CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the

James Doyle Sell Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

J. H. C.

APR 10 1967

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
April 10, 1967

MEMORANDUM TO MR. P. A. LEWIS

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during March amounted to 1,875.5 feet. Two (2) holes, M-136 and M-137 were completed. Drilling commenced on hole M-138.

The desired negative mineral results are being encountered on Sec. 33, T16S, R13E. Drilling will continue on Sec. 33 at least through the month of May.

M-136, positioned approximately 1,650 feet east and 230 feet south of the northwest corner of Sec. 33, T16S, R13E, encountered no visible copper mineralization, assays ranged from Trace to 0.02 per cent copper.

M-137, located approximately 1,650 feet west and 230 feet south of the northeast corner of Sec. 33, T16S, R13E, did not penetrate any visible copper mineralization.

M-138, situated approximately 800 feet south and 100 feet west of the northeast corner of Sec. 33, T16S, R13E, had rock bitted to a depth of 235.5 feet by the end of March.

GEOLOGIC LOG OF HOLES

M-136 encountered a hematite cemented breccia of chlorite altered siltstone and arkose at bedrock, approximately 320.0 feet below the surface. The brecciation ended at about 450.0 feet, below this point the bedrock was found to be inter-bedded siltstone occasionly grading to shale and fine to very course grained arkose. The chlorite alteration disappeared between 600.0 and 700.0 feet, below this point sparse to moderate carbonaceous matter was distinguishable in the core. Bedding was consistent throughout the entire hole at 45 degrees. The hole bottomed at 1000.0 feet.

M-137 penetrated moderately indurated, unaltered and unmineralized fanglomerate at bedrock and continued in this rock type to a depth of 1000.0 feet where the hole bottomed. The poorly sorted subangular to angular fragments of the fanglomerate ranged from a few millimeters to a meter in size. Bedding was occasionally distinguishable at 50 to 60 degrees.

M-138 had not encountered bedrock by the end of March.

Sections illustrating progress for March, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. HALL
Resident Geologist

DKH/tt

Enclosures

DIAMOND DRILLING - MISSION UNIT

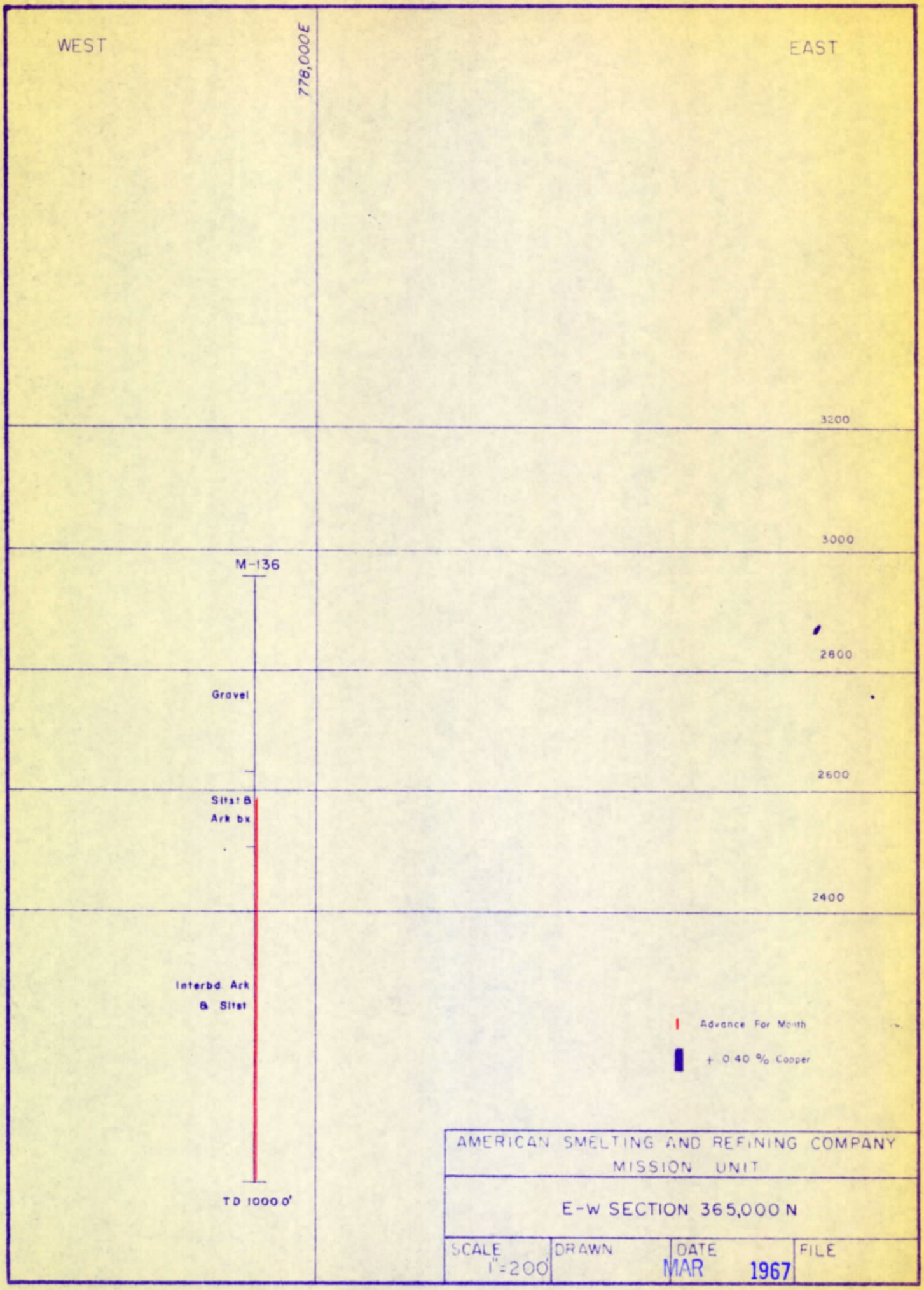
March, 1967

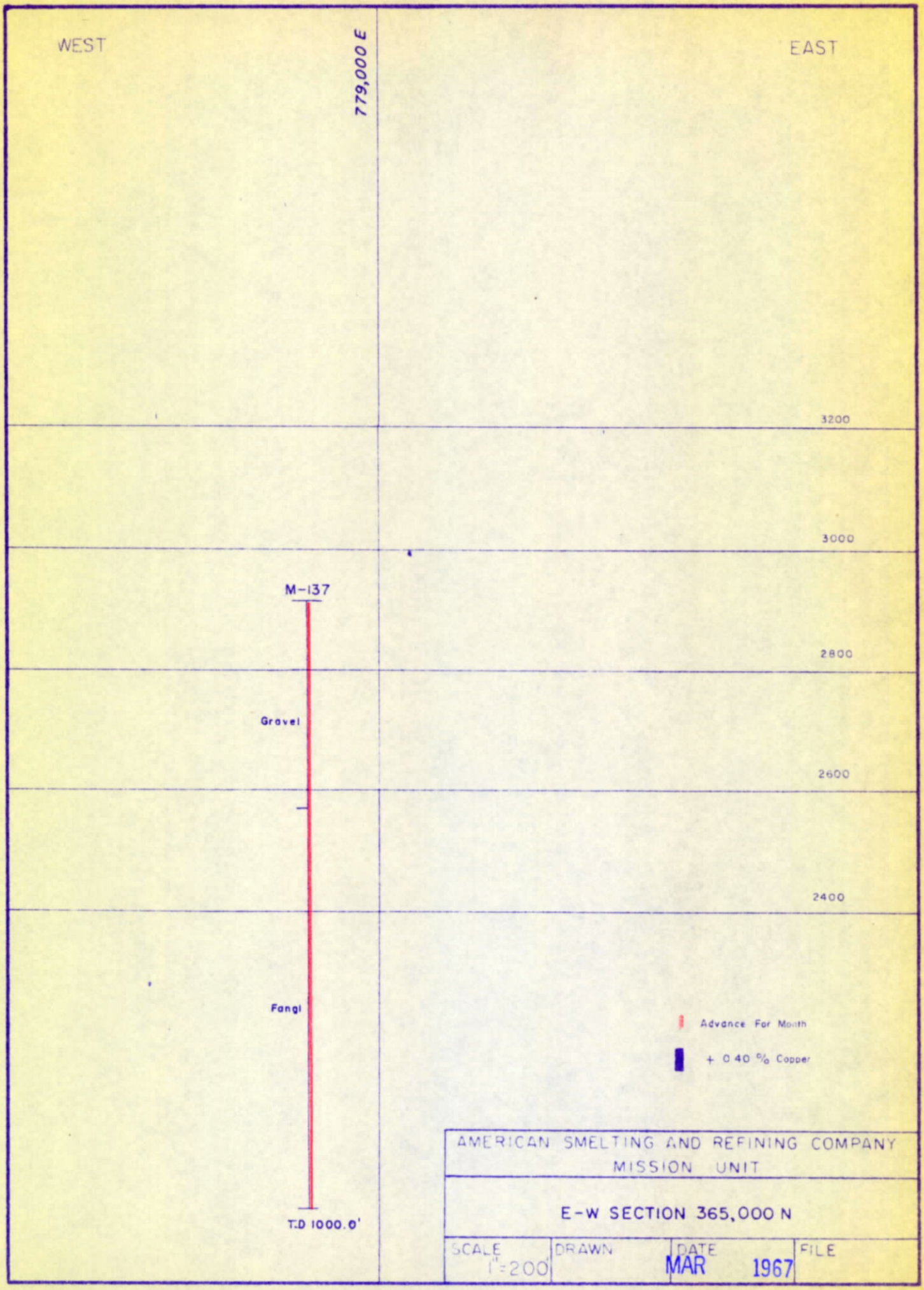
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu Depth	Intersections Interval	Average Total	% Cu N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
M-136	2,958.0	365,000	776,887	Assays range from Trace - 0.02% Cu				640.0	1000.0	1000.0
M-137	2,916.4	365,022	778,881	Unaltered and unmineralized rock - not assayed				1000.0	1000.0	1000.0
M-138	*2,897.0	-	-	Post Mineral Alluvium - not cored				235.5	235.5	
								1,875.5		

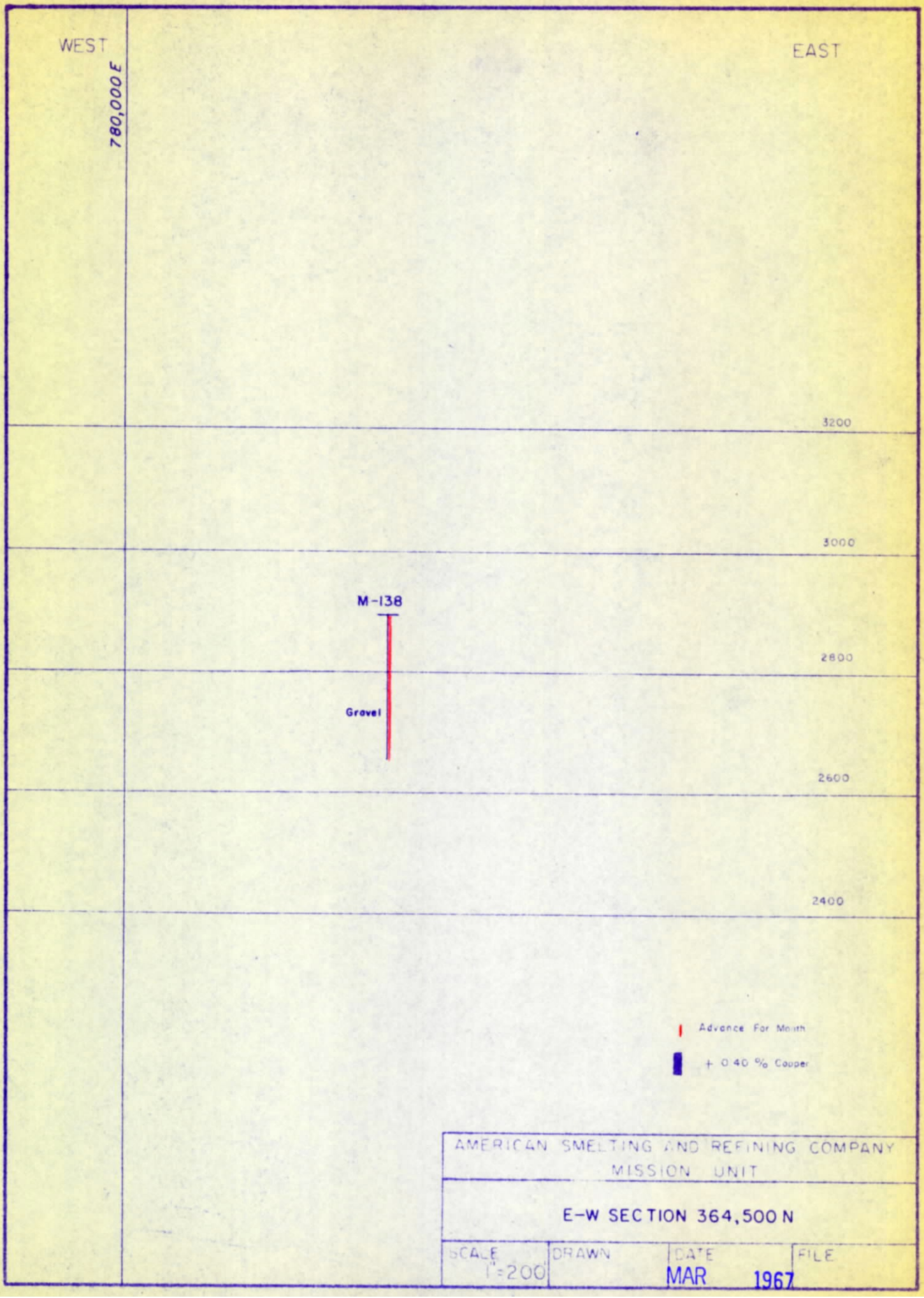
* Elevation approximate, location 800' S and 100' W of the NE corner of Sec. 33, T 16S, R 13E

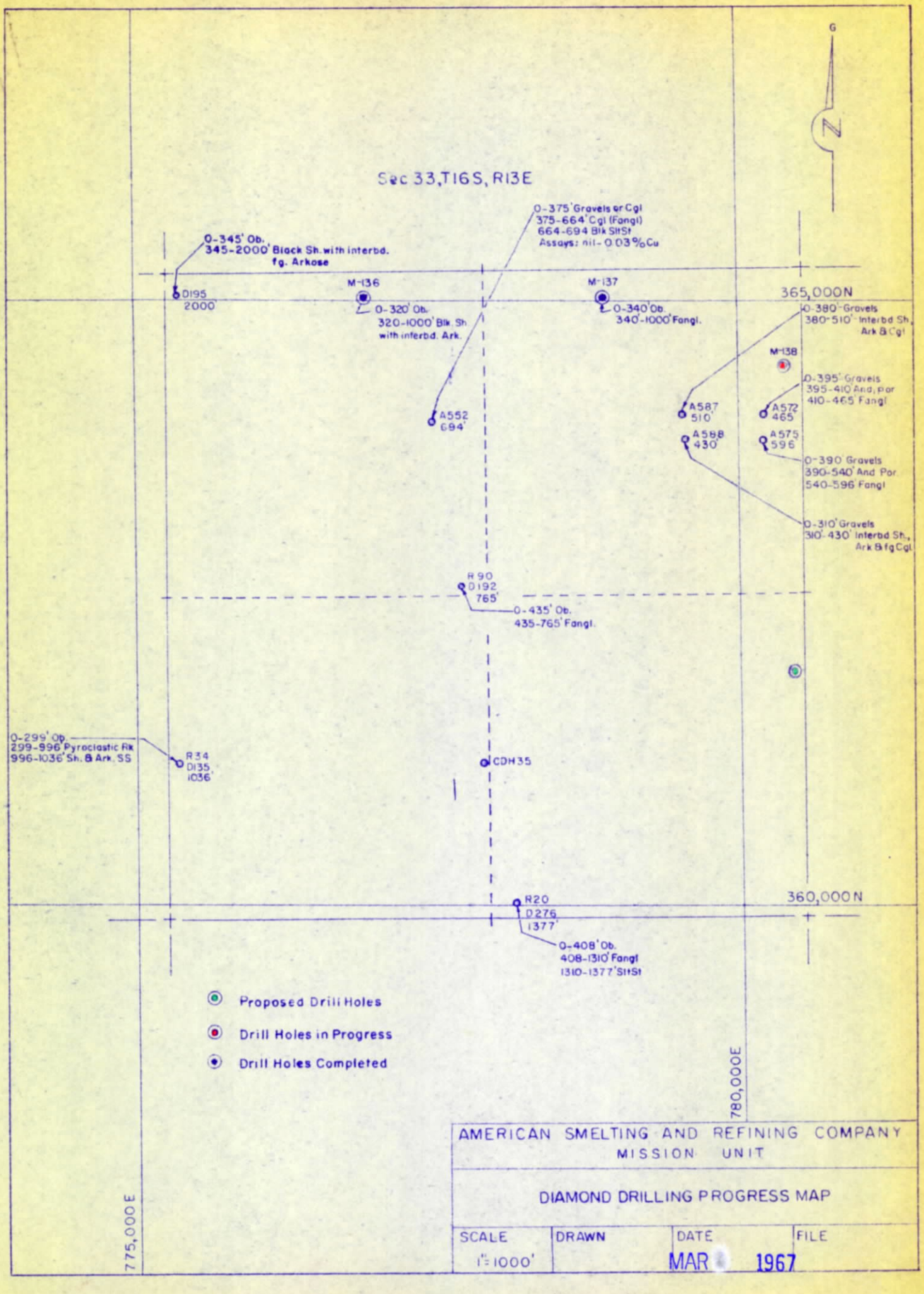
EXPLANATION OF ABBREVIATIONS ON SECTIONS

Cal. Cgl.	- Caliche Conglomerate (Overburden)
Arg.	- Argillite
Cgl.	- Conglomerate
Tt.	- Tactite
Hf.	- Hornfels
Mb.	- Marble
C. Arg.	- Calcareous Argillite
N.S.	- Non Sulfide
T.D.	- Total Depth
And.	- Andesite
Bx.	- Breccia
Mp.	- Metaporphyry
Gyp.	- Gypsum
Gr.	- Granite


WEST
778,000E
EAST
3200
3000
M-136
2800
Gravel
2600
Sltst & Ark bx
2400
Interbd. Ark & Sltst
Advance For Month
+ 0.40 % Copper
TD 1000.0'
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,000 N
SCALE 1"=200'
DRAWN
DATE MAR 1967
FILE


WEST
779,000 E
EAST
3200
3000
M-137
2800
Gravel
2600
2400
Fangl
Advance For Month
+ 0.40 % Copper
T.D 1000.0'
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,000 N
SCALE
1"=200'
DRAWN
DATE
MAR 1967
FILE


WEST
780,000 E
EAST
3200
3000
M-138
2800
Gravel
2600
2400
Advance For Month
+ 0.40 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 364,500 N
SCALE 1"=200'
DRAWN
DATE MAR 1967
FILE


Sec 33, T16S, R13E
0-375' Gravels or Cgl
375-664' Cgl (Fangl)
664-694 Blk SltSt
Assays: nil-0.03% Cu
0-345' Ob.
345-2000' Black Sh. with interbd. fg. Arkose
D195
2000'
M-136
0-320' Ob.
320-1000' Blk. Sh with interbd. Ark.
M-137
0-340' Ob.
340'-1000' Fangl.
365,000N
0-380' Gravels
380-510' Interbd Sh, Ark & Cgl
M-138
0-395' Gravels
395-410' And. por
410-465' Fangl
A552
694'
A587
510'
A572
465
A588
430'
A575
596
0-390' Gravels
390-540' And. Por.
540-596 Fangl
0-310' Gravels
310'-430' Interbd Sh., Ark & fg Cgl.
R90
D192
765'
0-435' Ob.
435-765' Fangl.
0-299' Ob.
299-996' Pyroclastic Rk
996-1036' Sh. & Ark. SS
R34
D135
1036'
CDH35
360,000N
R20
D276
1377'
0-408' Ob.
408-1310' Fangl
1310-1377' SltSt
Proposed Drill Holes
Drill Holes in Progress
Drill Holes Completed
780,000E
775,000E
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1"=1000'
DRAWN
DATE
MAR 1967
FILE

J. H. C.

JUN 2 1967

DIAMOND DRILLING - MISSION UNIT

May, 1967

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
M-140	2982.71	363,638.63	776,244.02	-	Assays range from nil to 0.02% Cu		-	1000.0	1000.0	1000.0
M-141	2955.57	361,275.00	779,153.58	-	Assays range from 0.01 to 0.05% Cu		-	500.0	500.0	500.0
M-142	3027.33	360,038.99	776,496.09	-	All drilling rotary		-	190.7	190.7	
								1,690.7		

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
March 10, 1967

J. H. C.
MAR 13 1967

MEMORANDUM TO MR. P. A. LEWIS

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during February amounted to 2,620.7 feet. Six holes, 2SX-66, 2SX-67, 2SX-69, 2SX-70, 2SX-71 and 2SX-72 were completed. Drilling commenced on hole M-136.

Drilling was completed on the San Xavier reservation during February. The series of interspaced holes drilled on the zone of secondary oxide and chalcocite mineralization on the reservation adjacent to the Banner property better defined the western and northern limits of this zone.

Hole M-136 is the first of a series of holes which will be drilled on Sec. 33, T16S, R13E, looking for negative mineral results in order to clear this land with the State of Arizona for the purpose of dumping waste.

2SX-66, located on the north central area of the low grade sulphide zone adjacent to the Banner property, continued for a short distance in the lengthy, moderate ore grade run encountered in January.

2SX-67, situated on the northwest portion of the low grade sulphide ore zone, penetrated a lengthy, moderate ore grade run at considerable depth during February.

2SX-69, positioned on the northeast boundary of the zone of secondary oxide mineralization, encountered a modest run of moderately high grade potential leach ore at bedrock.

2SX-70, located near the north boundary of the zone of secondary mineralization, penetrated a short run of potential leach ore and a short run of moderate chalcocite enrichment near bedrock.

2SX-71, situated on the north boundary of the zone of secondary mineralization, encountered a modest run of high grade potential leach ore at bedrock.

2SX-72, located on the west central portion of zone of secondary mineralization, penetrated a modest run of moderate grade chalcocite enrichment near bedrock. No potential leach ore was found in this hole.

M-136, positioned approximately 1,650 feet east and 230 feet south of the northwest corner of Sec. 33, T16S, R13E, had rock bitted to a depth of 360 feet by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-66 continued in moderate grading to sparsely mineralized argillite with the exception of a 25.0 foot andesite dike at 810.4 feet, to 850.0 feet where the hole bottomed.

2SX-67 remained in sparsely mineralized quartz monzonite porphyry to 995.4 feet where moderately mineralized conglomeritic argillite was encountered. At 1,320.6 feet, moderately mineralized tactite was penetrated and continued to 1,359.9 feet where barren calcareous argillite and marble were encountered. The hole bottomed in the barren marble at 1,401.4 feet.

2SX-69 penetrated leached argillite with sparse to strong copper oxides at bedrock. Below the base of the oxide zone at 292.2 feet, sparse primary chalcopyrite mineralization was encountered in the argillite and the hole bottomed in this argillite at 353.0 feet.

2SX-70 encountered leached quartz monzonite porphyry with sparse to moderate copper oxides at bedrock. Below the base of the oxide zone at 240.0 feet, a short zone of strong chalcocite enrichment on sparse primary sulphide mineralization was penetrated. The hole bottomed in the sparsely mineralized quartz monzonite porphyry at 322.0 feet.

2SX-71 penetrated leached argillite and arkose with strong copper oxide mineralization at bedrock. The base of the oxide zone was 309.0 feet. No significant chalcocite enrichment was encountered in this hole. The hole bottomed at 359.0 feet in sparsely mineralized altered arkose.

2SX-72 encountered leached quartz monzonite porphyry at bedrock. No significant copper oxide mineralization was penetrated in this hole, however, a modest zone of chalcocite enrichment was encountered at the base of the oxide zone at 225.8 feet. The hole bottomed in sparsely mineralized quartz monzonite at 329.0 feet.

M-136 penetrated bedrock at approximately 320.0 feet. This contact was noted in the rock bit cuttings by the abundance of hematite in the siltstone bedrock. No core was drilled in this hole during February.

Sections illustrating progress for February, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and plan maps with hole locations and proposed drill holes are attached.

D. K. Hall

D. K. HALL
Resident Geologist

DKH:vnm
attachs

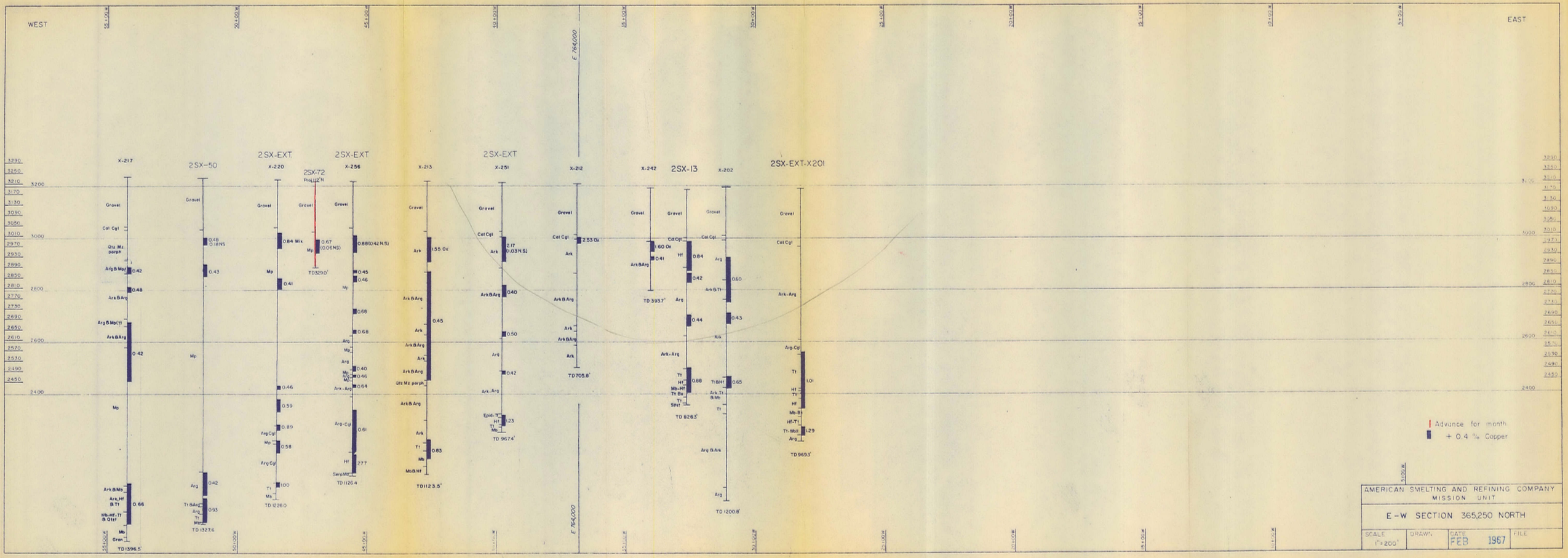
DIAMOND DRILLING - MISSION UNIT
February, 1967

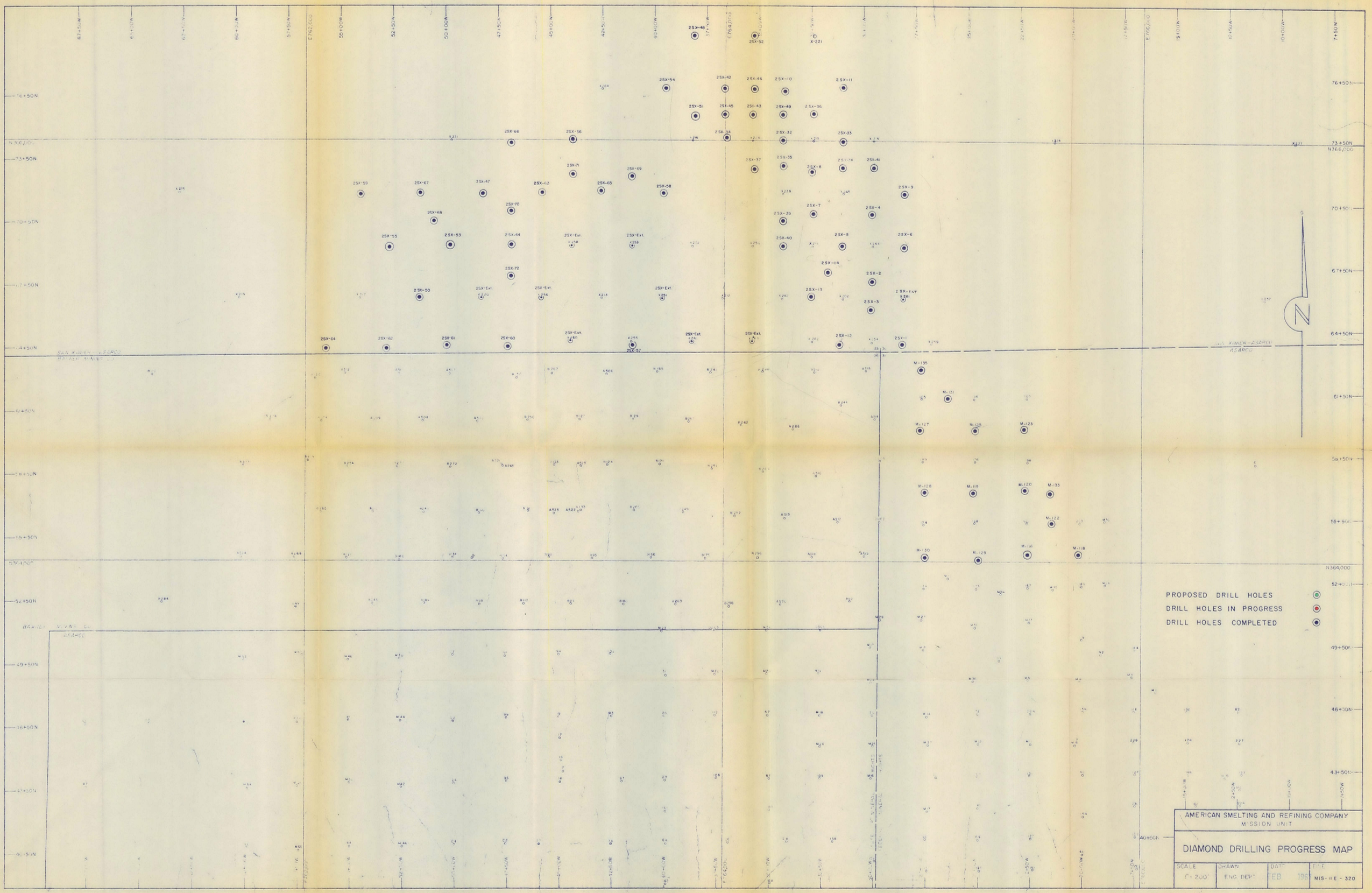
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu Depth	Intersections Interval	Average Total	% Cu N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-66	3,219.8	365,991	762,984	711.9-742.3	30.4	0.41	-			
				786.8-796.8	10.0	0.60	-	138.1	850.0	850.0
2SX-67	3,233.7	365,751	762,553	893.7-905.3	11.6	0.69	-			
				1000.0-1364.8	364.8	0.62	-	759.6	1,401.4	1,401.4
2SX-69	3,202.9	365,846	763,551	199.3-261.5	62.2	0.89	0.82	353.0	353.0	353.0
2SX-70	3,211.7	365,662	762,980	215.9-245.0	29.1	0.78	0.57			
				245.0-264.2	19.2	0.99	0.11	322.0	322.0	322.0
2SX-71	3,208.4	365,838	763,278	196.6-272.0	75.4	1.32	1.22			
				309.0-319.0	10.0	0.40	-	359.0	359.0	359.0
2SX-72	3,218.1	365,362	762,983	222.6-273.8	51.2	0.67	0.06	329.0	329.0	329.0
M-136*	2,954.0	-	-	-	-	-	-	360.0	360.0	
					663.9 feet			2,620.7 feet		

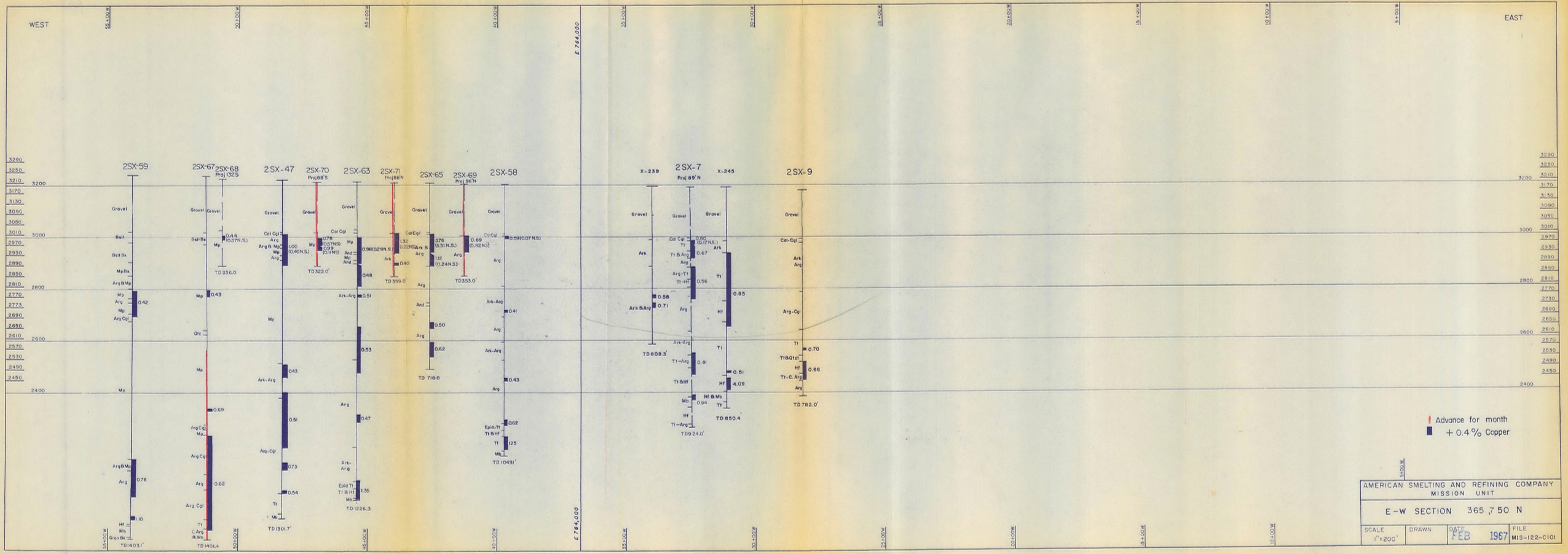
*Elevation approximate, Location-1650' E, 230' S of NW corner of Section 33, T 16S, R 13E

