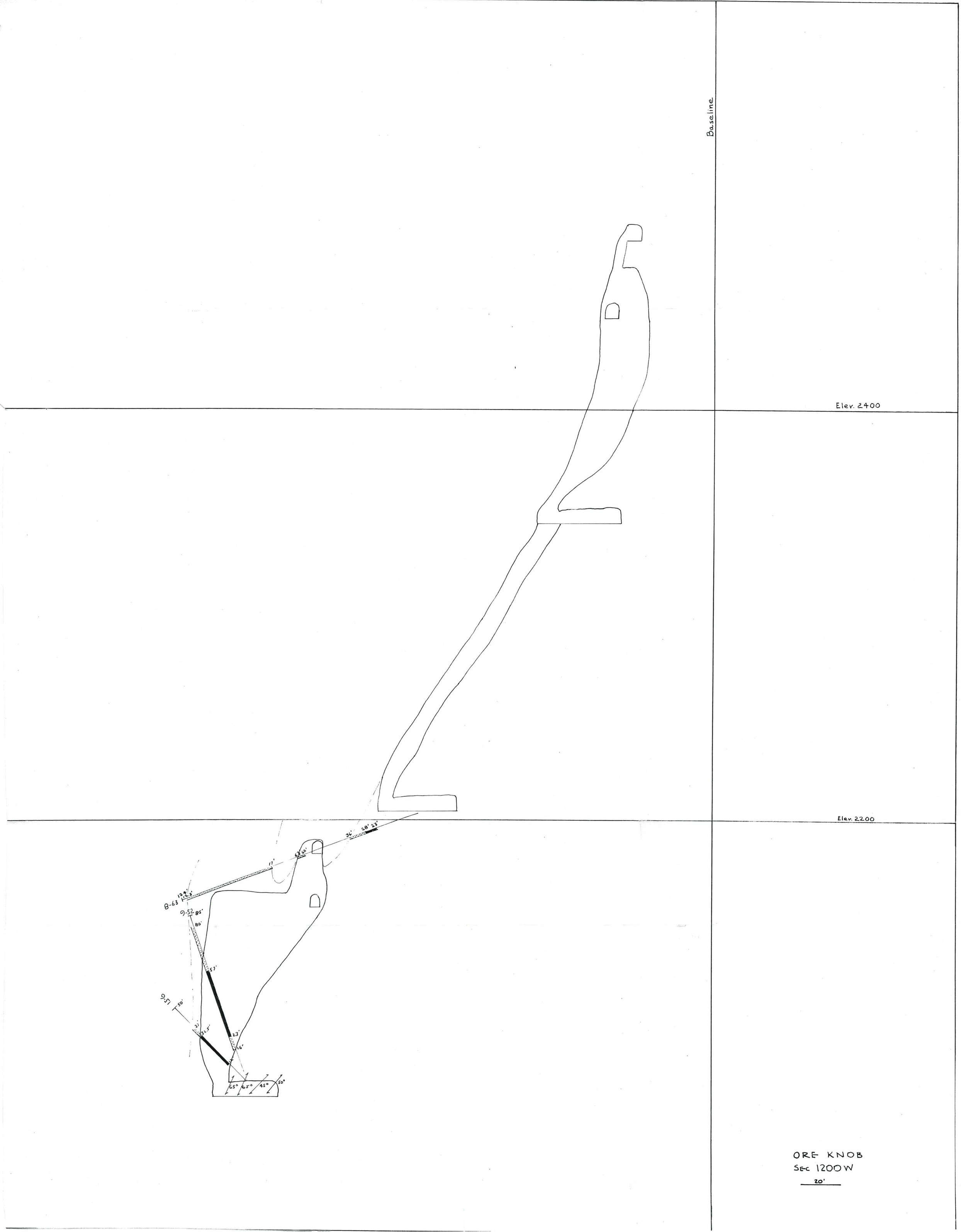


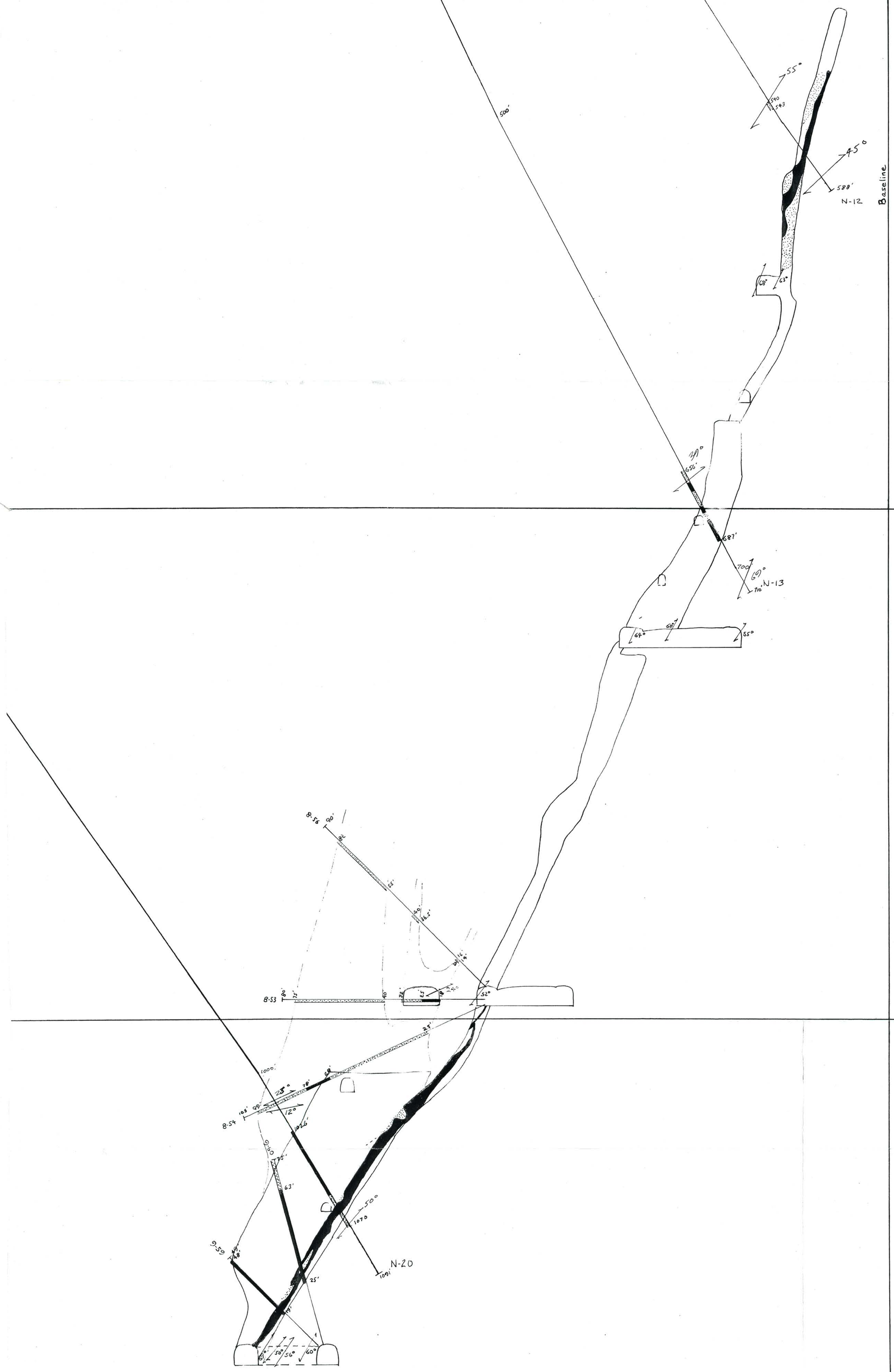

Elev. 1800

ORE KNOB
SEC 3000W
20'

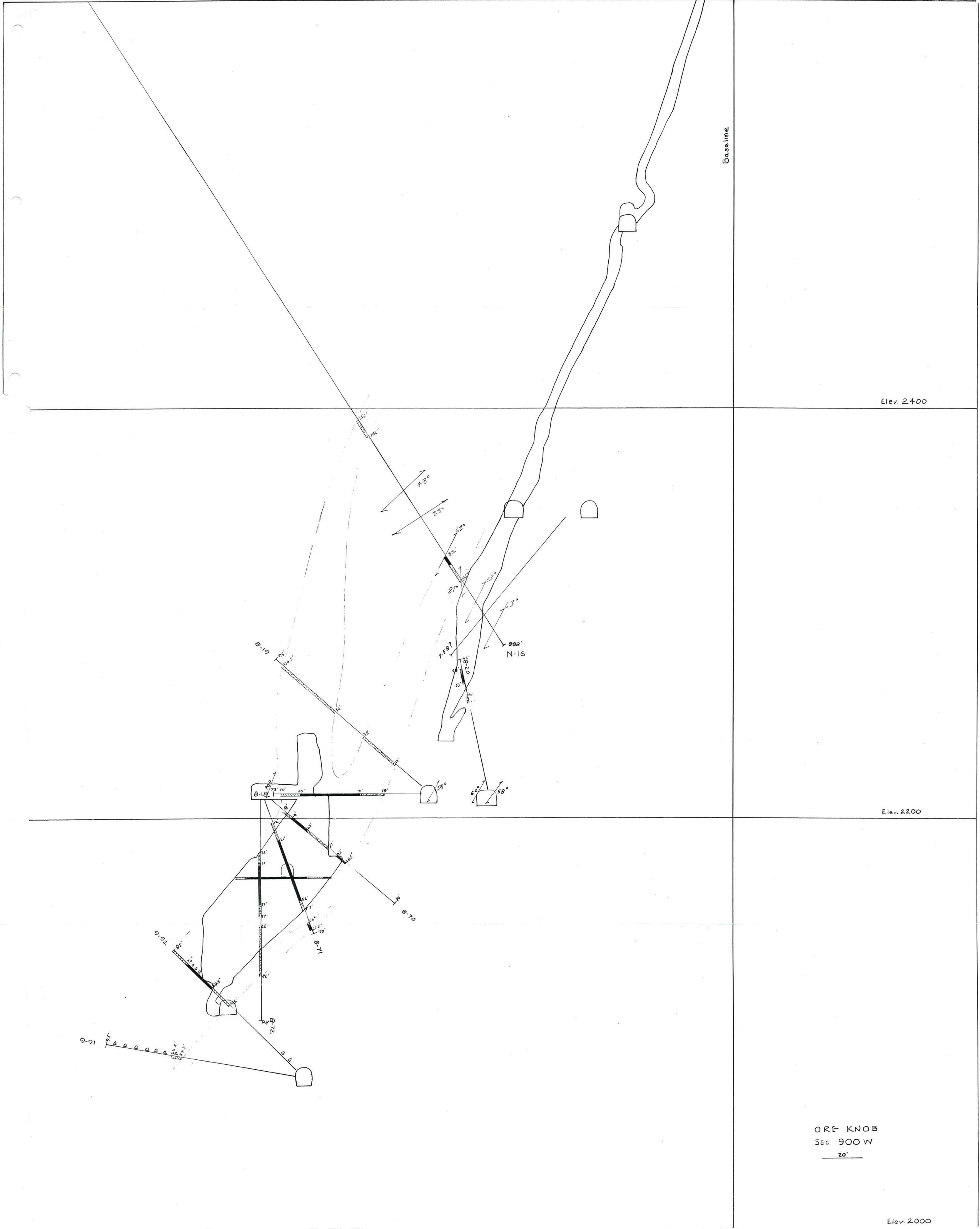


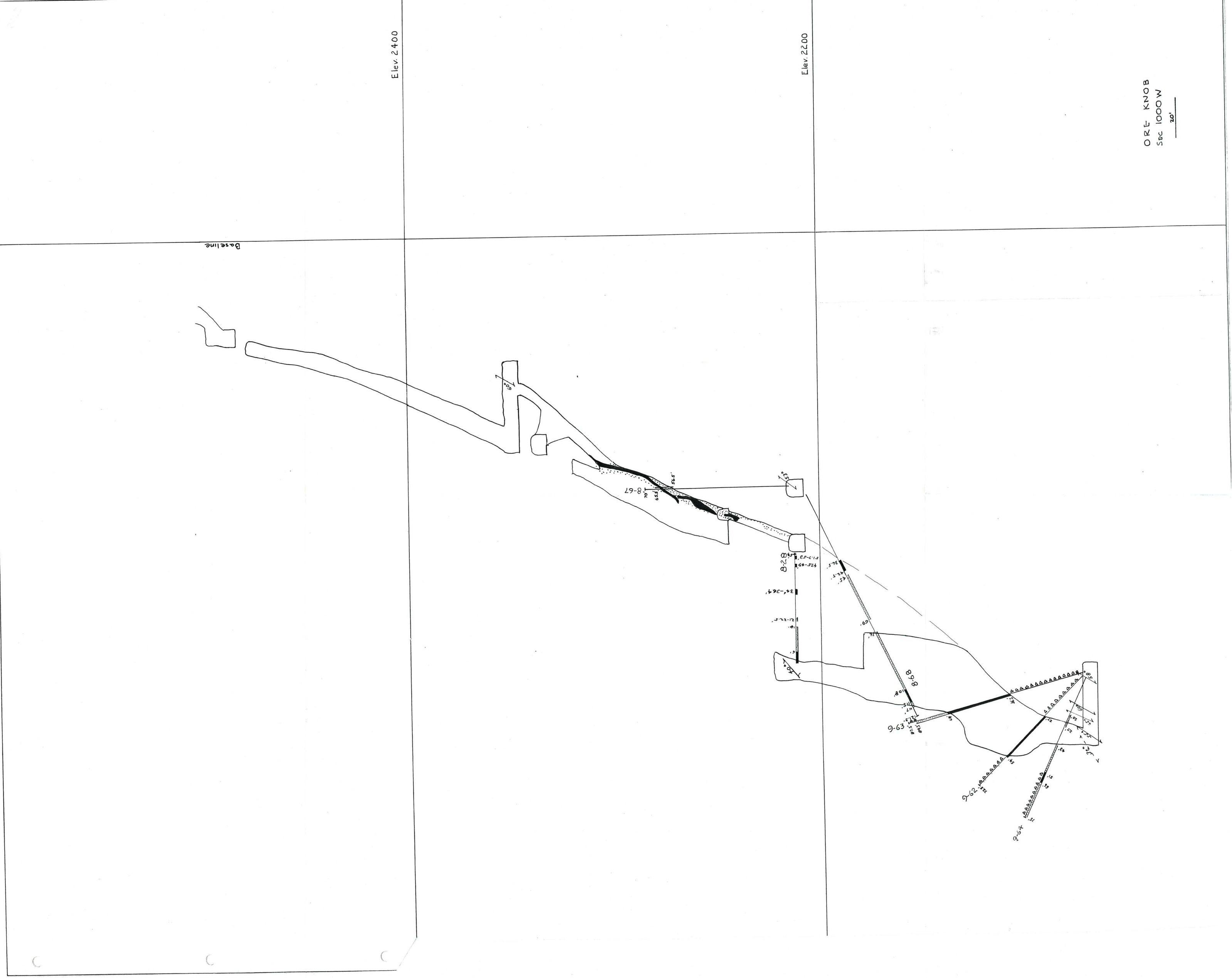

ORE KNOB
SEC 1300 W
20'


