PROJECT Kay Mine PROJECT NO. 3293 SUBMITTAL NO. 80-22-25

STATE Az COUNTY QUAD DATE SUBMITTED 7-18-79

SAMPLE NO. 65 TYPE Core GEOLOGIST M. Fellows

STORAGE BOX NO. PAGE 2 OF 2

REMARKS Hg to follow later.

SAMPLE		ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Co	ppm Ni	ppm Mn	% Mn				ppb Hg			
K-35																
510-520		136	32	144	1	84	303		0.21				< 5			
520-521		106	24	84	1	73	208		0.18				< 5			
521-530		115	26	73	1	78	252		0.14							
530-540		132	22	81	1	70	146		0.12							
540-550		97	22	109	1	62	113		0.11							
550-551		83	24	61	1	65	274		0.13				< 5			
551-552		166	26	66	1	63	254		0.13				5			
552-561		118	20	59	1	69	325		0.10				< 5			
561-562		83	20	44	1	61	257		0.10				< 5			
562-570		117	22	61	< 1	72	362	896					< 5			
570-576		135	20	60	1	74	359	957					< 5			
576-586		144	30	97	1	60	245		0.25				48			
586-590		106	20	63	1	65	264		0.10				< 5			
590-600		112	16	59	1	71	343	782								
600-610		127	18	64	1	67	384	804								
610-614		130	16	63	1	79	312	813								

EXXON MINERALS CO., USA

SIGNED [illegible] DATE 2/2/80

DRILLING REPORTS
Weekly

Week ending _____, page ____

Mineral	Project & No.	Location	Hole No.	Angle	Propsd. Depth	Depth	Progress From	Progress Footage	NO. Drill
Cu	KAY MINE 3293	County YAVAPAI State ARIZONA Coords: N NA E NA Elev. ~ 1900	K-15	-59°	700'				

Lithology Formation	From	To	Mineralization From	To	%Cu	%Zn	%Py	%	Additional Notes
Overburden	0	80'							
Andesite flows. Locally andesite tuff w/calcite & quartz veinlets	80	140					<<1%	<<1% cp <<1% po	
Chlorite phyllite with calcite partings & scattered graphite	140	158							
Andesite flows with calcite & quartz veinlets	158	254					<<1%	<<1% cp <<1% po	
Sept 22, 1978									
Same as above	254	345							Especially strong graphite 368-370
Tuffaceous chloritic siltstone with occasional graphitic bands with weak ~2%-3% pyrite	345	526					<1%	<1% Po	385-390 502-504 475-526- weak
Sept 29									
Same as above	526	614 T.D.							