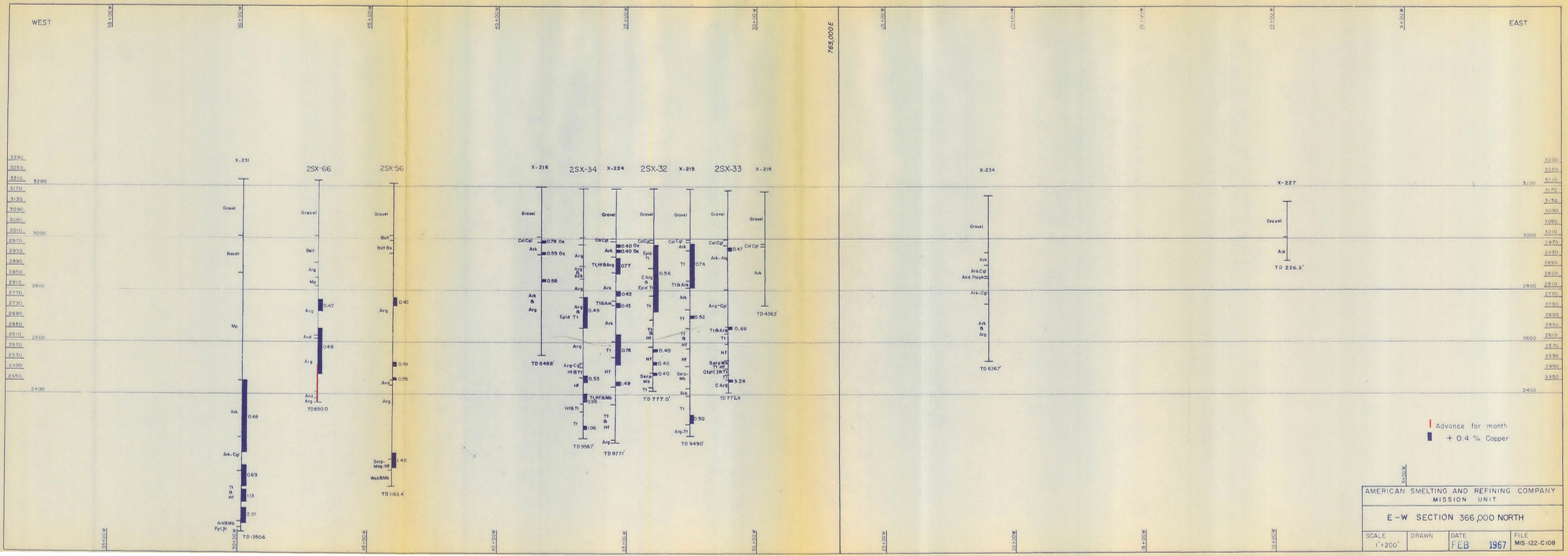
EXPLANATION OF ABBREVIATIONS ON SECTIONS

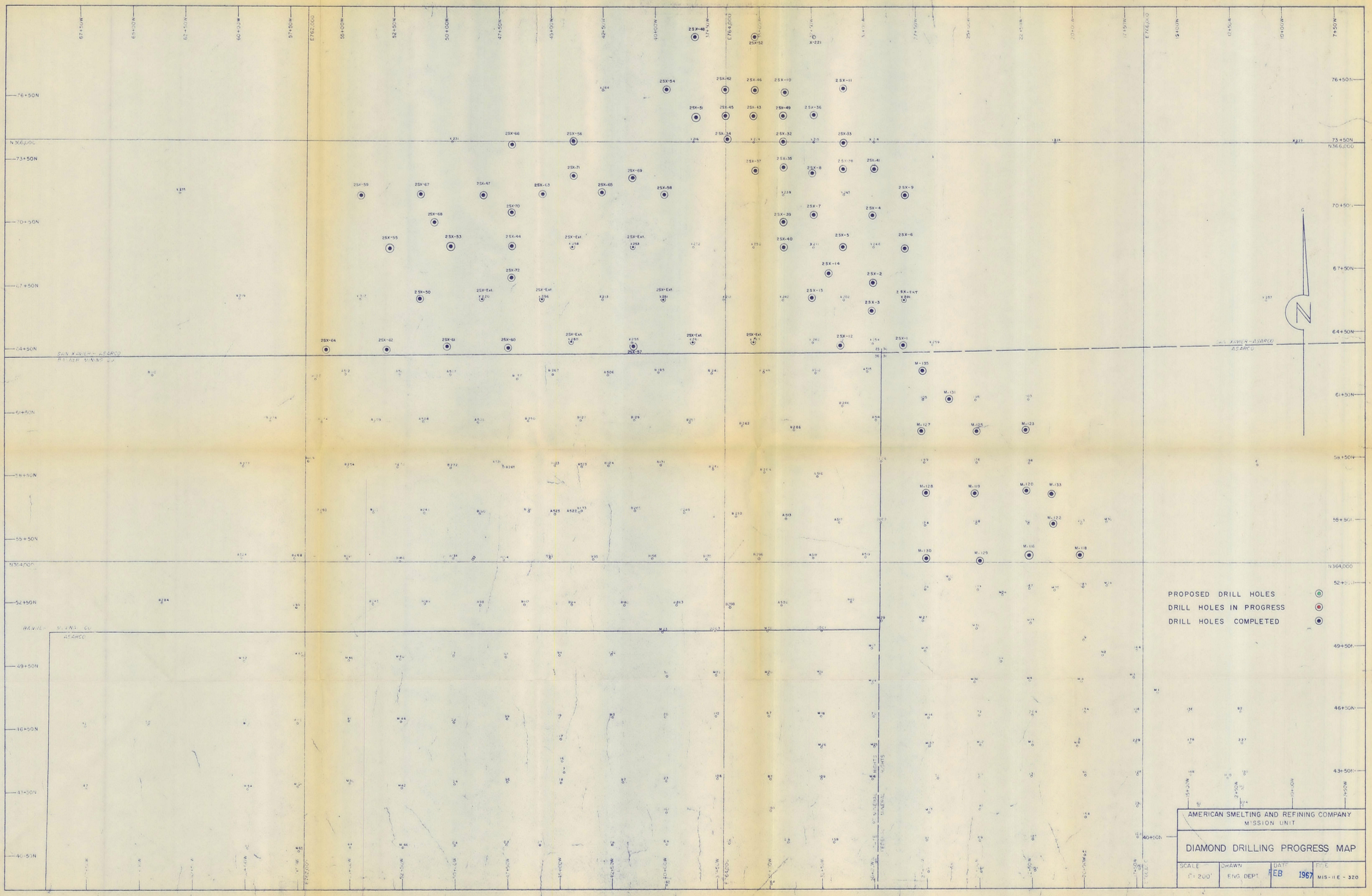
Cal. Cgl.	- Caliche Conglomerate (Overburden)
Arg.	- Argillite
Cgl.	- Conglomerate
Tt.	- Tactite
Hf.	- Hornfels
Mb.	- Marble
C. Arg.	- Calcareous Argillite
N.S.	- Non Sulfide
T.D.	- Total Depth
And.	- Andesite
Bx.	- Breccia
Mp.	- Metaporphyry
Gyp.	- Gypsum
Gr.	- Granite

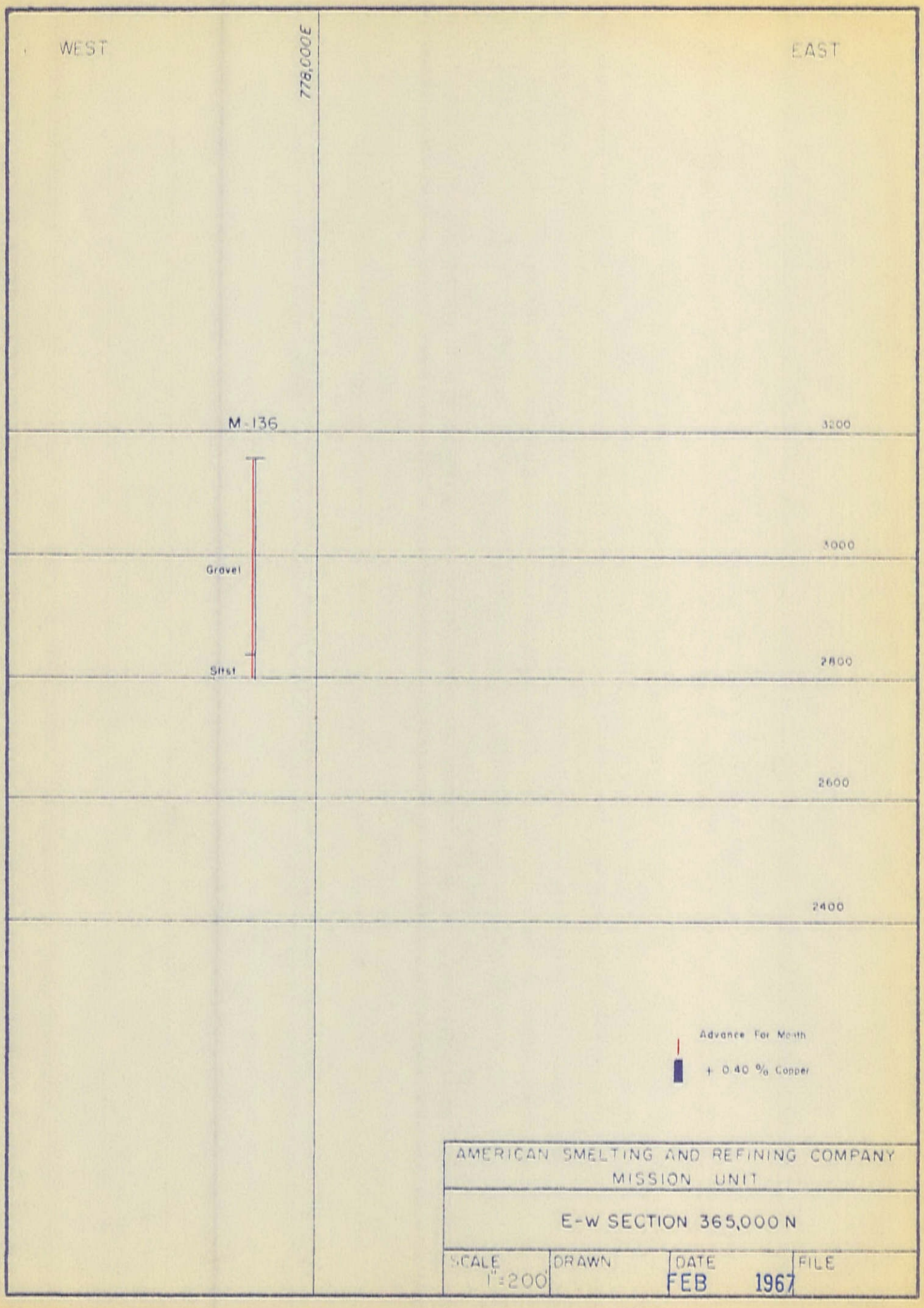

WEST
EAST
X-217
2SX-50
2SX-EXT
X-220
2SX-72
2SX-EXT
X-256
X-213
2SX-EXT
X-251
X-212
X-242
2SX-13
X-202
2SX-EXT-X201
E 764,000
TD 1396.5'
TD 1327.6
TD 1226.0
TD 3290'
TD 1126.4
TD 1123.5'
TD 967.4'
TD 705.8'
TD 393.7'
TD 826.5'
TD 1200.8'
TD 969.5'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,250 NORTH
SCALE 1"=200'
DRAWN
DATE FEB 1967
FILE

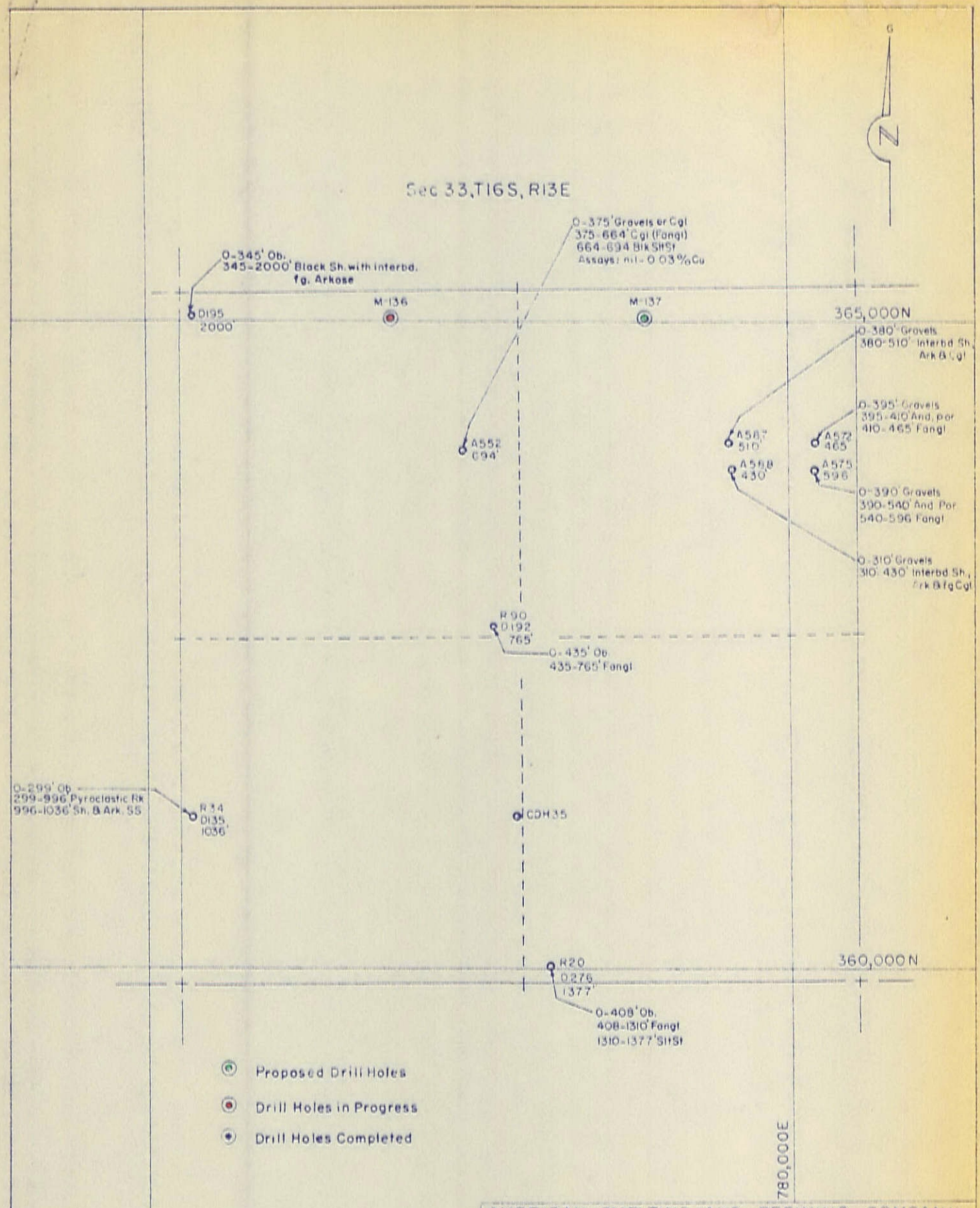

PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1" = 200'
DRAWN
ENG. DEPT
DATE
FEB 196
FILE
MIS-HE-320
N366,000
N364,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
SAN XAVIER - ASARCO
ASARCO


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 784,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-59
2SX-67
2SX-68
Proj 132'S
2SX-47
2SX-70
Proj 88'S
2SX-63
2SX-71
Proj 88'N
2SX-65
2SX-69
Proj 96'N
2SX-58
X-239
2SX-7
Proj 89'N
X-245
2SX-9
Gravel
Bslt
Bslt Bx
Mp Bx
Arg & Mp
Mp
Arg
Arg Cgl
Hf
Mb
Gran Bx
Qtz
Arg Cgl
C Arg & Mb
Tt
Col Cgl
Ark & Arg
Ark-Arg
Arg-Cgl
Epid Tt
Tt & Hf
Ark
Arg-Tt
Tt-Hf
Tt-Arg
Tt & Hf
Hf & Mb
Tt & Qtzt
Tt-C Arg
0.42
0.78
1.10
0.44 (0.37N.S.)
0.43
0.69
0.62
1.00 (0.40N.S.)
0.43
0.51
0.73
0.54
0.78 (0.57NS) 0.99 (0.11NS)
0.98(0.29N.S.)
0.51
0.53
0.47
1.35
1.32 (1.22NS)
0.40
0.48
3.76 (3.51 N.S.)
1.12 (0.24N.S.)
0.50
0.62
0.69 (0.62N.S.)
0.59(0.07 N.S.)
0.41
0.43
0.62
1.25
0.58
0.71
0.60 (0.17N.S.)
0.67
0.56
0.81
0.94
0.85
0.51
4.09
0.70
0.66
TD 1403.1'
TD 336.0
TD 140.4
TD 1301.7'
TD 322.0'
TD 1226.3
TD 359.0'
TD 718.0
TD 353.0'
TD 1049.1'
TD 608.3'
TD 924.0'
TD 850.4'
TD 782.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,750 N
SCALE 1"=200'
DRAWN
DATE FEB 1967
FILE MIS-122-C101


WEST
EAST
765,000 E
X-231
2SX-66
2SX-56
X-216
2SX-34
X-224
2SX-32
X-215
2SX-33
X-218
X-234
X-227
Gravel
Basalt
Mp
Ark
Ark-Cgl
Tt & Hf
Ark&Mb Fe(?)
TD 1350.6
Belt
Belt Bx
Arg
And
And Arg
TD 850.0
Serp-Mag-Hf
Wea&Mb
TD 1163.4'
Cal Cgl
Epid Tt
Arg-Cgl
Hf&Tt
Tt,Hf&Mb
Hf&Tt
TD 648.8'
TD 958.7'
TD 977'
Serp-Mb
TD 777.0'
Arg-Tt
TD 949.0'
Ark-Arg
Tt&Arg
Hf
Serp Mb
Qtzt(?)&Tt
C Arg
TD 777.8
TD 438.3'
Ark.Cgl
And Porph
TD 636.7'
TD 226.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,000 NORTH
SCALE 1" = 200'
DRAWN
DATE FEB 1967
FILE MIS-122-C108


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE 1" = 200'
DRAWN ENG DEPT
DATE FEB 1967
FILE MIS-11E-320
SAN XAVIER - ASARCO
RAYNER MINING CO
ASARCO
N
N366,000
N364,000
E762,000
E764,000
E766,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N


WEST
778,000E
EAST
M-136
3200
3000
Gravel
2800
Silt
2600
2400
Advance For Month
+ 0.40 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,000 N
SCALE
1"=200'
DRAWN
DATE
FEB 1967
FILE


Sec 33, T16S, R13E
0-375' Gravels or Cgl
375-664' Cgl (Fangl)
664-694 Blk Sh St
Assays: nil-0.03% Cu
0-345' Ob.
345-2000' Black Sh. with interbd. fg. Arkose
D195
2000'
M-136
M-137
365,000N
0-380' Gravels
380-510' Interbd Sh, Ark & Cgl
0-395' Gravels
395-410' And. por
410-465' Fangl
A552
694'
A587
510'
A572
465'
A588
430'
A575
596'
0-390' Gravels
390-540' And. Por
540-596' Fangl
0-310' Gravels
310-430' Interbd Sh, Ark & fg Cgl
R90
D192
765'
0-435' Ob.
435-765' Fangl
0-299' Ob.
299-996' Pyroclastic Rk
996-1036' Sh. & Ark. SS
R34
D135
1036'
CDH35
R20
D276
1377'
360,000N
0-408' Ob.
408-1310' Fangl
1310-1377' Slt St
Proposed Drill Holes
Drill Holes in Progress
Drill Holes Completed
780,000E
775,000E
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1"=1000'
DRAWN
DATE
FEB 1967
FILE

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J. H. C.
MAR 1 - 1967

March 1, 1967

Mr. Robert Richter, Assistant Comptroller
American Smelting and Refining Company
120 Broadway
New York, N. Y., 10005

TUCSON OFFICE
San Xavier Ore Bodies
Development Work, Year 1965

Dear Sir:

Further to my letter of January 17, 1967, which was in reference to your letter of January 3, 1967, File E-3, I am enclosing copies of a tabulation listing the holes drilled in the San Xavier North and San Xavier South ore bodies during the year 1965 and maps showing the location of these drill holes. You will note that all of the year 1965 drilling was done to provide data for estimating ore reserves and to delimit the ore bodies.

Very truly yours,

ORIGINAL SIGNED BY
K. A. von den Steinen

K. A. von den Steinen
Chief Accountant

KvdS/cj
Encls.
cc: HLGoodenough, no encls.
TASnedden, w/ "
RBMeen, " "
KERichard, " "
JHCourtright, " "

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
January 20, 1967

SAN XAVIER RESERVATION
DIAMOND DRILLING - 1965

SAN XAVIER NORTH

The reservation area approximately 2.5 miles north-northwest of the Mission Unit Property.

Each of the below holes was drilled to provide data for estimating ore reserves and to delimit the San Xavier North Ore Body.

I. Tract No. 1

Hole	Date Started	Date Completed	Total Rotary & Core Footage Drilled - 1965
1SX- 1	9- 9-65	9-29-65	754.0
1SX- 2	9-20-65	10- 1-65	602.8
1SX- 3	9-29-65	10-12-65	702.6
1SX- 4	10- 1-65	10-18-65	706.1
1SX- 5	10- 2-65	10-12-65	571.7
1SX- 6	10-12-65	10-22-65	583.6
1SX- 7	10-12-65	10-26-65	617.9
1SX- 8	10-18-65	10-27-65	594.0
1SX- 9	10-22-65	11- 9-65	726.1
1SX-10	10-26-65	11-11-65	549.4
1SX-11	10-27-65	11- 8-65	545.4
1SX-12	11- 5-65	11-17-65	648.0
1SX-13	11-10-65	11-23-65	649.0
1SX-14	11-12-65	11-20-65	594.0
1SX-15	11-18-65	11-30-65	623.9
1SX-16	11-22-65	12- 1-65	622.2
1SX-17	11-23-65	12- 3-65	523.0
1SX-18	11-30-65	12- 9-65	708.0
1SX-19	12- 9-65	12-19-65	556.0
1SX-20	12-13-65	12-27-65	797.8
1SX-21	12-16-65	-	747.3
1SX-22	12-28-65	-	308.3
			13,731.1

II. Tract No. 2

Hole	Date Started	Date Completed	Total Rotary & Core Footage Drilled - 1965
2SX-15	9-18-65	10- 1-65	646.5
2SX-16	12- 4-65	12-16-65	684.0
2SX-17	12- 1-65	12-13-65	738.0
2SX-18	12-20-65	-	651.2
			2,719.7

III. Drill Hole Location Map

SAN XAVIER SOUTH The reservation area immediately adjacent to the Banner and Mission Unit Properties.

Each of the below holes was drilled to provide data for estimating ore reserves and to delimit the narrow near surface north-northwest trending ore zone adjacent to the Mission Unit Property.

I. Tract No. 2

Hole	Date Started	Date Completed	Total Rotary & Core Footage Drilled - 1965
2SX- 1	5-24-65	6- 9-65	883.0
2SX- 2	6- 3-65	6-23-65	1,060.2
2SX- 3	6-10-65	6-22-65	868.6
2SX- 4	6-22-65	7- 6-65	775.0
2SX- 5	7- 7-65	7-15-65	644.0
2SX- 6	7- 9-65	7-27-65	824.0
2SX- 7	7-15-65	7-28-65	924.0
2SX- 8	7-27-65	8-10-65	789.7
2SX- 9	7-29-65	8-14-65	782.0
2SX-10	8-11-65	8-24-65	750.3
2SX-11	8-14-65	8-26-65	768.6
2SX-12	8-23-65	9- 4-65	703.6
2SX-13	8-24-65	9- 9-65	826.3
2SX-14	8-26-65	9-18-65	875.5
2SX-(Ext. X-201)	9- 4-65	9-17-65	421.0
			11,895.8

II. Drill Hole Location Map

Ext. - Prefix indicated extension of previously drilled hole.

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
February 10, 1967

J.H.C.
FEB 13 1967

MEMORANDUM TO MR. P. A. LEWIS

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during January amounted to 3,629.7 feet. Five holes, 2SX-62, 2SX-63, 2SX-64, 2SX-65 and 2SX-68 were completed. Drilling commenced on holes 2SX-66 and 2SX-67.

The present drilling program is nearing completion on the generally low grade sulphide ore zone on Tract 2 of the San Xavier Reservation adjacent to the Banner property. This program has developed approximately 50,000,000 tons of 0.40 percent copper ore at a 0.30 percent copper cutoff, 18,002,000 tons of which assay 0.021 percent Mo and 0.38 percent copper and has indicated an additional 15,500,000 tons at 0.57 percent copper in the mineralized zone. Approximately 3,000,000 tons of 1.00 percent copper which is potential acid leach ore are indicated at present in the oxide zone. A series of interspaced holes are being drilled to better define the secondary oxide and chalcocite mineralization at the top of the above mentioned low grade sulphide ore zone.

All drilling on the San Xavier Reservation should be completed during February.

2SX-62, situated adjacent to the Banner property line, encountered a few modest to short, high ore grade runs at considerable depth.

2SX-63, located on the central area of the low grade sulphide ore zone, encountered one lengthy run and one short run of moderate ore grade material at modest depth and a modest run of high ore grade material at considerable depth during January.

2SX-64, positioned adjacent to the Banner property line, encountered no significant ore grade material but did penetrate a modest amount of material assaying 0.30 percent to 0.40 percent copper.

2SX-65, situated on the east central area of the low grade sulphide ore zone, encountered a moderate run of very high grade potential acid leach material at bedrock and a moderate run of high grade chalcocite enriched material immediately below the oxide ore. One short and one modest run of sulphide ore of moderate ore grade were encountered at intermediate depth in this hole.

2SX-66, located on the north central area of the low grade sulphide ore zone, penetrated one short run of moderate ore grade material and was continuing in a lengthy, moderate ore grade run at the end of the month.

2SX-67, situated on northwest portion of the low grade sulphide ore zone, had encountered only one very short run of low ore grade material by the end of the month.

2SX-68, a interspaced hole on the zone of oxide mineralization at the top of the low grade sulphide ore body, is located on the northwest boundary of this zone of secondary copper mineralization. The hole encountered only a short run of low ore grade copper oxide mineralization.

GEOLOGIC LOG OF HOLES

2SX-62 continued in sparsely mineralized quartz monzonite porpyry to 1,045.0 feet where a 26.5 foot zone of strongly mineralized tactite and hornfels was penetrated. Below the tactite and hornfels weakly mineralized quartzite was encountered and continued to 1,136.1 feet where strongly mineralized tactite grading to locally siliceous chlorite rich hornfels was found. At 1,212.8 feet, below the hornfels, 36.3 feet of weakly mineralized quartzite was penetrated and below that sparse to strongly mineralized tactite and hornfels were found. The hole bottomed at 1,352.9 feet in barren marble which was encountered below the tactite at 1,321.3 feet.

2SX-63 remained in moderately mineralized argillite to 736.7 feet where the copper mineralization in the argillite became sparse. At1,165.0 feet, below a gradational contact, strongly mineralized tactite and hornfels were encountered. Barren serpentine rich marble was penetrated at 1,222.1 feet and the hole bottomed in this rock type at 1,226.5 feet.

2SX-64 continued in sparsely mineralized quartz monzonite porphyry to 913.0 feet where the hole bottomed.

2SX-65 encountered a 66.2 foot zone very strong secondary oxide mineralization at bedrock and 59.0 feet of strong chalcocite enrichment immediately below that in argillite. Below the secondary supergene mineralization at 322.6 feet sparse occasionally moderate sulphide mineralization was found in the argillite. The hole bottomed at 718.0 feet in the sparsely mineralized argillite.

2SX-66 penetrated post mineral basalt at bedrock and continued in the basalt to 316.2 feet where below a strong fault zone sparsely mineralized argillite was encountered. The mineralization in the argillite graded to moderate at 567.7 feet and the hole continued in the moderately mineralized argillite to 711.9 feet where it stood at the end of the month.

2SX-67 also encountered post mineral basalt at bedrock which continued to 264.4 feet where below a strong fault zone sparsely mineralized quartz monzonite porphyry was penetrated. The hole continued in the quartz monzonite porphyry to 641.8 feet where it stood at the end of the month.

2SX-68 penetrated oxidized quartz monzonite porphyry with weak to sparse copper oxide mineralization at bedrock. The base of the oxidation was at 269.4 feet below which sparse primary sulphide mineralization was encountered. The hole bottomed at 336.0 feet in the sparsely mineralized quartz monzonite porphyry.

Sections illustrating progress for January, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. Hall

D. K. HALL
Geologist

DKH:mlc
attachs

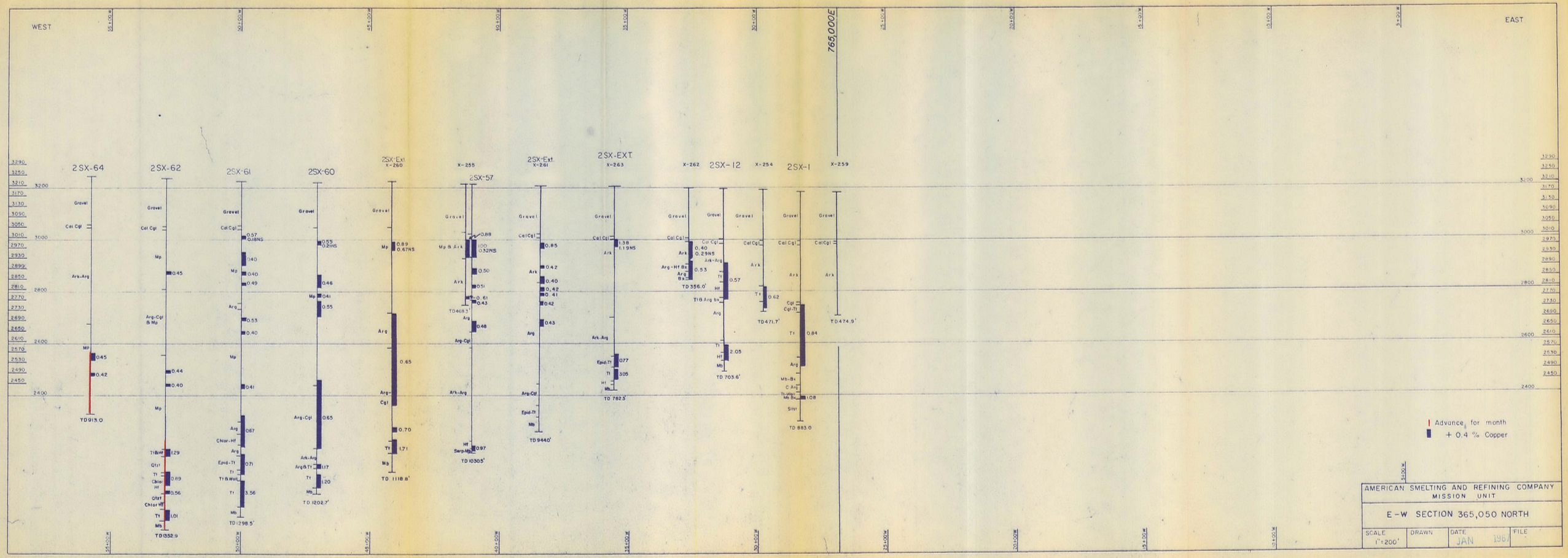
DIAMOND DRILLING - MISSION UNIT
January, 1967

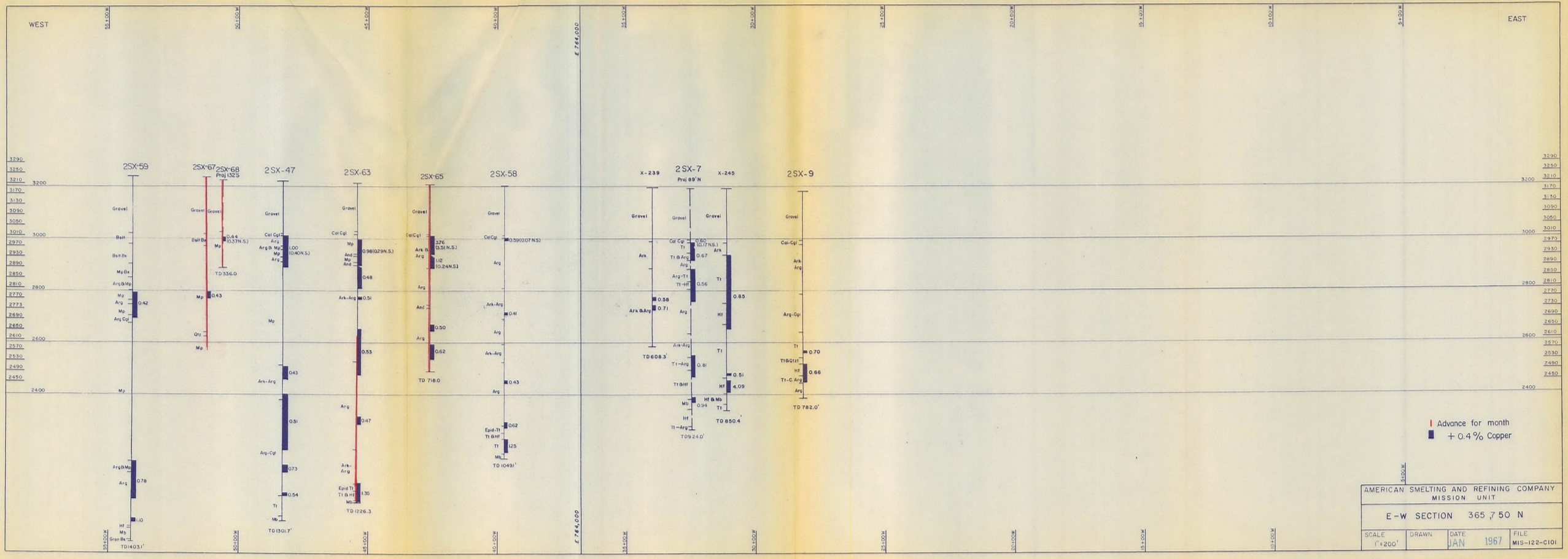
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-62	3,233.4	365,011	762,390	1045.4-1073.6	28.2	1.29				
				1131.3-1186.2	54.9	0.89				
				1206.8-1217.1	10.3	0.56				
				1280.2-1321.3	41.1	1.01		345.9	1,352.9	1,352.9
2SX-63	3,213.1	365,751	763,133	586.8- 736.7	149.9	0.54				
				897.7- 927.9	30.2	0.47				
				1152.9-1226.3	73.4	1.35		639.5	1,226.3	1,226.3
2SX-64	3,242.2	365,006	762,100	679.5- 707.2	27.7	0.45				
				767.0- 777.7	10.7	0.42		236.6	913.0	913.0
2SX-65	3,207.2	365,761	763,414	197.4- 263.6	66.2	3.76	3.51			
				263.6- 322.6	59.0	1.12	0.24			
				536.2- 560.4	24.2	0.50				
				612.8- 668.5	55.7	0.62		718.0	718.0	718.0
2SX-66	3,219.8	365,991	762,984	455.1- 501.6	46.5	0.47				
				567.7- 711.9	144.2	0.50		711.9	711.9	
2SX-67	3,233.7	365,751	762,553	442.3- 465.9	23.6	0.43		641.8	641.8	
2SX-68	3,226.0	365,618	762,615	215.3- 233.1	17.8	0.44	0.37	336.0	336.0	336.0
					863.6			3,629.7		

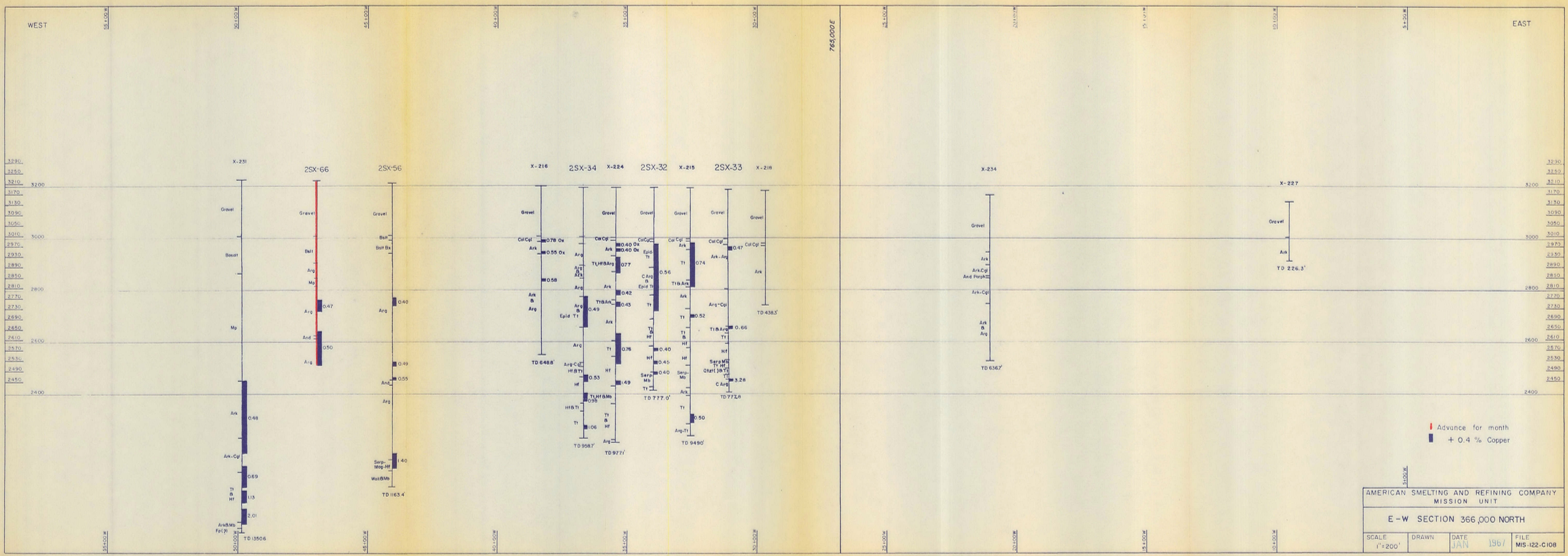
NOTE: Because the South San Xavier copper oxide zone adjacent to the Banner property is potential acid leach ore, the non-sulphide assays on the core in this zone are now being run by the sulfuric acid assay method and all previous non-sulphide assays in this zone are being rerun by this method.