Baseline
Elev. 2400
Elev. 2200
36'
28'
23'
63
60'
17'
12.5'
3'
8-63
9-52
85'
80'
57'
9-51
50'
32'
32.5'
23'
16'
65°
65°
45°
50°
ORE KNOB
SEC 1200W
20'



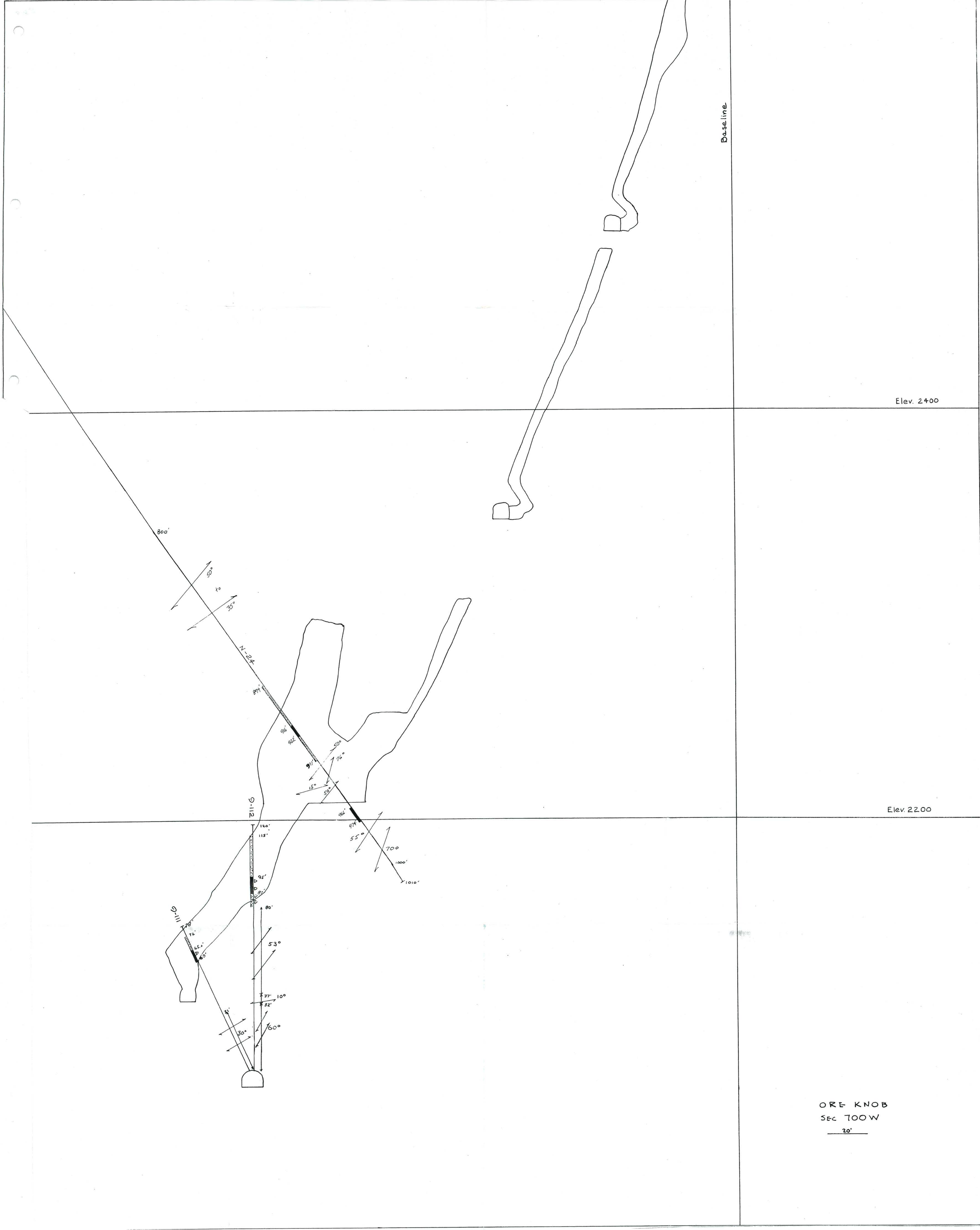

ORE KNOB
SEC 1100W
20'

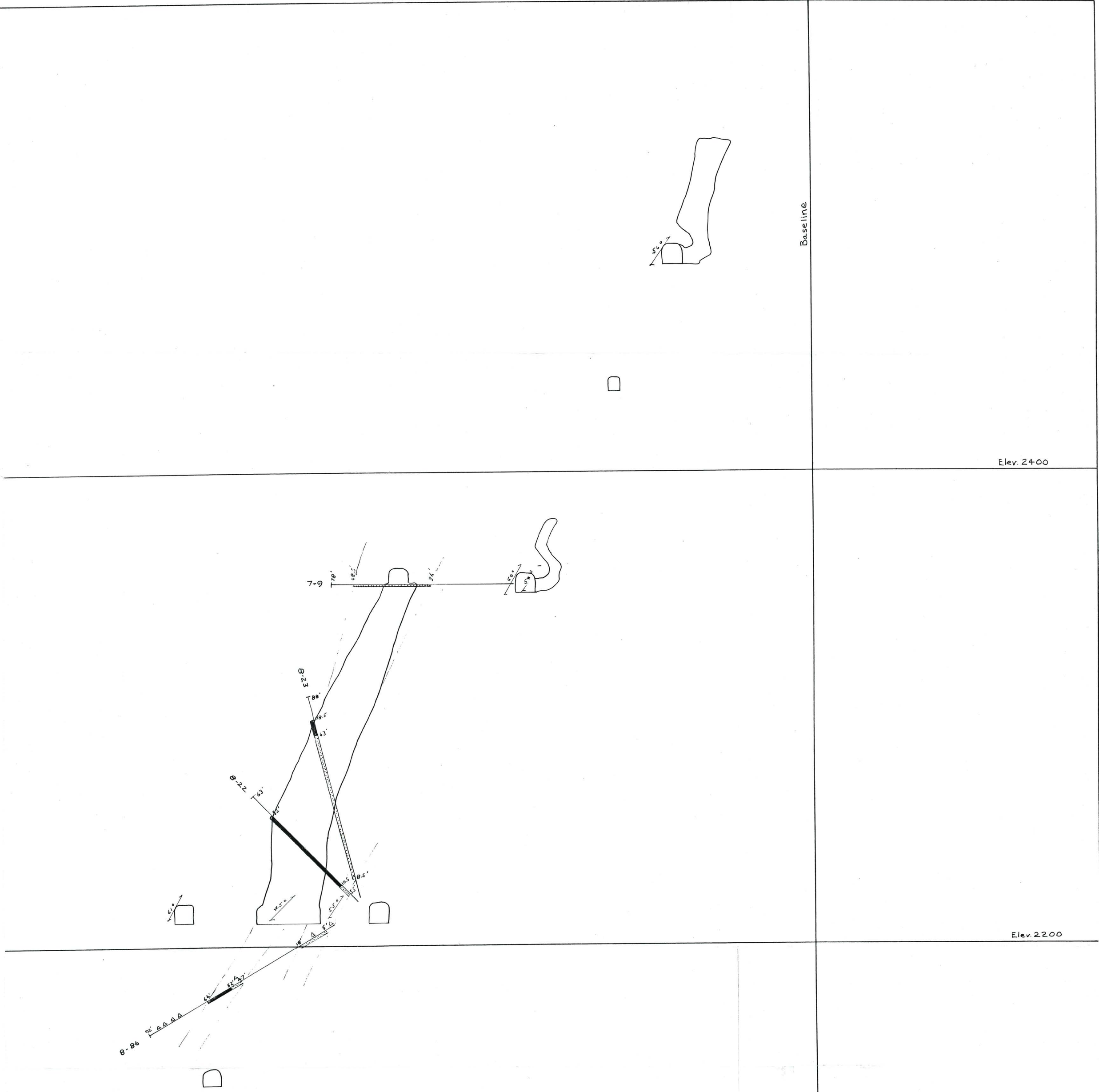

Baseline
Elev. 2400
Elev. 2200
Elev. 2000
N-16
B-19
B-18
B-70
B-71
B-72
B-92
B-91
ORE KNOB
SEC 900 W
20'

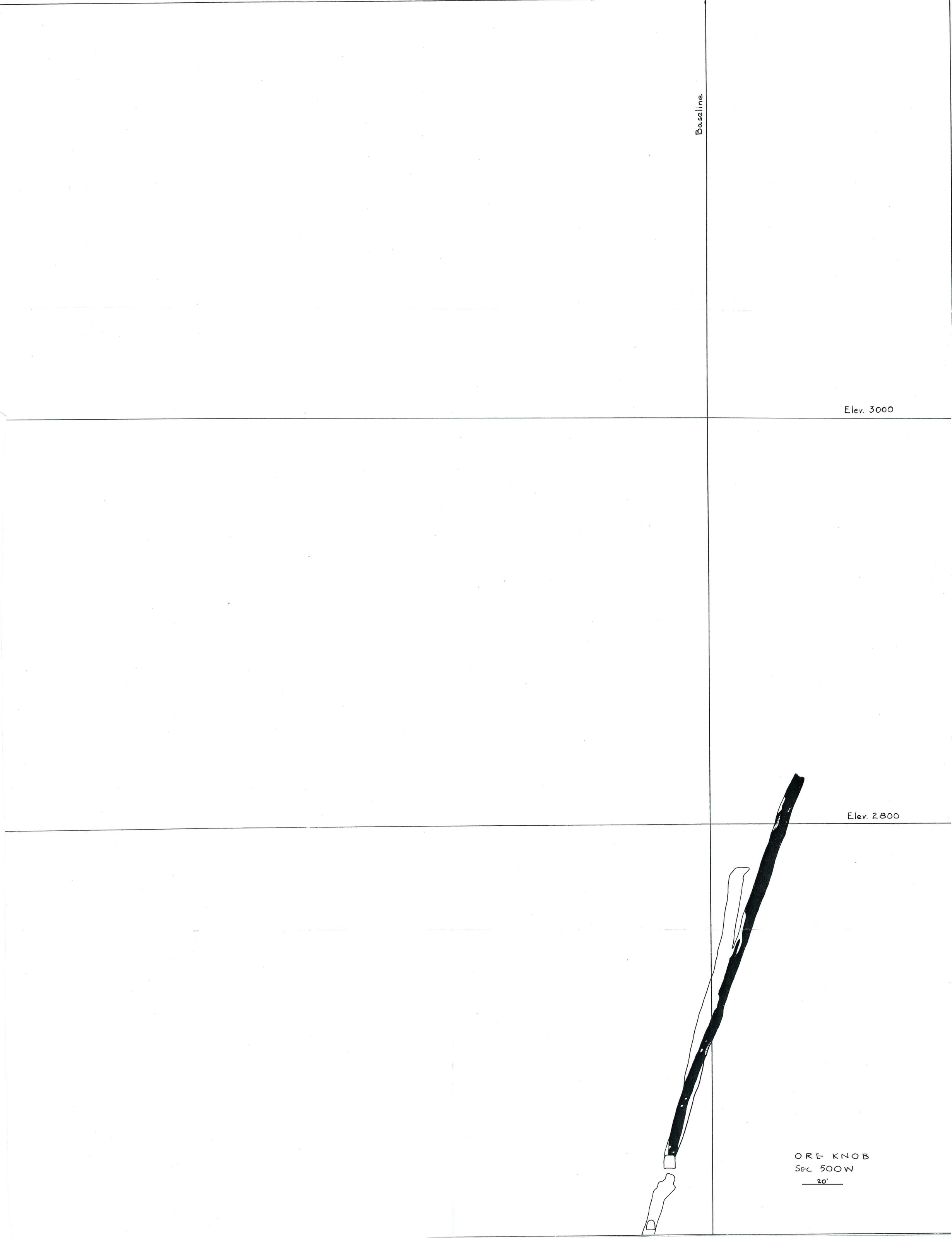

Elev. 2400
Elev. 2200
Baseline
ORE KNOB
SEC 1000W
20'
8-67
8-28
8-68
9-63
9-62
9-64

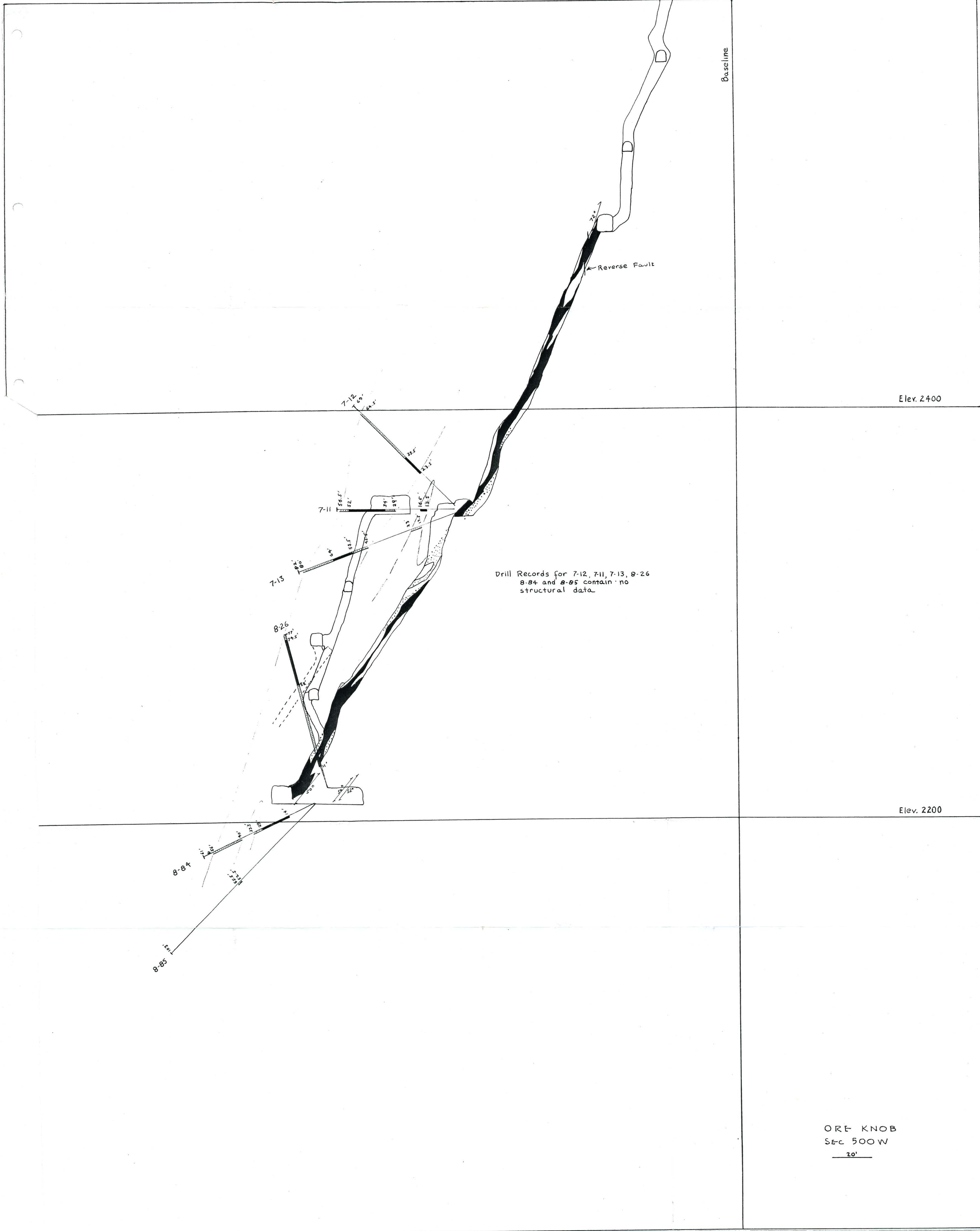
Elev. 3000
200'
Elev.
65°
Possible fault
379'
387.5'
400'
419'
ORE KNOB
SEC 800W
20'