Terminated October 3

K-15

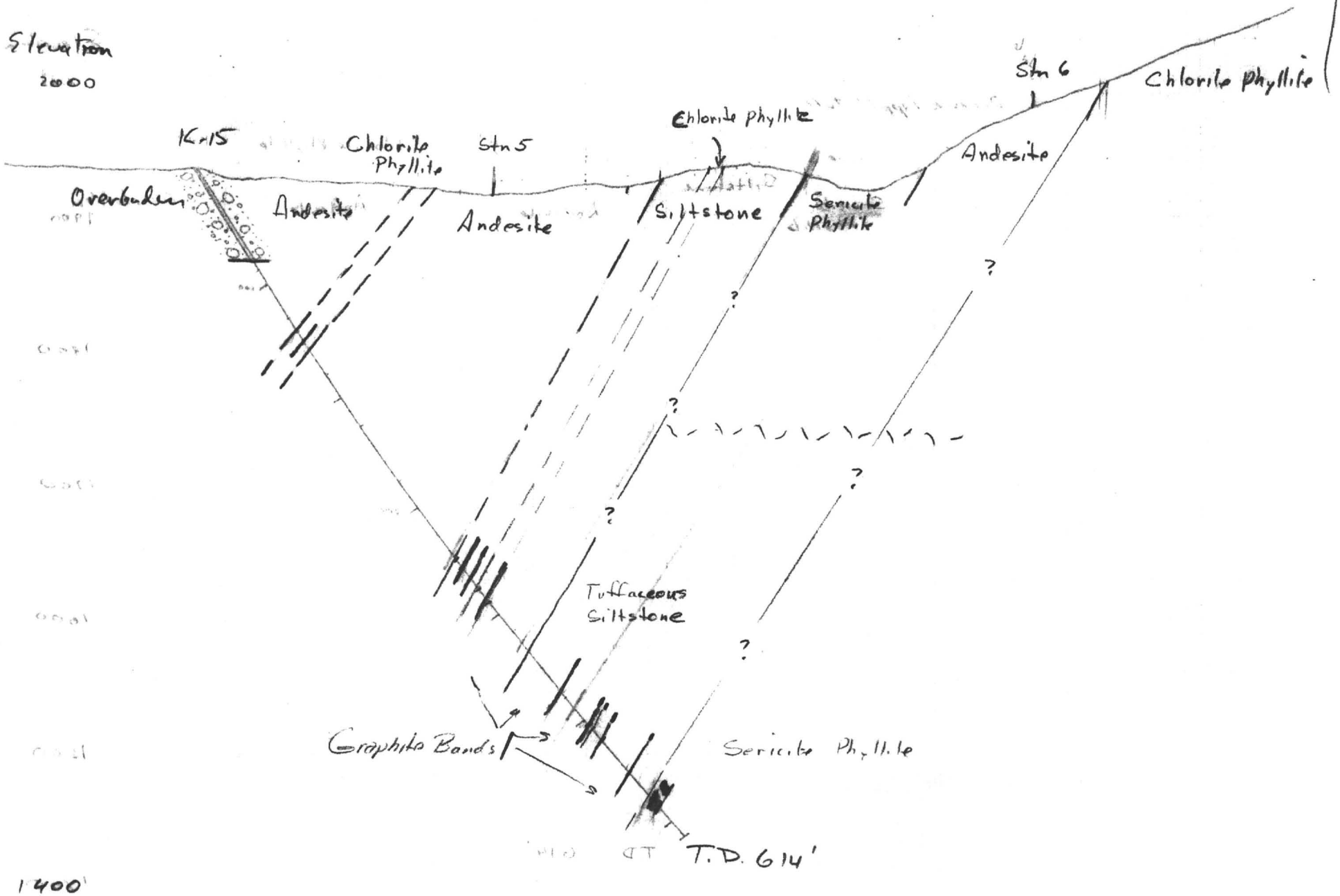
Initial Angle - 31° measured from Vertical (59°) Direction S80°E