EXPLANATION OF ABBREVIATIONS ON SECTIONS

Cal. Cgl.	-	Caliche Conglomerate (Overburden)
Arg.	-	Argillite
Cgl.	-	Conglomerate
Tt.	-	Tactite
Hf.	-	Hornfels
Mb.	-	Marble
C. Arg.	-	Calcareous Argillite
N.S.	-	Non Sulfide
T.D.	-	Total Depth
And.	-	Andesite
Bx.	-	Breccia
Mp.	-	Metaporphyry
Gyp.	-	Gypsum
Gr.	-	Granite


WEST
EAST
765,000E
2SX-64
2SX-62
2SX-61
2SX-60
2SX-Ext. X-260
X-255
2SX-57
2SX-Ext. X-261
2SX-EXT. X-263
X-262
2SX-12
X-254
2SX-1
X-259
TD 913.0
TD 1352.9
TD 1298.5'
TD 1202.7'
TD 1118.8'
TD 468.3'
TD 10305'
TD 9440'
TD 7823'
TD 356.0'
TD 703.6'
TD 471.7'
TD 883.0
TD 474.9'
Gravel
Cal Cgl
Ark-Arg
Mp
Arg-Cgl & Mp
Arg
Arg-Cgl
Epid-Tt
Tt
Mb
Ark
Hf
Serp-Mb
Tt & Arg bx
Tt & Wel
Mb-Bx
C Arg
Silst
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE 1"=200'
DRAWN
DATE JAN 1967
FILE


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 764,000
2SX-59
2SX-67
2SX-68
Proj 132S
2SX-47
2SX-63
2SX-65
2SX-58
X-239
2SX-7
Proj 89'N
X-245
2SX-9
Gravel
Bslt
Bslt Bx
Mp Bx
Arg & Mp
Mp
Arg
Arg Cgl
Qtz
Arg & Mp
Hf
Mb
Gran Bx
TD 1403.1'
TD 336.0
Col Cgl
Arg & Mp
And
Ark-Arg
Arg-Cgl
Ti
TD 1301.7'
Epid-Ti
Ti & Hf
TD 1226.3
Ark
Ark & Arg
Ti & Arg
Arg-Ti
Ti-Hf
Ti-Arg
Ti & Hf
TD 608.3'
TD 718.0
TD 1049.1'
Hf & Mb
TD 924.0'
TD 850.4'
Ti Qtz
Ti-C Arg
TD 782.0'
0.42
0.43
0.44 (0.37N.S.)
1.00 (0.40N.S.)
0.98 (0.29N.S.)
0.48
0.51
0.53
0.47
1.35
0.78
1.10
0.43
0.51
0.73
0.54
3.76 (0.51N.S.)
1.12 (0.24N.S.)
0.50
0.62
0.59 (0.07N.S.)
0.41
0.43
0.62
1.25
0.60 (0.17N.S.)
0.67
0.56
0.58
0.71
0.85
0.81
0.94
0.51
4.09
0.70
0.66
Advance for month
+0.4% Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,750 N
SCALE 1"=200'
DRAWN
DATE JAN 1967
FILE MIS-122-C101



AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT

E-W SECTION 366,000 NORTH

SCALE	DRAWN	DATE	FILE
1" = 200'		JAN 1967	MIS-122-C108

J H.C.
MAR 2 - 1967

DIAMOND DRILLING - MISSION UNIT
February, 1967

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu Depth	Intersections Interval	Average Total	% Cu N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-66	3,219.8	365,991	762,984	711.9-742.3	30.4	0.41	-			
				786.8-796.8	10.0	0.60	-	138.1	850.0	850.0
2SX-67	3,233.7	365,751	762,553	893.7-905.3	11.6	0.69	-			
				1000.0-1364.8	364.8	0.62	-	759.6	1,401.4	1,401.4
2SX-69	3,202.9	365,846	763,551	199.3-261.5	62.2	0.89	0.82	353.0	353.0	353.0
2SX-70	3,211.7	365,662	762,980	215.9-245.0	29.1	0.78	0.57			
				245.0-264.2	19.2	0.99	0.11	322.0	322.0	322.0
2SX-71	3,208.4	365,838	763,278	196.6-272.0	75.4	1.32	1.22			
				309.0-319.0	10.0	0.40	-	359.0	359.0	359.0
2SX-72	3,218.1	365,362	762,983	222.6-273.8	51.2	0.67	0.06	329.0	329.0	329.0
M-136*	2,954.0	-	-	-	-	-	-	360.0	360.0	
					663.9 feet			2,620.7 feet		

360
2260

*Elevation approximate, Location-1650' E, 230' S of NW corner of Section 33, T 16S, R 13E

3630
5890

J H.C.
MAR 2 - 1967

DIAMOND DRILLING - MISSION UNIT
February, 1967

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu Depth	Intersections Interval	Average Total	% Cu N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-66	3,219.8	365,991	762,984	711.9-742.3	30.4	0.41	-			
				786.8-796.8	10.0	0.60	-	138.1	850.0	850.0
2SX-67	3,233.7	365,751	762,553	893.7-905.3	11.6	0.69	-			
				1000.0-1364.8	364.8	0.62	-	759.6	1,401.4	1,401.4
2SX-69	3,202.9	365,846	763,551	199.3-261.5	62.2	0.89	0.82	353.0	353.0	353.0
2SX-70	3,211.7	365,662	762,980	215.9-245.0	29.1	0.78	0.57			
				245.0-264.2	19.2	0.99	0.11	322.0	322.0	322.0
2SX-71	3,208.4	365,838	763,278	196.6-272.0	75.4	1.32	1.22			
				309.0-319.0	10.0	0.40	-	359.0	359.0	359.0
2SX-72	3,218.1	365,362	762,983	222.6-273.8	51.2	0.67	0.06	329.0	329.0	329.0
M-136*	2,954.0	-	-	-	-	-	-	360.0	360.0	
					663.9 feet			2,620.7 feet		

360
2260

*Elevation approximate, Location-1650' E, 230' S of NW corner of Section 33, T 16S, R 13E

3630
5890

J. H. C.
FEB 6 1967

DIAMOND DRILLING - MISSION UNIT
January, 1967

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-62	3,233.4	365,011	762,390	1045.4-1073.6	28.2	1.29				
				1131.3-1186.2	54.9	0.89				
				1206.8-1217.1	10.3	0.56				
				1280.2-1321.3	41.1	1.01		345.9	1,352.9	1,352.9
2SX-63	3,213.1	365,751	763,133	586.8-736.7	149.9	0.54				
				897.7-927.9	30.2	0.47				
				1152.9-1226.3	73.4	1.35		639.5	1,226.3	1,226.3
2SX-64	3,242.2	365,006	762,100	679.5-707.2	27.7	0.45				
				767.0-777.7	10.7	0.42		236.6	913.0	913.0
2SX-65	3,207.2	365,761	763,414	197.4-263.6	66.2	3.76	1.79			
				263.6-322.6	59.0	1.12	0.40			
				536.2-560.4	24.2	0.50				
				612.8-668.5	55.7	0.62		718.0	718.0	718.0
2SX-66*	3,219.8	365,991	762,984	455.1-501.6	46.5	0.47		711.9	711.9	
2SX-67*	3,233.7	365,751	762,553	442.3-465.9	23.6	0.43		641.8	641.8	
2SX-68	3,226.0	365,618	762,615	Assays Incomplete At Present				336.0	336.0	336.0
					701.6 Feet			3,629.7 Feet		

* Assays Incomplete At Present

JER

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
January 6, 1967

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

J. H. C.
JAN 16 1967

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during December amounted to 4,253.0 feet. Four holes, 2SX-59, 2SX-60, 2SX-61 and 2SX-(Ext. X-253) were completed. Drilling commenced on holes 2SX-62, 2SX-63 and 2SX-64.

Drilling continues to be confined to the generally low grade sulphide ore zone on Tract 2 of the San Xavier Reservation adjacent to the Banner property.

2SX-(Ext. X-253), located on the east side of the low grade sulphide ore zone, penetrated a lengthy run of low ore grade material at moderate depth.

2SX-59, situated on the west side of the low grade sulphide ore zone, continued for a short distance in the deep lengthy moderate ore grade run first encountered in November.

2SX-60, positioned adjacent to the Banner property line on the low grade sulphide ore zone, penetrated a lengthy moderate ore grade run and two short high ore grade runs at considerable depth.

2SX-61, located adjacent to the Banner property, encountered three modest runs, two of moderate ore grade material and one of very high ore grade material at considerable depth.

2SX-62, also situated adjacent to the Banner property, had encountered no significant ore grade material by the end of the month.

2SX-63, located on the central area of the low grade sulphide ore zone, penetrated a modest run of high oxide grading to mixed oxide and chalcocite ore at bedrock. Immediately below the secondary ore zone, a modest run of low sulphide ore was encountered. The hole was continuing in a moderate ore grade run at the end of the month.

2SX-64, positioned adjacent to the Banner property on the west side of the low grade sulphide ore zone, had penetrated no ore grade material by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-(Ext. X-253) encountered sparse to moderately mineralized argillite occasionally showing a fine grained arkosic texture at the bottom of the original hole. Below 650.0 feet, the mineralization in the argillite graded from sparse to weak and the hole bottomed in weakly mineralized argillite at 881.0 feet.

2SX-59 continued in moderate to strongly mineralized argillite to 1240.0 feet where the mineralization became very weak. At 1345.0 feet, a 5.0 foot zone of brecciated hornfels was penetrated below which a fine grained marble with very weak copper mineralization was encountered. The hole penetrated the basement thrust fault zone containing fragments of brecciated granite at 1397.0 feet and bottomed in this fault zone at 1403.1 feet.

2SX-60 continued in sparsely mineralized quartz monzonite porphyry to 782.2 feet where moderately mineralized conglomeritic argillite was penetrated. At 1027.1 feet, medium grained weakly mineralized arkosic argillite was encountered and continued to 1087.8 feet where the rock type graded to weak to strongly mineralized tactite. Barren marble was penetrated at 1128.5 feet and the hole bottomed in this rock type at 1202.7 feet.

2SX-61 remained in sparsely mineralized quartz monzonite porphyry to 930.8 feet where moderately mineralized argillite was encountered. At 976.1 feet, a 44.8 foot zone of chlorite rich moderate to strongly mineralized hornfels was penetrated below which weakly mineralized argillite was encountered. Moderately grading to sparsely then very strongly mineralized tactite was penetrated at 1061.0 feet. The hole bottomed in barren marble which was encountered at 1259.0 feet below the very strongly mineralized tactite.

2SX-62 penetrated a 100.0 foot zone of oxidation in quartz monzonite porphyry with no significant copper oxide values. Below the zone of oxidation, the hole continued in sparsely mineralized quartz monzonite porphyry containing a 250.0 foot zone of very strongly altered, sparsely mineralized argillite at 424.5 feet to a depth of 1007.0 feet where the hole stood at the end of the month.

2SX-63 encountered a 40 foot zone of strong oxidation with good copper oxides at bedrock and immediately below this a 80.0 foot zone with sparse oxidation and moderate chalcocite enrichment in quartz monzonite porphyry at bedrock. At 316.9 feet, below the secondary mineralization, moderate grading to sparsely mineralized fine grained argillite was penetrated. The argillite became again moderately mineralized at 559.3 feet and the hole stood at 586.8 feet in the moderately mineralized argillite at the end of the month.

2SX-63, which did not encounter any significant copper oxidation at bedrock, penetrated sparsely mineralized argillite at bedrock and continued in the argillite to 569.5 feet where sparsely mineralized quartz monzonite was encountered. The hole stood at 676.4 feet in the quartz monzonite at the end of the month.

Sections illustrating progress for December, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D K Hall

D. K. HALL
Geologist

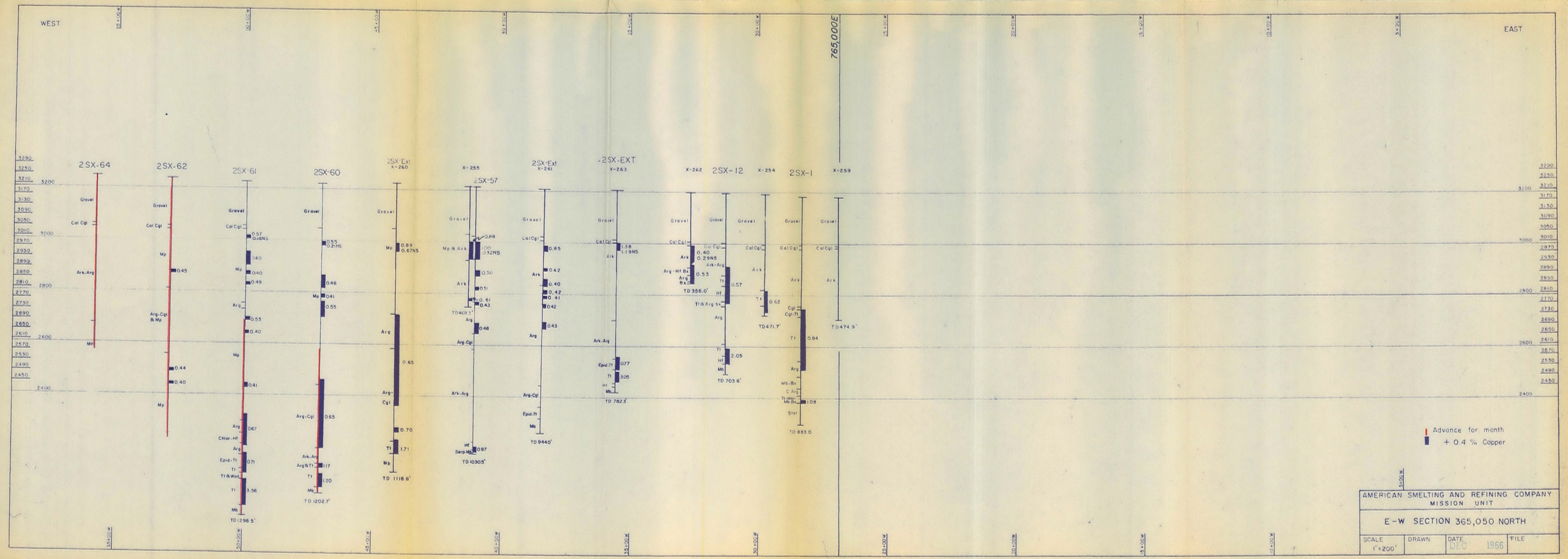
DKH:vnt
attachs

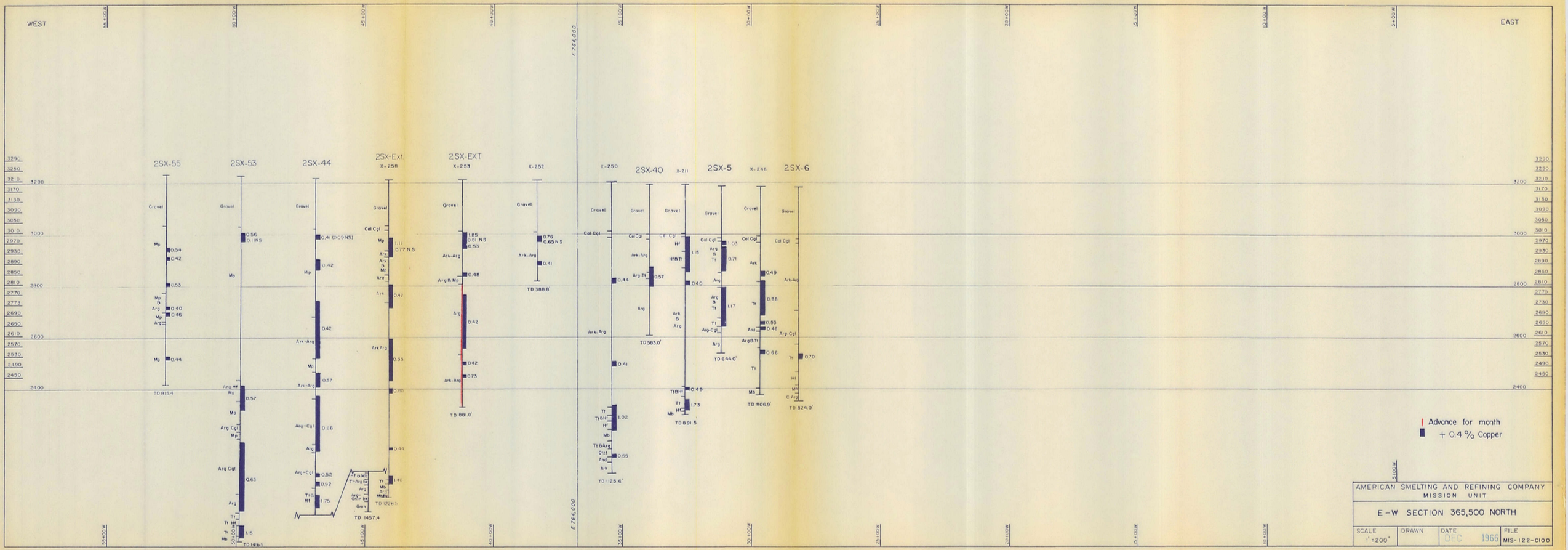
EXPLANATION OF ABBREVIATIONS ON SECTIONS

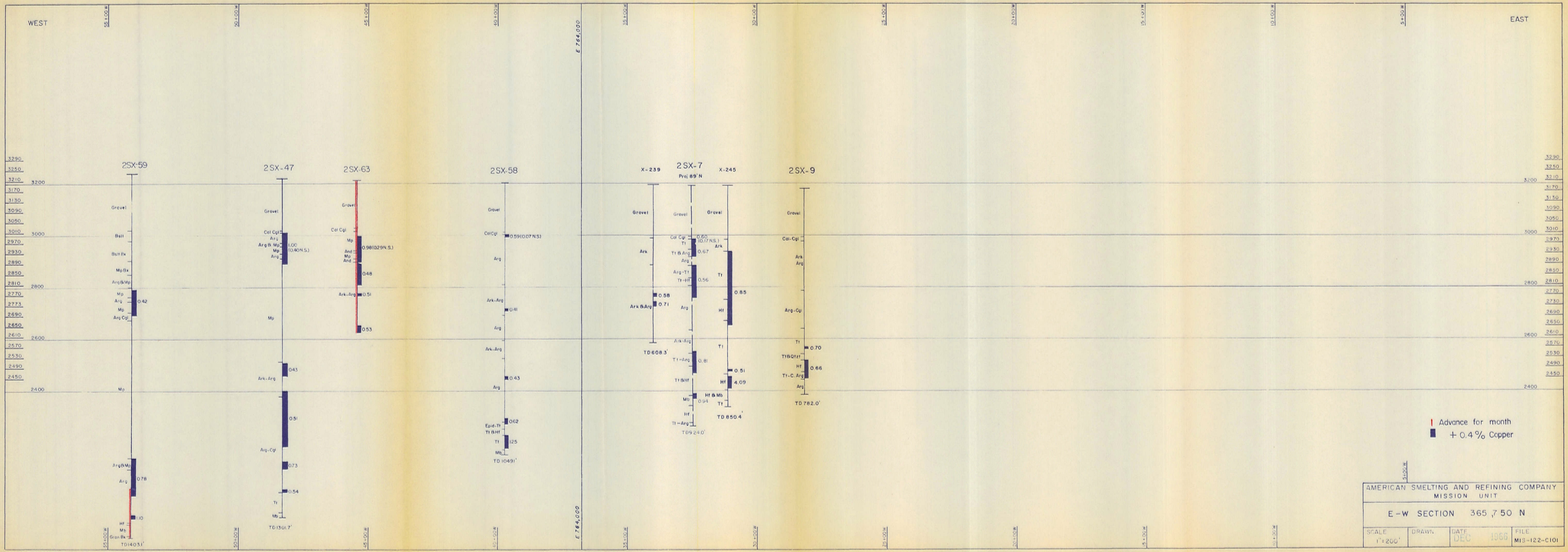
Cal. Cgl.	-	Caliche Conglomerate (Overburden)
Arg.	-	Argillite
Cgl.	-	Conglomerate
Tt.	-	Tactite
Hf.	-	Hornfels
Mb.	-	Marble
C. Arg.	-	Calcareous Argillite
N.S.	-	Non Sulfide
T.D.	-	Total Depth
And.	-	Andesite
Bx.	-	Breccia
Mp.	-	Metaporphyry
Gyp.	-	Gypsum
Gr.	-	Granite

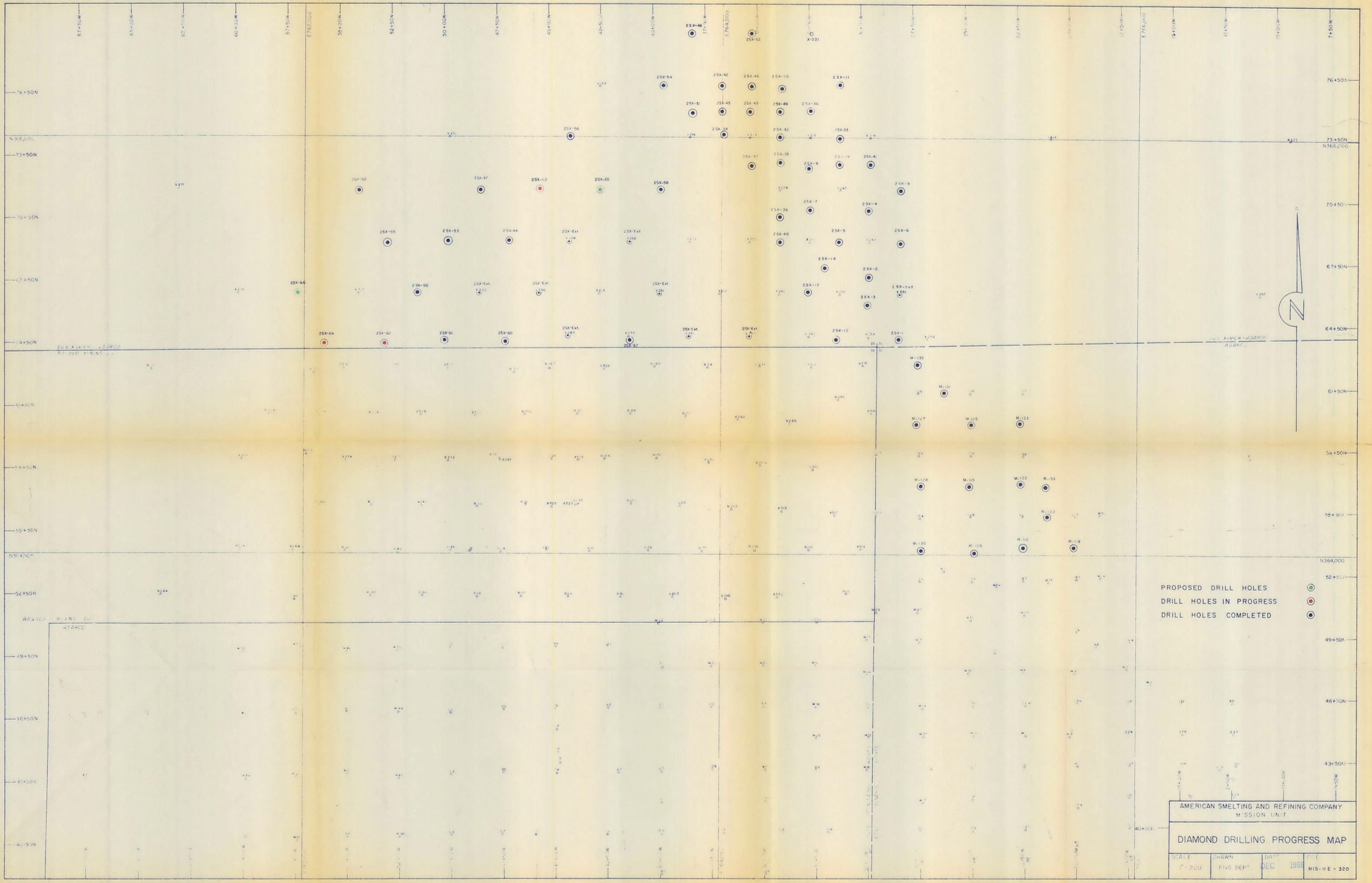
DIAMOND DRILLING - MISSION UNIT
December, 1966

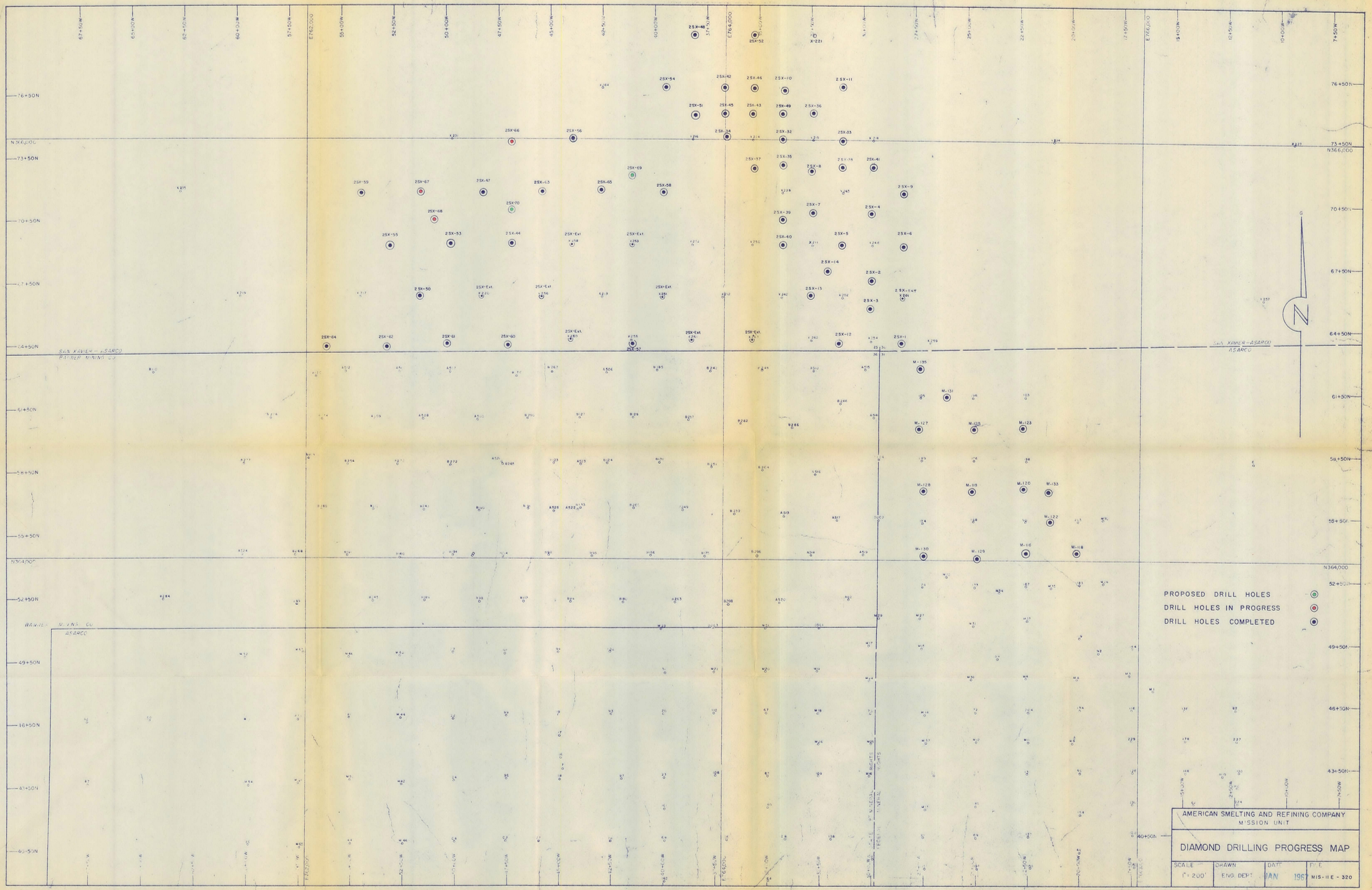
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX (Ext-X-253)	3,210.2	365,500	763,557	444.6-653.5	208.9	0.42				
				705.6-717.0	11.4	0.42				
				757.6-767.6	10.0	0.73		478.8	881.0	881.0
2SX-59	3,238.8	365,747	762,265	1209.4-1239.8	30.4	1.54				
				1314.4-1324.7	10.3	1.10		193.7	1,403.1	1,403.1
2SX-60	3,221.1	365,017	762,972	762.6-1027.1	264.5	0.65				
				1087.8-1103.6	15.8	1.17				
				1124.1-1178.3	54.2	1.20		552.6	1,202.7	1,202.7
2SX-61	3,226.3	365,025	762,679	580.1-590.8	10.7	0.40				
				784.0-800.3	16.3	0.41				
				894.0-1026.5	132.5	0.67				
				1053.0-1132.2	79.2	0.71				
				1156.3-1257.8	101.5	3.56		757.7	1,298.5	1,298.5
2SX-62	3,233.4	365,011	762,390	358.9-369.9	11.0	0.45				
				738.9-750.6	11.7	0.44				
				789.9-799.9	10.0	0.40		1,007.0	1,007.0	
2SX-63	3,213.1	365,751	763,133	216.2-316.9	100.7	0.98	0.29			
				316.9-402.6	85.7	0.48				
				434.9-445.9	11.0	0.51				
				559.3-586.8	27.5	0.53		586.8	586.8	
2SX-64	3,242.2	365,006	762,100		No Ore Grade Runs			676.4	676.4	
					1,203.3 Feet			4,253.0 Feet		


WEST
EAST
765,000E
2SX-64
2SX-62
2SX-61
2SX-60
2SX-Ext
X-260
X-255
2SX-57
2SX-Ext
X-261
-2SX-EXT
X-263
X-262
2SX-12
X-254
2SX-1
X-259
TD 1298.5'
TD 1202.7'
TD 1118.8'
TD 10305'
TD 9440'
TD 782.3'
TD 356.0'
TD 703.6'
TD 471.7'
TD 474.9'
TD 883.0
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE
1"=200'
DRAWN
DATE
DEC 1966
FILE


WEST
EAST
2SX-55
2SX-53
2SX-44
2SX-Ext
X-258
2SX-EXT
X-253
X-252
X-250
2SX-40
X-211
2SX-5
X-246
2SX-6
TD 815.4
TD 1465
TD 1457.4
TD 1225
TD 881.0'
TD 388.8'
TD 1125.6'
TD 583.0'
TD 891.5
TD 644.0'
TD 806.9'
TD 824.0'
E 784,000
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,500 NORTH
SCALE 1"=200'
DRAWN
DATE DEC 1966
FILE MIS-122-C100


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 784,000
E 785,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-59
Gravel
Bslt
Bslt Bx
Mp Bx
Arg & Mp
Mp
Arg
Mp
Arg Cgl
0.42
Mp
Arg & Mp
Arg
0.78
1.0
Hf
Mb
Gran Bx
TD 1403.1'
2SX-47
Gravel
Col Cgl
Arg
Arg & Mp
Mp
Arg
1.00 (0.40 N.S.)
Mp
0.43
Ark-Arg
0.51
Arg-Cgl
0.73
0.54
Tt
Mb
TD 1301.7'
2SX-63
Gravel
Col Cgl
Mp
And
Mp
And
0.98 (0.29 N.S.)
0.48
Ark-Arg
0.51
0.53
2SX-58
Gravel
Col Cgl
0.59 (0.07 N.S.)
Arg
Ark-Arg
0.41
Arg
Ark-Arg
0.43
Arg
Epid-Tt
Tt & Hf
0.62
Tt
1.25
Mb
TD 1049.1'
X-239
Gravel
Ark
0.58
Ark & Arg
0.71
TD 608.3'
2SX-7
Proj. 89' N
Gravel
Col Cgl
Tt
0.60 (0.17 N.S.)
Tt & Arg
0.67
Arg
Arg-Tt
Tt-Hf
0.56
Arg
Ark-Arg
Tt-Arg
0.81
Tt & Hf
Mb
0.94
Hf
Tt-Arg
TD 924.0'
X-245
Gravel
Ark
Tt
0.85
Hf
Tt
0.51
Hf
4.09
Hf & Mb
Tt
TD 850.4'
2SX-9
Gravel
Col-Cgl
Ark
Arg
Arg-Cgl
Tt
0.70
Tt & Qtzt
Hf
0.66
Tt-C. Arg
Arg
TD 782.0'
Advance for month
+ 0.4% Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,750 N
SCALE 1"=200'
DRAWN
DATE DEC 1966
FILE MIS-122-C101


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1" = 200'
DRAWN
ENG. DEPT
DATE
DEC 1968
FILE
MIS-11E-320
N366,000
N364,000
E762,000
E764,000
E766,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
67+50W
65+00W
62+50W
60+00W
57+50W
55+00W
52+50W
50+00W
47+50W
45+00W
42+50W
40+00W
37+50W
35+00W
32+50W
30+00W
27+50W
25+00W
22+50W
20+00W
17+50W
15+00W
12+50W
10+00W
7+50W
25X-46
25X-52
X-221
25X-54
25X-42
25X-46
25X-10
25X-11
25X-51
25X-45
25X-43
25X-49
25X-36
25X-56
25X-34
25X-32
25X-33
25X-37
25X-35
25X-8
25X-41
25X-59
25X-47
25X-63
25X-65
25X-58
25X-9
25X-7
25X-4
25X-39
25X-55
25X-53
25X-44
25X-Ext.
25X-40
25X-5
25X-6
25X-14
25X-66
25X-50
25X-2
25X-13
25X-EXT
25X-3
25X-64
25X-62
25X-61
25X-60
25X-57
25X-12
25X-1
SAN XAVIER - ASARCO
BAUER MINING CO.
M-135
M-131
M-127
M-125
M-123
M-128
M-119
M-120
M-133
M-122
M-130
M-129
M-116
M-118
ASARCO


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
SAN XAVIER - ASARCO
BARNER MINING CO.
ASARCO
E762,000
E764,000
E766,000
N366,000
N364,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
67+50W
65+00W
62+50W
60+00W
57+50W
55+00W
52+50W
50+00W
47+50W
45+00W
42+50W
40+00W
37+50W
35+00W
32+50W
30+00W
27+50W
25+00W
22+50W
20+00W
17+50W
15+00W
12+50W
10+00W
7+50W
5+00W
2+50W
0+00W
2+50E
5+00E
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE 1" = 200'
DRAWN ENG. DEPT.
DATE JAN 1967
FILE MIS-IIE-320

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
December 9, 1966

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

J. H. C.
DEC 12 1966

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during November amounted to 3,883.3 feet. Three holes, 2SX-(Ext. X-220), 2SX-(Ext. X-256) and 2SX-(Ext. X-258) were completed. Drilling commenced on holes 2SX-59, 2SX-60 and 2SX-61.

Drilling was confined during November to the generally low grade sulphide ore zone on Tract 2 of the San Xavier Reservation adjacent to the Banner property.

2SX-59, located on the west side and near the north end of the low grade sulphide ore zone, encountered a modest run of low ore grade material at moderate depth and was continuing in a modest run of moderate ore grade material at considerable depth at the end of the month.

2SX-60, situated adjacent to the Banner property line on the low grade sulphide ore zone, had penetrated a modest amount of low ore grade material at moderate depth by the end of the month.

2SX-61, also situated adjacent to the Banner property line on the low grade sulphide ore zone, encountered a small amount of low grade material at moderate depth before the end of the month.

2SX-(Ext. X-220), positioned on the west side of the low grade sulphide ore zone, penetrated a modest amount of moderate ore grade material at considerable depth.

2SX-(Ext. X-256), located on the central area of the low grade sulphide ore zone, continued for a short distance in the deep lengthy moderate ore grade run first encountered in October. A modest run of very high ore grade material was also encountered in the hole at considerable depth.

2SX-(Ext. X-258), situated toward the eastern side of the central portion of the low grade sulphide ore zone, penetrated a 456.6 foot zone of marginal ore grade material (0.44 percent copper) at 404.0 feet below the surface. A very short high ore grade run was encountered at considerable depth in this hole.

GEOLOGIC LOG OF HOLES

2SX-59 - penetrated post mineral basalt at bedrock and continued in the basalt to 335.8 feet where, below a very strong fault, altered and sparsely mineralized quartz monzonite porphyry was encountered. Below 404.3 feet numerous blocks of sparse to moderately mineralized argillite were found included in the quartz monzonite porphyry to a depth of 562.9 feet. The base of the quartz monzonite porphyry sill was encountered at 1,105.4 feet below which moderately mineralized argillite was penetrated. The hole continued in the moderately mineralized argillite to a depth of 1,209.4 feet where it stood at the end of the month.

2SX-60 - encountered a 94.5 foot zone of oxidation in altered quartz monzonite porphyry at bedrock with no significant copper oxide values present. The hole continued, below the zone of oxidation, in sparse to moderately mineralized quartz monzonite porphyry to a depth of 650.1 feet where it stood at the end of the month.

2SX-61 - penetrated altered, leached quartz monzonite porphyry with no significant copper oxide values at bedrock. Below the base of the zone oxidation at 233.9 feet the hole continued in sparsely mineralized quartz monzonite porphyry to a depth of 540.8 feet where it stood at the end of the month.

2SX-(Ext. X-220) - continued in sparse, occasionally moderately mineralized quartz monzonite porphyry to 944.8 feet where sparse to moderately mineralized conglomeratic argillite was penetrated. Below a low angle fault at1,046.4 feet the mineralization in the argillite became very weak. At 1,160.3 feet, 40.9 feet of strong grading to weakly mineralized tactite was encountered below which barren marble was penetrated. The hole bottomed in the barren marble at 1,226.0 feet.