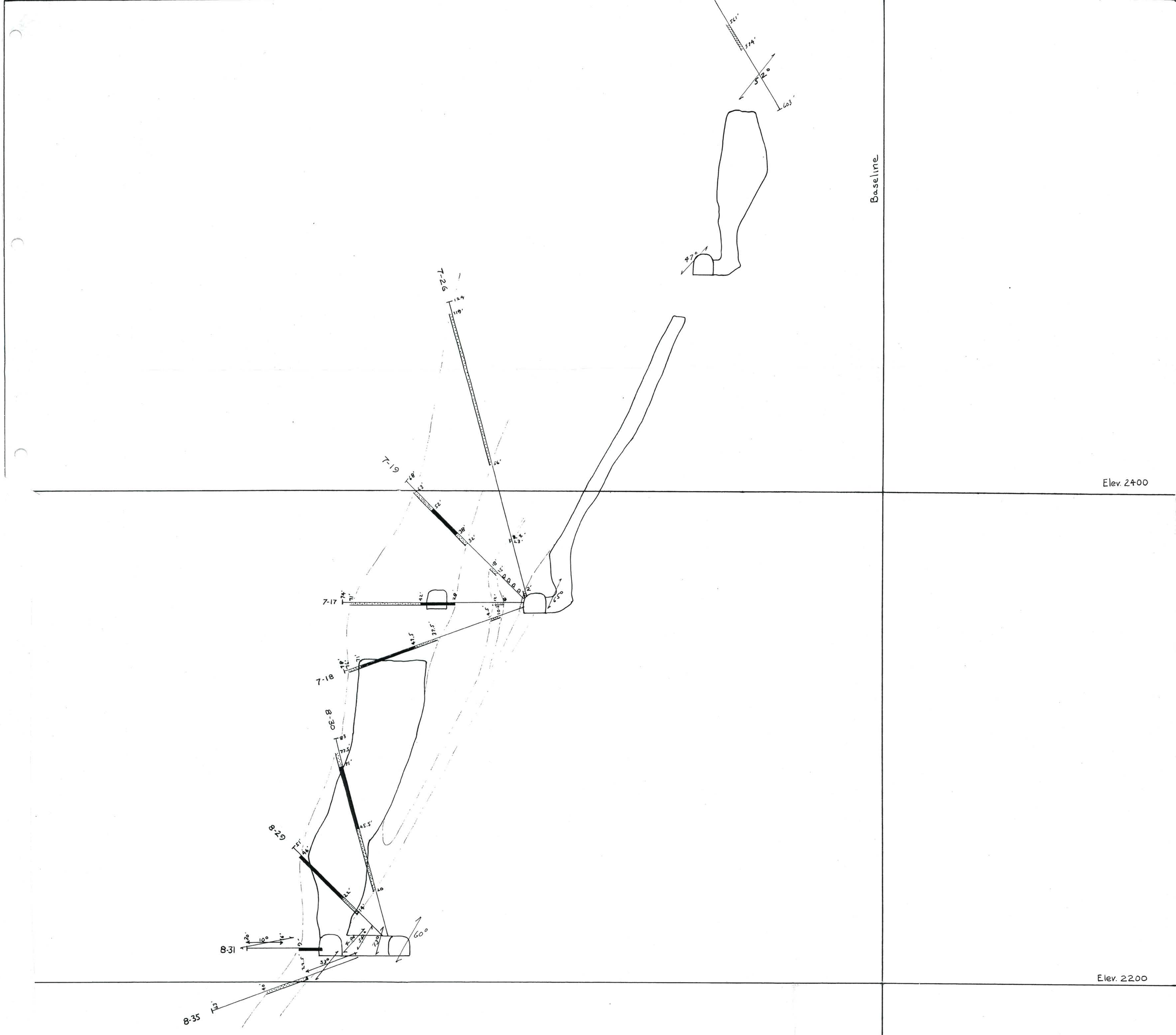
Baseline
Elev. 2400
Elev. 2200
N-24
48°
33°
894'
916'
935'
73°
948'
48°
956'
43° contact
966'
68°
974'
48°
43°
1010'
55°
8-14
8-15
8-16
9-96
100'
9-128
9-95
100'
30°
55°
ORE KNOB
SEC 800W
20'


Baseline
Elev. 2400
Elev. 2200
800'
50°
to
35°
N-24
894'
916'
922'
931'
50°
76°
15°
50°
966'
974'
55°
700
1000'
1010'
G-112
120'
115'
95'
80'
53°
37'
10°
32'
60°
30°
G-111
78'
72'
65.5'
60'
ORE KNOB
SEC 700W
20'

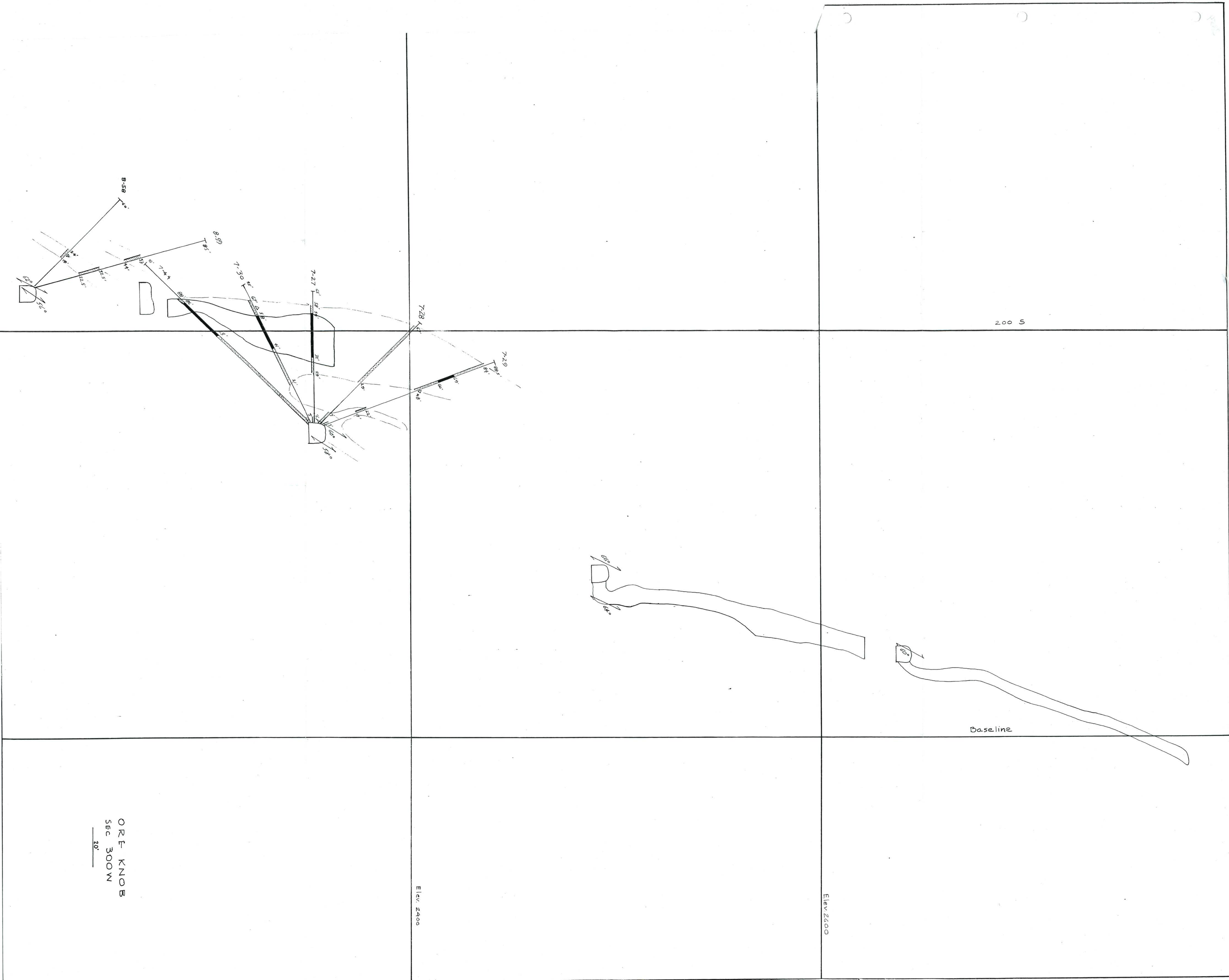

Baseline
Elev. 2400
Elev. 2200
7-9
8-23
8-22
8-86
ORE KNOB
SEC. 600W
20'


Baseline
Elev. 3000
Elev. 2800
ORE KNOB
SEC 500W
20'


Baseline
Reverse Fault
Elev. 2400
Elev. 2200
7-12
7-11
7-13
8-26
8-84
8-85
Drill Records for 7-12, 7-11, 7-13, 8-26
8-84 and 8-85 contain no
structural data
ORE KNOB
SEC 500W
20'




ORE KNOB
SEC 400 W
20'


200 S
Baseline
Elev 2600
Elev 2400
ORF KNOB
SEC 300W
20'

Baseline

Elev. 3200

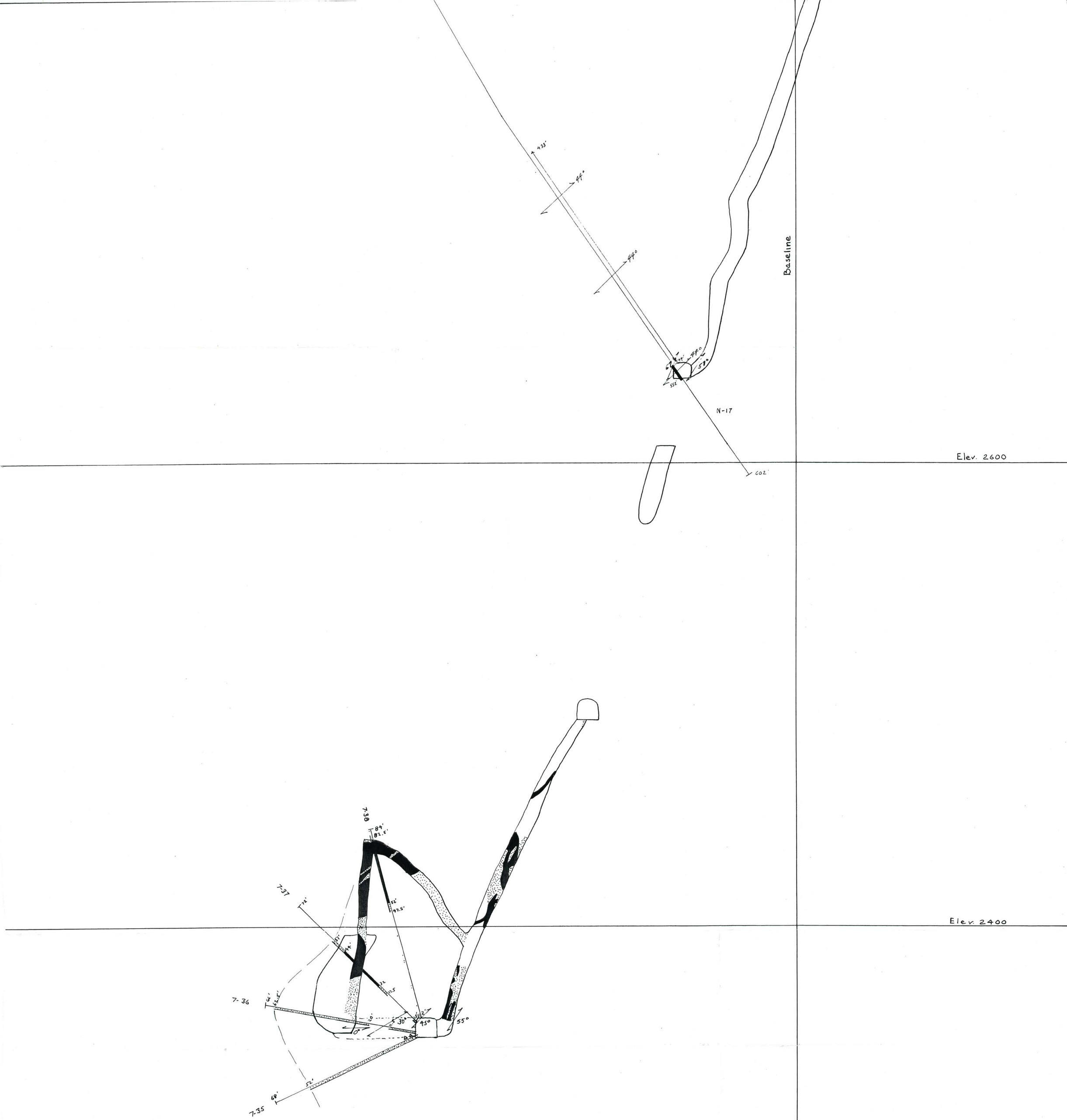
Elev 3000

N-17 on 300 W at surface; drift eastward ~ 60-80'