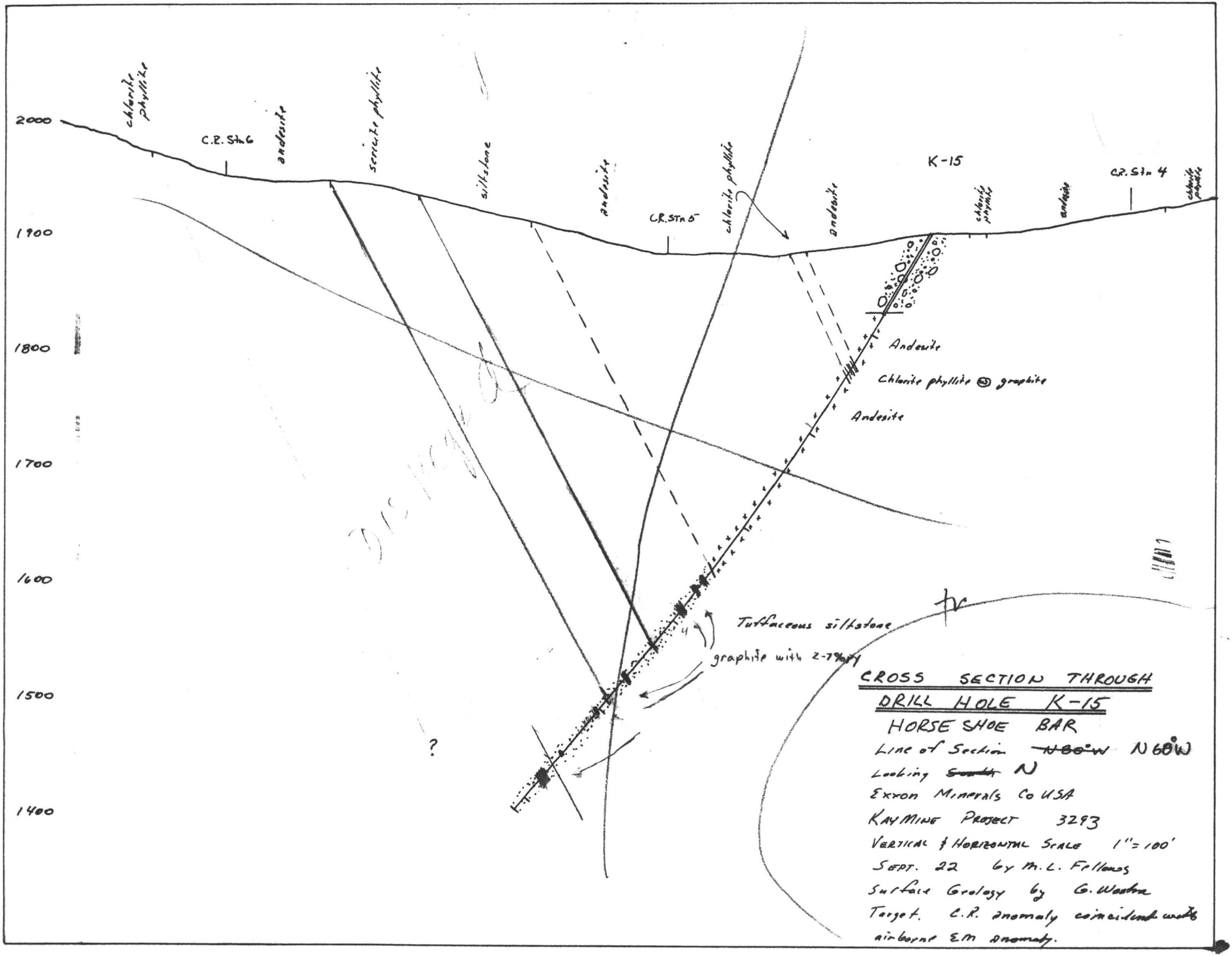
DEPTH	Inclination ∡V	∡H	Direction Magnetic	true	
50'	31	59	N5°E	(N 19°E	in casing
80'	31¾	58¼	N4°E	N 18°E	in casing
100	32	58 (90')	S80E	S 66°E	
158	33	57 (129)	S80E	S66°E	
200	34	56 (179)	S81E	S67E	
250	35°	55 (225')	S81E	S67E	
300'	36½°	53½ (275)	S80E	S66E	
350'	37½°	52½ (325)	S80E	S66E	
400'	39°	51° (375)	S80E	S66E	
450'	39½°	50½ (425)	S80E	S66E	
500'	40°	50 (475)	S80E	S66E	
550'	40½	49½ (525)	S80E	S66E	
604'	41°	49° (577)	S81E	S67°E	

$\frac{10°}{600'} = 1.67°/100'$

495.53 ✓

359 ✓


Elevation
2000
1400'
K-15
Overburden
Chlorite Phyllite
Andesite
Stn 5
Andesite
Chlorite phyllite
Siltstone
Sericite Phyllite
Andesite
Stn 6
Chlorite phyllite
Tuffaceous Siltstone
Graphite Bands
Sericite Phyllite
T.D. 614'


2000
1900
1800
1700
1600
1500
1400
chlorite phyllite
C.R. Stn 6
andesite
sericite phyllite
siltstone
andesite
C.R. Stn 5
chlorite phyllite
andesite
K-15
chlorite phyllite
andesite
C.R. Stn 4
chlorite phyllite
Andesite
Chlorite phyllite ⊗ graphite
Andesite
Tuffaceous siltstone
graphite with 2-7%
?
CROSS SECTION THROUGH
DRILL HOLE K-15
HORSE SHOE BAR
Line of Section ~~N 80°W~~ N 68°W
Looking ~~South~~ N
Exxon Minerals Co USA
KAY MINE PROJECT 3293
VERTICAL & HORIZONTAL SCALE 1" = 100'
SEPT. 22 by M. L. Fellows
Surface Geology by G. Washburn
Target. C.R. anomaly coincident with
airborne EM anomaly.