2SX-(Ext. X-256) - remained in moderately mineralized conglomeratic argillite to 1,035.0 feet where very strongly mineralized, fine grained, soft hornfels with a few pods of tactite was encountered. At 1,115.3 feet a very weakly mineralized, serpentine rich marble was penetrated and the hole bottomed in this rock type at 1,226.4 feet.

2SX-(Ext. X-258) - encountered sparse to moderately mineralized occasionally arkosic argillite at the bottom of the original hole. The hole continued in the arkosic argillite, with the mineralization decreasing slightly below 860.6 feet, to 1,159.0 feet where an 18 foot zone of strongly mineralized tactite was penetrated. Below the tactite 21.0 feet of barren marble was encountered. The hole passed through a weak, possibly low angle fault zone at 1,198.0 feet and bottomed in a very weakly mineralized light gray, fine grained argillite at 1,201.5 feet.

Sections illustrating progress for November, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. Hall

D. K. HALL
Geologist

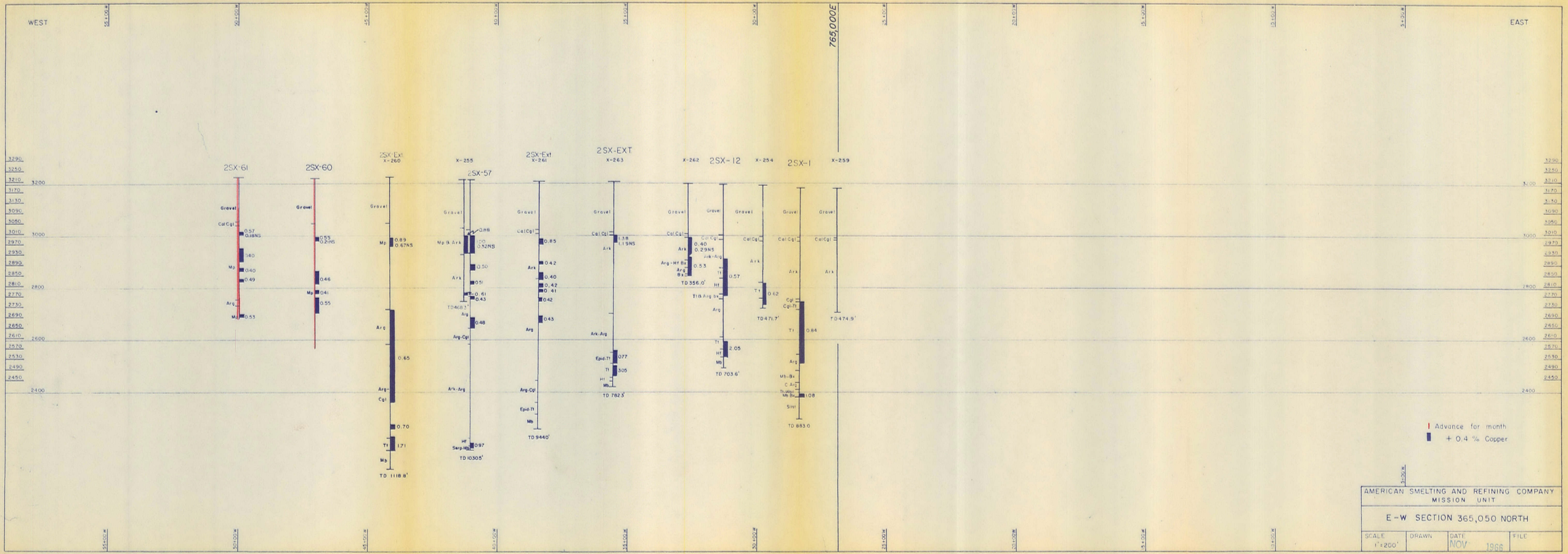
DKH:mlc

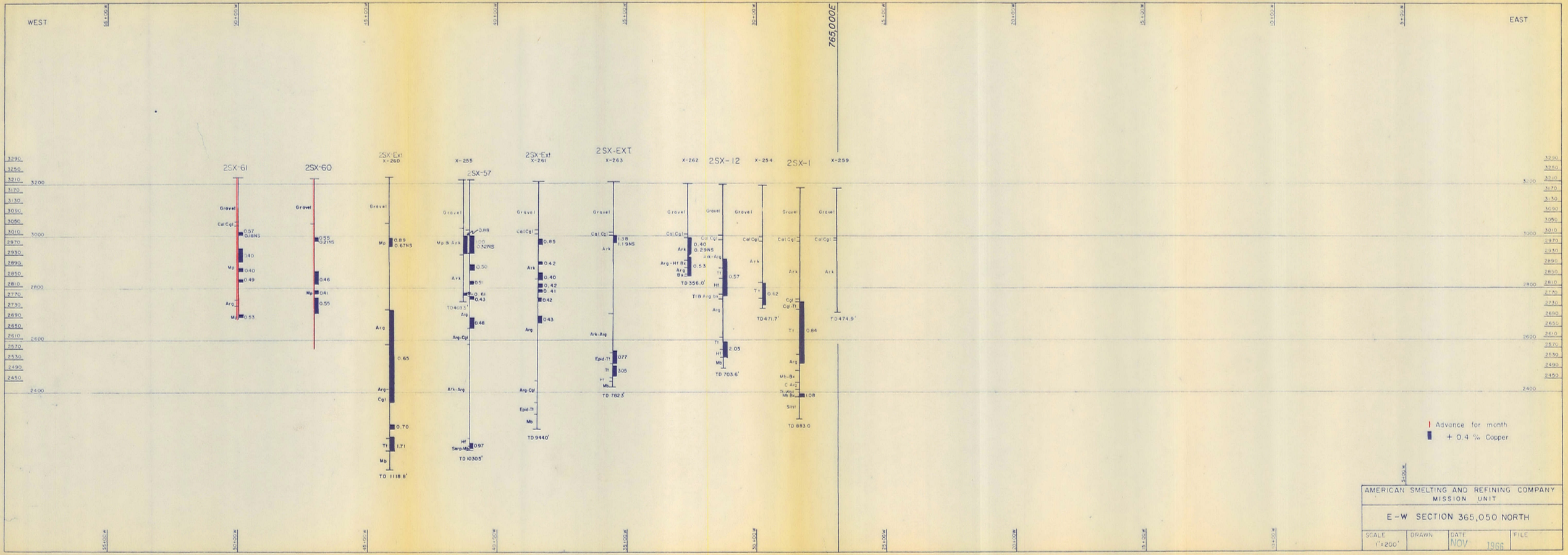
EXPLANATION OF ABBREVIATIONS ON SECTIONS

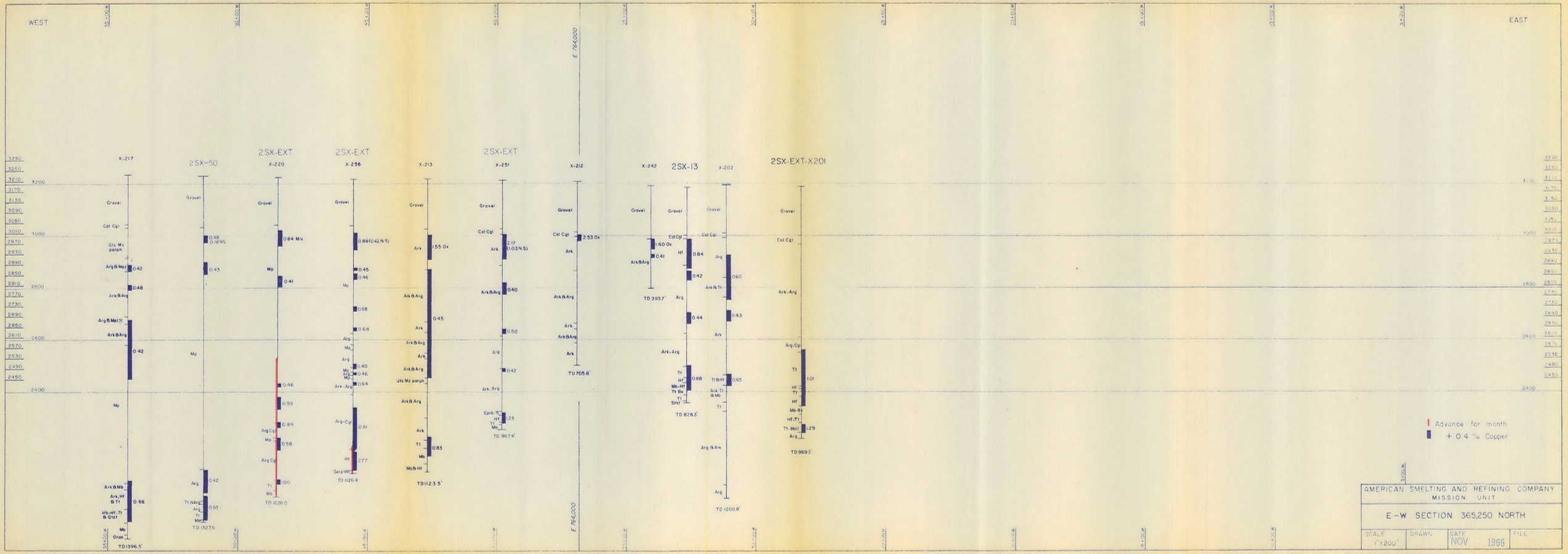
Cal. Cgl.	-	Caliche Conglomerate (Overburden)
Arg.	-	Argillite
Cgl.	-	Conglomerate
Tt.	-	Tactite
Hf.	-	Hornfels
Mb.	-	Marble
C. Arg.	-	Calcareous Argillite
N.S.	-	Non Sulfide
T.D.	-	Total Depth
And.	-	Andesite
Bx.	-	Breccia
Mp.	-	Metaporphyry
Gyp.	-	Gypsum
Gr.	-	Granite

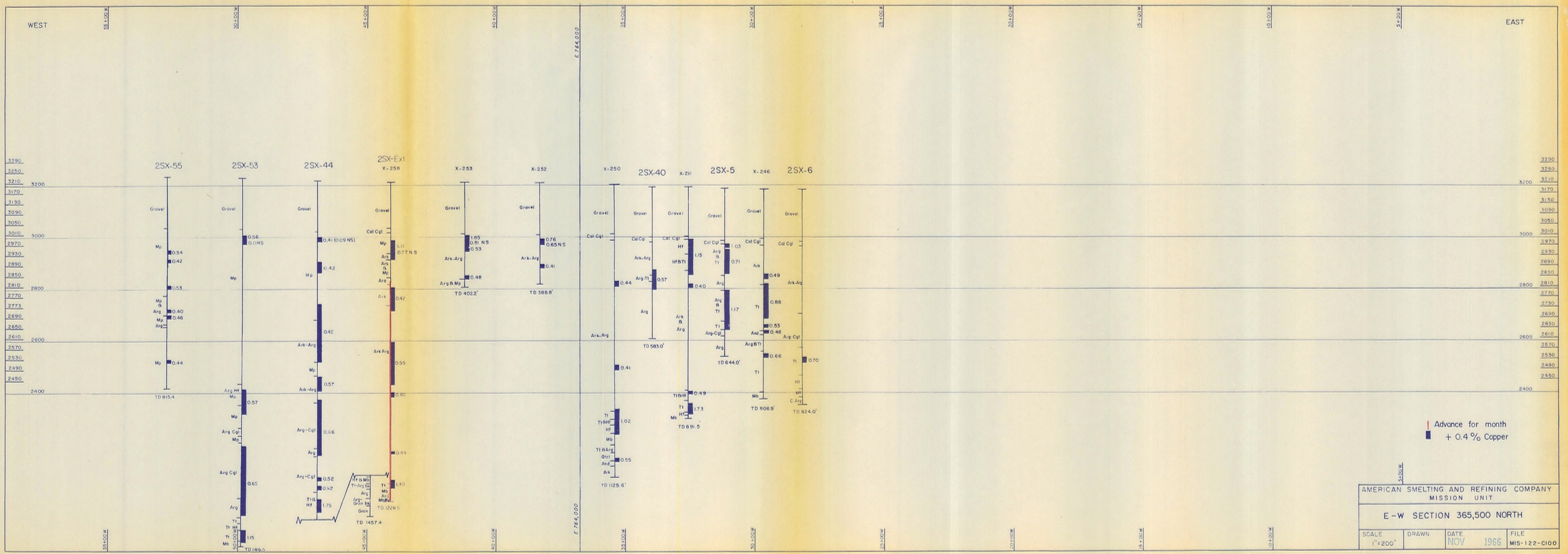
DIAMOND DRILLING - MISSION UNIT
November, 1966

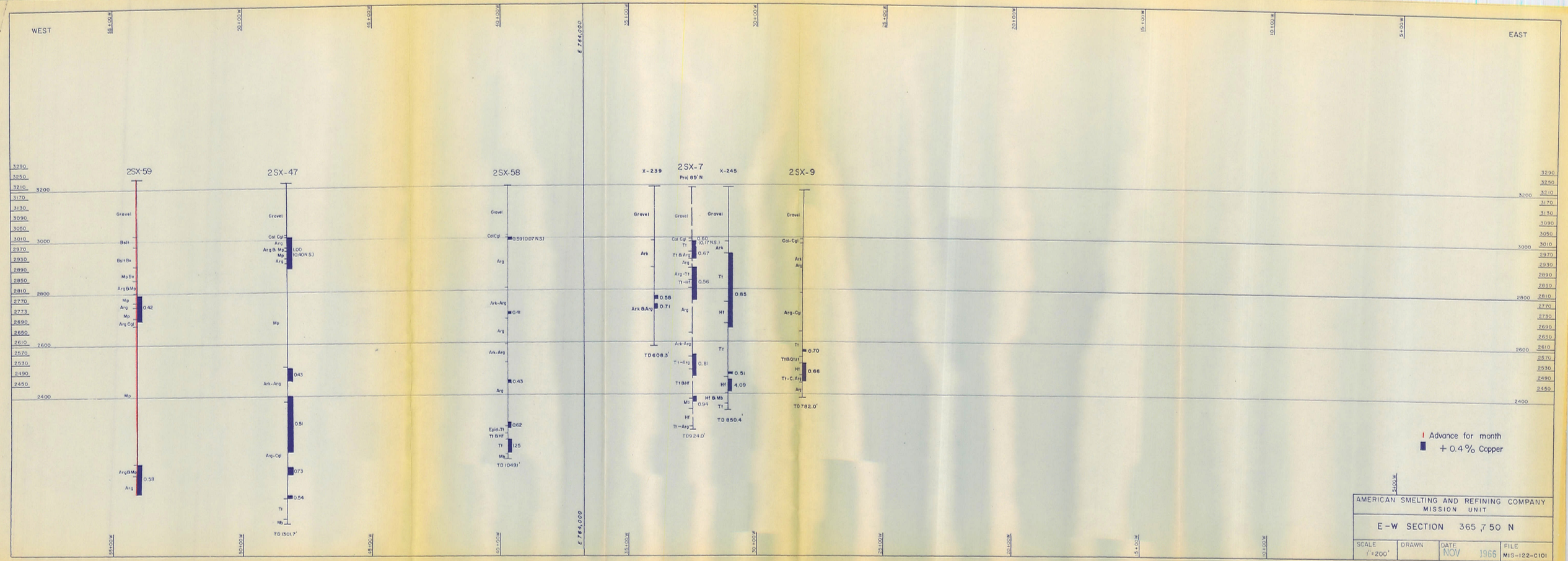
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-59	3,238.8	365,747	762,265	447.0-544.0	97.0	0.42				
				1095.2-1209.4	114.2	0.58				
								1,209.4	1,209.4	-
2SX-60	3,221.1	365,017	762,972	222.7-240.2	17.5	0.55	0.21			
				355.4-406.7	51.3	0.46				
				429.5-441.0	11.5	0.41				
				457.3-523.9	66.6	0.55		650.1	650.1	-
2SX-61	3,226.3	365,025	762,679	209.8-221.9	12.1	0.57	0.18			
				272.9-326.6	53.7	0.40				
				348.0-360.1	12.1	0.40				
				524.9-535.6	10.7	0.53		540.8	540.8	-
2SX-(Ext. X-220)	3,223,3	365,250	762,835	785.7-801.5	15.8	0.46				
				838.8-888.1	49.3	0.59				
				937.6-957.0	19.4	0.89				
				997.8-1046.2	48.4	0.58				
				1156.3-1177.9	21.6	1.00		529.8	1,226.0	1,226.0
2SX-(Ext. X-256)	3,216.3	365,250	763,124	1019.0-1044.7	25.7	0.59				
				1044.7-1116.4	71.7	2.77		107.4	1,126.4	1,126.4
2SX-(Ext. X-258)	3,210.7	365,500	763,268	404.0-497.7	93.7	0.42				
				616.4-779.2	162.8	0.55				
				810.5-827.2	16.7	0.80				
				1037.1-1047.3	10.2	0.44				
				1147.0-1177.0	30.0	1.40		845.8	1,228.5	1,228.5
					1,012.0			3,883.3		


WEST
EAST
765,000E
2SX-61
2SX-60
2SX-Ext
X-260
X-255
2SX-57
2SX-Ext
X-261
2SX-EXT
X-263
X-262
2SX-12
X-254
2SX-1
X-259
Gravel
Cal Cgl
Mp
Arg
Mb
Ark
Arg-Cgl
Ark-Arg
Epid-Tt
Tt
Hf
Serp-Mb
Arg-Hf Bx
Arg Bx
Jus-Arg
Cgl-Tt
Mb-Bx
C Arg
Tt-Wed
Mb Bx
Sint
TD 1118.8'
TD 10305'
TD 9440'
TD 782.3'
TD 356.0'
TD 703.6'
TD 471.7'
TD 883.0
TD 474.9'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE 1" = 200'
DRAWN
DATE NOV 1966
FILE


WEST
EAST
765,000E
2SX-61
2SX-60
2SX-Ext
X-260
X-255
2SX-57
2SX-Ext
X-261
2SX-EXT
X-263
X-262
2SX-12
X-254
2SX-1
X-259
Gravel
Cal Cgl
Mp
Arg
Mb
Ti
Ark
Arg-Cgl
Ark-Arg
Epid-Ti
Hf
Serp-Mb
Cgl
Arg-Hf Bx
Arg Bx
Ti B Arg bx
Cgl-Ti
Mb-Bx
C Arg
Ti-Wac
Mb Bx
Silt
TD 1118.8'
TD 10305'
TD 9440'
TD 782.3'
TD 356.0'
TD 703.6'
TD 471.7'
TD 883.0'
TD 474.9'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE 1"=200'
DRAWN
DATE NOV 1966
FILE


WEST
EAST
E 764,000
X-217
2SX-50
2SX-EXT
X-220
2SX-EXT
X-256
X-213
2SX-EXT
X-251
X-212
X-242
2SX-13
X-202
2SX-EXT-X201
Gravel
Col Cgl
Qtz Mz porph
Arg & Mz
Ark & Arg
Arg & Mb(?)
Mp
Ark & Mb
Ark, Hf & Tt
Mb, Hf, Tt & Qtzt
Grch
TD 1396.5'
Arg
Tt & Arg
TD 1327.6
Mix
TD 1226.0
TD 1126.4
Ox
Qtz Mz porph
TD 1123.5'
Epid-Tc
TD 967.4'
TD 705.8'
TD 593.7'
TD 826.3'
Arg & Ark
TD 1200.8'
Arg-Cgl
Tt
Hf
Mb-Tt
Tt-Wall
TD 969.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,250 NORTH
SCALE 1" = 200'
DRAWN
DATE NOV 1966
FILE


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 764,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-55
2SX-53
2SX-44
2SX-Ex1
X-258
X-253
X-252
X-250
2SX-40
X-211
2SX-5
X-246
2SX-6
Gravel
Col Cgl
Ark-Arg
Arg-Tl
Arg
Arg-Cgl
Tl
Mb
Mp
TD 815.4
TD 1466.5
TD 1457.4
TD 1228.5
TD 402.2'
TD 388.8'
TD 583.0'
TD 891.5'
TD 644.0'
TD 806.9'
TD 824.0'
TD 1125.6'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,500 NORTH
SCALE
1"=200'
DRAWN
DATE
NOV 1966
FILE
MIS-122-C100

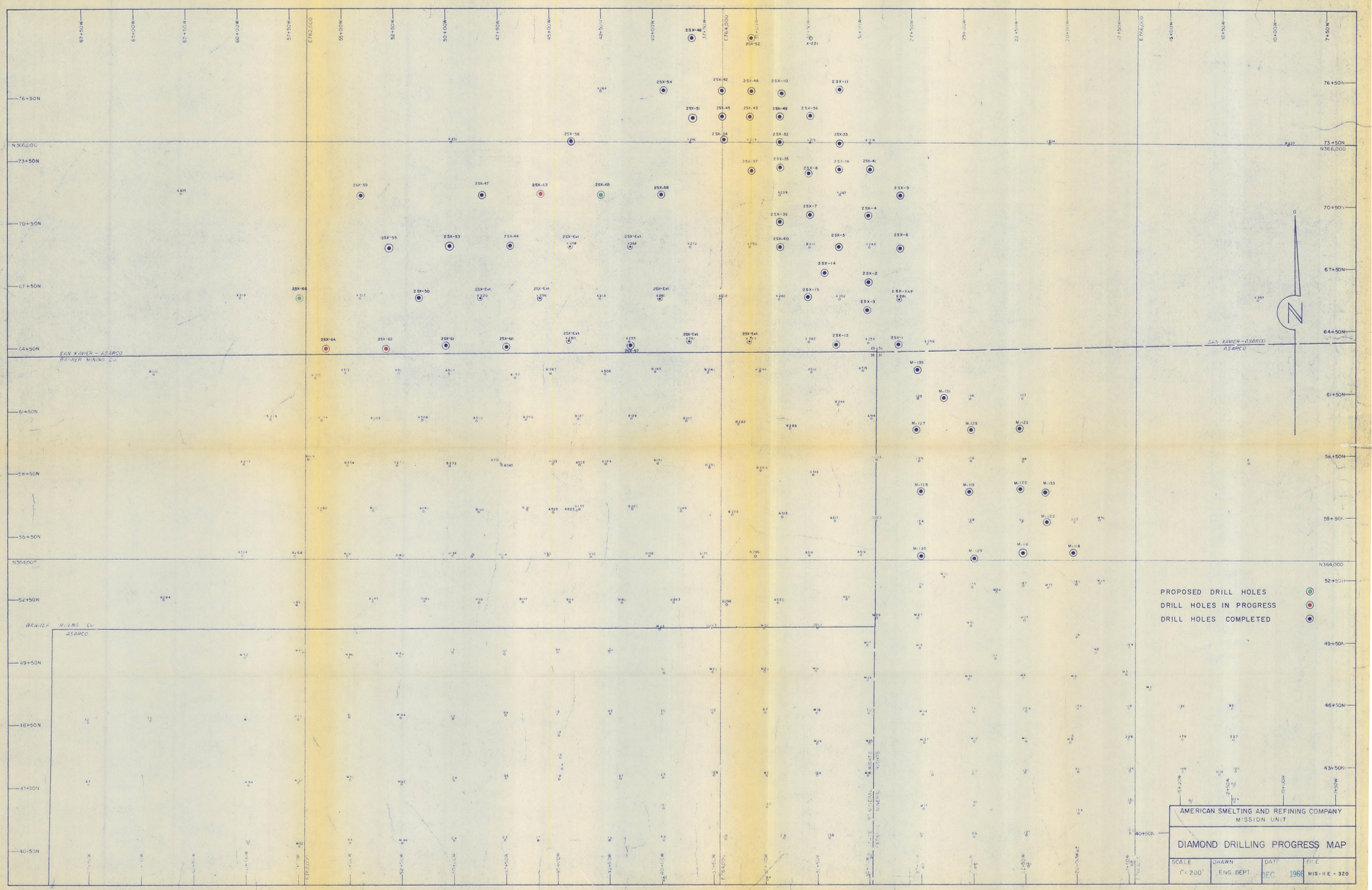

WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 784,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-59
Gravel
Bslt
Bslt Bx
Mp Bx
Arg & Mp
Mp
Arg
Mp
Arg Cgl
0.42
Arg & Mp
Arg
0.58
2SX-47
Gravel
Col Cgl
Arg
Arg & Mp
Mp
Arg
1.00 (0.40 N.S.)
Mp
Ark-Arg
0.43
0.51
Arg-Cgl
0.73
0.54
Ti
Mb
TD 1301.7'
2SX-58
Gravel
Col Cgl
0.59 (0.07 N.S.)
Arg
Ark-Arg
0.41
Arg
Ark-Arg
0.43
Arg
Epid-Ti
Ti & Hf
Ti
1.25
Mb
TD 1049.1'
X-239
Gravel
Ark
0.58
Ark & Arg
0.71
TD 608.3'
2SX-7
Proj 89' N
Gravel
Col Cgl
Ti
0.50 (0.17 N.S.)
Ti & Arg
0.67
Arg
Arg-Ti
Ti-Hf
0.56
Arg
Ark-Arg
Ti-Arg
0.81
Ti & Hf
Mb
0.94
Hf
Ti-Arg
TD 924.0'
X-245
Gravel
Ark
Ti
0.85
Hf
Ti
0.51
Hf
4.09
Hf & Mb
Ti
TD 850.4'
2SX-9
Gravel
Col-Cgl
Ark
Arg
Arg-Cgl
Ti
0.70
Ti & Qtzt
Hf
0.66
Ti-C Arg
Arg
TD 782.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,750 N
SCALE 1" = 200'
DRAWN
DATE NOV 1966
FILE MIS-122-C101

DIAMOND DRILLING - MISSION UNIT

December, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-(Ext-X-253)	3210.2	365,300	763,557	444.6-653.5	208.9	0.42	Nil			
				705.6-717.0	11.4	0.42	Nil			
				757.6-767.6	10.0	0.73	Nil	478.8	881.0	881.0
2SX-59	3238.8	365,747	762,265	1209.4-1239.8	30.4	1.54	Nil			
				1314.4-1324.7	10.3	1.10	Nil	193.7	1403.1	1403.1
2SX-60	3221.1	365,017	762,972	762.6-1027.1	264.5	0.65	Nil			
				1087.8-1103.6	15.8	1.17	Nil			
				1124.1-1178.3	54.2	1.20	Nil	352.6	1202.7	1202.7
2SX-61	3226.3	365,025	762,679	580.1-590.8	10.7	0.40	Nil			
				784.0-800.3	16.3	0.41	Nil			
				894.0-1026.5	132.5	0.67	Nil			
				1053.0-1132.2	79.2	0.71	Nil			
				1156.3-1257.8	101.5	3.56	Nil	757.7	1298.5	1298.5
2SX-62*	3233.4	365,011	762,390	358.9-369.9	11.0	0.45	Nil			
				738.9-750.6	11.7	0.44	Nil			
				789.9-799.9	10.0	0.40	Nil	1007.0	1007.0	-
2SX-63*	3213.1	365,751	763,133	216.2-316.9	100.7	0.96	0.29			
				316.9-402.6	85.7	0.48	Nil			
				434.9-445.9	11.0	0.51	Nil	586.8	586.8	-
2SX-64*	3242.2	365,006	762,100		No Ore Grade Runs			676.4	676.4	-
					1,175.8 feet			4,253.0 feet		

* Assays Incomplete


SAN XAVIER – ASARCO
BANNER MINING CO.
ASARCO
PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1" = 200'
DRAWN
ENG. DEPT.
DATE
DEC 1966
FILE
MIS-IIE-320

DIAMOND DRILLING - MISSION UNIT
November, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-59*	3,238.8	365,747	762,265	447.0-544.0	97.0	0.42				
				1095.2-1128.8	33.6	0.56				
								1,209.4	1,209.4	-
2SX-60*	3,221.1	365,017	762,972	222.7-240.2	17.5	0.55	0.21			
				355.4-406.7	51.3	0.46				
				429.5-441.0	11.5	0.41				
				457.3-523.9	66.6	0.55		650.1	650.1	-
2SX-61*	3,226.3	365,025	762,679	209.8-221.9	12.1	0.57	0.18			
				272.9-326.6	53.7	0.40				
				348.0-360.1	12.1	0.40				
								540.8	540.8	-
2SX-(Ext. X-220)	3,223,3	365,250	762,835	785.7-801.5	15.8	0.46				
				838.8-888.1	49.3	0.59				
				937.6-957.0	19.4	0.89				
				997.8-1046.2	48.4	0.58				
				1156.3-1177.9	21.6	1.00		529.8	1,226.0	1,226.0
2SX-(Ext. X-256)	3,216.3	365,250	763,124	1019.0-1044.7	25.7	0.59				
				1044.7-1116.4	71.7	2.77		107.4	1,126.4	1,126.4
2SX-(Ext. X-258)	3,210.7	365,500	763,268	404.0-497.7	93.7	0.42				
				616.4-779.2	162.8	0.55				
				810.5-827.2	16.7	0.80				
				1037.1-1047.3	10.2	0.44				
				1147.0-1177.0	30.0	1.40		845.8	1,228.5	1,228.5
					920.7			3,883.3		

* - Assays not complete

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona

November 9, 1966

J. H. C.
NOV 16 1966

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during October amounted to 4,144.3 feet. Five holes, 2SX-56, 2SX-57, 2SX-(Ext.X-251), 2SX-(Ext.X-261) and 2SX-(Ext.X-263) were completed. Drilling commenced on holes 2SX-58, 2SX-(Ext.X-220) and 2SX-(Ext.X-256).

During October drilling continued on the essentially low grade sulphide ore zone on Tract 2 of the San Xavier Reservation adjacent to the Banner property. Two holes, 2SX-56 and 2SX-58, were completed in the very weakly mineralized zone between the low grade sulphide ore zone adjacent to the Banner property and the narrow near surface east boundary ore zone adjacent to the Mission property. These holes, 2SX-56 and 2SX-58, were drilled to be sure of the waste nature of the zone; no open pit ore was encountered.

2SX-56, - situated near the north end of the waste block described above, encountered a short high grade copper run at considerable depth apparently of little significance.

2SX-57, - a re-drill of hole X-256 which could not be located, is situated adjacent to the Banner property line. The hole penetrated a few short low ore grade runs at moderate depth during October.

2SX-58, - positioned on the waste block between the two south San Xavier ore zones, encountered a few very short low grade copper runs but no copper ore of open pit significance.

2SX-(Ext.X-220), - situated on the west side of the low grade sulphide ore zone adjacent to the Banner property, had penetrated no ore grade material by the end of the month.

2SX-(Ext.X-251), - located on the east side of the low grade sulphide ore zone adjacent to the Banner property, encountered two very short low ore grade runs and one short high ore grade run at moderate to considerable depth.

2SX-(Ext.X-256), - positioned on the central area of the low grade sulfide ore zone adjacent to the Banner property, penetrated numerous short low ore grade runs at moderate depth and was continuing in a deep lengthy run of moderate ore grade material at the end of the month.

2SX-(Ext.X-261), - situated adjacent to the Banner property line, encountered two very short low ore grade runs at moderate depth during October.

2SX-(Ext.X-263), - also located adjacent to the Banner property line, penetrated two moderate length runs, one of modest grade and one of very high grade copper ore, at intermediate depth.

GEOLOGIC LOG OF HOLES

2SX-56 - continued in very weakly mineralized argillite to 1037.8 feet where the copper mineralization began to increase sharply. At 1062.0 feet a strongly mineralized serpentine and magnetite rich hornfels was penetrated. A 15 foot post mineral andesite dike was encountered at 1091.8 feet on the contact of the hornfels and the underlying barren marble. The hole bottomed in the marble at 1163.4 feet.

2SX-57 - continued in sparsely mineralized occasionally arkosic to conglomeritic argillite to 654.0 feet where the chalcopyrite mineralization became very weak. At 986.3 feet a strongly altered contact with sparse to strongly mineralized hornfels was penetrated. The hornfels continued to 1021.9 feet where a serpentine rich marble was encountered and the hole bottomed in this rock type at 1030.5 feet.

2SX-58 - penetrated a 63.9 foot zone of oxidation at bedrock in argillite with no significant copper oxide values. The hole continued, below the zone of oxidation, in sparse to weakly mineralized, locally arkosic argillite to 920.6 feet where epidote rich tactite was encountered. Zones of hornfels were found below 949.0 feet in weakly mineralized tactite. At 972.2 feet strongly mineralized tactite was encountered and continued to 1004.5 feet where barren marble was penetrated. The hole bottomed in the barren marble at 1049.1 feet.

2SX-(Ext.X-220) - encountered sparsely mineralized quartz monzonite porphyry at the bottom of the original hole and continued in this rock type to 696.2 feet where the hole stood at the end of the month.

2SX-(Ext.X-251) - penetrated sparsely mineralized agrillite at the bottom of the original hole. At 740.8 feet weakly mineralized arkosic argillite was encountered and continued to 888.0 feet where strongly mineralized tactite and hornfels were penetrated. Barren marble was encountered at 938.8 feet and the hole bottomed in this rock type at 957.4 feet.

2SX-(Ext.X-256) - encountered sparsely mineralized quartz monzonite porphyry at the bottom of the original hole and continued in the monzonite to 592.3 feet below which argillite containing off shoots of the main monzonite mass was penetrated. No monzonite was encountered below 767.2 feet. Sparse grading to moderately mineralized conglomeratic argillite was penetrated at 824.7 feet and the hole continued in this rock type to 1019.0 feet where it stood at the end of the month.

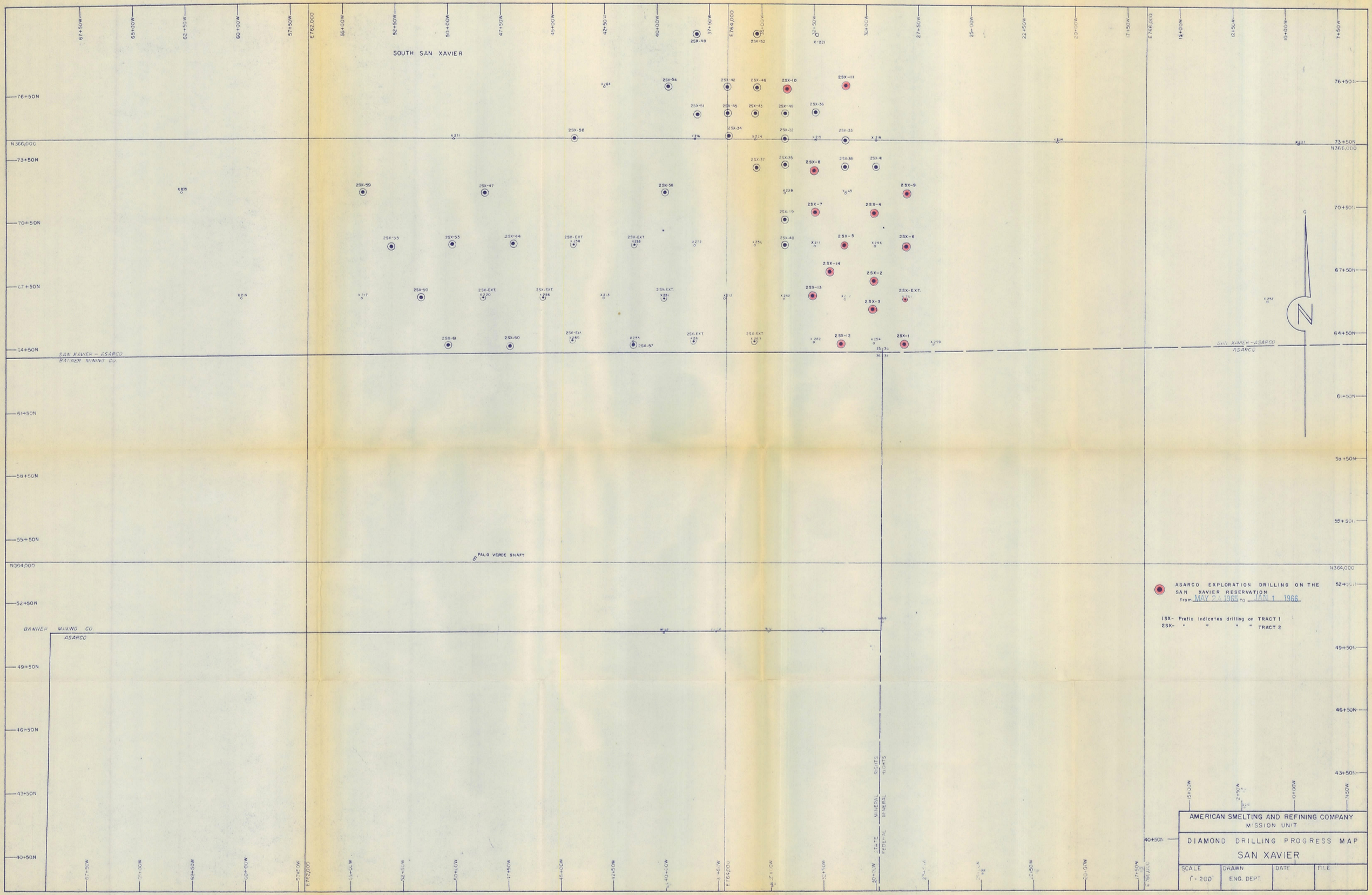
2SX-(Ext.X-261) - continued in sparse grading to weakly mineralized argillite to 845.0 feet below which sparsely mineralized epidote rich tactite was encountered. Barren marble was penetrated at 895.2 feet and the hole bottomed in this rock type at 944.0 feet.