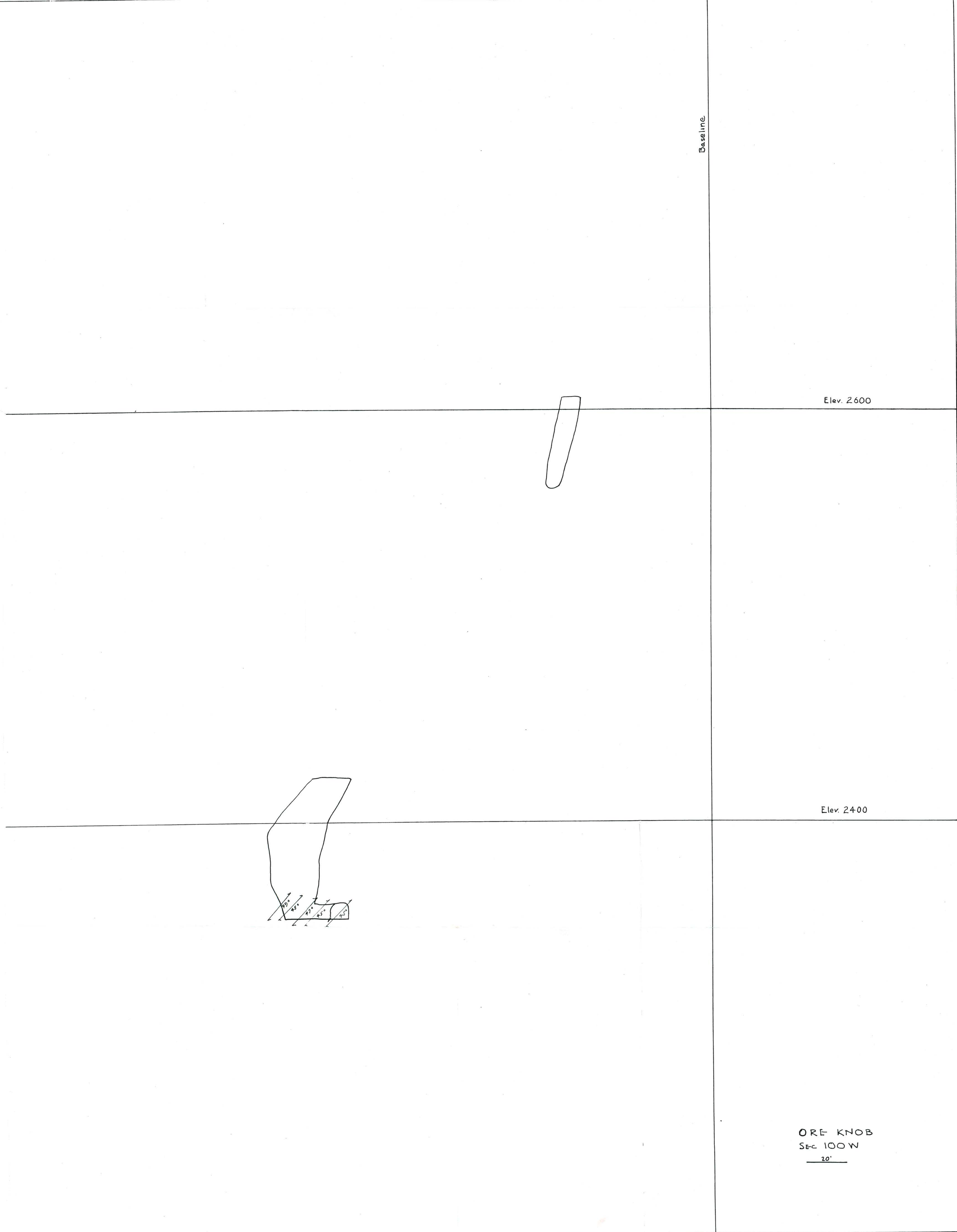
N-17

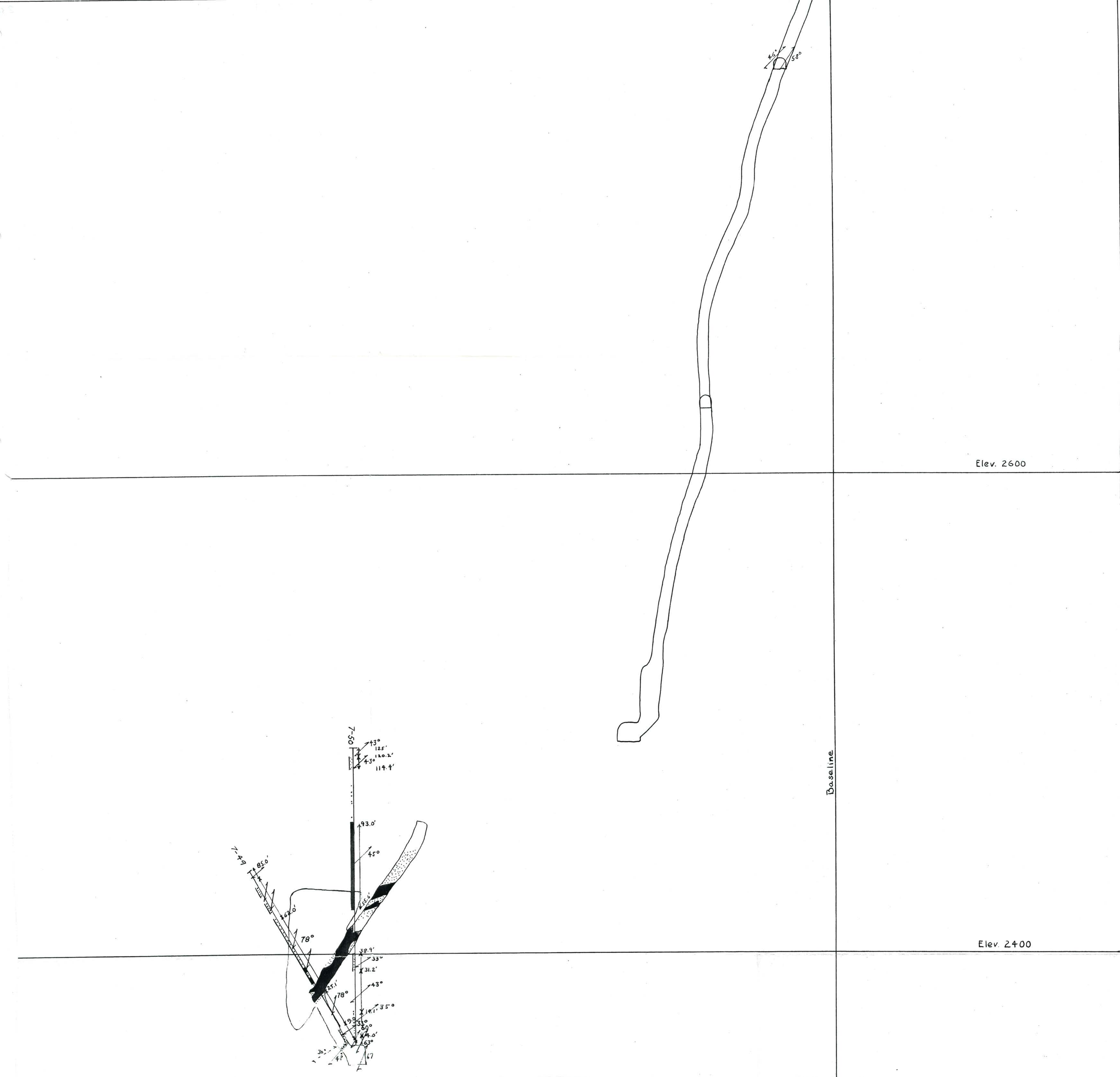
ORE KNOB
SEC 200W

20'

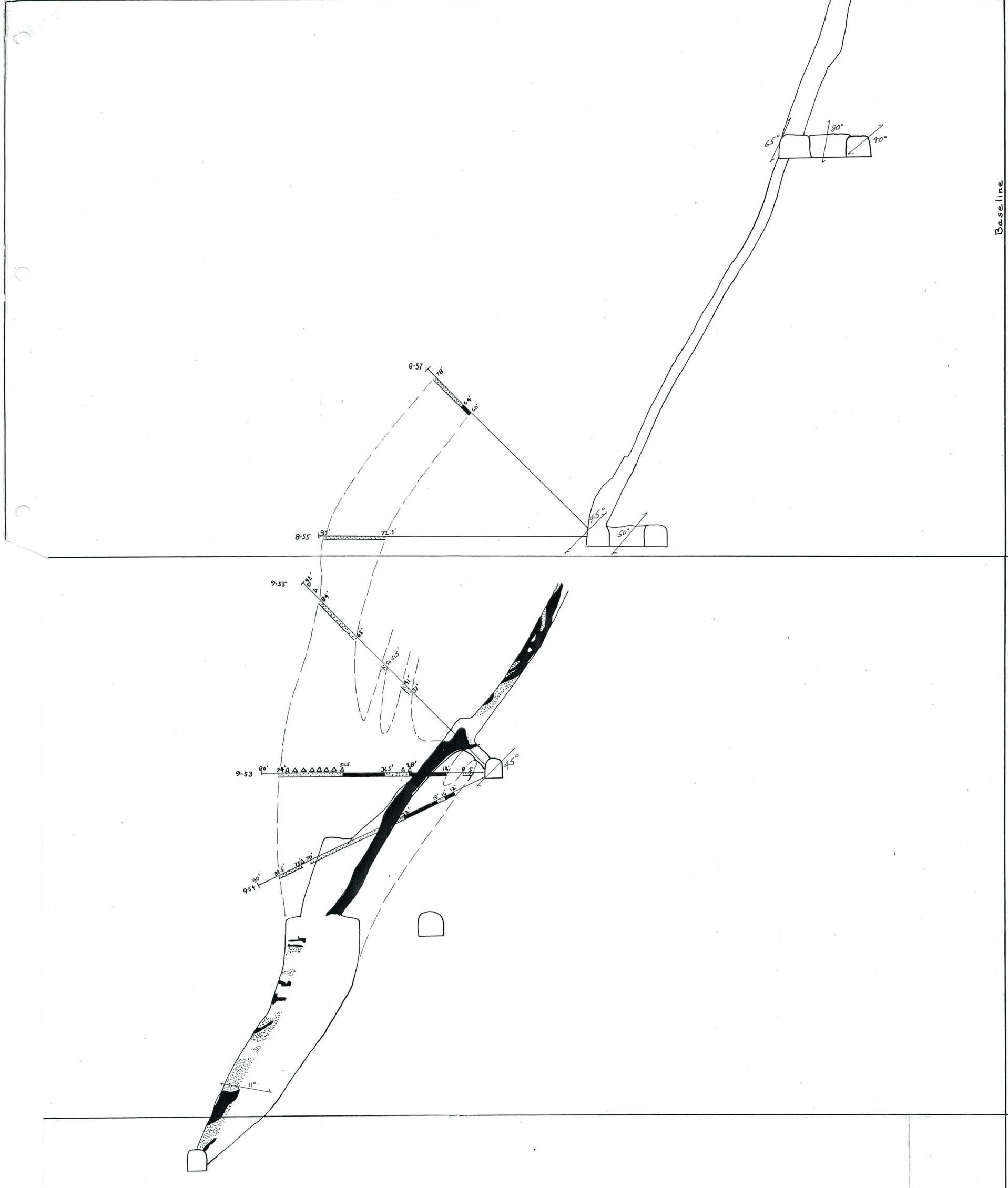



ORE KNOB
SEC 200W
20'

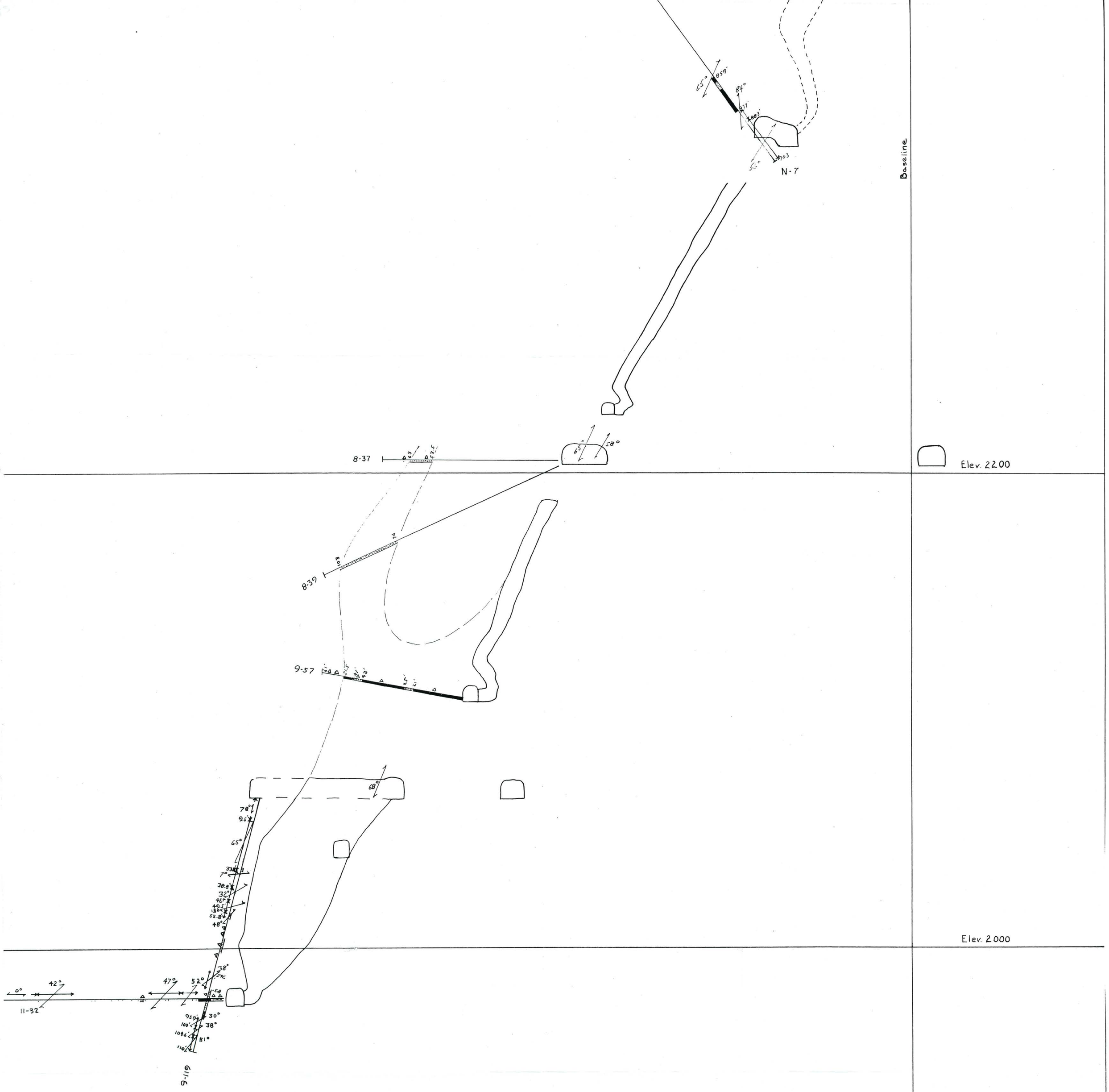

Baseline
Elev. 2600
Elev. 2400
49°
45°
47°
45°
45°
ORE KNOB
SEC 100W
20'