DRILL HOLE STARTING REPORT

PROJECT KAYMINE PROJ. NO. 3293 HOLE NO. K-15

LOCATION: STATE ARIZONA COUNTY YAVAPAI

CLAIM NO./LEASE KM 66 T 8N R 2E SEC 16 ELEV ~1900'

COORDINATES (if surveyed) N.A.

DISTANCE FROM N AND W SECTION LINES 1400 S 1900 E

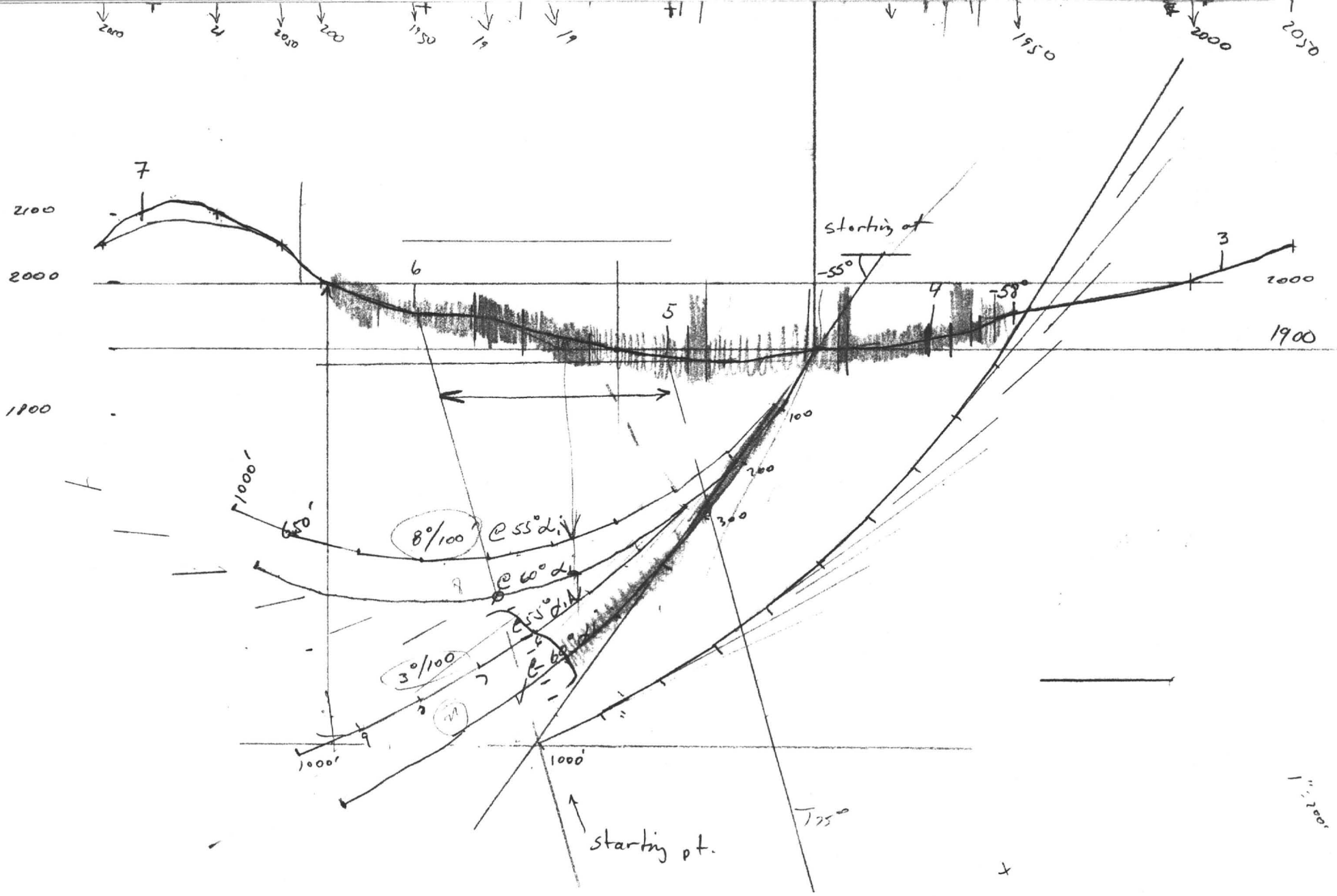
PROPOSED DEPTH 700' BEARING S 80E INCLINATION -59°

TARGET OBJECTIVE Shallow C.R. anomaly at site of 1972 AEM INPUT Anomaly. Expect to hit geophysical target at 300 and continuing to 700'.

CONTRACTOR E.J. Longyear

DATE SPUDDED Sept 11, 1978

MISC. REMARKS:



Horse shoe

looking S

CPS

KM-15

80-90=108
90-99=106
99-108=110
108-117=112
117-126=114
126-134.5=112
134.5-143=108
143-152=114
152-162=116
162-170=116
170-179=118
179-188=120
188-197=118
197-205=116
205-215=114
215-224=116
224-233=112
233-242=110
242-252=112
252-262=114
262-271.5=114
271.5-281=112
281-290=110
290-299=116
299-308=116

308-317=114
317-327=118
327-336=120
336-344=120
344-355=120