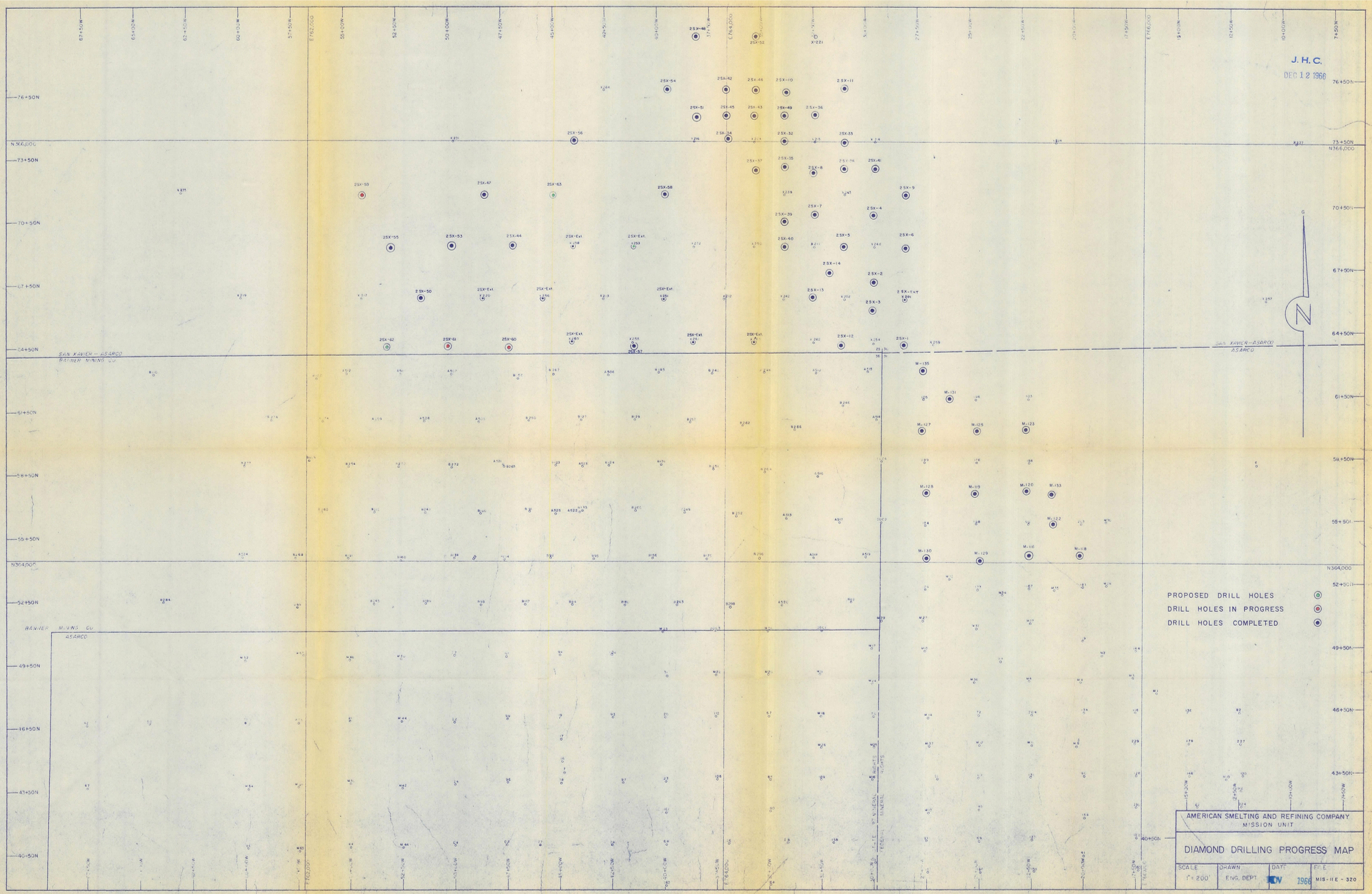
2SX-(Ext.X-263) - penetrated sparse grading to weakly mineralized arkosic argillite at the bottom of the original hole and continued in the argillite to 651.2 feet where moderately mineralized epidote rich tactite was encountered. At 696.2 feet very strongly mineralized tactite was penetrated. Barren hornfels and marble were found below 750.0 feet and the hole bottomed in the hornfels at 782.3 feet.

Sections illustrating progress for October, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. HALL, Geologist

DKH:hko


SOUTH SAN XAVIER
PALO VERDE SHAFT
SAN XAVIER - ASARCO
BANNER MINING CO.
ASARCO
MINERAL RIGHTS
STATE
FEDERAL
ASARCO EXPLORATION DRILLING ON THE SAN XAVIER RESERVATION
From MAY 2, 1965 TO JAN 1 1966
1SX- Prefix indicates drilling on TRACT 1
2SX- " " " " TRACT 2
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SAN XAVIER
SCALE 1" = 200'
DRAWN ENG. DEPT.
DATE
FILE


J. H. C.
DEC 12 1966
PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
SAN XAVIER – ASARCO
BARNER MINING CO.
ASARCO
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE 1" = 200'
DRAWN ENG. DEPT
DATE NOV 1966
FILE MIS-IIE-320

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
October 10, 1966

MEMORANDUM TO MR. P. A. LEWIS

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during September amounted to 3,956.2 feet. Four holes, 2SX-53, 2SX-54, 2SX-55 and 2SX-(Ext. X-260) were completed. Drilling commenced on holes 2SX-56, 2SX-57 and 2SX-(Ext. X-261).

Drilling is now restricted to the oxide zone and the low-grade sulphide ore adjacent to the Banner property on Tract 2 of the San Xavier Indian Reservation. Delineation of the narrow eastern boundary ore zone adjacent to the Mission property on Tract 2 of the Reservation was finished in the early part of September.

2SX-53, positioned at the western edge of the interpreted leach zone, encountered during September, one modest and one lengthy run of moderate ore grade material and a short run of high ore grade material at considerable depth.

2SX-54, situated just to the west of the northern end of the eastern boundary ore zone, did not penetrate any ore grade material.

2SX-55, located just off the western edge of the eastern boundary ore zone, encountered a few short low grade runs of little if any consequence.

2SX-56, positioned to the north of the potential leach ore zone, to the east of the low grade sulphide ore adjacent to the Banner property and to the west of the northern end of the eastern boundary ore zone, is being drilled in the suspected block of waste material between the two sulphide ore zones. A few short low ore grade runs of no importance have been encountered to date in this hole.

2SX-57, situated adjacent to the Banner property on the low grade sulphide ore zone is a redrill of hole X-256 which could not be located. 2SX-57 penetrated a run of leach ore similar to but of slightly higher grade than that encountered in hole X-256. One short low grade sulphide run had been penetrated in hole 2SX-57 by the end of the month.

2SX-(Ext. X-260), also situated adjacent to the Banner property on the low grade sulphide ore zone, encountered a very long run of moderate ore grade material at intermediate depth and a short high ore grade run at considerable depth.

2SX-(Ext. X-261), located adjacent to the Banner property and possibly also on the low grade sulphide ore zone, had penetrated several short low ore grade runs near bedrock by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-53 continued in sparsely mineralized quartz monzonite porphyry to 792.4 feet below which, in a sparse to moderately mineralized zone, partially digested fragments of hornfels and argillite were evident in the porphyry. At 1,018.7 feet moderately mineralized siliceous, conglomeritic grading to fine grained argillite was encountered. The hole remained in the argillite to 1,303.7 feet where weak to very strongly mineralized tactite was penetrated. Below 11.8 feet of barren marble at 1,397.5 feet the basement thrust fault zone was encountered and the hole bottomed in this fault zone at 1,416.5 feet.

2SX-54 continued in the post mineral basalt to 422.7 feet below which weak to sparsely mineralized argillite was encountered. The hole remained in the argillite to 744.8 feet where very weakly mineralized hornfels and tactite were penetrated. At 840.0 feet barren marble was encountered and the hole bottomed in this rock type at 897.0 feet.

2SX-55 remained in sparsely mineralized quartz monzonite porphyry to 815.4 feet where the hole bottomed.

2SX-56 penetrated post mineral basalt at bedrock and continued in this rock type to 268.8 feet where sparsely mineralized argillite was encountered. The hole continued in the argillite with the mineralization becoming weak below a 20.9 foot post mineral andesite dike at 754.2 feet to 850.5 feet where the hole stood at the end of the month.

2SX-57 encountered leached altered quartz monzonite porphyry with included fragments of arkose at bedrock. The oxide mineralization continued to 265.5 feet. At 294.0 feet sparsely mineralized weakly altered arkose was penetrated and the hole remained in this rock type to 365.5 feet where it stood at the end of the month.

2SX-(Ext. X-260) resumed drilling in sparsely mineralized quartz monzonite porphyry at 340.5 feet and continued in this rock type to 506.0 feet where moderate occasionally strongly mineralized fine grained grading to conglomeritic argillite was encountered. Below 860.7 feet, the argillite became weakly mineralized. At 999.4 feet strongly mineralized tactite and hornfels were penetrated. Barren marble was encountered below 1,045.5 feet and the hole bottomed in this rock type at 1,118.8 feet.

2SX-(Ext. X-261) penetrated sparsely mineralized arkosic grading to fine grained argillite at the bottom (285.3 feet) of the original hole. The hole stood at 447.8 feet in the fine grained argillite at the end of the month.

Sections illustrating progress for September, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. Hall

D. K. HALL
Geologist

DKH:mlc
attachs

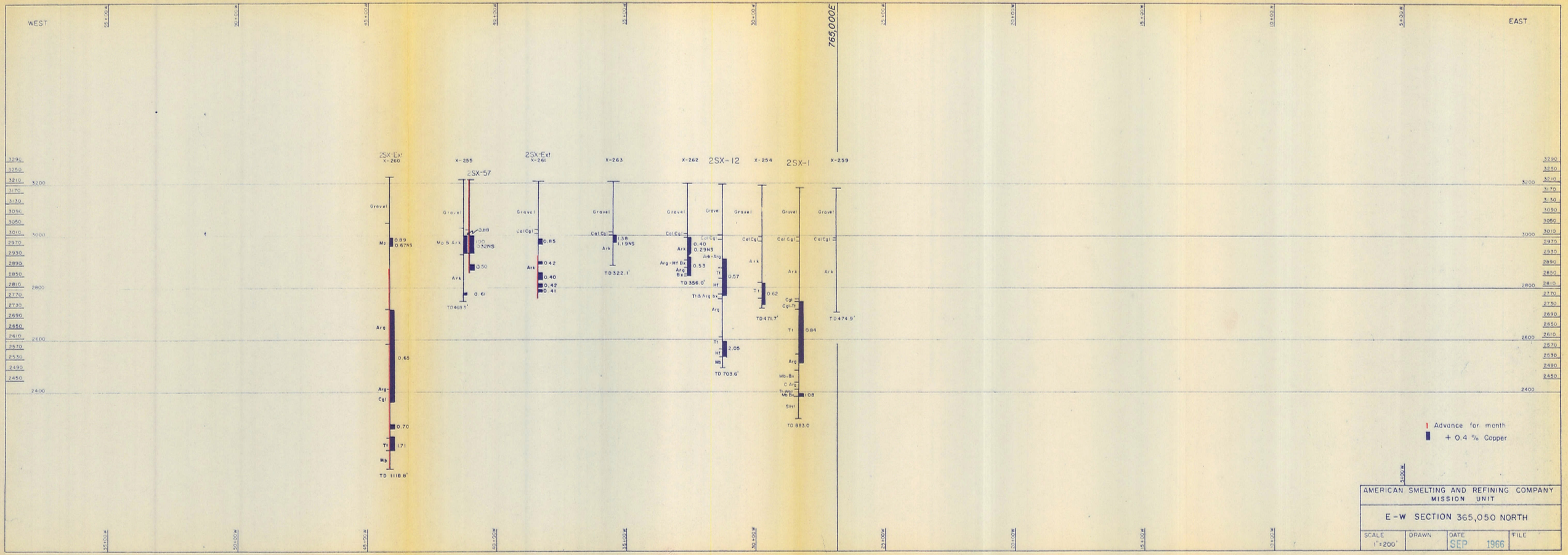
EXPLANATION OF ABBREVIATIONS ON SECTIONS

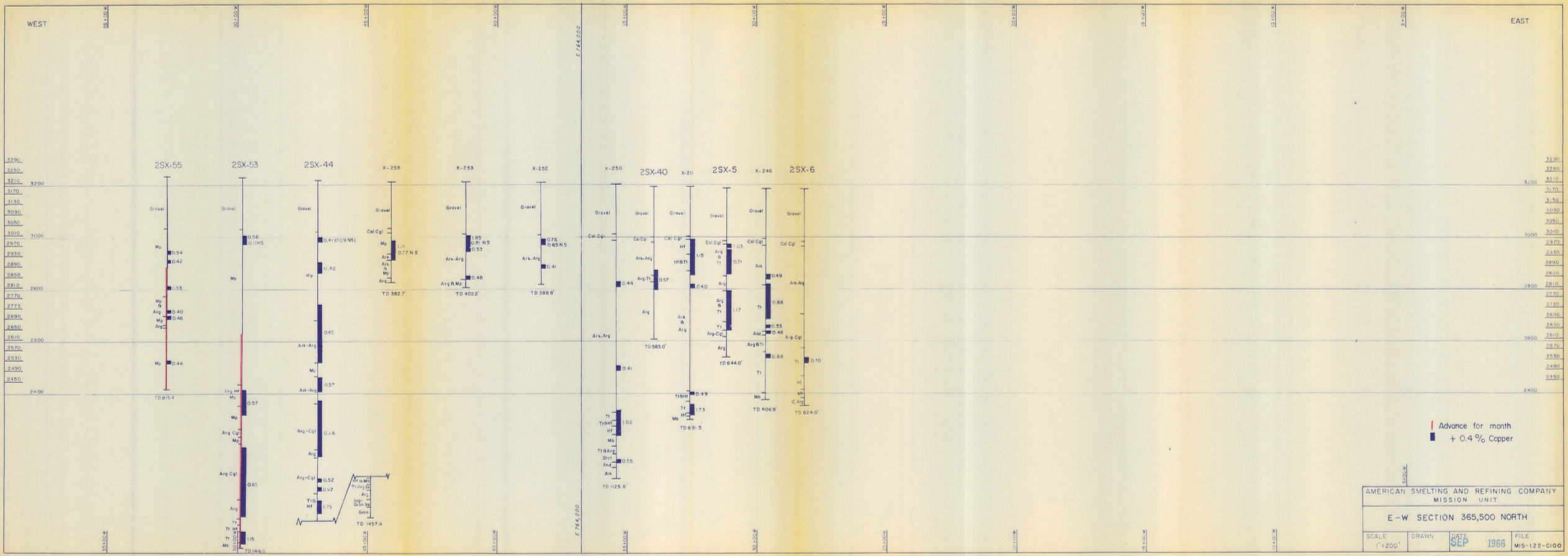
Cal. Cgl.	-	Caliche Conglomerate (Overburden)
Arg.	-	Argillite
Cgl.	-	Conglomerate
Tt.	-	Tactite
Hf.	-	Hornfels
Mb.	-	Marble
C. Arg.	-	Calcareous Argillite
N.S.	-	Non Sulfide
T.D.	-	Total Depth
And.	-	Andesite
Bx.	-	Breccia
Mp.	-	Metaporphyry
Gyp.	-	Gypsum
Gr.	-	Granite

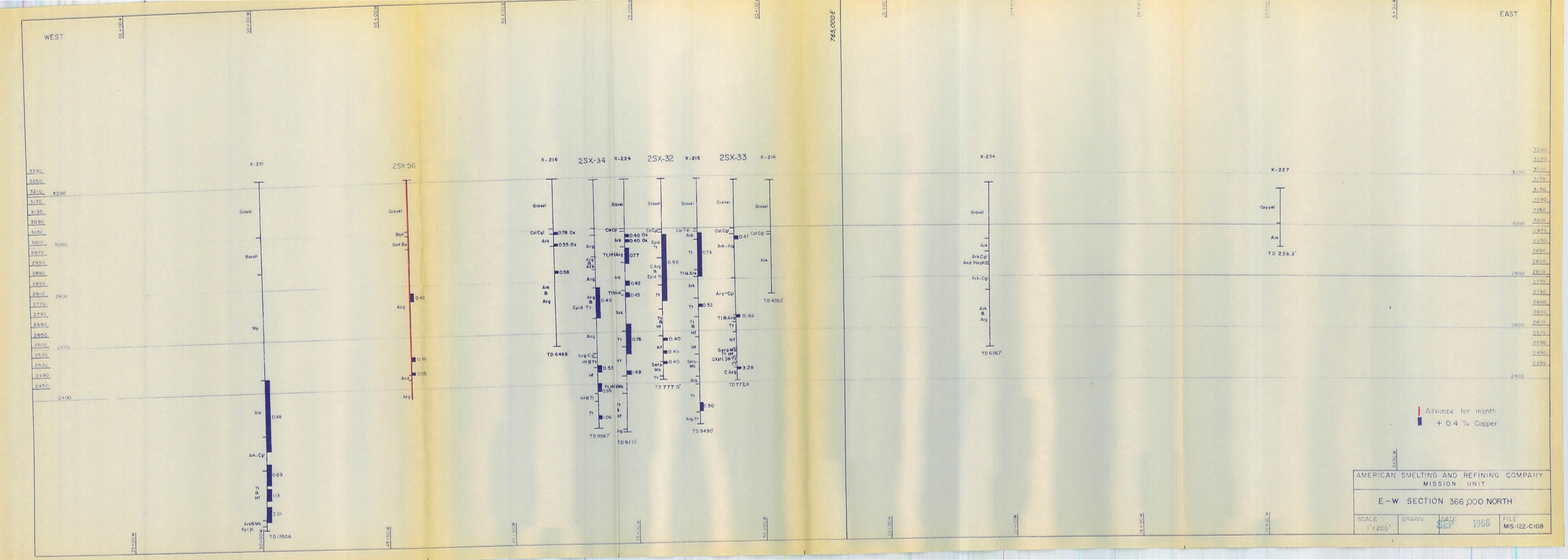
DIAMOND DRILLING - MISSION UNIT

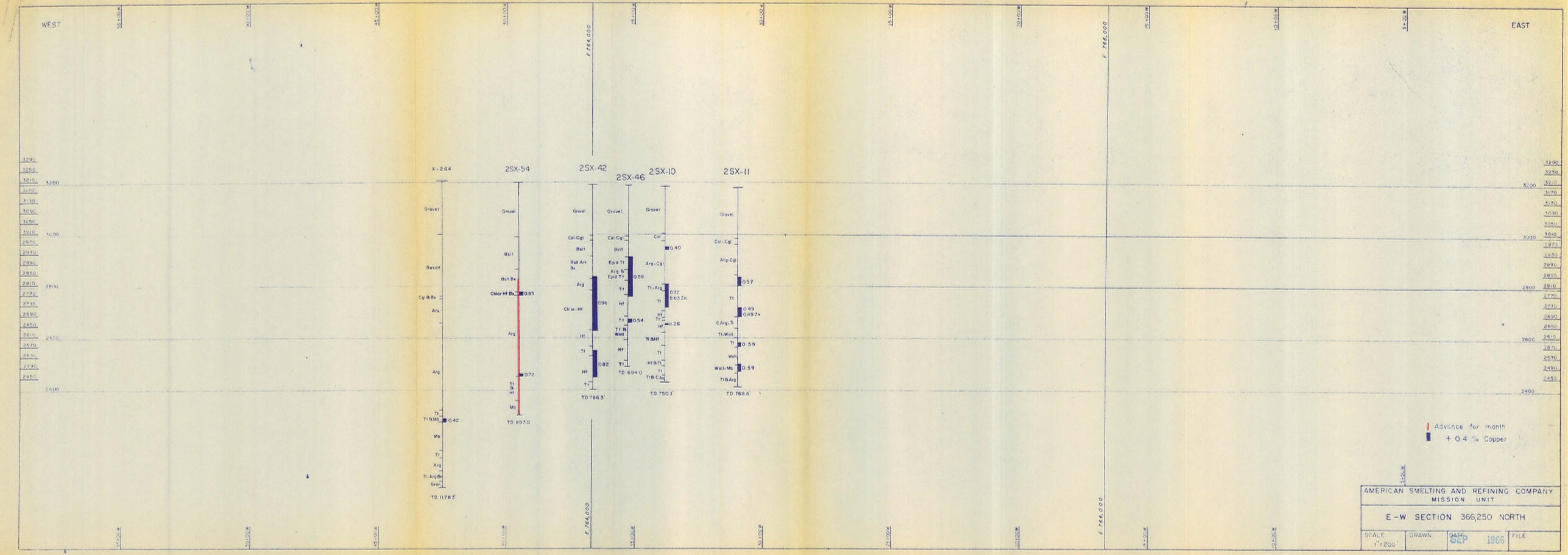
September, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu Depth	Intersections Interval	Average Total	% Cu N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-53	3228.0	365,498	762,692	812.8-906.8	94.0	0.57	Nil			
				1028.8-1297.3	268.5	0.65	Nil			
				1352.5-1401.3	48.8	1.15	Nil	821.6	1416.5	1416.5
2SX-54	3199.0	366,249	763,715	422.7-432.7	10.0	0.65	Nil			
				734.6-744.8	10.2	0.72	Nil	521.0	897.0	897.0
2SX-55	3233.8	365,489	762,401	420.8-431.6	10.8	0.53	Nil			
				512.8-523.6	10.8	0.40	Nil			
				533.3-543.6	10.3	0.46	Nil			
				702.8-712.8	10.0	0.44	Nil	466.8	815.4	815.4
2SX-56	3210.6	366,002	763,271	441.0-471.3	30.3	0.40	Nil			
				687.4-702.0	14.6	0.49	Nil			
				743.1-754.2	11.1	0.50	Nil	850.5	850.5	
2SX-57	3216.3	365,026	763,559	213.9-278.8	64.9	1.00	0.32			
				325.7-346.5	20.8	0.50	Nil	355.5	355.5	
2SX- (Ext.X-260)	3223.0	365,031	763,265	507.8-860.7	352.9	0.65	Nil			
				945.3-961.1	15.8	0.70	Nil			
				991.4-1048.7	57.3	1.71	Nil	778.3	1118.8	1118.8
2SX- (Ext. X-261)	3208.5	365,024	763,845	307.0-317.1	10.1	0.42	Nil			
				349.3-377.7	28.4	0.40	Nil			
				389.7-401.6	11.9	0.42	Nil			
				411.6-421.6	10.0	0.41	Nil	162.5	447.8	
					1,101.8			3,956.2		


WEST
EAST
765,000E
2SX-Ext
X-260
X-255
2SX-57
2SX-Ext
X-261
X-263
X-262
2SX-12
X-254
2SX-1
X-259
Gravel
Mb
Arg
Arg-Cgl
Tt
Ark
Cal Cgl
Arg-Hf Bx
Hf
Mb-Bx
Sint
TD 1118.8'
TD 406.5'
TD 322.1'
TD 356.0'
TD 703.6'
TD 471.7'
TD 474.9'
TD 883.0
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE 1"=200'
DRAWN
DATE SEP 1966
FILE


WEST
EAST
2SX-55
2SX-53
2SX-44
X-258
X-253
X-252
X-250
2SX-40
X-211
2SX-5
X-246
2SX-6
Gravel
Col Cgl
Ark-Arg
Arg-Ti
Arg
Ark & Arg
Hf
Hf & Ti
Arg & Ti
Arg-Cgl
Ark
Ti
Ti & Hf
Mb
Mp
Mp & Arg
Arg Cgl
Arg Hf
Ti & Arg
Ohl
And
Arg & Ti
C Arg
TD 815.4
TD 1466.0
TD 1457.4
TD 382.7'
TD 402.2'
TD 388.8'
TD 583.0'
TD 644.0'
TD 891.5
TD 1125.6'
TD 806.9'
TD 824.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,500 NORTH
SCALE 1"=200'
DRAWN
DATE SEP 1966
FILE MIS-122-C100


WEST
EAST
765,000E
X-231
2SX-56
X-216
2SX-34
X-224
2SX-32
X-215
2SX-33
X-218
X-234
X-227
Gravel
Basalt
Mp
Ark
Ark-Cgl
Ark & Arg
Arg
Epid-Tt
Arg-Cgl
Hf & Tt
Tt
Hf
Ark & Mb
Fp(?)
Bslt
Bslt Bx
Ark-Arg
Arg-Cgl
Serp-Mb
C Arg
Ark-Cgl And Porph
TD 3506
TD 6488'
TD 9587'
TD 9271'
TD 777.0'
TD 9490'
TD 7778
TD 4383'
TD 6367'
TD 226.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,000 NORTH
SCALE 1"=200'
DRAWN
DATE SEP 1966
FILE MIS-122-C108

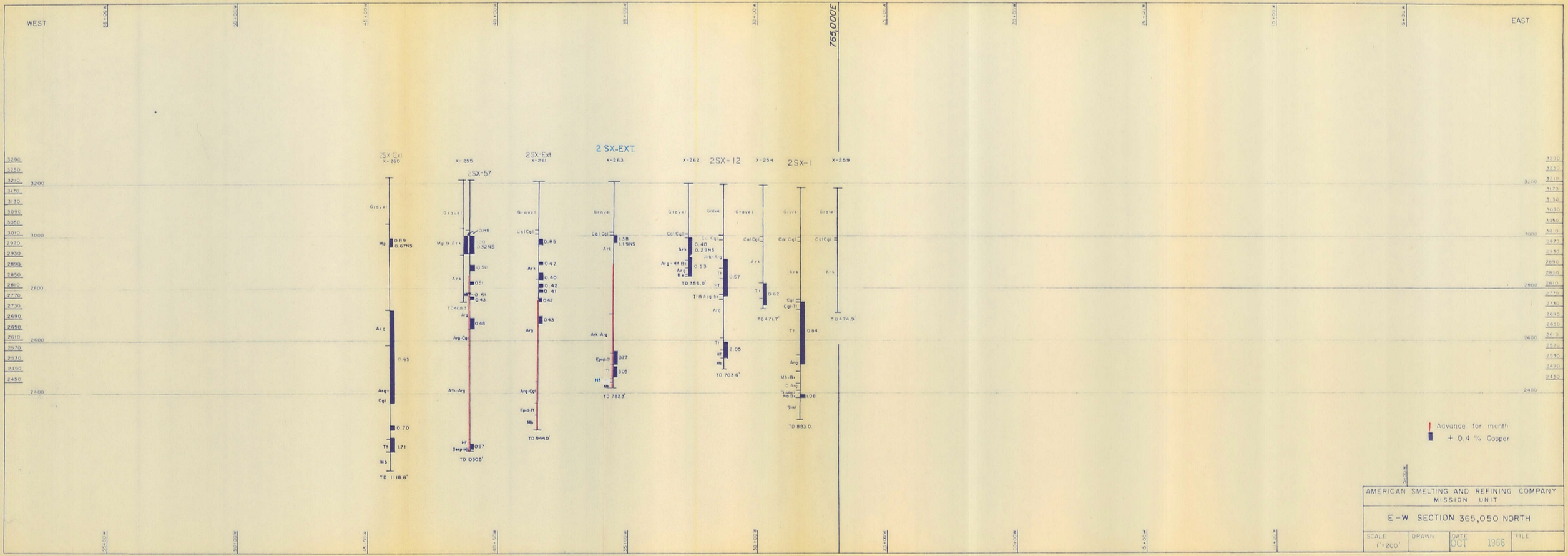

WEST
EAST
X-264
2SX-54
2SX-42
2SX-46
2SX-10
2SX-11
E 766,000
Gravel
Bsalt
Bsalt Bx
Chlor Hf Bx
0.65
Arg
0.72
Mb
TD 897.0'
Cal Cgl
Bsalt Ark Bx
Chlor. Hf
C96
0.82
TD 786.3'
Epid Tf
Arg Bx
Epid Tf
0.59
Hf
0.54
Tf & Wall
TD 694.0
Cal
0.40
Arg-Cgl
Tf-Arg
0.32
0.63 Zn
0.26
Tf & Hf
Hf & Tf
Tf & Cal
TD 750.3'
Arg-Cgl
0.57
0.49
0.49 Zn
C Arg-Tf
Tf-Wall
0.59
Wall
Wall-Mb
0.59
Tf & Arg
TD 768.6'
Cgl & Bx
Ark
Tf & Mb
0.42
Tf-Arg Bx
Gran
TD 1178.3'
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,250 NORTH
SCALE 1"=200'
DRAWN
DATE SEP 1966
FILE

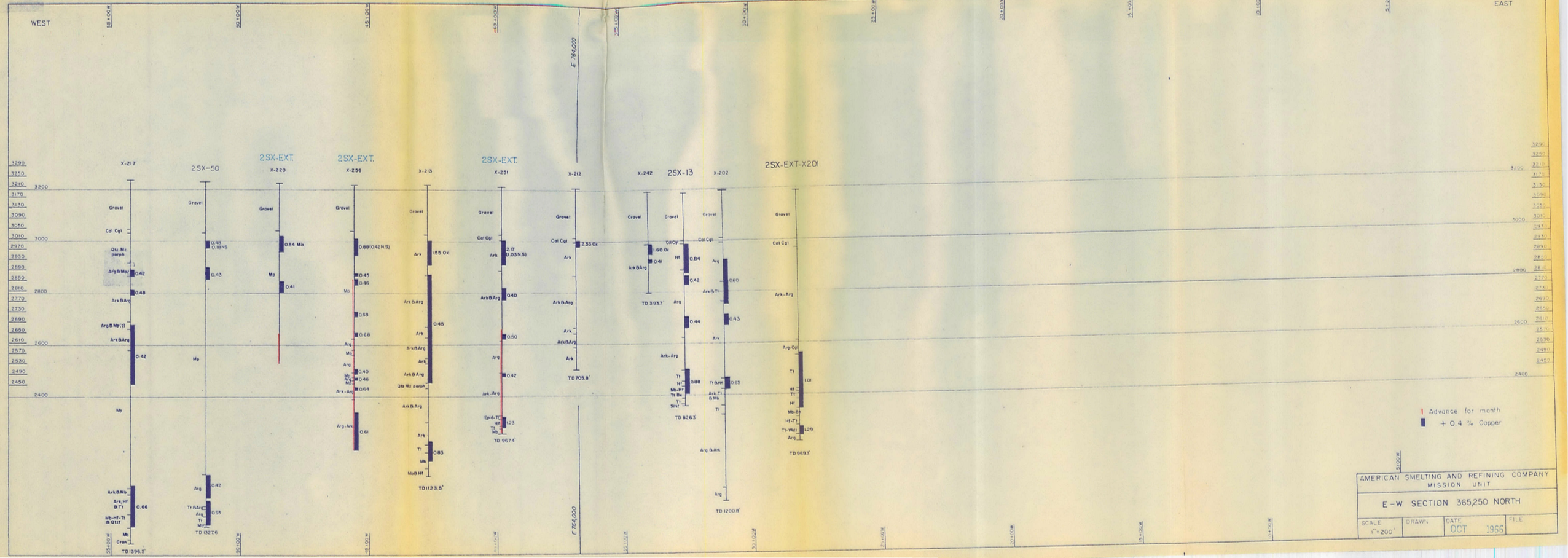
DIAMOND DRILLING - MISSION UNIT

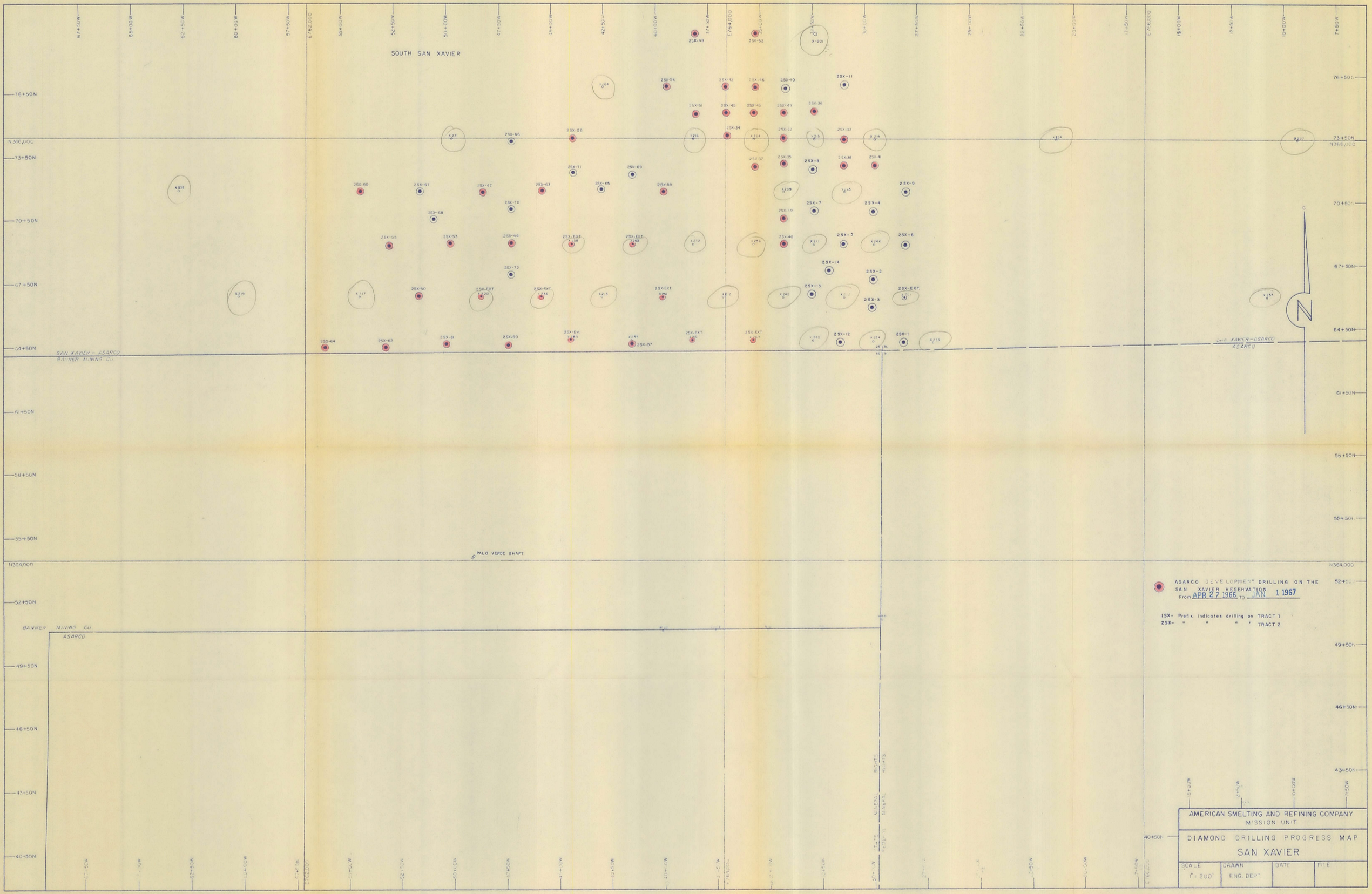
October, 1966

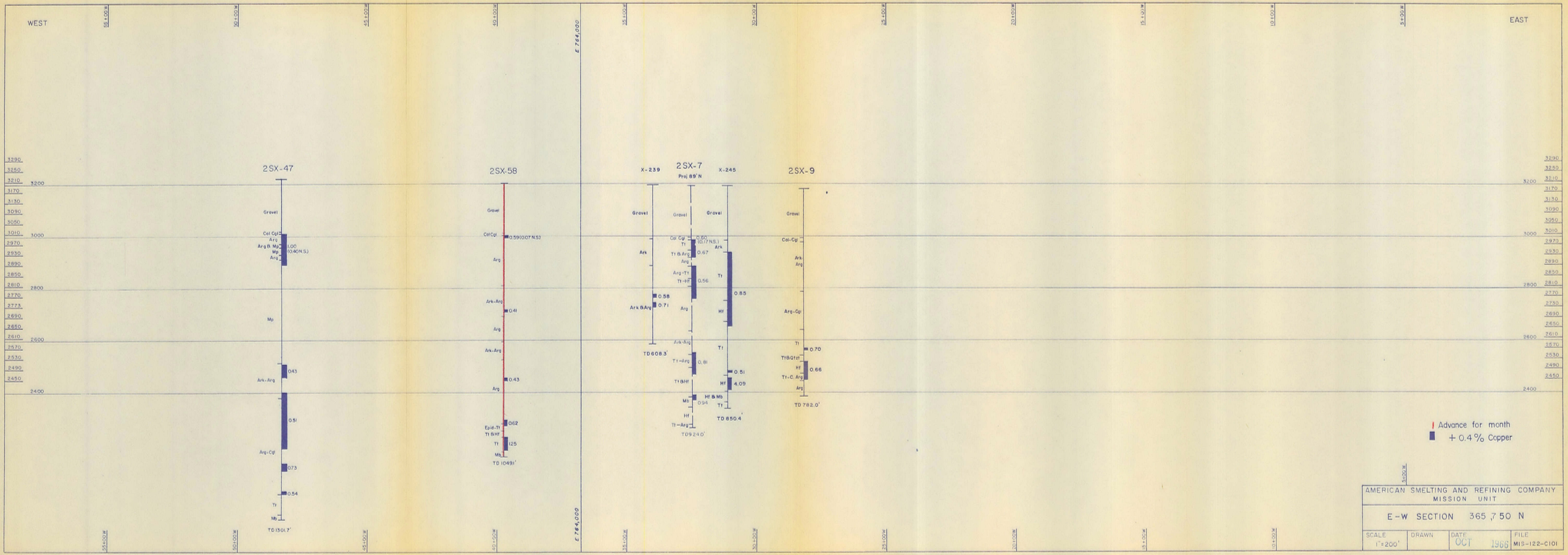
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	o.40% Cu Depth	Intersections Interval	Average Total	% Cu N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-56	3210.6	366,002	763,271	1037.8-1091.8	54.0	1.40	Nil	312.9	1163.4	1163.4
2SX-57	3216.3	365,026	763,559	385.7-397.5	11.8	0.51	Nil			
				441.7-452.6	10.9	0.43	Nil			
				524.0-567.0	43.0	0.48	Nil			
				1005.1-1024.5	19.4	0.97	Nil	674.8	1030.5	1030.5
2SX-58*	3200.5	365,748	763,707	199.0-209.1	10.1	0.59	0.07			
				485.4-497.2	11.8	0.41	Nil			
				745.4-758.7	13.3	0.43	Nil			
				908.6-928.3	19.7	0.62	Nil	854.1	1049.1	1049.1
2SX-** (Ext.X-220)	3223.5	365,250	762,835		No Assays Reported			95.4	696.2	
2SX- (Ext.X-251)	3212.2	365,250	763,701	568.8-590.1	21.3	0.50	Nil			
				722.5-732.7	10.2	0.42	Nil			
				880.1-930.8	50.7	1.23	Nil	399.2	957.4	957.4
2SX-* (Ext.X-256)	3216.5	365,250	763,124	362.5-382.0	19.5	0.46	Nil			
				486.4-503.7	17.3	0.68	Nil			
				569.1-581.5	12.4	0.68	Nil			
				704.4-723.7	19.3	0.40	Nil			
				738.7-748.7	10.0	0.46	Nil			
				776.2-788.8	12.6	0.64	Nil	656.5	1019.0	
2SX- (Ext.X-261)	3208.5	365,024	763,845	442.2-453.0	10.8	0.42	Nil			
				511.7-538.7	27.0	0.43	Nil	496.2	944.0	944.0
2SX- (Ext.X-263)	3206.4	365,022	764,130	352.9-364.2	11.3	0.42	Nil			
				646.2-696.2	50.0	0.77	Nil			
				701.0-742.2	41.2	3.05	Nil	460.2	782.3	782.3
					507.6 feet			3,949.3 feet		