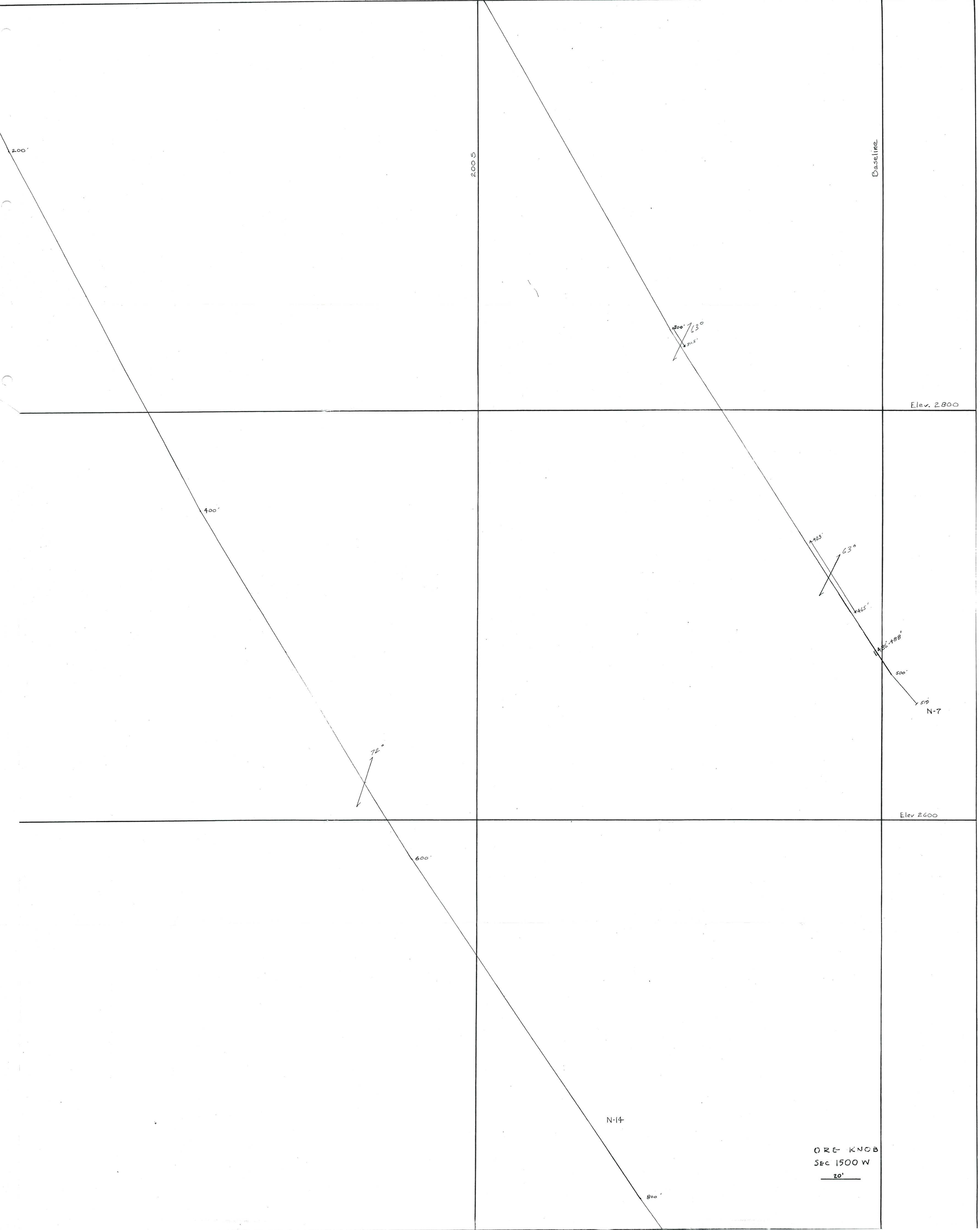

ORE KNOB
SEC 00
30'

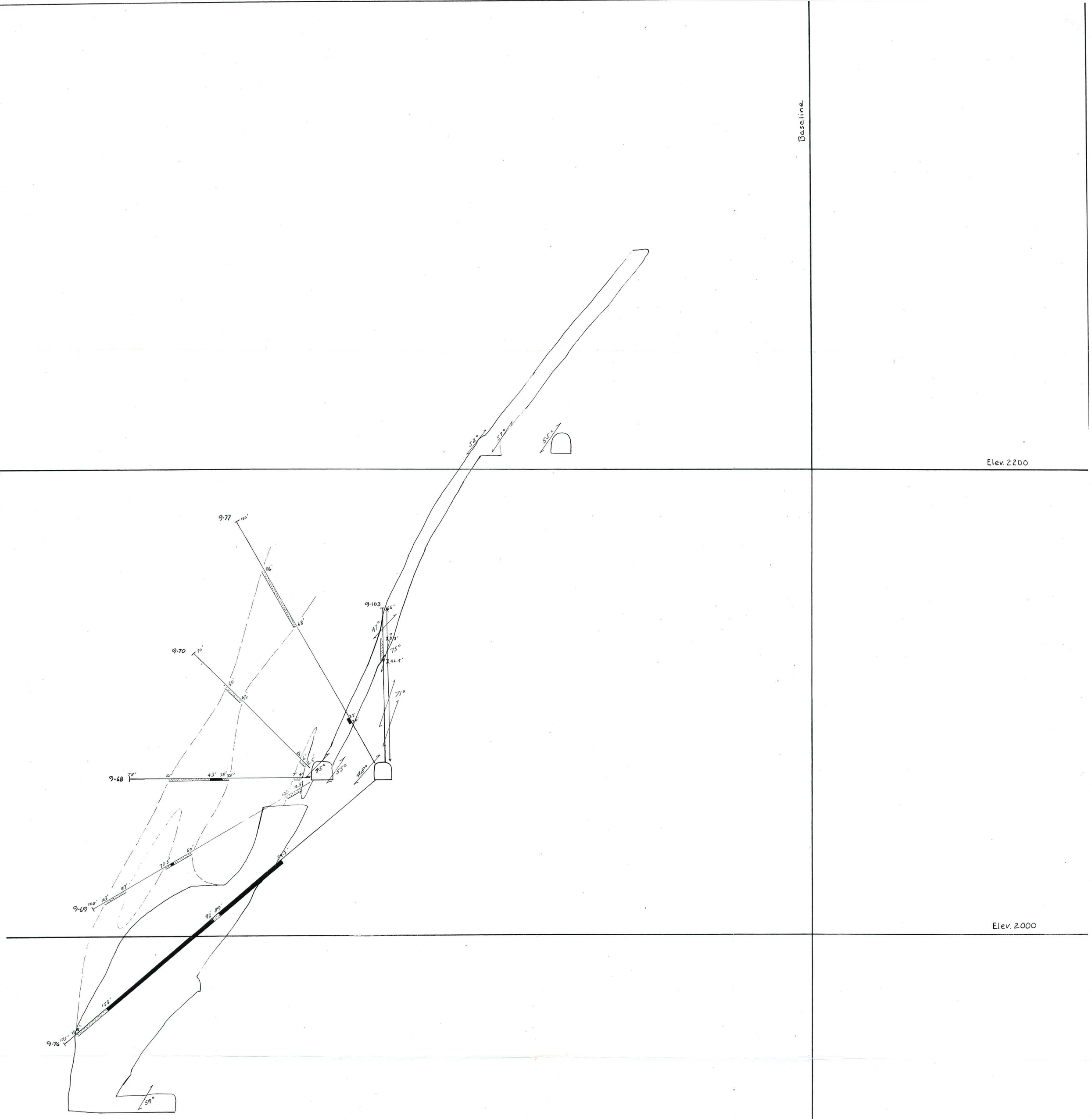



ORE KNOB
SEC 1400W
20'

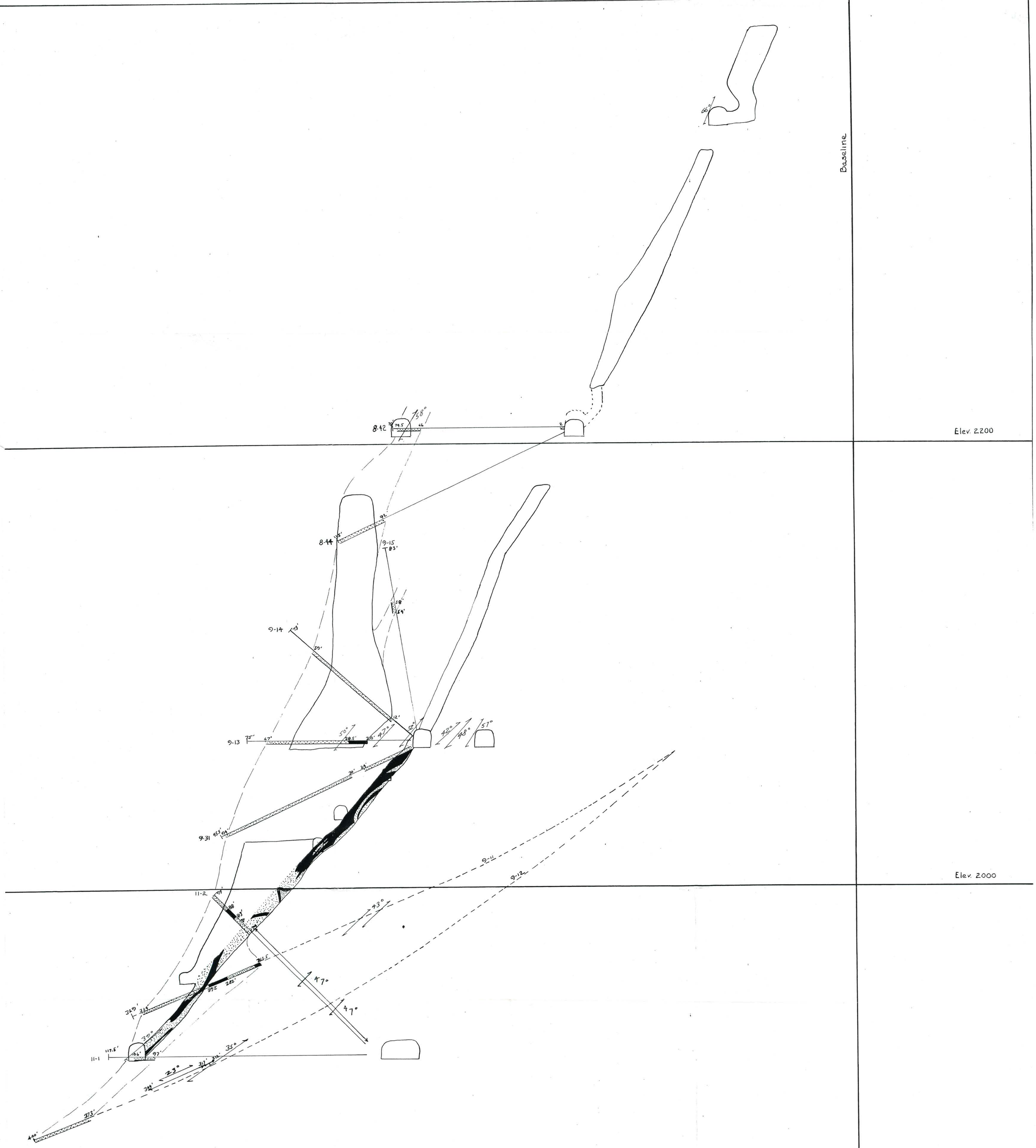


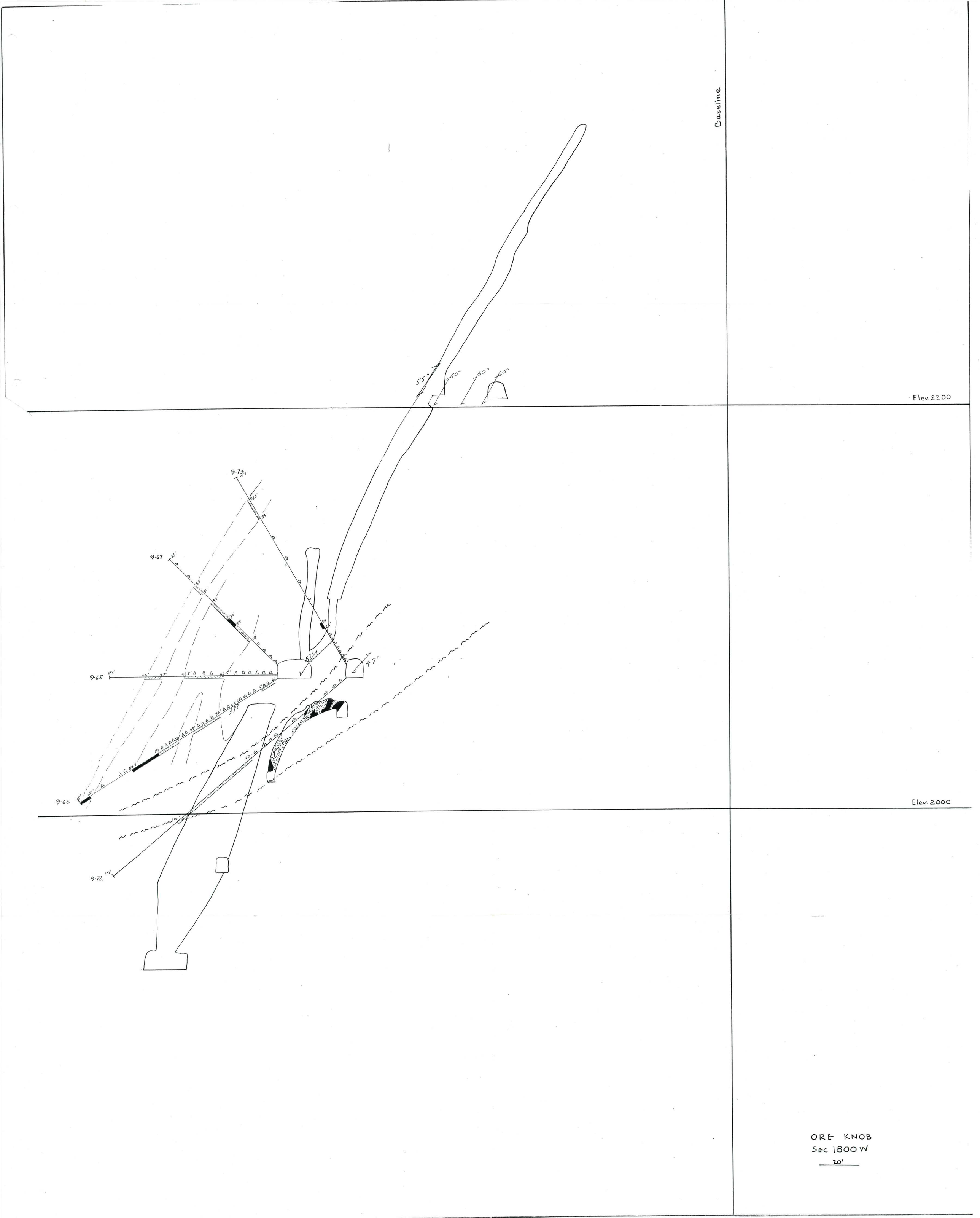

ORE KNOB
SEC 1500 W
20'