355-363.5=120
363-373=116
373-382=114
382-392=118
392-401=116
401-410=118
410-419=118
419-429=118
429-438=120
438-447=120
447-456=116
456-466=116
466-476=118
476-485.5=120
485.5-495=120
495-506=118
506-514.5=116
514.5-523=116
523-533=118
533-542=118

542-551=116
551-561=118
561-571=118
571-588=118
588-597=116
597-606=116
606-614=114
TD

K-15

80 - 90 = 108

90 - 99 = 109

99 - 108 = 112

108 - 117 = 113

117 - 126 = 111

126 - 134.5 = 111

134.5 - 143 = [illegible]

143 - 152 = [illegible]

152 - 162 = 117

162 - 170 = 118

170 - 179 = 119

179 - 188 = 118

188 - 197 = 116

197 - 205 = 115

205 - 215 = 114

215 - 224 = 113

224 - 233 = 111

233 - 242 = 112

242 - 252 = 113

252 - 262 = 113

262 - 271.5 = 112

271.5 - 281 = 113

281 - 290 = 114

290 - 299 = 115

299 - 308 = 116

308 - 317 = 117

317 - 327 = 119

327 - 336 = 120

336 - 344 = 120

344 - 355 = [illegible]

355 - 363 = 117

363 - 372 = 116

373 - 382 = [illegible]