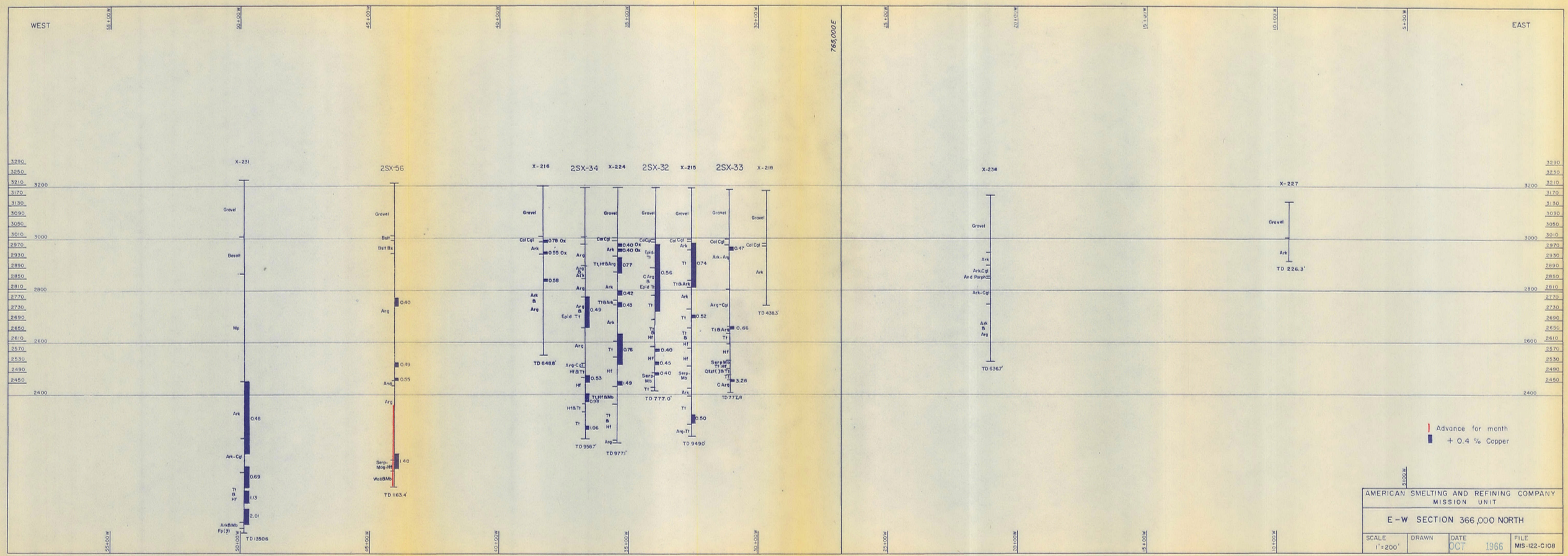
* Assays incomplete
** Approximate elevation

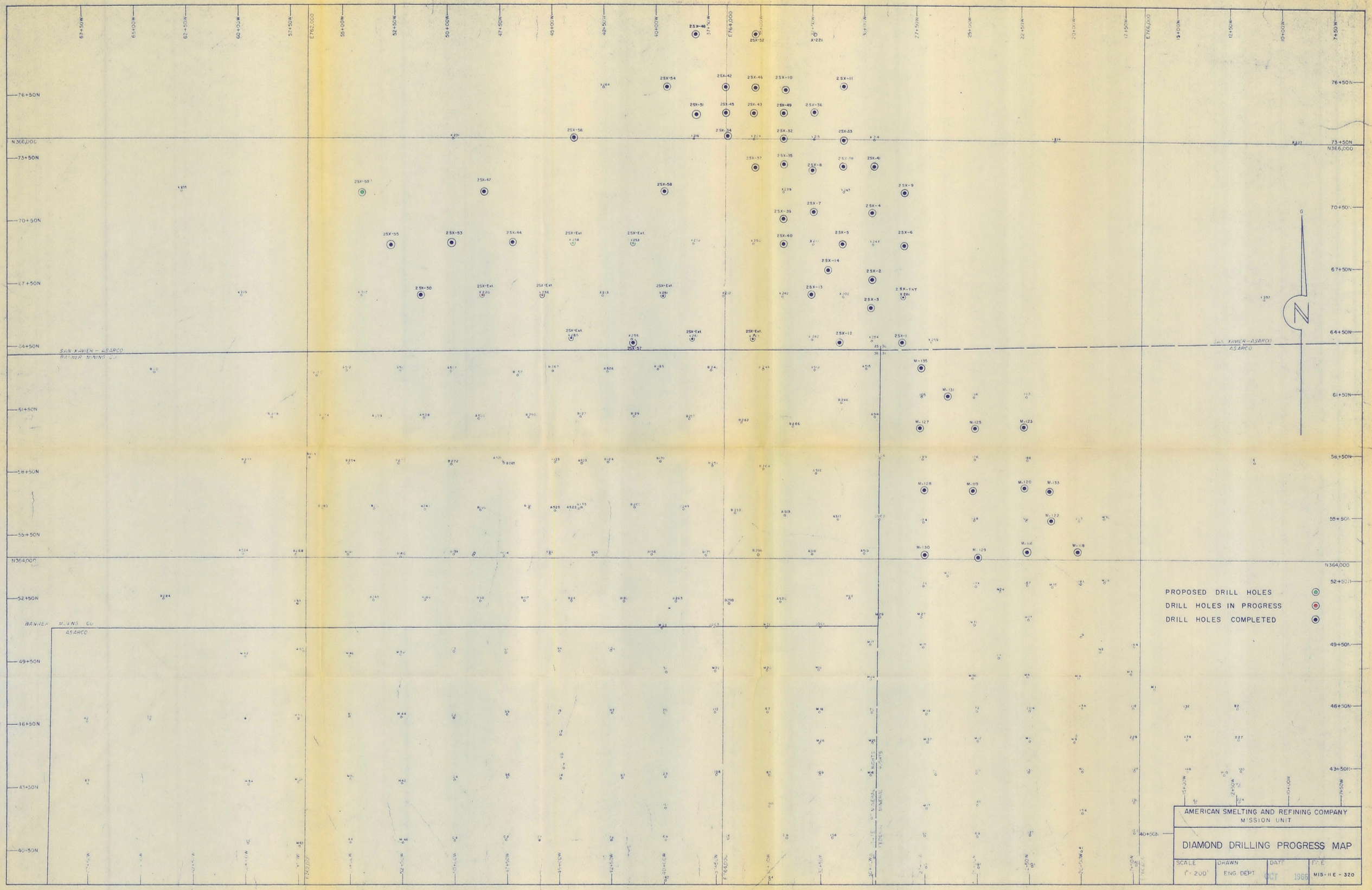

WEST
EAST
765,000E
2SX-Ext
X-260
X-255
2SX-57
2SX-Ext
X-261
2 SX-EXT.
X-263
X-262
2SX-12
X-254
2SX-1
X-259
Gravel
Mp
0.89
0.67NS
Arg
0.65
Arg-Cgl
0.70
Tt
1.71
Mb
TD 1118.8'
Mp & Ark
0.48
0.52NS
0.50
0.51
0.61
0.43
TD 468.3'
Ark
Arg
0.48
Arg-Cgl
Ark-Arg
Hf
Serp-Mb
0.97
TD 1030.5'
Cal Cgl
0.85
0.42
0.40
0.42
0.41
0.42
0.43
Arg
Arg-Cgl
Epid-Tt
Mb
TD 944.0'
1.38
1.19NS
Ark-Arg
Epid-Tt
0.77
Tt
3.05
Hf
Mb
TD 782.5'
0.40
0.29NS
Arg-Hf Bx
0.53
TD 356.0'
Ark-Arg
0.57
Hf
Tt & Arg bx
Arg
Tt
2.05
Hf
Mb
TD 703.6'
0.62
TD 471.7'
Cgl-Tt
0.84
Mb-Bx
C Arg
Mb Bx
1.08
Slist
TD 883.0'
TD 474.9'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,050 NORTH
SCALE
1"=200'
DRAWN.
DATE
OCT 1966
FILE


WEST
EAST
X-217
2SX-50
2SX-EXT.
X-220
2SX-EXT.
X-256
X-213
2SX-EXT.
X-251
E 764,000
X-212
X-242
2SX-13
X-202
2SX-EXT-X201
Gravel
Col Cgl
Qtz Mz porph
Arg & Mz
Ark & Arg
Arg & Mo(?)
Ark & Mb
Ark, Hf & Ti
Mb-Hf-Ti & Qtzt
Mb
Gran
Mp
Arg
Ti & Arg
Ti
TD 1396.5'
TD 1327.6
0.48
0.18 NS
0.43
0.84 Mix
0.41
0.88 (0.42 N.S.)
0.45
0.46
0.68
0.40
0.64
0.61
1.55 Ox
0.83
TD 1123.5'
2.17 N (0.03 N.S.)
0.50
1.23
TD 967.4'
2.53 Ox
TD 705.8'
1.60 Ox
TD 395.7'
Hf
Mb-Hf
Ti Bx
Sint
TD 826.3'
Ark & Ti
Arg & Ark
TD 1200.8'
Ark-Arg
Ti & Hf
Ark, Ti & Mb
Ti-Wall
TD 969.3'
1.01
1.29
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,250 NORTH
SCALE 1"=200'
DRAWN
DATE OCT 1966
FILE


SOUTH SAN XAVIER
SAN XAVIER - ASARCO
BANNER MINING CO.
ASARCO
PALO VERDE SHAFT
N366,000
N364,000
E762,000
E764,000
E766,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
ASARCO DEVELOPMENT DRILLING ON THE SAN XAVIER RESERVATION
From APR 27 1966 TO JAN 1 1967
1SX- Prefix indicates drilling on TRACT 1
2SX- " " " " TRACT 2
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SAN XAVIER
SCALE 1" = 200'
DRAWN ENG. DEPT
DATE
FILE


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
E 764,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-47
Gravel
Col Cgl
Arg
Arg & Mp
Mp
Arg
1.00
(0.40N.S.)
Mp
0.43
Ark-Arg
0.51
Arg-Cgl
0.73
0.54
Tf
Mb
TD 1301.7'
2SX-58
Gravel
Col Cgl
0.59 (0.07 N.S.)
Arg
Ark-Arg
0.41
Arg
Ark-Arg
0.43
Arg
0.62
Epid-Tf
Tf & Hf
Tf
1.25
Mb
TD 1049.1'
X-239
Gravel
Ark
0.58
0.71
Ark & Arg
TD 608.3'
2SX-7
Proj 89' N
Gravel
Col Cgl
Tf
0.80
(0.17 N.S.)
Tf & Arg
0.67
Arg
Arg-Tf
Tf-Hf
0.56
Arg
Ark-Arg
Tf-Arg
0.81
Tf & Hf
Mb
0.94
Hf
Tf-Arg
TD 924.0'
X-245
Gravel
Ark
Tf
0.85
Hf
Tf
0.51
Hf
4.09
Hf & Mb
Tf
TD 850.4'
2SX-9
Gravel
Col-Cgl
Ark
Arg
Arg-Cgl
Tf
0.70
Tf & Qtzt
Hf
0.66
Tf-C. Arg
Arg
TD 782.0'
Advance for month
+ 0.4% Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,750 N
SCALE 1"=200'
DRAWN
DATE OCT 1966
FILE MIS-122-C101


WEST
EAST
765,000E
X-231
2SX-56
X-216
2SX-34
X-224
2SX-32
X-215
2SX-33
X-218
X-234
X-227
Gravel
Basalt
Mp
Ark
Ark-Cgl
Tr & Hf
Ark&Mb
Fp(?)
TD 13506
Basalt Bx
Arg
And
Serp-Mbg-Hf
Wall&Mb
TD 1163.4'
Col Cgl
Ark
Arg & Ark
Arg & Epid Tr
Arg-Cgl
Hf&Tr
Tr,Hf&Mb
Hf&Tr
TD 6488'
TD 958.7'
Tr,Hf&Arg
Tr&Ark
Tr & Hf
TD 977.1'
Epid Tr
C Arg & Epid Tr
Serp-Mb
TD 777.0'
Tr&Ark
Arg-Tr
TD 949.0'
Ark-Arg
Tr&Arg
Serp-Mb Tr,Hf Qtz(?)&Tr
C Arg
TD 777.8
TD 438.3'
Ark.Cgl And Perph
TD 636.7'
TD 226.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,000 NORTH
SCALE 1"=200'
DRAWN
DATE OCT 1966
FILE MIS-122-C108


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
SAN XAVIER - ASARCO
BANNER MINING CO.
ASARCO
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1" = 200'
DRAWN
ENG. DEPT.
DATE
OCT 1966
FILE
MIS-11E-320

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
September 12, 1966

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during August amounted to 4,766.0 feet. Five holes, 2SX-46, 2SX-47, 2SX-50, 2SX-51 and 2SX-52 were completed. Drilling commenced on holes 2SX-53, 2SX-54 and 2SX-55.

With the completion of hole 2SX-54 delineation of the narrow eastern boundary ore zone on Tract 2 of the San Xavier Indian Reservation adjacent to the Mission property will be finished. Drilling is continuing on the oxide zone and the low grade sulphide ore adjacent to the Banner property.

2SX-46, situated at the northern end of the eastern boundary ore zone, did not encounter any ore grade material during August.

2SX-47, located at the interpreted north-western boundary of the potential leach zone adjacent to the Banner property, penetrated one short and one lengthy low to moderate ore grade run at considerable depth during August.

2SX-50, positioned on the western part of the mineralized area adjacent to the Banner property, encountered a short run of low grade leach material at bedrock and a short low grade run of sulphide ore just below the leach material. Two modest ore grade runs, one low grade and one high grade, were penetrated at considerable depth.

2SX-51, situated at the western edge of the northern end of the eastern boundary ore zone, encountered a short low ore grade run at modest depth.

2SX-52, located just to the north of the northern end of the eastern boundary ore zone, did not penetrate any ore grade material.

2SX-53, positioned at the western edge of the interpreted leach zone adjacent to the Banner property, had encountered a short run of sparse to moderate grade leach material by the end of the month.

2SX-54, situated just to the west of the northern end of the eastern boundary ore zone had not encountered any mineralized material by the end of the month.

2SX-55, located just off the western edge of the interpreted leach ore zone, did not encounter any leach material. No sulphide ore of any consequence had been encountered in this hole by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-46, continued in weakly mineralized tactite to 694.0 feet where the hole bottomed.

2SX-47, continued in weak to sparsely mineralized quartz monzonite porphyry to 706.5 feet where sparse to moderately mineralized arkosic grading to conglomeritic argillite was penetrated. At 1206.1 feet, weakly mineralized tactite and hornfels were encountered. The hole continued in the tactite and hornfels to 1285.0 feet where a serpentine rich marble, which the hole bottomed in at 1301.7 feet, was penetrated.

2SX-50, encountered sparsely mineralized quartz monzonite porphyry at bedrock and continued in this rock type to 1126.0 feet where sparse to moderately mineralized argillite was penetrated. At 1245.0 feet interbedded moderate to strongly mineralized Paleozoic argillite, tactite and hornfels were encountered. The hole penetrated weakly mineralized serpentine rich marble at 1322.0 feet and bottomed in this rock type at 1327.6 feet.

2SX-51, penetrated post mineral basalt at bedrock and continued in this rock type to approximately 290.0 feet where a short run of epidote rich tactite and chlorite rich hornfels was encountered. At 330.4 feet, sparsely mineralized argillite was penetrated and the hole bottomed in this rock type at 472.5 feet.

2SX-52, also penetrated post mineral basalt at bedrock. At 408.3 feet sparsely mineralized argillite was encountered. The argillite continued to 462.9 feet where interbedded Paleozoic hornfels, tactite and argillite were penetrated. At 736.9 feet, below the very weakly mineralized Paleozoic rocks, a fine grained argillite with almost nil sulphide mineralization was encountered. The hole remained in the fine grained argillite to 796.9 feet where it bottomed.

2SX-53, encountered sparsely mineralized quartz monzonite porphyry at bedrock and continued in this rock type to 594.9 feet where the hole stood at the end of the month.

2SX-54, penetrated post mineral basalt at bedrock. The hole remained in the basalt to 376.0 feet where it stood at the end of the month.

2SX-55, encountered sparsely mineralized quartz monzonite porphyry at bedrock and remained in this rock type to 348.6 feet where it stood at the end of the month.

Sections illustrating drilling progress for August, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. Hall

D. K. HALL
Geologist

DKH:kay
attachs

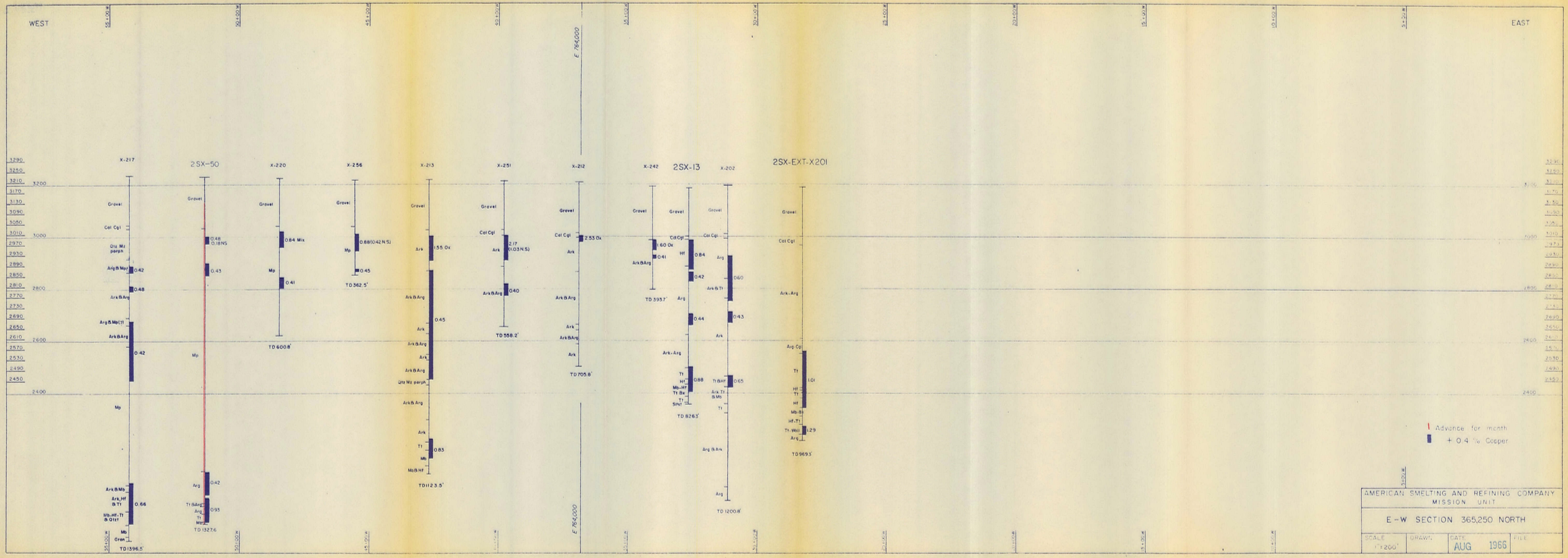
EXPLANATION OF ABBREVIATIONS ON SECTIONS

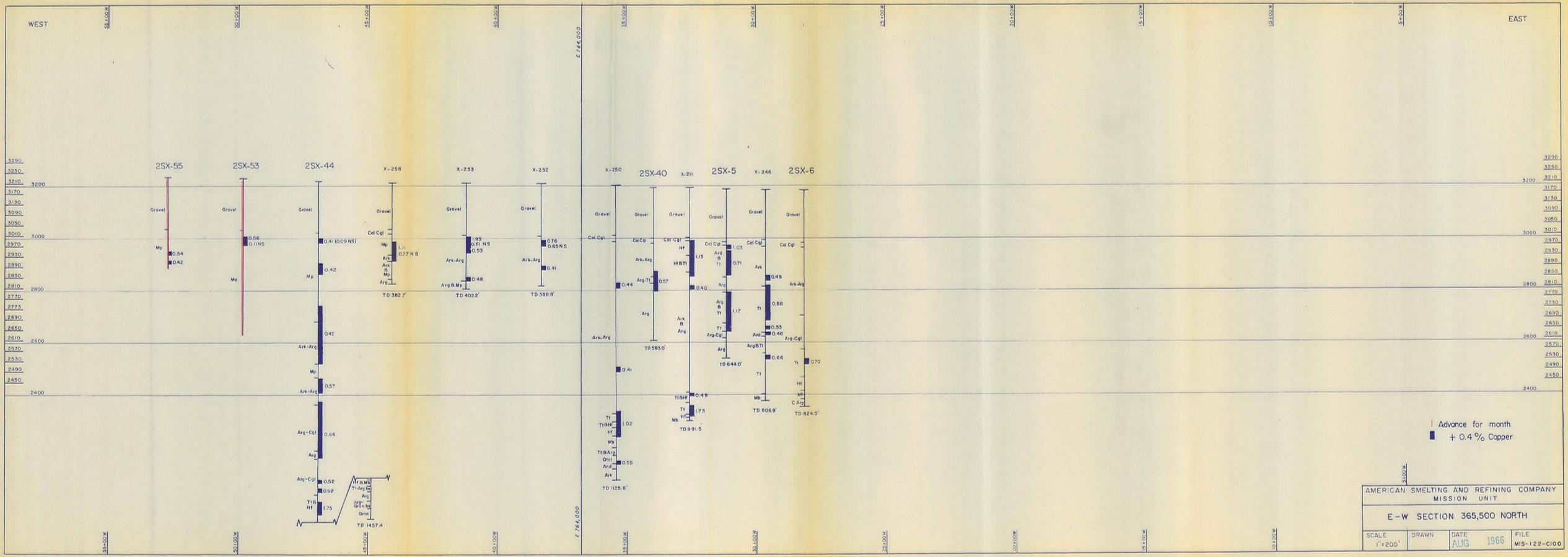
Cal. Cgl.	-	Caliche Conglomerate (Overburden)
Arg.	-	Argillite
Cgl.	-	Conglomerate
Tt.	-	Tactite
Hf.	-	Hornfels
Mb.	-	Marble
C. Arg.	-	Calcareous Argillite
N.S.	-	Non Sulfide
T.D.	-	Total Depth
And.	-	Andesite
Bx.	-	Breccia
Mp.	-	Metaporphyry
Gyp.	-	Gypsum
Gr.	-	Granite

DIAMOND DRILLING - MISSION UNIT

September 1, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-46	3188.6	366,246	764,140	No Ore Grade Runs				5.6	694.0	694.0
2SX-47	3223.3	365,744	762,846	709.7-759.4	49.7	0.43	Nil			
				815.7-1031.7	216.0	0.51	Nil			
				1088.9-1115.8	26.9	0.73	Nil			
				1196.5-1206.6	10.1	0.54	Nil	938.9	1301.7	1301.7
2SX-50	3230.3	365,250	762,546	228.1-253.2	25.1	0.48	0.18			
				329.1-377.4	48.3	0.43	Nil			
				1128.7-1215.2	86.5	0.42	Nil			
				1226.0-1319.0	93.0	0.93	Nil	1232.6	1327.6	1327.6
2SX-51	3193.1	366,115	763,855	300.0-340.3	40.3	0.51	Nil	472.5	472.5	472.5
2SX-52	3183.8	366,500	764,137	No Ore Grade Runs				796.9	796.9	796.9
2SX-53	3228.0	365,498	762,692	221.0-253.9	32.9	0.56	0.11	594.9	594.9	
2SX-54	3199.0	366,249	763,715	No Ore Grade Runs				376.0	376.0	
2SX-55	3233.8	365,489	762,401	285.7-297.9	12.2	0.54	Nil			
				320.8-331.7	10.9	0.42	Nil	348.6	348.6	
					651.9			4766.0		


WEST
EAST
E 764,000
X-217
2SX-50
X-220
X-256
X-213
X-251
X-212
X-242
2SX-13
X-202
2SX-EXT-X201
Gravel
Col Cgl
Qtz Mz perph
Arg & Mo(?)
Ark & Arg
Ark & Mb
Ark, Hf & Tt
Mb-Hf-Tt & Qtzt
Mb
Gran
Mp
Arg
Tt & Arg
Tt
Mb
Ark
Tt
Mb
Mb & Hf
Hf
Mb-Hf
Tt Bx
Spt
Tt & Hf
Ark, Tt & Mb
Arg & Ark
Ark-Arg
Arg Cgl
Hf-Tt
Tt-Weil
0.42
0.48
0.66
0.48
0.18NS
0.43
0.93
0.84 Mix
0.41
0.88(0.42 N.S.)
0.45
1.55 Ox
0.45
0.83
2.17 (1.03 N.S.)
0.40
2.53 Ox
1.60 Ox
0.41
0.84
0.42
0.44
0.88
0.60
0.43
0.65
1.01
1.29
TD 1396.5'
TD 1327.6
TD 600.8'
TD 362.5'
TD 1123.5'
TD 558.2'
TD 705.8'
TD 593.7'
TD 826.3'
TD 1200.8'
TD 969.5'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365,250 NORTH
SCALE 1"=200'
DRAWN
DATE AUG 1966
FILE



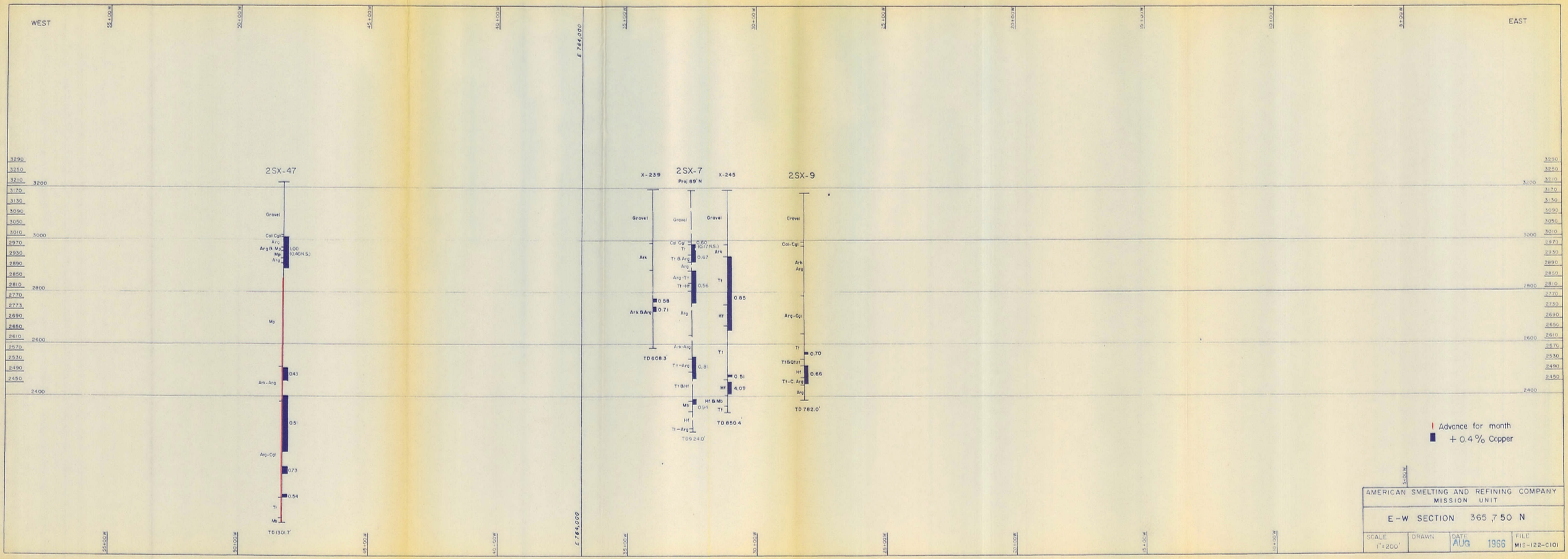
! Advance for month

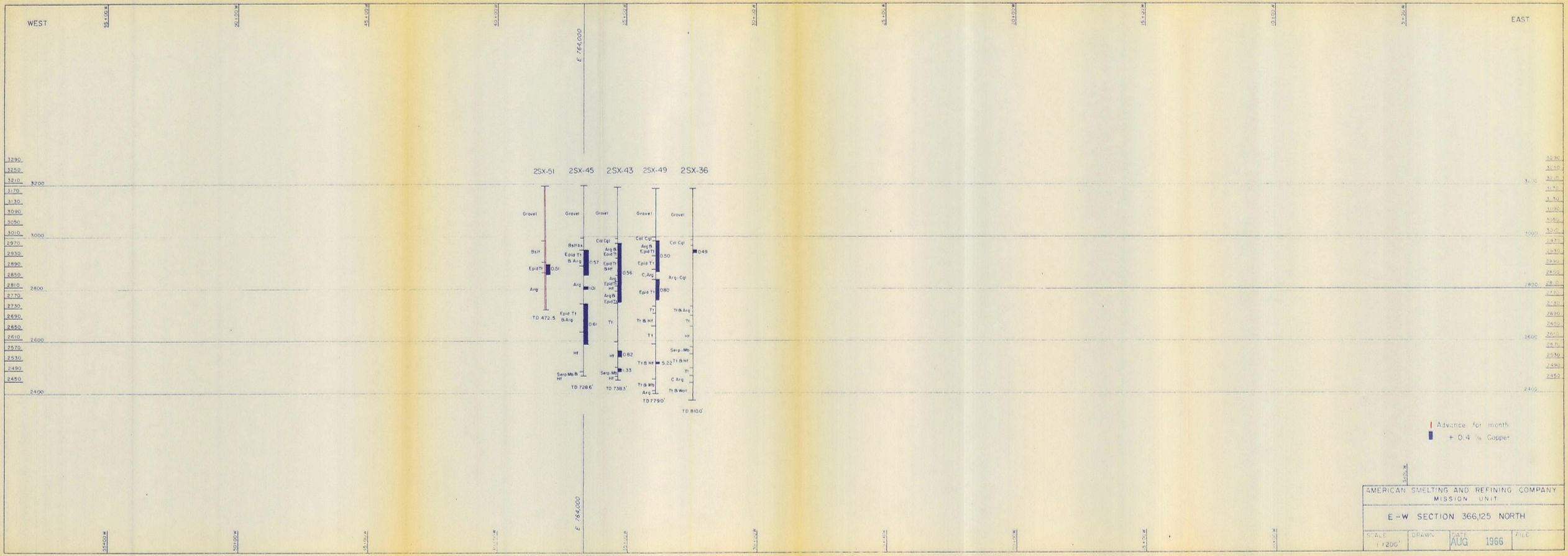
■ + 0.4 % Copper

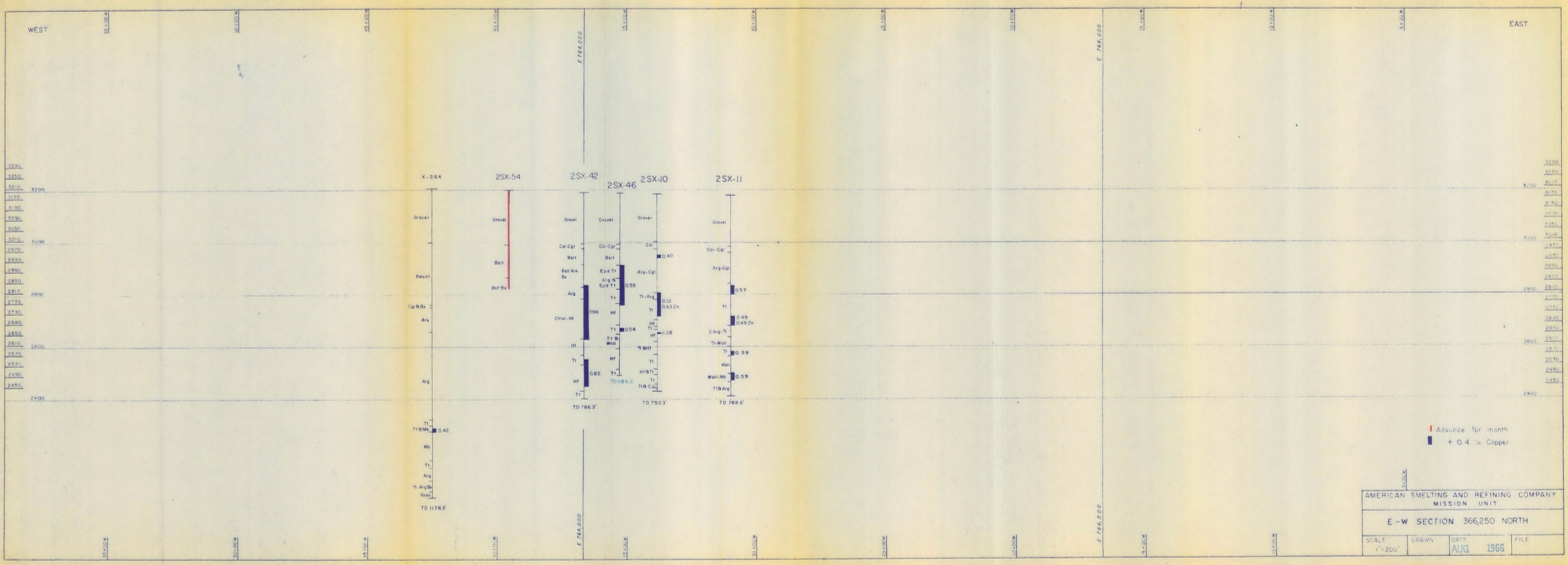
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT