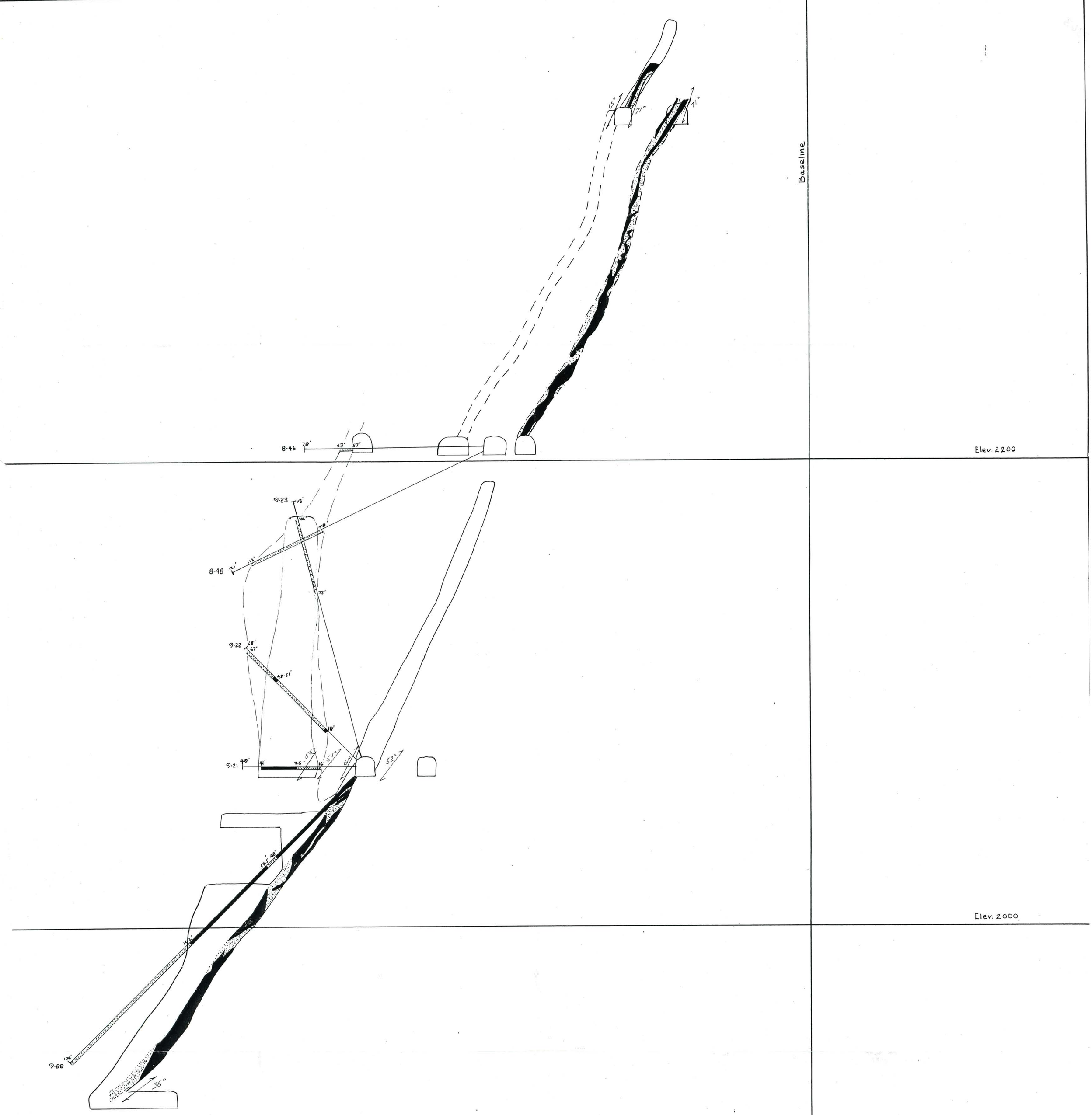

200'
2005
Baseline
200'
63°
311.5'
Elev. 2800
400'
423'
63°
465'
486-488'
500'
519
N-7
72°
Elev 2600
600'
N-14
800'
ORE KNOB
SEC 1500 W
20'

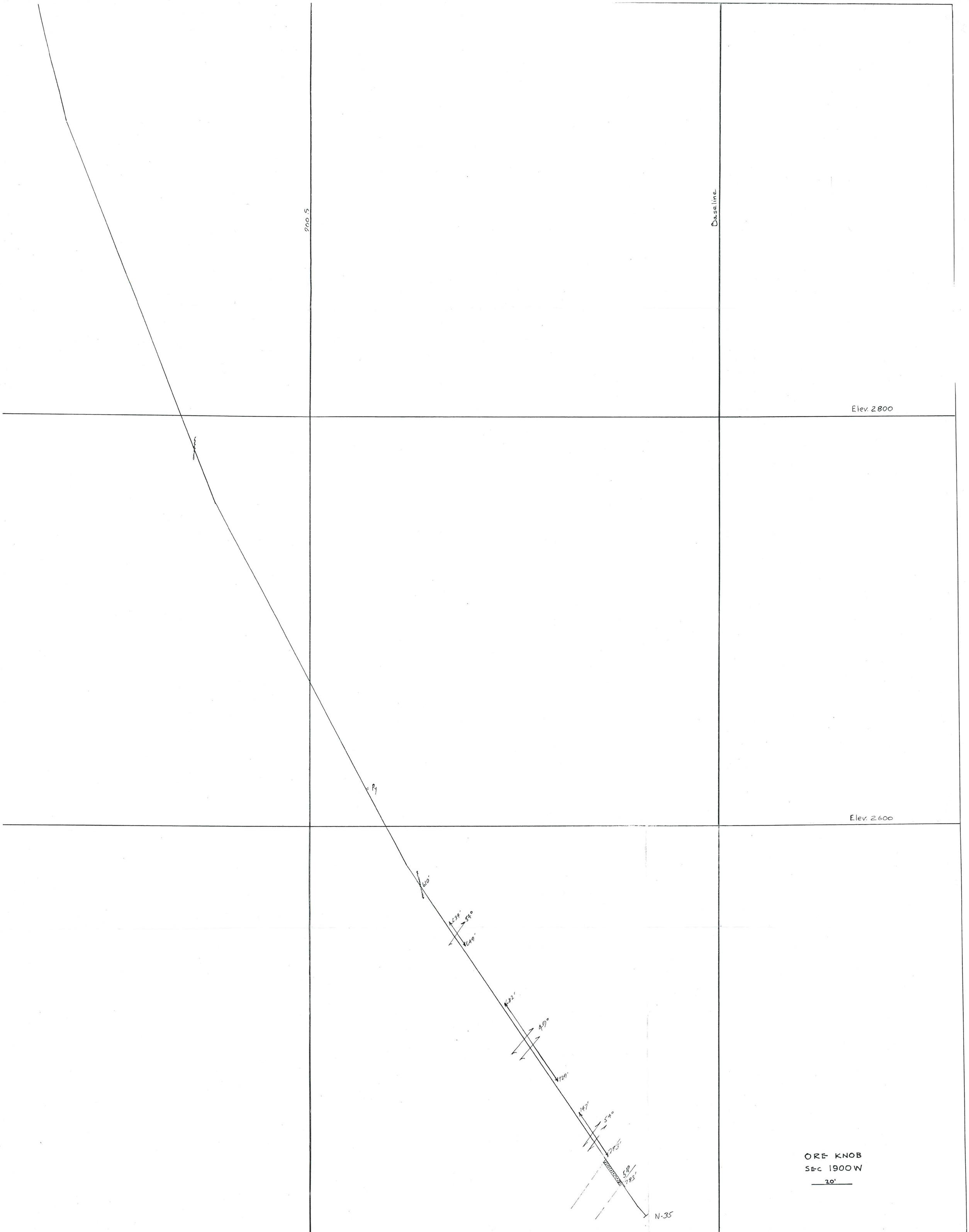


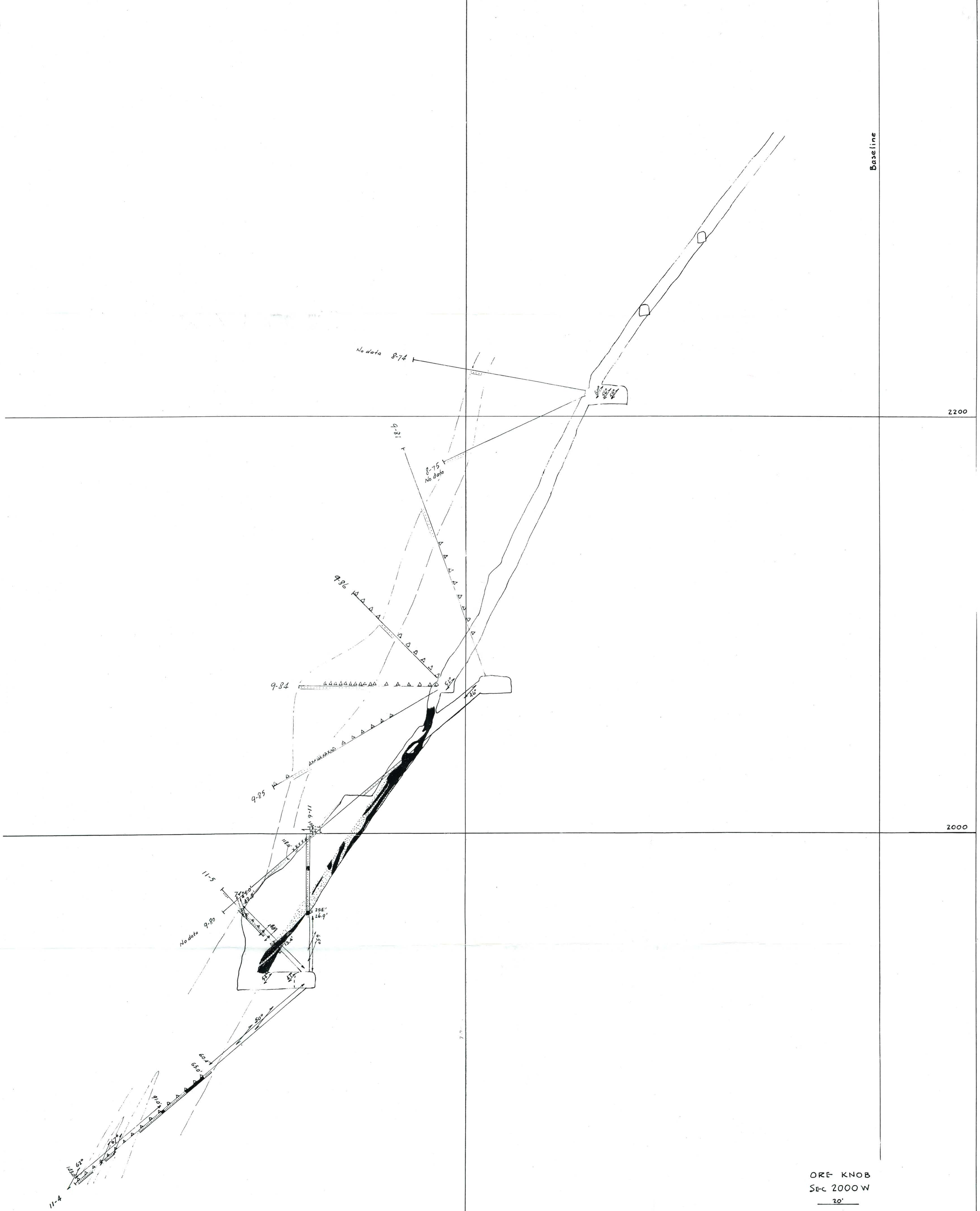

ORE KNOB
SEC 1900 W
20'

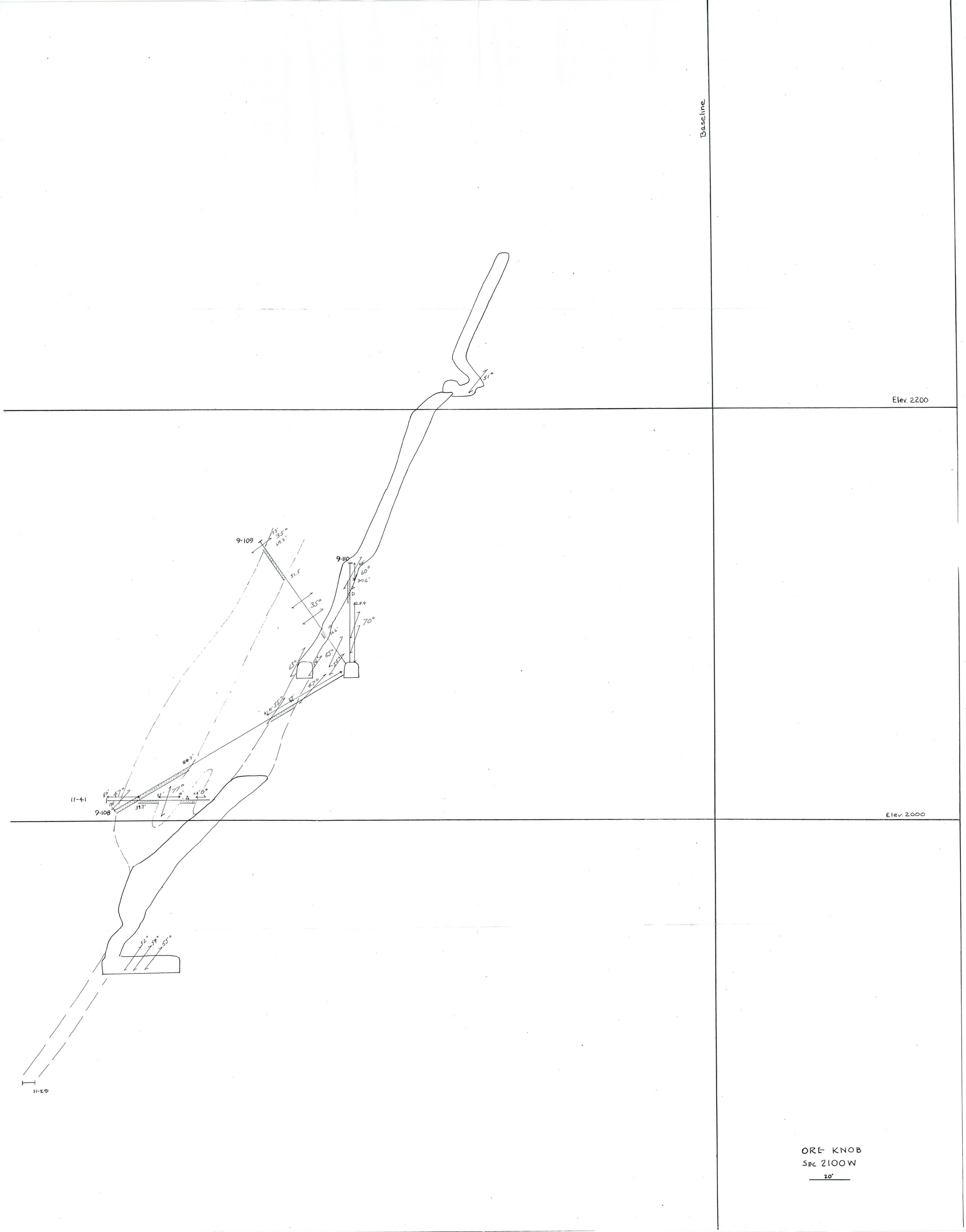

Baseline
Elev. 2200
Elev. 2000
8-42
8-44
9-15
9-14
9-13
9-31
9-11
9-12
11-2
11-1
ORE KNOB
SEC 1600W
20'