382 - 392 = 117

392 - 401 = 117

401 - 410 = 118

410 - 419 = 119

419 - 429 = 119

429 - 438 = 119

438 - 447 = 117

447 - 456 = 117

456 - 466 = 118

466 - 476 = 119

476 485.5 = 119

485.5 - 495 = 118

495 - 506 = 117

506 - 514.5 = 117

514.5 - 523 = 117

523 - 533 = 117

533 - 542 = 117

542 - 551 = 117

551 - 561 = 118

561 - 571 = 117

571 - 588 = 117

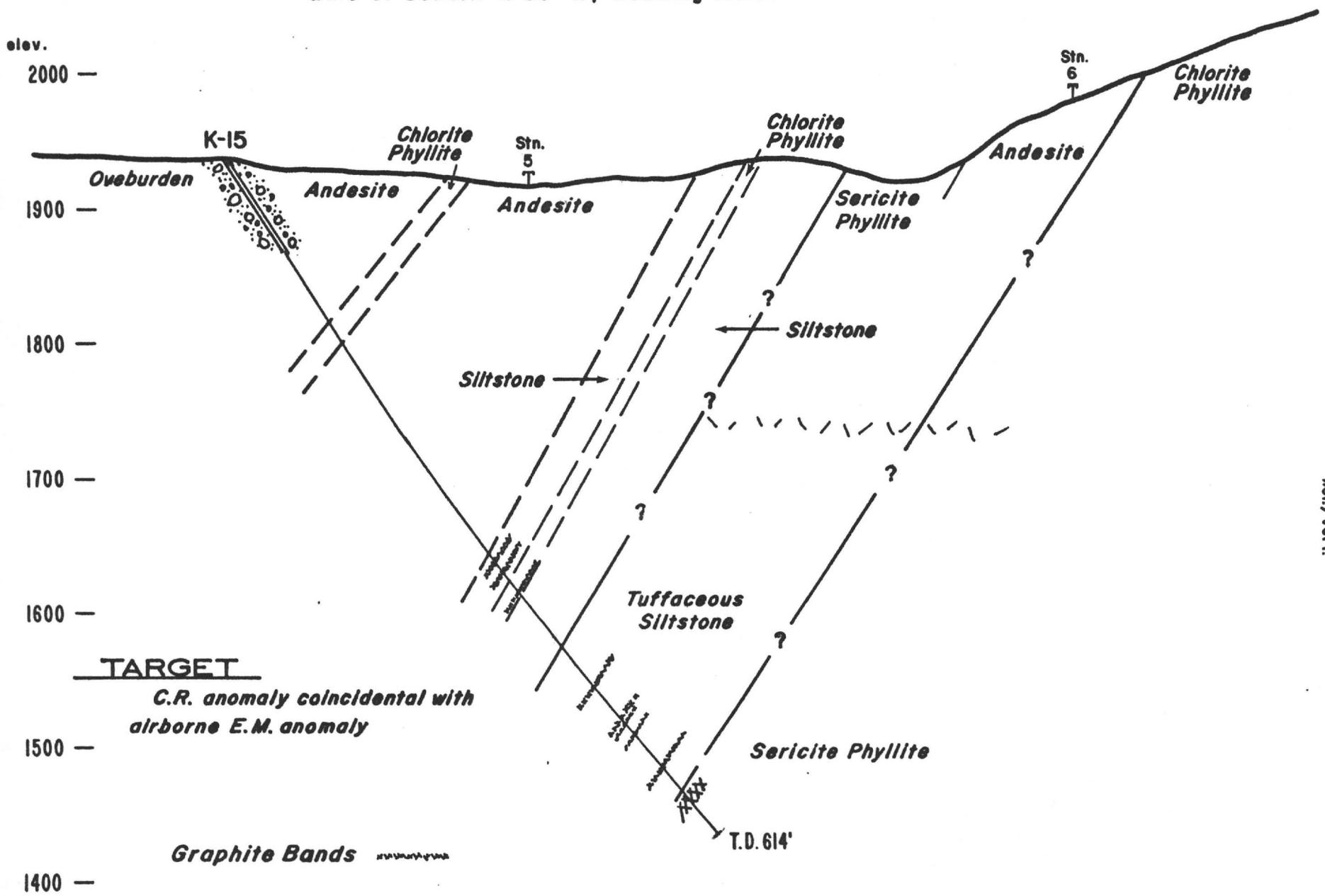
588 - 597 = 115

597 - 606 = 116

606 - 614 = 114

FIG. 2 CROSS SECTION THROUGH DRILL HOLE K-15 (HORSESHOE BAR)