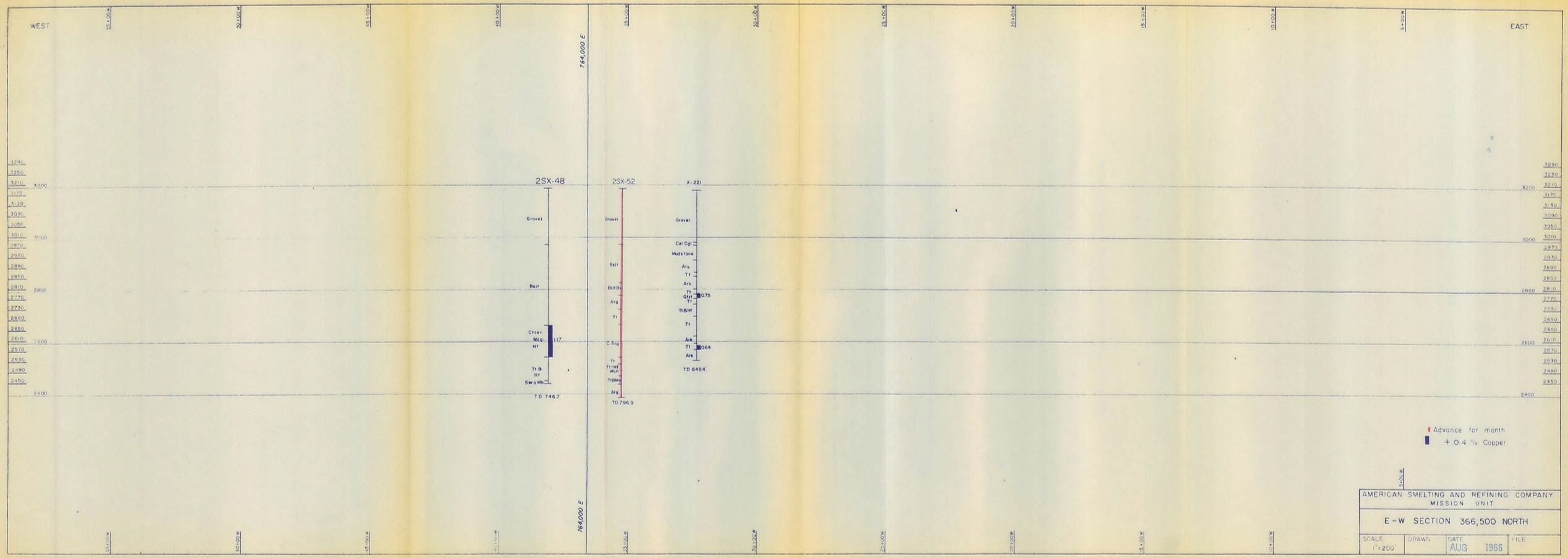
E-W SECTION 365,500 NORTH

SCALE	DRAWN	DATE	FILE
1" = 200'		AUG 1966	MIS-122-C100


WEST
EAST
55+00W
50+00W
45+00W
40+00W
35+00W
30+00W
25+00W
20+00W
15+00W
10+00W
5+00W
0+00
E 764,000
E 764,000
3290
3250
3210
3200
3170
3130
3090
3050
3010
3000
2970
2930
2890
2850
2810
2800
2770
2730
2690
2650
2610
2600
2570
2530
2490
2450
2400
2SX-47
Gravel
Col Cgl
Arg
Arg & Mp
Mp
Arg
1.00
(0.40N.S.)
Mp
0.43
Ark-Arg
0.51
Arg-Cgl
0.73
0.54
Tt
Mb
TD 1301.7'
X-239
2SX-7
Proj. 89' N
X-245
2SX-9
Gravel
Gravel
Gravel
Gravel
Col Cgl
Tt
0.60
(0.17 N.S.)
Tt & Arg
0.67
Arg
Arg-Tt
Tt-Hf
0.56
Ark
Tt
0.85
Hf
0.58
0.71
Ark & Arg
Arg
Ark-Arg
Tt
Tt-Arg
0.81
0.51
Tt & Hf
Hf
4.09
Mb
0.94
Hf & Mb
Tt
Hf
Tt-Arg
TD 668.3'
TD 850.4'
TD 924.0'
Col-Cgl
Ark-Arg
Arg-Cgl
Tt
0.70
Tt & Qtzt
Hf
0.66
Tt-C. Arg
Arg
TD 782.0'
Advance for month
+ 0.4% Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 365 ,750 N
SCALE
1"=200'
DRAWN
DATE
AUG 1966
FILE
MIS-122-C101


WEST
EAST
E 164,000
2SX-51
2SX-45
2SX-43
2SX-49
2SX-36
Gravel
Bslt
Epid Tt
Arg
0.51
TD 472.5
Bslt bx
Epid Tt & Arg
0.57
1.01
0.61
Hf
Serp Mb & Hf
TD 728.6'
Col Cgl
Arg & Epid Tt
Epid Tt & Hf
0.56
Arg Epid Tt Hf
Arg & Epid Tt
Tt
0.82
1.33
TD 738.3'
Epid Tt
0.50
C Arg
0.80
Tt & Hf
5.22
Tt & Mb
TD 7790'
0.49
Arg-Cgl
Tt & Arg
Serp-Mb
C Arg
Tt & Wolf
TD 8100'
3290
3250
3210
3170
3130
3090
3050
3010
2970
2930
2890
2850
2810
2770
2730
2690
2650
2610
2570
2530
2490
2450
3200
3000
2800
2600
2400
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,125 NORTH
SCALE 1"=200'
DRAWN
DATE AUG 1966
FILE


WEST
EAST
X-264
2SX-54
2SX-42
2SX-46
2SX-10
2SX-11
Gravel
Bsalt
Bsalt Bx
Basalt
Cgl & Bx
Ark
Arg
Th
Th & Mb
0.42
Mb
Th-Arg Bx
Gran
TD 1178.3'
Cal Cgl
Bsalt Ark Bx
Chlor-Hf
Hf
0.96
0.82
TD 786.3'
Epid Tf
Arg & Epid Tf
0.59
Tf
0.54
Tf & Wolf
TD 694.0
Cal
0.40
Arg-Cgl
Th-Arg
0.32
0.63 Zn
Hf & Tf
Th & Cal
TD 750.3'
0.57
0.49
0.49 Zn
C Arg-Th
Th-Wolf
0.59
Wolf
Wolf-Mb
Wolf & Arg
TD 768.6'
E 764,000
E 766,000
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,250 NORTH
SCALE 1" = 200'
DRAWN
DATE AUG 1966
FILE


WEST
EAST
35+00W
30+00W
45+00W
40+00W
25+00W
20+00W
15+00W
10+00W
5+00W
0+00
5+00W
764,000 E
3290
3250
3210
3170
3130
3090
3050
3010
2970
2930
2890
2850
2810
2770
2730
2690
2650
2610
2570
2530
2490
2450
3200
3000
2800
2600
2400
2SX-48
Gravel
Bslt
Chlor
Mag
Hf
1.17
Tr B
Hf
Serp Ms
T.D 746.7
2SX-52
Gravel
Bslt
Bslt Br
Arg
Tr
C Arg
Tr
Tr Hf
Wgh
Tr BMg
Arg
T.D 796.9
X-221
Gravel
Col Cgl
Mudstone
Ark
Tt
Ark
Tt
Qtzt
Tt
0.75
Tt & Hf
Tt
Ark
Tt
0.64
Ark
T.D 649.4'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 366,500 NORTH
SCALE 1"=200'
DRAWN
DATE AUG 1966
FILE

DIAMOND DRILLING - MISSION UNIT

September, 1966

J. H. C.

OCT 10 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N.S.	Feet Drilled During Month	Depth End of Month	Final Depth
				221	33	.56	.11			
2SX-53	3228.0	365,498	762,692	812.8-906.8	94.0	0.57	Nil			
				1028.8-1297.3	268.5	0.65	Nil			
				1352.5-1401.3	48.8	1.15	Nil	821.6	1416.5	1416.5
2SX-54	3199.0	366,249	763,715	422.7-432.7	10.0	0.65	Nil			
				734.6-744.8	10.2	0.72	Nil	521.0	897.0	897.0
2SX-55	3233.8	365,489	762,401	420.8-431.6	10.8	0.53	Nil			
				512.8-523.6	10.8	0.40	Nil			
				533.3-543.6	10.3	0.46	Nil			
				702.8-712.8	10.0	0.44	Nil	466.8	815.4	815.4
*2SX-56	3210.6	366,002	763,271	441.0-471.3	30.3	0.40	Nil	850.5	850.5	
*2SX-57	3216.3	365,026	763,559	213.9-278.8	64.9	1.00	0.32			
				325.7-336.2	10.5	0.53	Nil	355.5	355.5	
2SX-	3223.0	365,031	763,265	507.8-860.7	352.9	0.65	Nil			
(Ext.X-260)				945.3-961.1	15.8	0.70	Nil			
				991.4-1048.7	57.3	1.71	Nil	778.3	1118.8	1118.8
			**							
*2SX-	3209.2	365,030	763,845	307.0-317.1	10.1	0.42	Nil	162.5	447.8	
(Ext.X-261)										
					1015.2			3956.2		

* Assays Not Complete
** Approximate coordinates & elevations

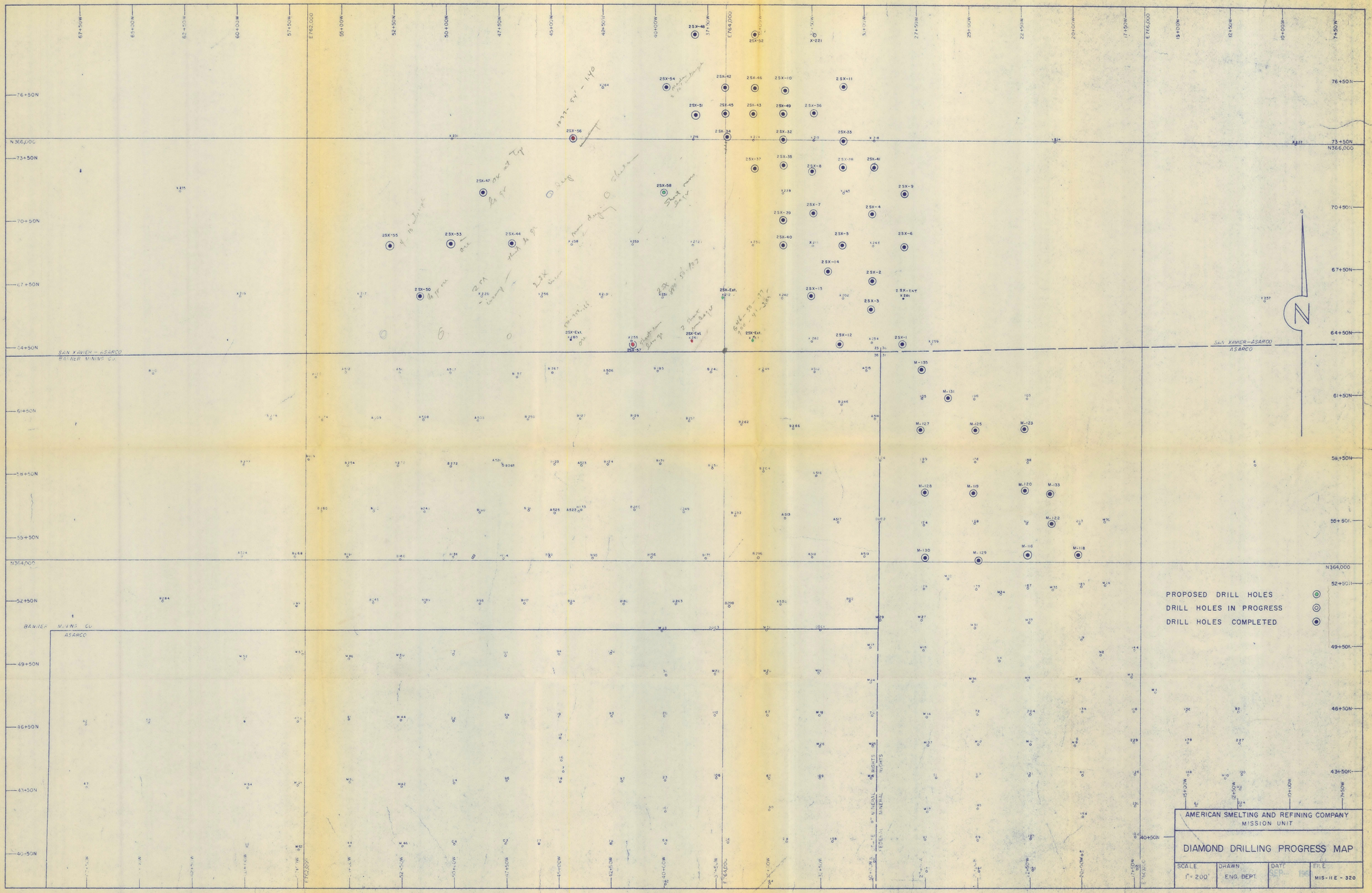
DIAMOND DRILLING - MISSION UNIT

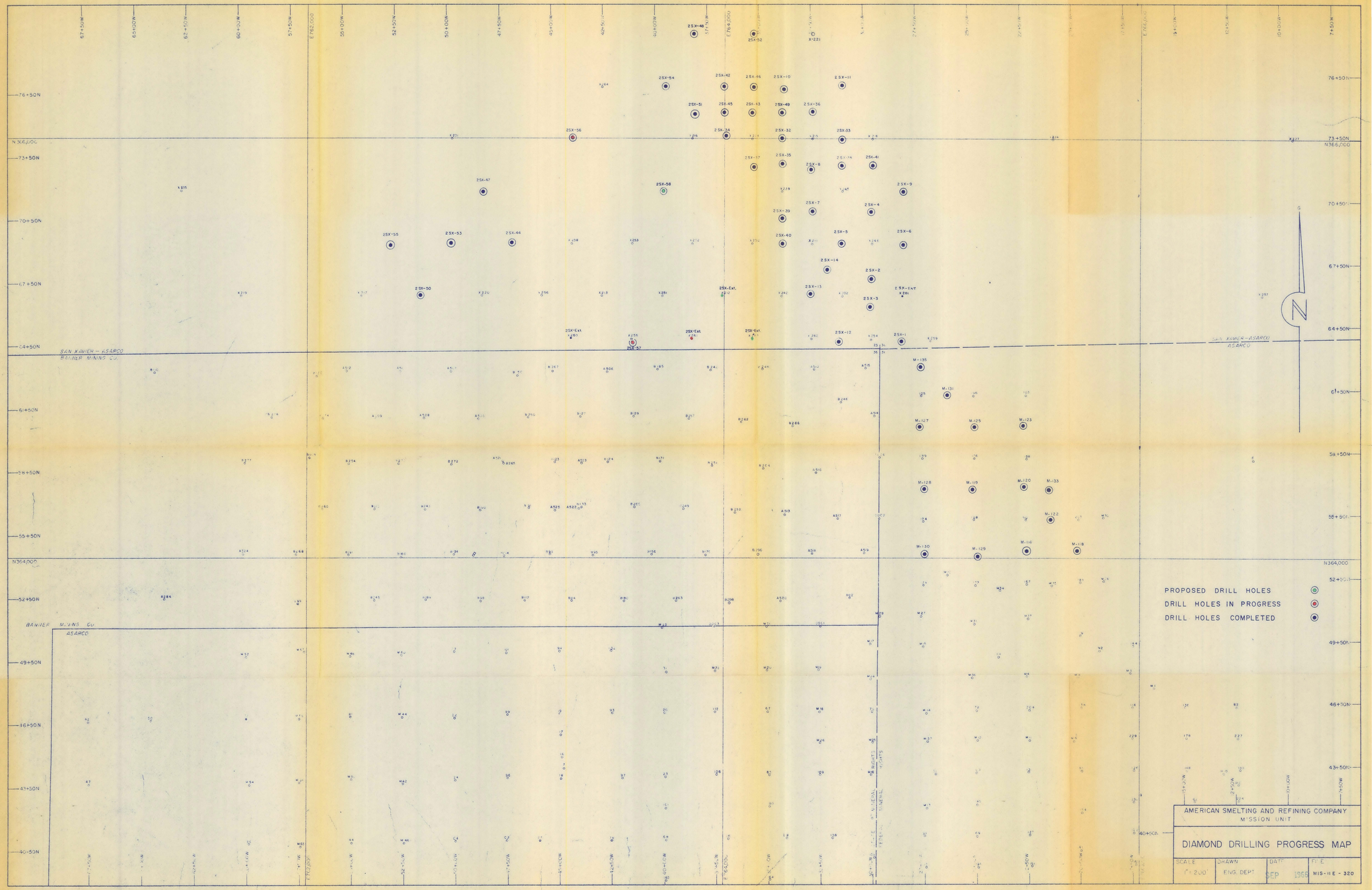
September 1, 1966

J. H. C.

SEP 6 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-46	3188.6	366,246	764,140	No Assays Run				5.6	694.0	694.0
2SX-47	3223.3	365,744	762,846	709.7-759.4	49.7	0.43	Nil			
				815.7-1031.7	216.0	0.51	Nil			
				1088.9-1115.8	26.9	0.73	Nil			
				1196.5-1206.6	10.1	0.54	Nil	938.9	1301.7	1301.7
2SX-50	3230.3	365,250	762,546	228.1-253.2	25.1	0.48	0.18			
				329.1-377.4	48.3	0.43	Nil			
				1128.7-1215.2	86.5	0.42	Nil			
				1226.0-1319.0	93.0	0.93	Nil	1232.6	1327.6	1327.6
2SX-51	3193.1	366,115	763,855	300.0-340.3	40.3	0.51	Nil	472.5	472.5	472.5
2SX-52	3183.8	366,500	764,137	No Assays Run				796.9	796.9	796.9
2SX-53	3228.0	365,498	762,692	221.0-253.9	32.9	0.56	0.11	594.9	594.9	
2SX-54	3199.0	366,249	763,715	No Assays Run				376.0	376.0	
2SX-55	3233.8	365,489	762,401	No Assays Reported				348.6	348.6	
					628.8			4766.0		


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
SAN XAVIER – ASARCO
BANNER MINING CO.
ASARCO
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE
1" = 200'
DRAWN
ENG. DEPT.
DATE
SEP. 196
FILE
MIS-IIE-320


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
SAN XAVIER - ASARCO
BANNER MINING CO.
ASARCO
N366,000
N364,000
E762,000
E764,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
67+50W
65+00W
62+50W
60+00W
57+50W
55+00W
52+50W
50+00W
47+50W
45+00W
42+50W
40+00W
37+50W
35+00W
32+50W
30+00W
27+50W
25+00W
22+50W
20+00W
17+50W
15+00W
12+50W
10+00W
7+50W
2SX-52
X-221
2SX-54
2SX-42
2SX-46
2SX-10
2SX-11
2SX-51
2SX-45
2SX-43
2SX-49
2SX-36
2SX-56
2SX-34
2SX-32
2SX-33
2SX-17
2SX-35
2SX-8
2SX-41
2SX-47
2SX-58
2SX-9
2SX-39
2SX-7
2SX-4
2SX-55
2SX-53
2SX-44
2SX-40
2SX-5
2SX-6
2SX-14
2SX-2
2SX-50
2SX-13
2SX-Ext.
2SX-EXT
X-201
2SX-3
2SX-12
2SX-1
2SX-57
M-135
M-131
M-127
M-125
M-123
M-128
M-119
M-120
M-133
M-122
M-130
M-129
M-116
M-118
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE 1" = 200'
DRAWN ENG. DEPT.
DATE SEP 1966
FILE MIS-II E - 320

to JEK

Note: A complete report for July, 1966 was not available. The location and the advance of the holes drilled in July can be seen on the sections and the plan map in the report for August.

J H.C

OCT 21 1966

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona
August 11, 1966

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during July amounted to 5,082.2 feet. Six holes, 2SX-42, 2SX-43, 2SX-44, 2SX-45, 2SX-48 and 2SX-49 were completed. Drilling commenced on holes 2SX-46, 2SX-47 and 2SX-50.

All drilling during July was confined to the southern segment of Tract 2 of the San Xavier Indian Reservation adjacent to the Mission and Banner Properties. The narrow eastern boundary ore zone will require 3 or 4 holes to complete the delineation of its northern most end. Drilling is now in progress on the oxide zone and the deep low grade sulphide ore adjacent to the Banner property, preliminary results are moderately encouraging.

2SX-42, situated at the northern end of the eastern boundary ore zone encountered a moderately high grade ore run at considerable depth. A long run of high grade ore, at moderate depth, was drilled in this hole during June, 1966.

2SX-43, also located at the northern end of the eastern boundary ore zone penetrated two very short runs of moderately high grade material at considerable depth.

2SX-44, positioned on the western part of the mineralized area adjacent to the Banner property encountered a very short run of low grade oxide material at bedrock, This hole also penetrated over 600.0 feet of primary sulphide ore ranging from marginal grade, near the surface, to high grade at considerable depth.

2SX-45, located at the northern end of the eastern boundary ore zone penetrated a modest run of moderate ore grade material just below bedrock. A similar lengthy ore grade run was also encountered at marginal possible open pit depth.

2SX-46, also situated at the northern end of the eastern boundary ore zone penetrated a good run of moderate ore grade material near bedrock. No mineralization of importance was encountered below the initial moderate grade run.

2SX-47, positioned on the interpreted north-western boundary of the potential leach zone adjacent to the Banner property, encountered a modest run of moderately high grade leach ore. No primary sulphide ore had been penetrated by the end of the month.

2SX-48, located just to the north of the northern end of the eastern boundary ore zone encountered a modest run of high grade material at considerable depth. This drill hole helped prove that the northern end of the eastern boundary ore zone terminates against the post mineral basalt flow.

2SX-49, situated at the northern end of the eastern boundary ore zone penetrated two moderate ore grade runs, one at bedrock and the other at moderate depth. Also a very short, very high grade, run was encountered in this hole at considerable depth.

2SX-50, positioned on the western part of the mineralized area adjacent to the Banner property had not encountered bedrock by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-42, continued in weakly mineralized tactite to 638.2 feet where strongly mineralized tactite was encountered grading to moderately mineralized hornfels at 655.0 feet. Mineralization became weak in the hornfels at 740.0 feet. At 755.0 feet, weakly mineralized tactite was penetrated and the hole bottomed in this rock type at 786.3 feet.

2SX-43, which stood at 439.1 feet at the end of June, graded immediately into weakly mineralized tactite and continued in this rock type to 592.0 feet. At 592.0 feet an essentially weakly mineralized hornfels was encountered and except for a 40.0 foot faulted zone at 686.0 feet, containing serpentine altered marble, remained in this rock type to 738.3 feet where the hole bottomed.

2SX-44, continued in sparse to moderately mineralized altered quartz monzonite porphyry to 536.5 feet where sparse to moderately mineralized arkosic argillite was penetrated. The hole continued in the arkosic argillite, with the exception of a 50.0 foot zone of quartz monzonite at 700.5 feet, to 858.6 feet where a sparse to moderately mineralized pebble conglomerate altered to argillite was encountered. At 1206.8 feet the above argillite graded to Paleozoic tactite and hornfels containing a 47.4 foot strongly mineralized shear zone at 1227.3 feet. No significant mineralization was penetrated below the ore run at 1227.3 feet. The hole bottomed in unaltered and unmineralized Laramide granite at 1457.4 feet.

2SX-45, encountered very strongly faulted post mineral basalt at bedrock and continued in this rock type to 240.8 feet where moderately mineralized argillite with occasional pods of epidote tactite was penetrated. The above rock type graded to sparsely mineralized argillite at 340.0 feet. At 451.8 feet, moderately mineralized argillite with moderate to strong pods of epidote tactite was encountered. Moderate grading almost immediately to weakly mineralized hornfels was penetrated at 570.0 feet. The hole bottomed in the weakly mineralized hornfels at 728.6 feet.

2SX-46, also encountered strongly faulted post mineral basalt at bedrock. At 274.1 feet, moderately mineralized epidote rich tactite was penetrated and continued to 368.6 feet where strongly mineralized tactite was encountered. Weakly mineralized tactite and hornfels were penetrated at 425.2 feet and the hole continued in this rock type to 688.4 feet where it stood at the end of the month.

2SX-47, penetrated leached argillite (?) and quartz monzonite porphyry at bedrock which contained moderate to strong copper oxide values to the base of the oxidized zone at 327.9 feet. Below the oxidized zone the hole continued in weakly mineralized quartz monzonite porphyry to 362.8 feet where it stood at the end of the month.

2SX-48, encountered post mineral basalt at bedrock and remained in the basalt 527.1 feet where strongly mineralized magnitite rich hornfels was penetrated. At 647.1 feet weakly mineralized tactite and hornfels were encountered. The tactite and hornfels continued to 738.4 feet where a serpentine rich marble, which the hole bottomed in at 746.7 feet, was penetrated.

2SX-49, encountered a moderate to occasionally weakly mineralized argillite and epidote rich tactite at bedrock and continued in this rock type to 449.0 feet where weakly mineralized tactite and hornfels were penetrated. The hole essentially remained in the weakly mineralized tactite and hornfels to 779.0 feet where it bottomed.

2SX-50, had drilled only 95.0 feet into the alluvial overburden by the end of the month.

Sections illustrating drilling progress for July, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D. K. Hall

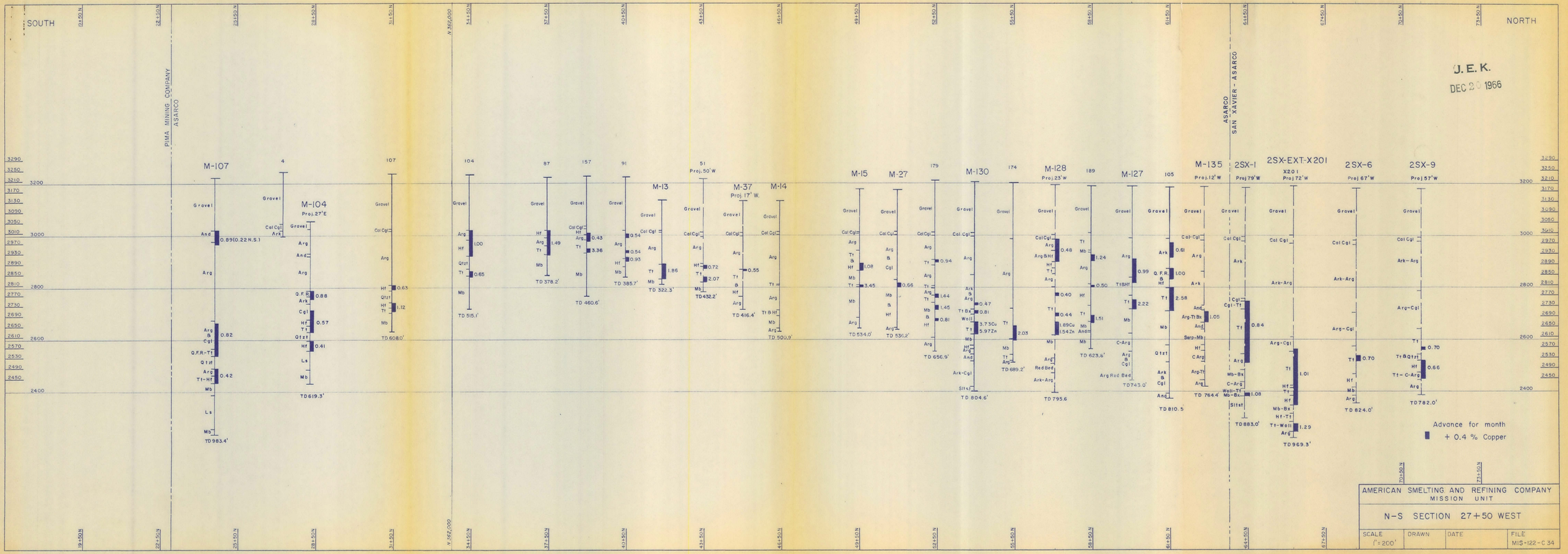
D. K. HALL
Geologist

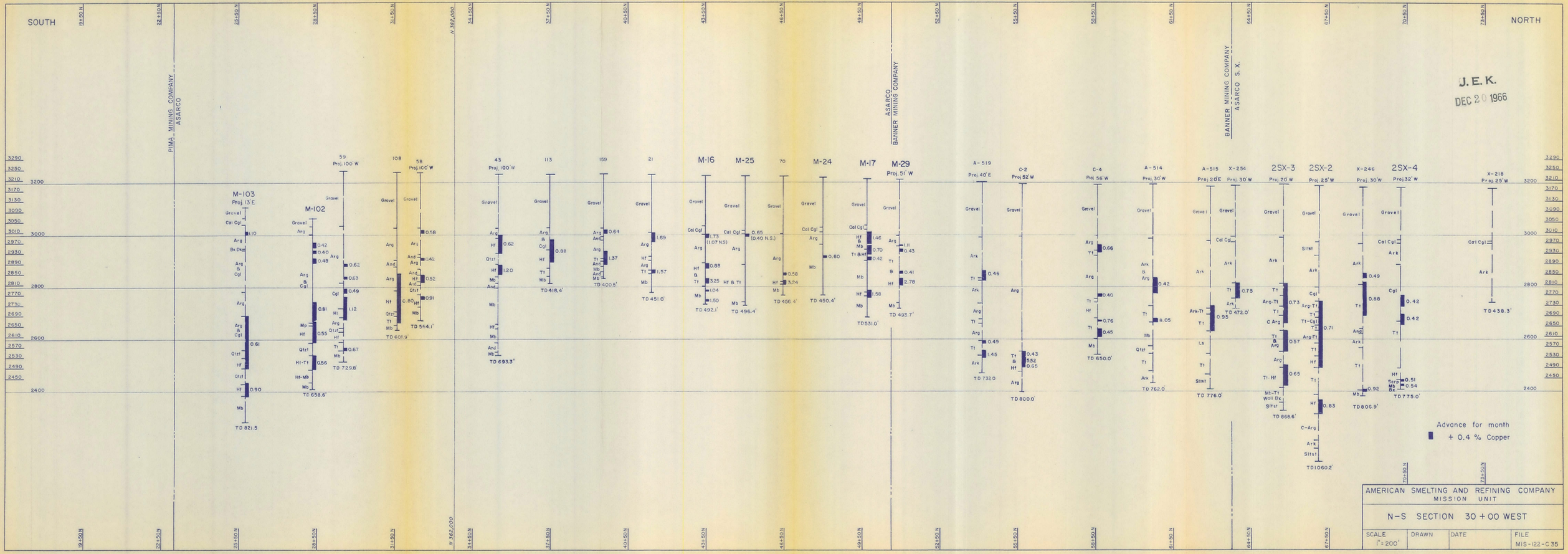
DKH:kay
attachs

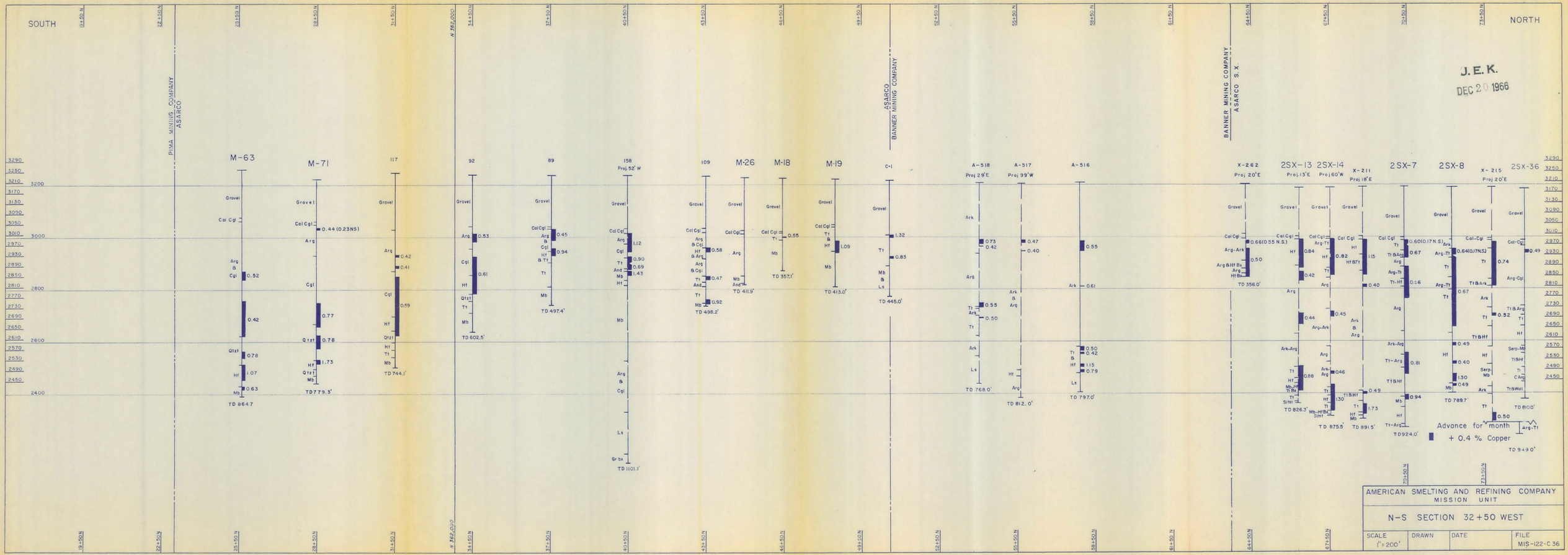
DIAMOND DRILLING - MISSION UNIT

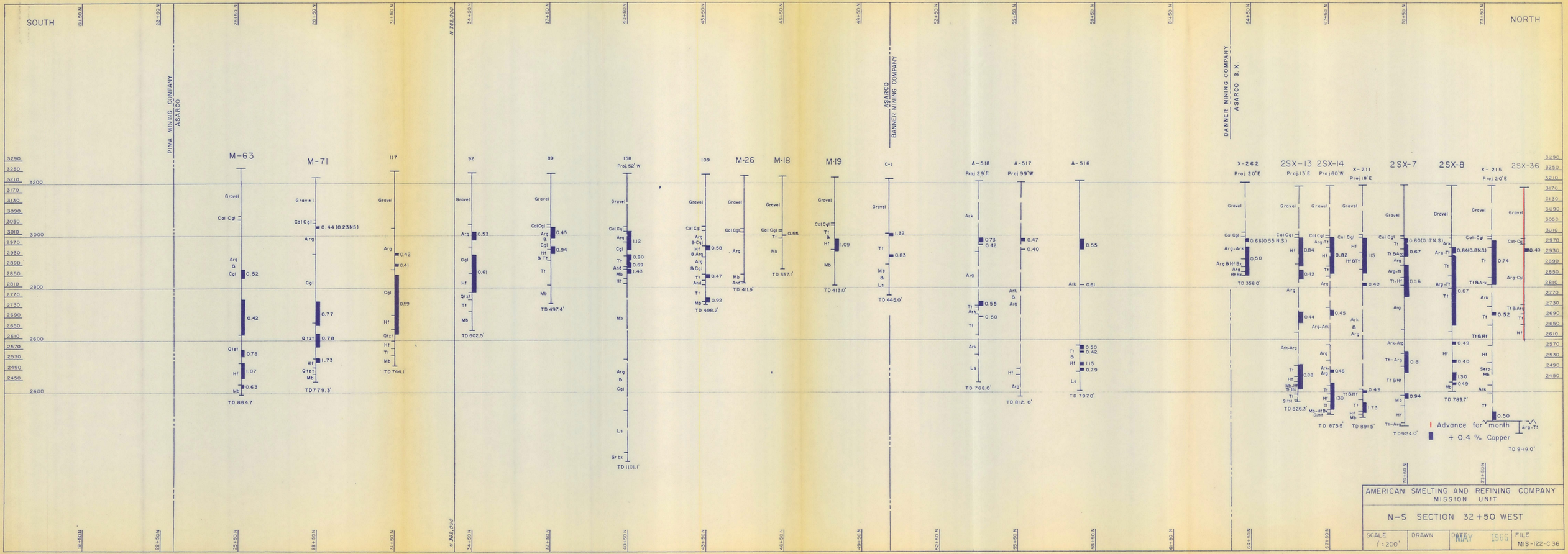
August 1, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40 % Cu. Depth	Intersections Interval	Average Total	% Cu. N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-42	3190.8	366,249	763,996	638.2-738.9	100.7	0.82	Nil	158.0	786.3	786.3
2SX-43	3188.2	366,122	764,131	627.0-649.1	22.1	0.82	Nil			
				696.2-707.6	11.4	1.33	Nil	299.2	738.3	738.3
2SX-44	3217.2	365,502	762,984	218.7-235.2	16.5	0.41	0.09			
				313.8-353.4	39.6	0.42	Nil			
				474.3-700.5	226.2	0.42	Nil			
				754.5-809.4	54.9	0.57	Nil			
				841.1-1058.0	216.9	0.66	Nil			
				1143.5-1153.8	10.3	0.52	Nil			
				1174.3-1188.6	14.3	0.92	Nil			
				1227.3-1274.7	47.4	1.75	Nil	1224.5	1457.4	1457.4
2SX-45	3191.6	366,126	763,998	240.8-341.4	100.6	0.57	Nil			
				385.0-395.6	10.6	1.01	Nil			
				451.8-608.8	157.0	0.61	Nil	728.6	728.6	728.6
2SX-46	3188.6	366,246	764,140	274.1-425.2	151.1	0.59	Nil			
				517.8-530.6	12.8	0.54	Nil	688.4	688.4	
2SX-47	3223.3	365,744	762,846	208.4-327.9	119.5	1.00	0.40	362.8	362.8	
2SX-48	3188.7	366,498	763,849	527.1-647.1	120.0	1.17	Nil	746.7	746.7	746.7
2SX-49	3184.0	366,122	764,279	200.9-318.2	117.3	0.50	Nil			
				348.9-424.5	75.6	0.80	Nil			
				663.0-671.9	8.9	5.22	Nil	779.0	779.0	779.0
2SX-50	3230.3	365,250	762,546		No Assay Runs			95.0	95.0	
					1633.7			5082.2		