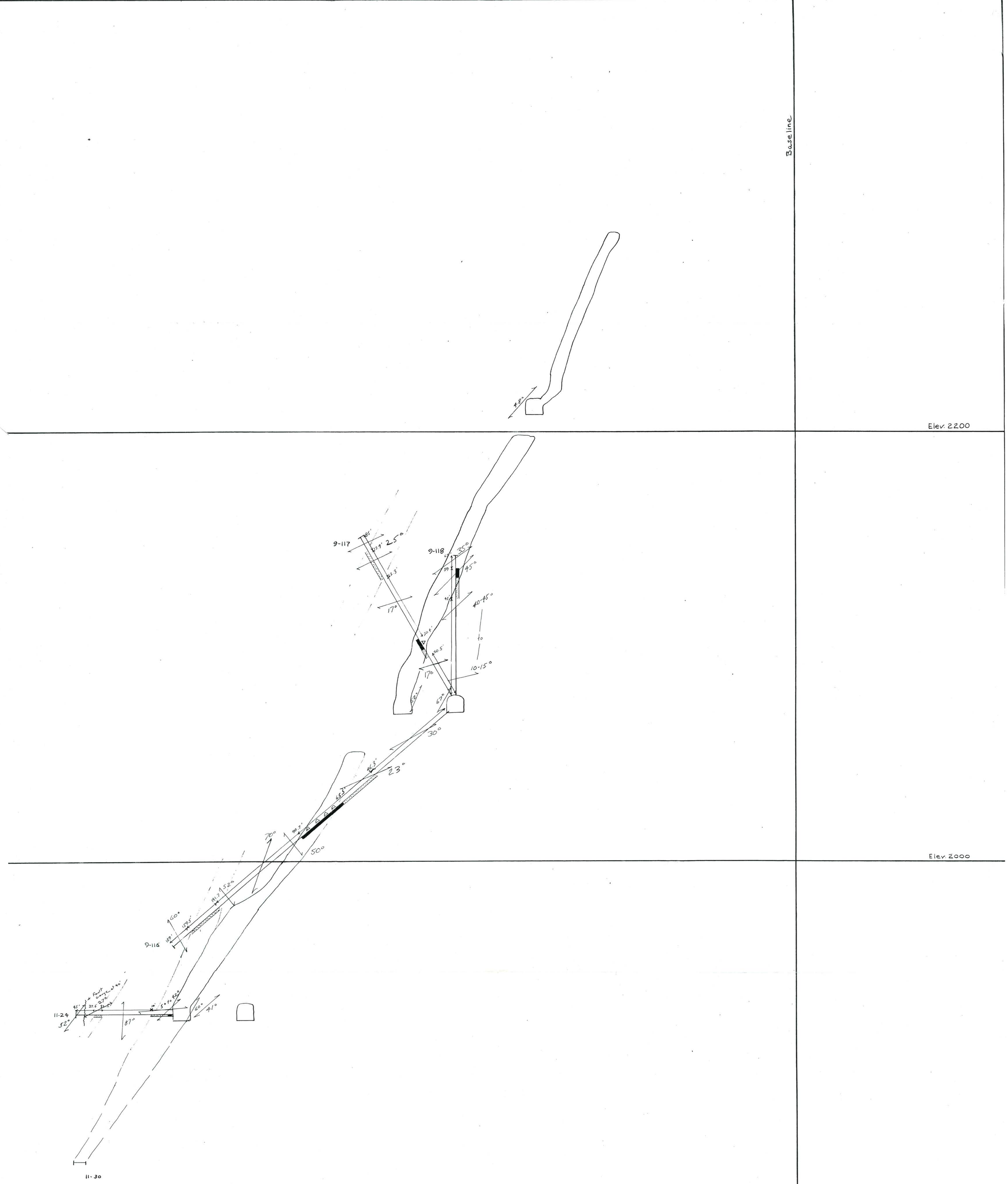

Baseline
Elev. 2200
Elev. 2000
55°
60°
60°
60°
9-73
9-67
9-65
9-66
9-72
57°
47°
ORE KNOB
SEC 1800W
20'


Baseline
Elev. 2200
Elev. 2000
8-46
78'
63'
57'
65°
71°
71°
9-23
113'
106'
79'
8-48
121'
112'
73'
9-22
78'
67'
42-51'
19'
9-21
49'
41'
36'
16'
58°
51°
61°
52°
54.5'
49'
19'
9-88
36°
ORE KNOB
SEC 1700 W
20'

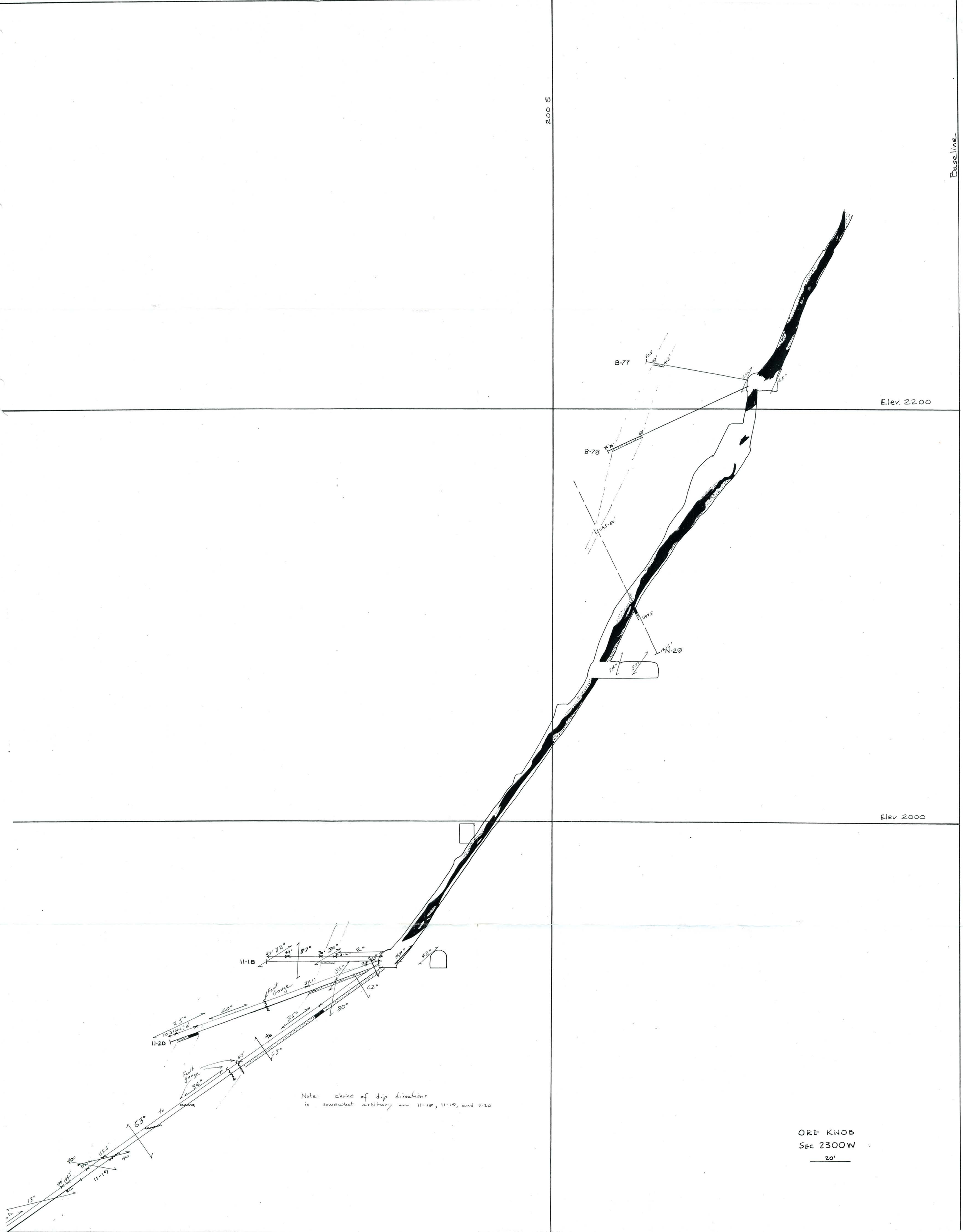

200.S
Baseline
Elev. 2800
Elev. 2600
Py
610'
634'
540
649'
732'
470
729'
747'
540
773'
540
783'
N-35
ORE KNOB
SEC 1900W
20'

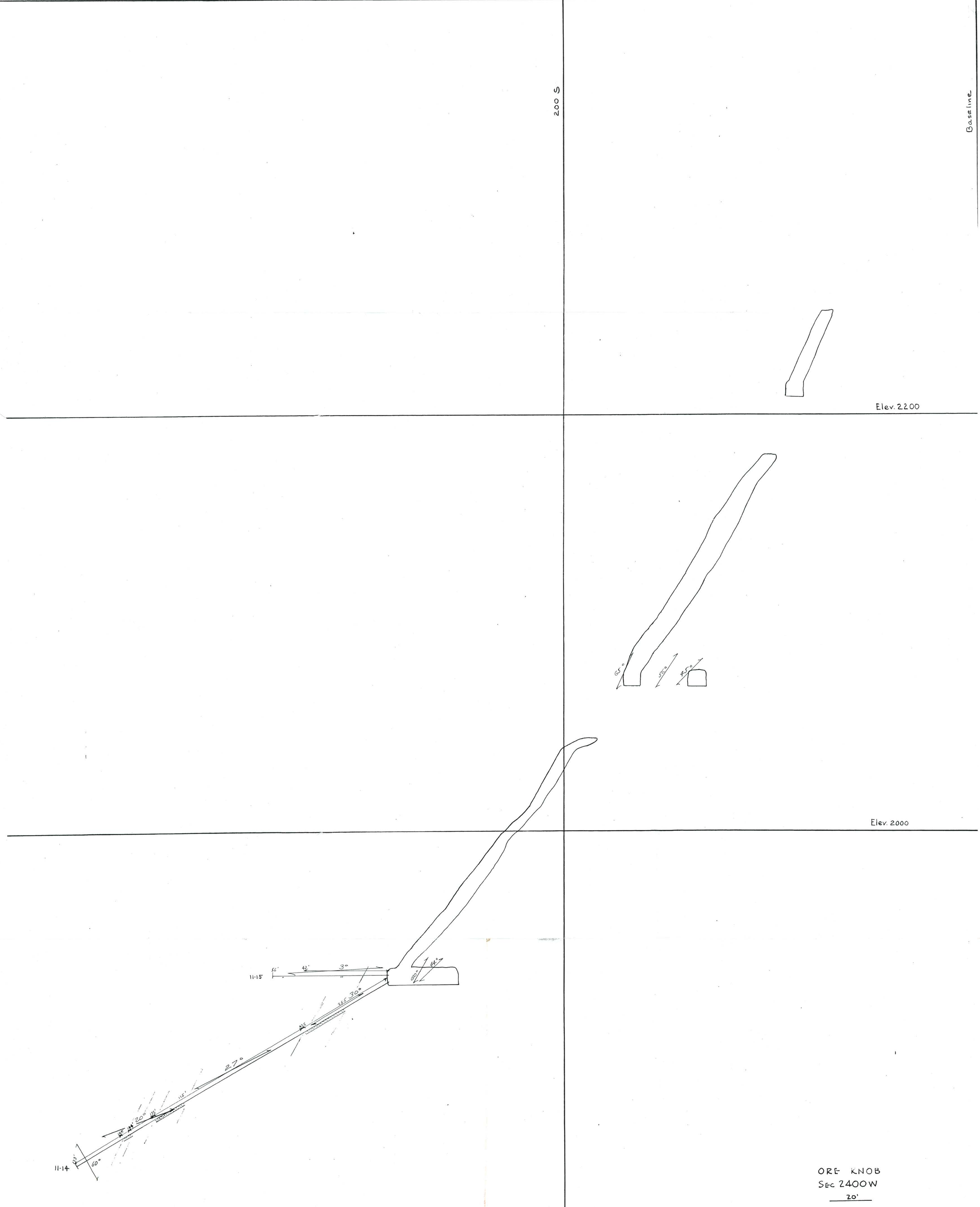

Baseline
2200
2000
No data 8-74
9-31
8-75
No data
9-86
9-84
9-85
11-6
11-5
No data 9-80
11-4
ORE KNOB
SEC 2000 W
20'