Line of Section N 60° W, Looking North



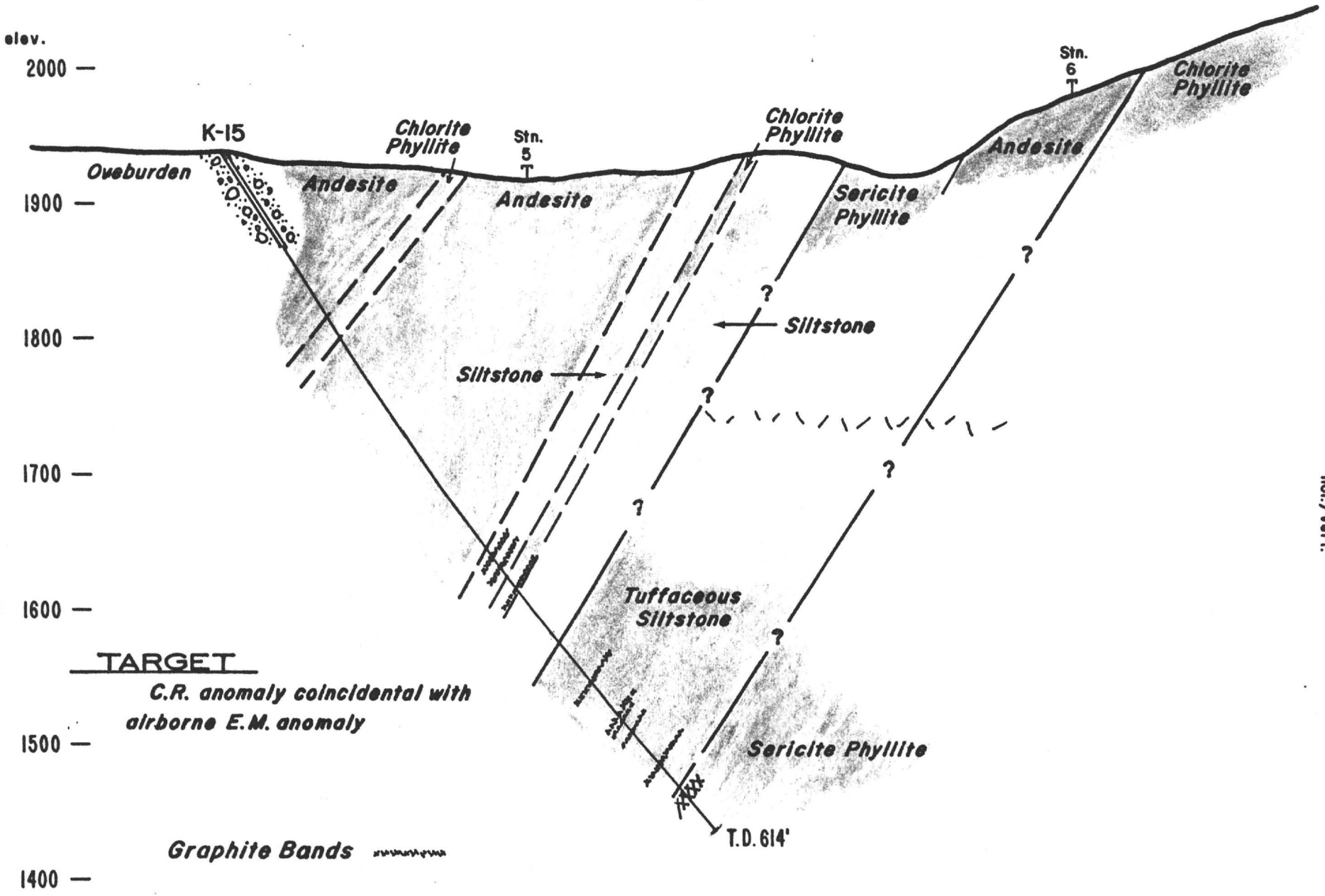
EXXON MINERALS CO. U.S.A.
Southwest Office
TUCSON SILVER CITY

AREA: KAY MINE
CO. & ST.: YAVAPAI Co., ARIZONA
SCALE: 0 100' 200' hor./vert.
PROJ. NO. 3293
DATE 8-78
FILE NO.