SOUTH
NORTH
PIMA MINING COMPANY
ASARCO
ASARCO
SAN XAVIER - ASARCO
J. E. K.
DEC 20 1966
M-107
TD 983.4'
M-104
Proj. 27'E
TD 619.3'
TD 608.0'
TD 515.1'
TD 378.2'
TD 460.6'
TD 385.7'
M-13
TD 322.3'
TD 432.2'
M-37
Proj. 17' W.
TD 416.4'
M-14
TD 500.9'
M-15
TD 534.0'
M-27
TD 536.2'
TD 656.9'
M-130
TD 804.6'
TD 689.2'
M-128
Proj. 23' W
TD 795.6
TD 623.6'
M-127
TD 743.0'
TD 810.5
M-135
Proj. 12' W
TD 764.4'
2SX-1
Proj 79' W
TD 883.0'
2SX-EXT-X201
X201
Proj 72' W
TD 969.3'
2SX-6
Proj 67' W
TD 824.0'
2SX-9
Proj 57' W
TD 782.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
N-S SECTION 27+50 WEST
SCALE 1" = 200'
DRAWN
DATE
FILE MIS-122-C 34


SOUTH
NORTH
PIMA MINING COMPANY
ASARCO
ASARCO
BANNER MINING COMPANY
BANNER MINING COMPANY
ASARCO S. X.
N 165,000
J. E. K.
DEC 20 1966
M-103
Proj 13 E
M-102
59
Proj 100' W
108
58
Proj 100' W
43
Proj 100' W
113
159
21
M-16
M-25
70
M-24
M-17
M-29
Proj 51' W
A-519
Proj 40' E
C-2
Proj 52 W
C-4
Proj 56' W
A-514
Proj 30' W
A-515
Proj 20' E
X-254
Proj 30' W
2SX-3
Proj 20 W
2SX-2
Proj 25' W
X-246
Proj 30' W
2SX-4
Proj 32' W
X-218
Proj 25' W
TD 821.5
TD 658.6'
TD 729.8'
TD 564.1'
TD 601.9'
TD 693.3'
TD 418.4'
TD 400.5'
TD 451.0'
TD 492.1'
TD 496.4'
TD 456.4'
TD 450.4'
TD 531.0'
TD 493.7'
TD 732.0
TD 800.0
TD 650.0'
TD 762.0'
TD 776.0'
TD 472.0'
TD 868.6'
TD 1060.2'
TD 806.9'
TD 775.0'
TD 438.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
N-S SECTION 30 + 00 WEST
SCALE 1" = 200'
DRAWN
DATE
FILE MIS-122-C 35


SOUTH
NORTH
PIMA MINING COMPANY
ASARCO
ASARCO
BANNER MINING COMPANY
BANNER MINING COMPANY
ASARCO S.X.
J. E. K.
DEC 20 1966
M-63
M-71
117
92
89
158
Proj. 52' W
109
M-26
M-18
M-19
C-1
A-518
Proj 29'E
A-517
Proj 99'W
A-516
X-262
Proj 20'E
2SX-13
Proj 13'E
2SX-14
Proj 60'W
X-211
Proj 18'E
2SX-7
2SX-8
X-215
Proj 20'E
2SX-36
Gravel
Col Cgl
Arg & Cgl
Qtzt
Hf
Mb
TD 864.7
TD 779.3'
TD 744.1'
TD 602.5'
TD 497.4'
TD 498.2'
TD 411.9'
TD 357.1'
TD 413.0'
TD 445.0'
TD 768.0'
TD 812.0'
TD 797.0'
TD 356.0'
TD 826.3'
TD 875.5'
TD 891.5'
TD 924.0'
TD 789.7'
TD 810.0'
TD 949.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
N-S SECTION 32+50 WEST
SCALE 1" = 200'
DRAWN
DATE
FILE MIS-122-C36


SOUTH
NORTH
PIMA MINING COMPANY
ASARCO
BANNER MINING COMPANY
ASARCO
M-63
TD 864.7'
M-71
TD 779.3'
117
TD 744.1'
92
TD 602.5'
89
TD 497.4'
158
Proj. 52' W
TD 1101.1'
109
TD 498.2'
M-26
TD 411.9'
M-18
TD 357.1'
M-19
TD 413.0'
C-1
TD 445.0'
A-518
Proj 29'E
TD 768.0'
A-517
Proj 99'W
TD 812.0'
A-516
TD 797.0'
X-262
Proj 20'E
TD 356.0'
2SX-13
Proj 13'E
TD 826.3'
2SX-14
Proj 60'W
TD 875.5'
X-211
Proj 18'E
TD 891.5'
2SX-7
TD 924.0'
2SX-8
TD 789.7'
X-215
Proj 20'E
2SX-36
TD 949.0'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
N-S SECTION 32+50 WEST
SCALE 1"=200'
DRAWN
DATE MAY 1966
FILE MIS-122-C36

DIAMOND DRILLING - MISSION UNIT

August 1, 1966

Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+ 0.40% Cu. Depth	Intersections Interval	Average Total	% Cu. N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-42	3190.8	366,249	763,996	638.2-738.9	100.7	0.82	Nil	158.0	786.3	786.3
2SX-43	3188.2	366,122	764,131	627.0-649.1	22.1	0.82	Nil			
				696.2-707.6	11.4	1.33	Nil	299.2	738.3	738.3
2SX-44	3217.2	365,502	762,984	218.7-235.2	16.5	0.41	0.09			
				313.8-353.4	39.6	0.42	Nil			
				474.3-700.5	226.2	0.42	Nil			
				754.5-809.4	54.9	0.57	Nil			
				841.1-1058.0	216.9	0.66	Nil			
				1143.5-1153.8	10.3	0.52q	Nil			
				1174.3-1188.6	14.3	0.92	Nil			
				1227.3-1274.7	47.4	1.75	Nil	1224.5	1457.4	1457.4
2SX45	3191.6	366,126	763,998	240.8-341.4	100.6	0.57	Nil			
				385.0-395.6	10.6	1.01	Nil			
				451.8-608.8	157.0	0.61	Nil	728.6	728.6	728.6
2SX-46	3188.6	366,246	764,140	274.1-425.2	151.1	0.59	Nil			
				517.8-530.6	12.8	0.54	Nil	688.4	688.4	
2SX-47	3223.3	365,744	762,846	208.4-255.7*	47.3	1.15	0.44	362.8	362.8	
2SX-48	3188.7	366,498	763,849	527.1-647.1	120.0	1.17	Nil	746.7	746.7	746.7
2SX-49	3184.0	366,122	764,279	200.9-318.2	117.3	0.50	Nil			
				348.9-424.5	75.6	0.80	Nil			
				663.0-671.9	8.9	5.22	Nil	779.0	779.0	779.0
2SX-50**	3228.0	365,250	762,548	No Assay Runs				95.0	95.0	
					1561.5			5082.2		

* - Assays not complete
** - Approximate elevation and coordinates

AMERICAN SMELTING AND REFINING COMPANY
Sahuarita Arizona

July 8, 1966

W.E.S.
JUL 11 1966

MEMORANDUM TO MR. P. A. LEWIS, Superintendent

Re: Monthly Report on Diamond Drilling

SUMMARY - DISCUSSION

The total footage drilled during June amounted to 4,935.9 feet. Seven holes, 2SX-34, 2SX-36, 2SX-37, 2SX-38, 2SX-39, 2SX-40 and 2SX-41 were completed. Drilling commenced on holes 2SX-42, 2SX-43 and 2SX-44.

Drilling was confined to the southern segment of Tract 2 of the San Xavier Indian Reservation adjacent to the Mission and Banner Properties. A few more holes will be required at the north end of the northwest trending ore zone at the eastern boundary of the mineralized area to completely define this ore zone. With the near completion of the eastern boundary ore zone drilling has started on the proposed holes on the remainder of the mineralized area adjacent to the Banner property.

2SX-34, situated on the eastern boundary ore zone penetrated two short high grade ore runs at considerable depth. A modest low ore grade run at moderate depth was reported in this hole during May, 1966.

2SX-36, located on the eastern side of the eastern boundary ore zone did not encounter any ore grade runs.

2SX-37, positioned on the western side of the eastern boundary ore zone penetrated a few very short ore grade runs but none of any importance.

2SX-38, situated on the eastern boundary ore zone encountered one modest run of moderate ore grade material near bedrock. No mineralization of importance was encountered below the initial moderate grade run.

2SX-39, located on the western side of the eastern boundary ore zone penetrated one short moderate grade ore run just below bedrock.

2SX-40, also located on the western side of the eastern boundary ore zone encountered a modest run of low ore grade material at moderate depth.

2SX-41, positioned on the eastern side of the eastern boundary ore zone did not penetrate any ore grade runs.

2SX-42, situated at the north end of the eastern boundary ore zone had encountered one long run of high grade ore material at moderate depth by the end of the month.

2SX-43, located at the northern end of the eastern boundary ore zone had penetrated one lengthy run of moderate ore grade material by the end of the month.

2SX-44, situated on the western part of the mineralized area adjacent to the Banner property had encountered no ore grade runs by the end of the month.

GEOLOGIC LOG OF HOLES

2SX-34, continued in moderately mineralized hornfels to 828.0 feet where the rock graded into very weakly mineralized tactite. The hole bottomed in the weakly mineralized tactite at 958.7 feet.

2SX-36, continued in weakly mineralized hornfels to 604.0 feet where a weakly mineralized strongly serpentine altered marble was penetrated. At 632.0 feet a practically unmineralized mixture of tactite, hornfels, Paleozoic argillite and wollastonite was encountered. The hole bottomed in this mixture of Paleozoic rocks at 810.0 feet.

2SX-37, penetrated weak to sparsely mineralized argillite and arkosic argillite at bedrock and continued in this rock type to 772.4 feet where weakly mineralized hornfels was penetrated. Except for a 32.3 feet strongly mineralized zone at 816.8 feet the hole continued in the weakly mineralized hornfels to 887.1 feet where the hole bottomed.

2SX-38, encountered weakly mineralized arkosic and conglomeritic argillite at bedrock and continued in this rock type to 312.0 feet where the hole graded into epidote and chlorite altered, moderately mineralized tactite. At 432.0 feet weak to sparsely mineralized conglomeritic argillite was penetrated. The hole continued in this rock type to 591.6 feet where weakly mineralized hornfels was encountered. The hornfels continued to 714.6 feet where a very weakly mineralized, faulted serpentine marble with fragments of tactite and hornfels was encountered. The hole penetrated very weakly mineralized Paleozoic argillite at 791.0 feet and bottomed in this rock type at 800.4 feet.

2SX-39, penetrated sparsely mineralized argillite at bedrock and continued in this rock type to 240.6 feet where the rock graded to moderately mineralized epidote altered Tactite. At 266.2 feet sparsely mineralized argillite and arkosic argillite were encountered. The hole bottomed in the arkosic argillite at 541.1 feet.

2SX-40, encountered sparsely mineralized arkosic argillite at bedrock and continued in this rock type to 340.2 feet where moderately mineralized argillite with pods of tactite was encountered. At 364.5 feet moderate grading to sparsely mineralized argillite was penetrated and the hole bottomed in this rock type at 583.0 feet.

2SX-41, penetrated very weakly mineralized arkosic argillite at bedrock. The argillite became conglomeritic at 300.0 feet and the hole remained in this weakly mineralized rock type to 456.2 feet where it bottomed.

2SX-42, encountered post sulphide basalt at bedrock. At 273.7 feet a strong fault zone was penetrated, this fault zone continued to 352.2 feet where a strongly chlorite altered, moderately mineralized argillite was penetrated. The mineralized argillite graded to strongly chlorite altered, moderate to very strongly mineralized hornfels at 404.6 feet. At 556.0 feet weakly mineralized hornfels and tactite were encountered. The hole continued in the hornfels and tactite to 628.3 feet where it stood at the end of the month.

28K-43, penetrated moderately mineralized epidote rich tactite with occasional zones of argillite and continued in this rock type to 439.1 feet where the hole stood at the end of the month.

28K-44, encountered leached metaporphyry with sparse secondary copper mineralization at bedrock and continued in this rock type to 232.9 feet where the hole stood at the end of the month.

Sections illustrating drilling progress for June, a list of abbreviations utilized on cross sections, a tabulation of ore intercepts for the month, and a plan map with hole locations and proposed drill holes are attached.

D K Hall

D. K. Hall
Geologist

DKH:hkd
attachs

EXPLANATION OF ABBREVIATIONS ON SECTIONS

Cal. Cgl.	- Caliche Conglomerate (Overburden)
Arg.	- Argillite
Cgl.	- Conglomerate
Tt.	- Tactite
Hf.	- Hornfels
Mb.	- Marble
C. Arg.	- Calcareous Argillite
N.S.	- Non Sulfide
T.D.	- Total Depth
And.	- Andesite
Br.	- Breccia
Mp.	- Metaporphyry
Gyp.	- Gypsum
Gr.	- Granite

J. H. C.

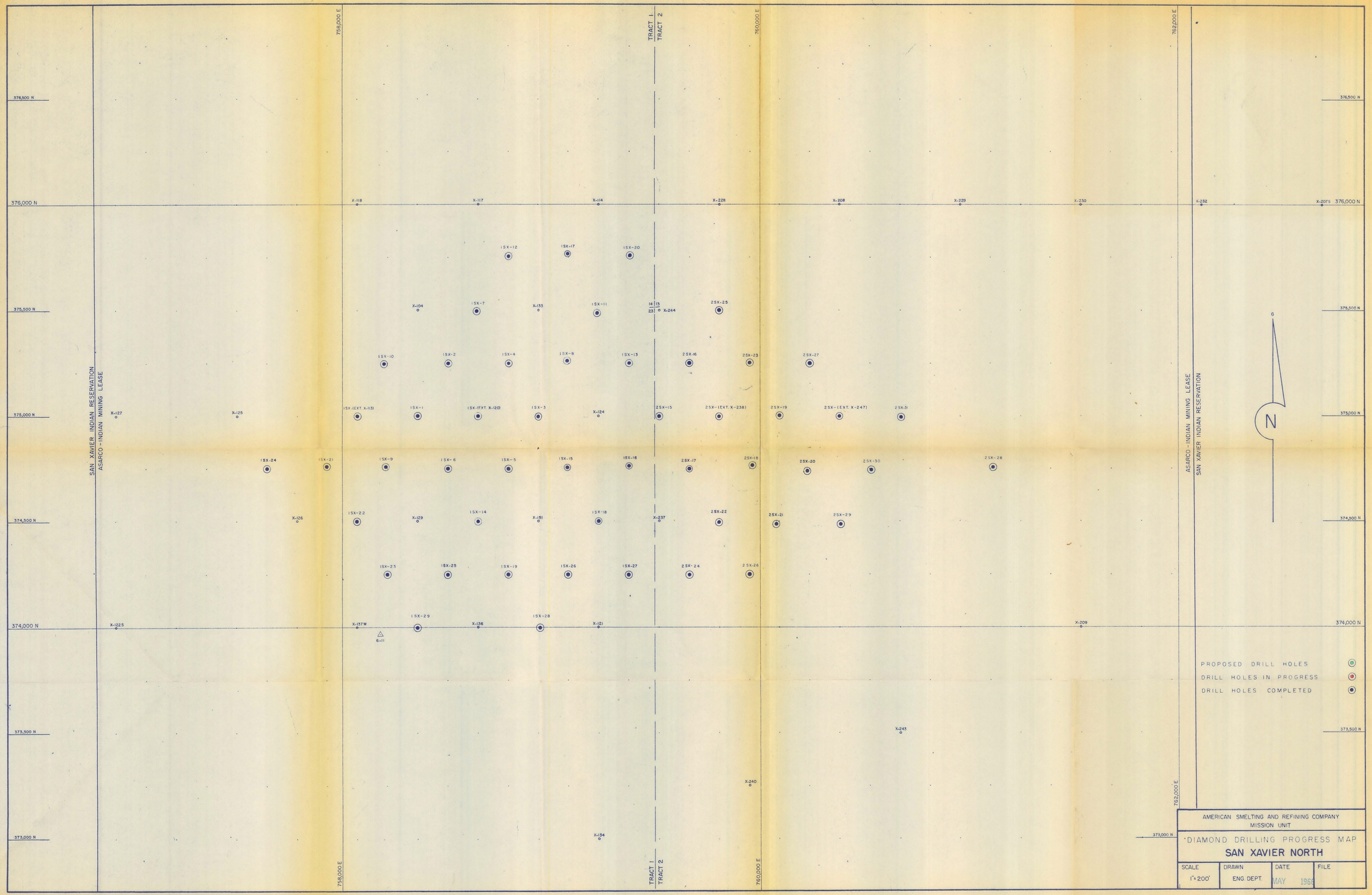
JUL 5 1966

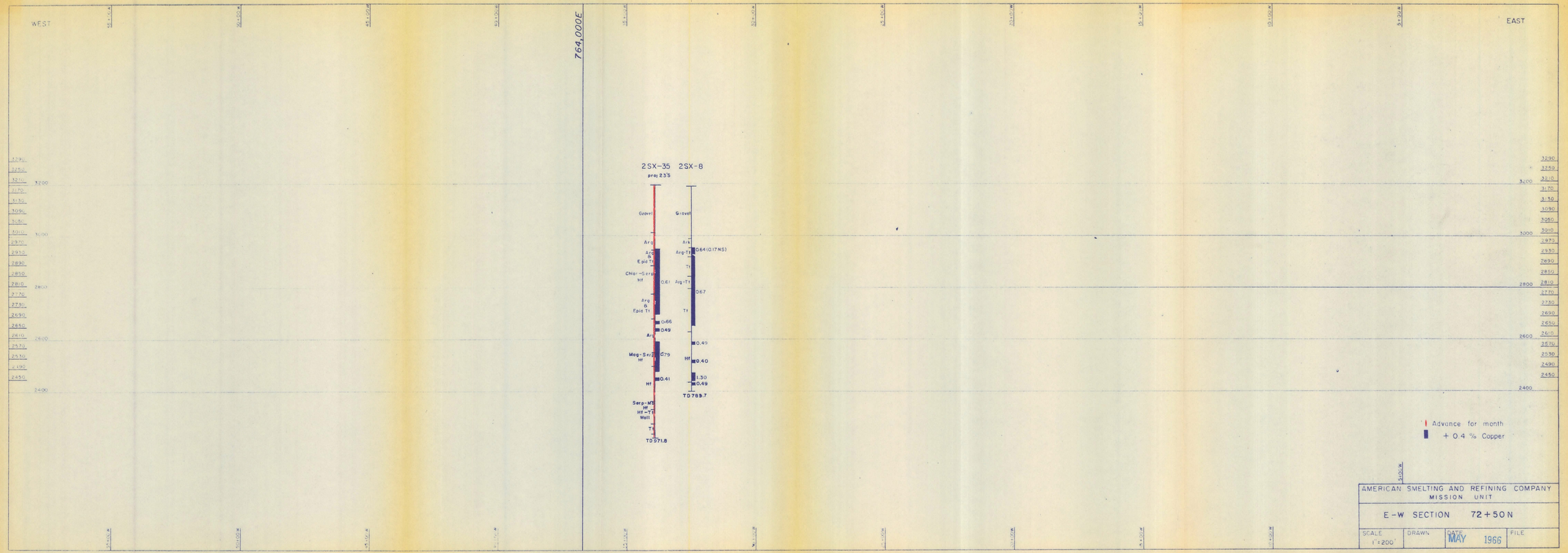
DIAMOND DRILLING - MISSION UNIT

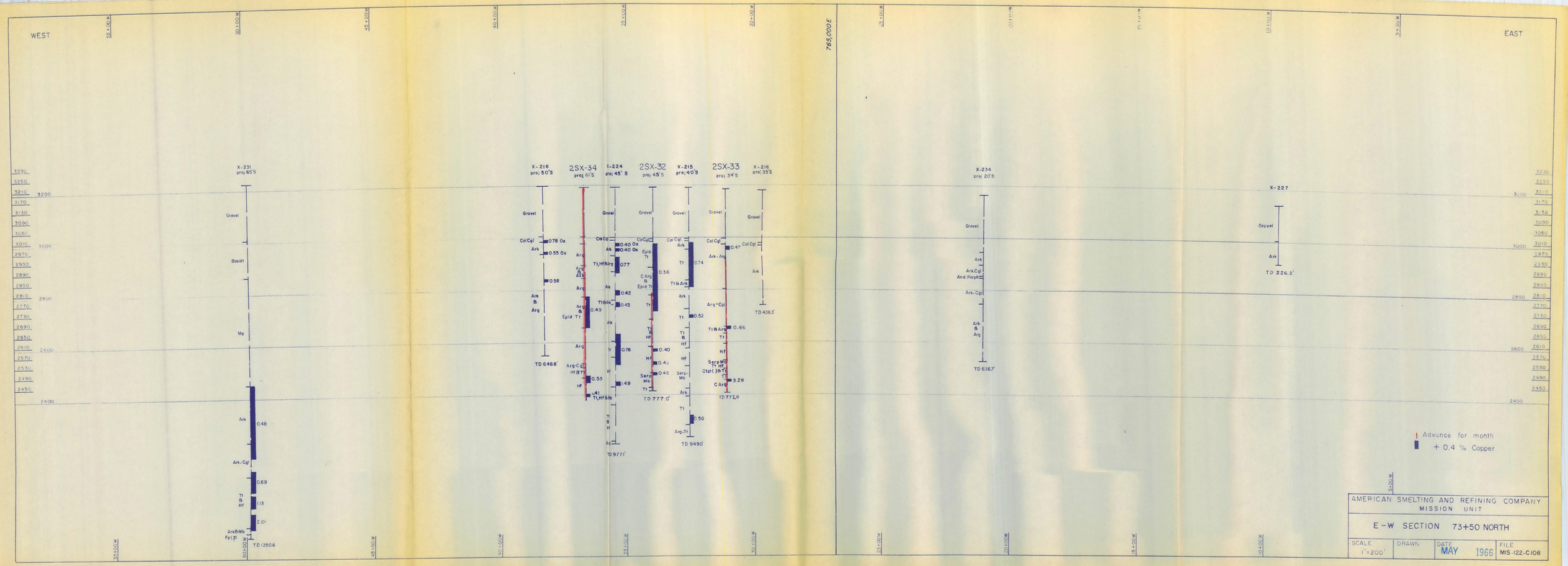
June, 1966

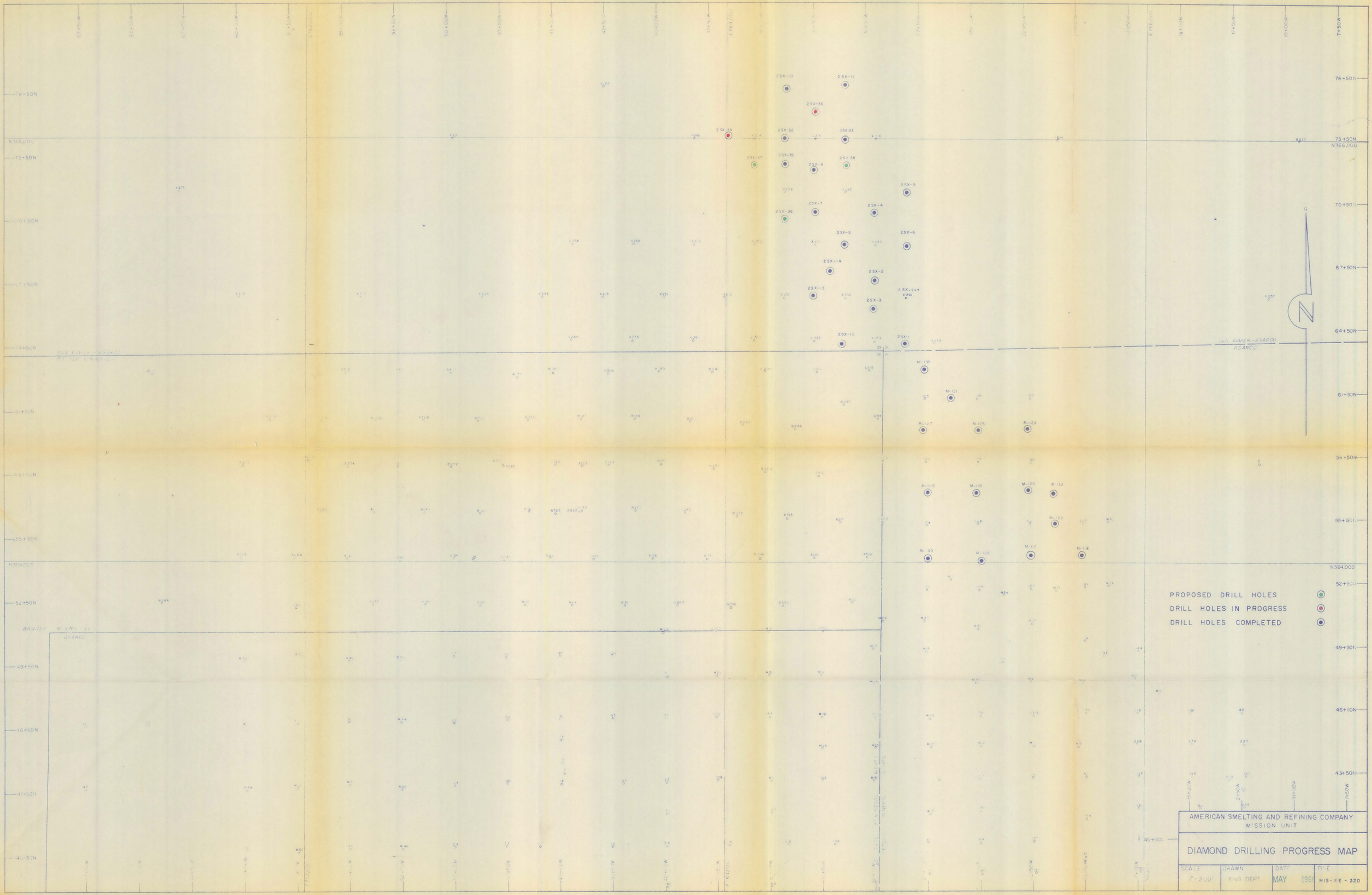
Hole Nos.	Ground Elevations	Coordinates North	Coordinates East	+0.40% Cu Depth	Intersections Interval	Average Total	% Cu N. S.	Feet Drilled During Month	Depth End of Month	Final Depth
2SX-34	3,192.0	366,014	764,009	807.8-828.2	20.4	1.10	Nil			
				912.0-924.9	12.9	1.06	Nil	147.8	958.7	958.7
2SX-36	3,183.6	366,128	764,423	No	Ore	Runs		220.0	810.0	810.0
2SX-37	3,192.5	365,862	764,141	228.1-238.5	10.4	.43	.05			
				261.8-273.0	11.2	.42	Nil			
				772.4-782.7	10.3	.71	Nil			
				816.8-849.1	32.3	1.21	Nil	887.1	887.1	887.1
2SX-38	3,182.1	365,869	764,566	295.3-419.5	124.2	.66	Nil			
				538.5-548.8	10.3	.41	Nil	800.4	800.4	800.4
2SX-39	3,196.5	365,618	764,280	240.6-266.2	25.6	.77	Nil	541.1	541.1	541.1
2SX-40*	3,192.8	365,496	764,281	319.0-392.8	73.8	.57	Nil			
				420.9-431.4	10.5	.44	Nil	583.0	583.0	583.0
2SX-41	3,181.7	365,870	764,714	No	Assays	Reported		456.2	456.2	456.2
2SX-42	3,190.8	366,249	763,996	No	Assays	Reported		628.3	628.3	
2SX-43	3,188.2	366,122	764,131	No	Assays	Reported		439.1	439.1	
2SX-44	3,217.2	365,502	762,984	No	Assays	Reported		232.9	232.9	
					341.9			4,935.9		

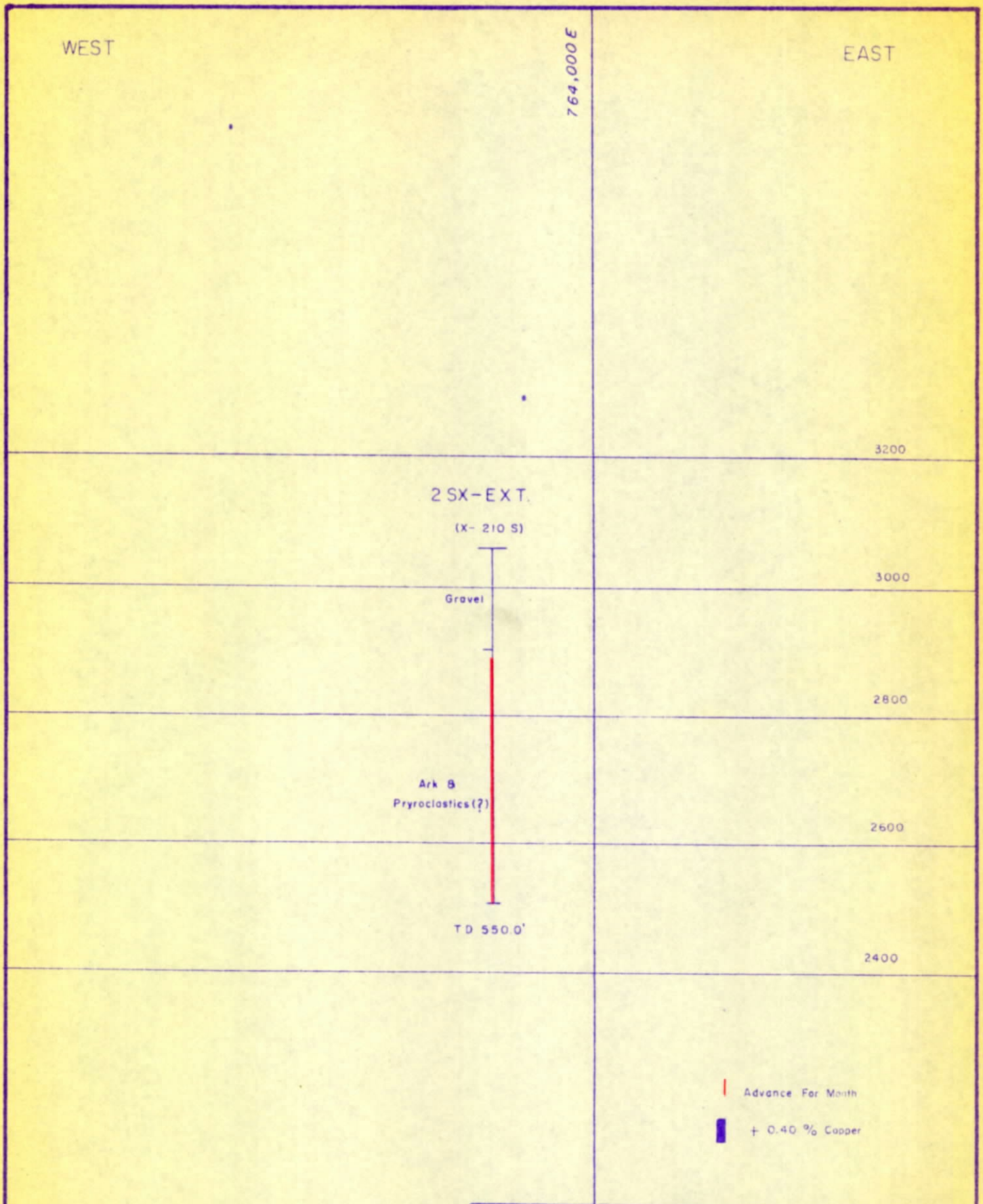
*Assays not complete


758,000 E
760,000 E
762,000 E
376,500 N
376,000 N
375,500 N
375,000 N
374,500 N
374,000 N
373,500 N
373,000 N
TRACT 1
TRACT 2
SAN XAVIER INDIAN RESERVATION
ASARCO - INDIAN MINING LEASE
X-118
X-117
X-114
X-228
X-208
X-229
X-230
X-232
X-207S
X-104
X-133
X-244
X-127
X-125
X-124
X-126
X-129
X-131
X-237
X-122S
X-137W
X-136
X-121
X-209
X-243
X-240
X-134
6-11
1SX-12
1SX-17
1SX-20
1SX-7
1SX-11
1SX-10
1SX-2
1SX-4
1SX-8
1SX-13
1SX-(EXT. X-113)
1SX-1
1SX-(EXT. X-120)
1SX-3
1SX-24
1SX-21
1SX-9
1SX-6
1SX-5
1SX-15
1SX-16
1SX-22
1SX-14
1SX-18
1SX-23
1SX-25
1SX-19
1SX-26
1SX-27
1SX-29
1SX-28
2SX-25
2SX-16
2SX-23
2SX-27
2SX-15
2SX-(EXT. X-238)
2SX-19
2SX-(EXT. X-247)
2SX-31
2SX-17
2SX-18
2SX-20
2SX-30
2SX-28
2SX-22
2SX-21
2SX-29
2SX-24
2SX-26
N
PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SAN XAVIER NORTH
SCALE
1" = 200'
DRAWN
ENG. DEPT.
DATE
MAY 1968
FILE


WEST
EAST
764,000E
2SX-35
proj 23'S
2SX-8
Gravel
Arg
Arg & Epid Tf
Chlor-Serp
Hf
0.61
Arg & Epid Tf
0.66
0.49
Arg
Mag-Serp
Hf
0.79
0.41
Hf
Serp-Mt
Hf
Hf-Tf
Wolf
Tf
TD 971.8
Gravel
Ark
Arg-Tf
0.64 (0.17 NS)
Tf
Arg-Tf
0.67
Tf
0.49
Hf
0.40
1.30
0.49
TD 783.7
3200
3100
3000
2800
2600
2400
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 72+50N
SCALE 1"=200'
DRAWN
DATE MAY 1966
FILE


WEST
EAST
765,000E
X-231 proj 65'S
X-216 proj 50'S
2SX-34 proj 61'S
1-224 proj 45' S
2SX-32 proj 45'S
X-215 proj 40'S
2SX-33 proj 34'S
X-218 proj 35'S
X-234 proj 20'S
X-227
Gravel
Basalt
Mp
Ark
Ark-Cgl
Ark&Mb Fp(?)
TD 1350.6
TD 648.8'
TD 977.1'
TD 777.0'
TD 949.0'
TD 777.8
TD 438.3'
TD 636.7'
TD 226.3'
Advance for month
+ 0.4 % Copper
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
E-W SECTION 73+50 NORTH
SCALE 1"=200'
DRAWN
DATE MAY 1966
FILE MIS-122-C108


PROPOSED DRILL HOLES
DRILL HOLES IN PROGRESS
DRILL HOLES COMPLETED
AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT
DIAMOND DRILLING PROGRESS MAP
SCALE 1" = 200'
DRAWN ENG. DEPT.
DATE MAY 1966
FILE MIS-IIE - 320
SAN XAVIER - ASARCO
ASARCO
N366,000
N364,000
N304,000
76+50N
73+50N
70+50N
67+50N
64+50N
61+50N
58+50N
55+50N
52+50N
49+50N
46+50N
43+50N
40+50N
7+50N
10+00W
12+50W
15+00W
17+50W
20+00W
22+50W
25+00W
27+50W
30+00W
32+50W
35+00W
37+50W
40+00W
42+50W
45+00W
47+50W
50+00W
52+50W
55+00W
57+50W
60+00W
62+50W
65+00W
67+50W
E 76,000
E 76,500
E 77,000
E 77,500
E 78,000
E 78,500
E 79,000
E 79,500
E 80,000
E 80,500
E 81,000
E 81,500
E 82,000
2SX-10
2SX-11
2SX-36
2SX-34
2SX-32
2SX-33
2SX-35
2SX-37
2SX-8
2SX-38
2SX-9
2SX-7
2SX-4
2SX-39
2SX-5
2SX-6
2SX-14
2SX-2
2SX-13
2SX-EAST
2SX-3
2SX-12
2SX-1
M-135
M-131
M-127
M-125
M-123
M-128
M-119
M-120
M-133
M-122
M-130
M-129
M-116
M-118



AMERICAN SMELTING AND REFINING COMPANY
MISSION UNIT

SAN XAVIER SCOUT DRILL HOLE
E-W SECTION 374,000 NORTH

SCALE	DRAWN	DATE	FILE
1"=200'		APR 1966	