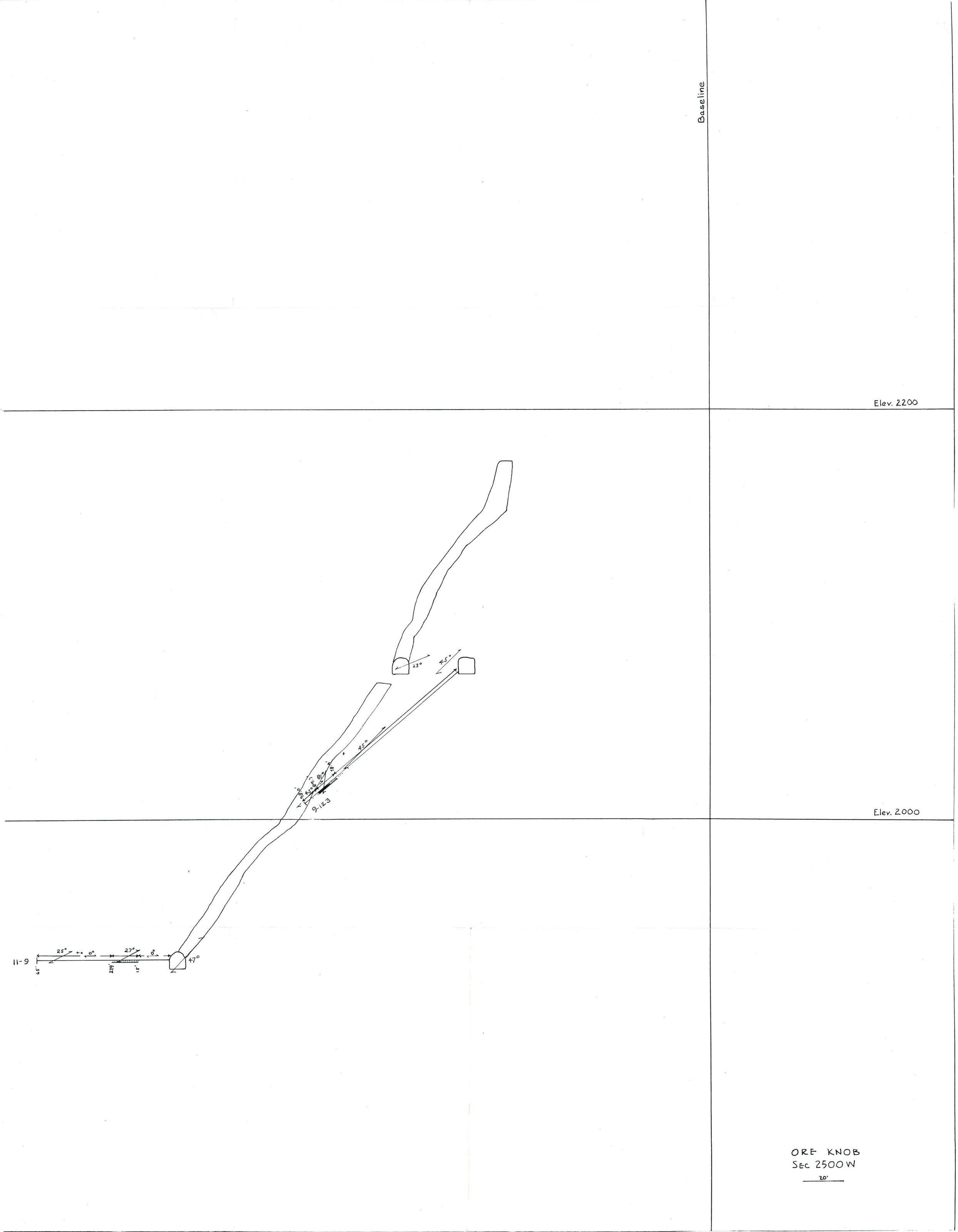

Baseline
Elev. 2200
Elev. 2000
51°
9-109
35°
9-110
60°
70°
35°
65°
47°
88.7'
11-41
9-108
47°
77°
0°
52°
54°
55°
11-29
ORE KNOB
SEC 2100W
20'

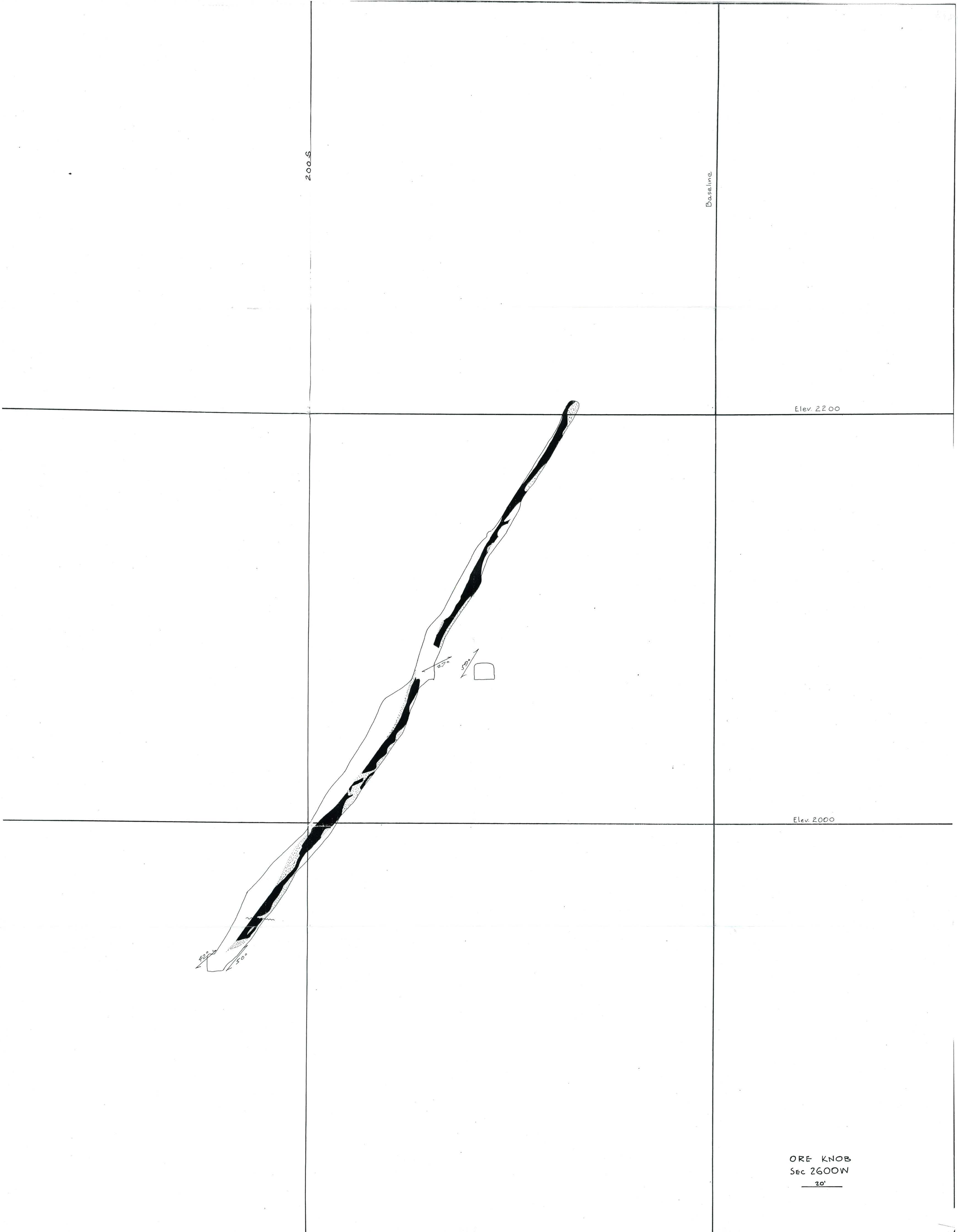


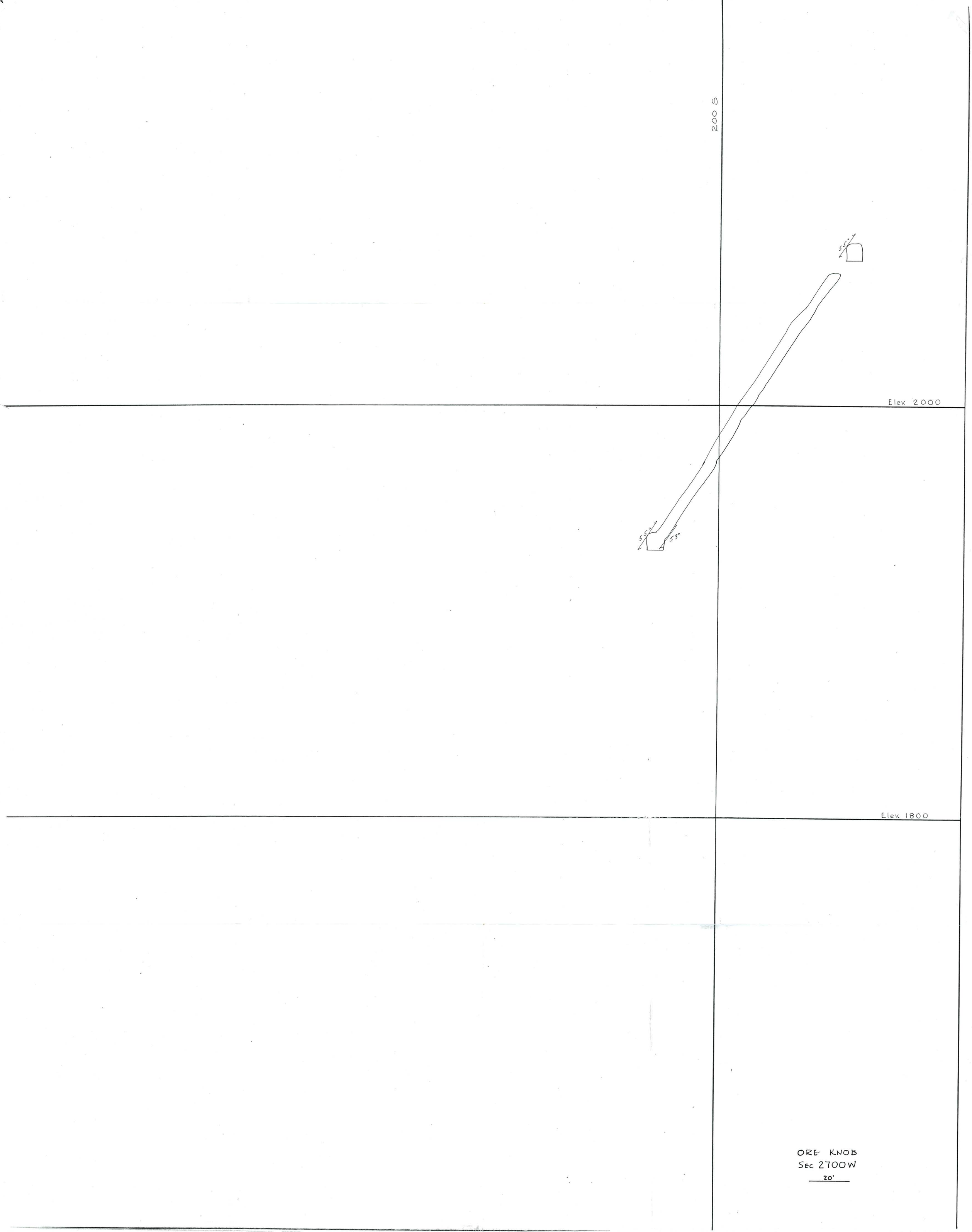

ORE KNOB
SEC 2200 W
20'

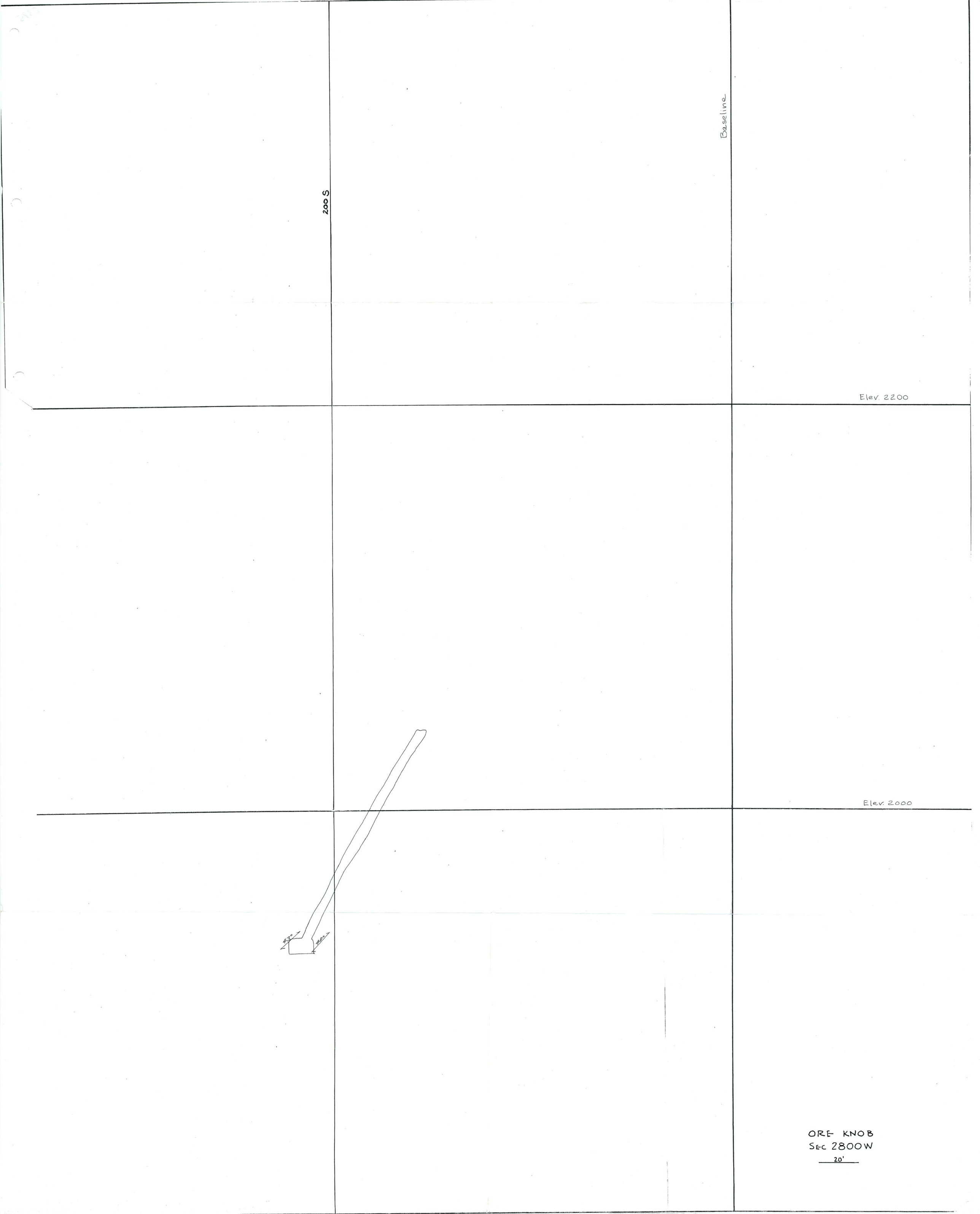

200 S
Baseline
8-77
Elev. 2200
8-78
N-29
Elev 2000
11-18
Fault Gouge
11-20
Fault Gouge
11-19
Note: choice of dip directions is somewhat arbitrary on 11-18, 11-19, and 11-20
ORE KNOB
SEC 2300W
20'


200 S
Baseline
Elev. 2200
65°
56°
45°
Elev. 2000
11-15
56'
42'
3°
44°
60°
30°
27°
20°
11-14
60°
ORE KNOB
SEC 2400W
20'


Baseline
Elev. 2200
23°
45°
45°
9-12-3
Elev. 2000
11-9
25°
0°
27°
0°
47°
65'
229'
15'
ORE KNOB
SEC 2500W
20'

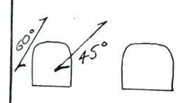

200S
Baseline
Elev. 2200
27°
50°
Elev. 2000
42°
50°
ORE KNOB
SEC 2600W
20'


200 S
55°
Elev. 2000
55°
53°
Elev. 1800
ORE KNOB
SEC 2700W
20'


200 S
Baseline
Elev. 2200
Elev. 2000
43°
48°
ORE KNOB
SEC 2800W
20'

200 S

Elev. 2000




Elev. 1800

ORE KNOB
SEC 3100 W
20'