TITLE: K-15 CROSS SECTION
BY M.L. Fellows
surface geology by G. Westra

FIG. 2 CROSS SECTION THROUGH DRILL HOLE K-15 (HORSESHOE BAR)

Line of Section N 60° W, Looking North



EXXON MINERALS CO. U.S.A.
Southwest Office
TUCSON SILVER CITY

AREA: KAY MINE
CO. & ST.: YAVAPAI Co., ARIZONA
SCALE: 0' 100' 200' hor./vert.
TITLE: K-15 CROSS SECTION
PROJ. NO. 3293
BY M.L. Fellows
surface geology by G. Westra
DATE 8-78
FILE NO.

Recovery	Base Metal Mineralization	% Sulfide	Alteration – Metamorphic	∀ Bedding to core	Structure flt – frac	Rock Type

PROJECT KAYMINE 3293

Coord _____ _____ Hole No. KM-16

Logged by PGS Scale 1"=50' Date 2/26/86 P. 1 of 3

INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au

Overburden collared _____, completed _____

Bedrock collared _____, completed _____

Owner of surface _____, minerals _____

Location: ___ 1/4 ___ 1/4, Sec ___ Twp ___ Rge ___

Azm. of ddh: ___

Incl. of ddh at surf: ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

Rock Types

Surface

0

55 — felsic tuff siliceous qtz eye thin laminated w/ qtz layers

27 — Graphitic tuff, siliceous, brecciated, chaotic pyrite oxidized, limonitic

50

100

95 — Punky limonite calcareous – carbonate

98.5

103 — Heavy graphite

Rhyolite tuff – lapilli tuff (sericite schist) qtz eyes white becomes massive, bash ~120'

50 — becomes banded, v. fine felsic tuff minor qtz eyes tr py lt greenish-grey to cream

slightly graphitic 149–157 165–175 no recovery

165 — no recovery probable MS unit – oxidized

175 — Rhyolite Bx, lapilli tuff lt to med greenish chloritic

50 — 1-3 minor py tr cp chloritic streaks + clots

190 — 1

200

tr cp 1-3 Massive rhyolite siliceous chloritic w/ darker green-chlorite + lighter grey patches – siliceous hard dense minor dissem py tr cp dk green to black-white

tr cp 1-3 dol – qtz – chlorite veins + patches w/ minor cp

165 — 250

<1 Rhyolite heavy chlorite very schistose – potato chip dk green hematitic – v. fine dusting to massive fine gr. hematitic repl. w/ dolomite veins + chlorite irreg + patchy

hem 250–303, lt chlorite + sericite, minor

300 hem 303–325, heavier chlorite w/ hem 325–347

347

Recovery	Base Metal Mineralizn	% Sulfide	Alteration-Metamorph	Bedding ∡ to core	Structure Ult-frac	Rock Type	PROJECT / Coord / Collar elev / By / Scale / Date / Hole No. KM-16 / P. 2	INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au
300													
		<1											
							347 Rhyolite tuff white-lt grey laminated qtz eyes qtz veins pyritic-minor disseminated						
		2-5		70			Sericite schist, minor grey chl. + thin wisps, clots						
400		1-3					sulfides diminish below 420 Yellow sericite appears below 430						
							chlorite diminishes below 460						
		3-7		80			py increases below 450 to 7-10%, diminishes to 2% at 470						
		tr to 1%					477 Rhyolite tuff-sericite schist white-cream massive, polka-dot, tr py qtz eyes						
500							514 Rhyolite tuff-sericite schist w/yellow sericite becomes chloritic in patches-streaks, heavier w/ increasing py below 520 rare qtz eyes						
		1-3		90									
		2-5											
		1-3		80			Less chlorite, more sericite below 600' py ~1% occ thin wisps + bands of py						
600							more chloritic below 620 652' - a 6" jaspery qtz vein w/ py tr.cp						
							670-12" f gouge						
				90			671-672 pyritic chert, black chlorite w/ fine semi-massive 672-678 py 15%, thinly laminated dk green chlorite w/py						
700							678-680 white mostly dolomite 680-684 Laminated dk green-black chlorite + marble 684-694 grey chlorite + dolomite 694-6" f gouge 695- Andesitic meta sed thin laminated hematitic w/ jaspery wispy clots, chloritic, feld eyes, chert						
				80			750 Andesitic tuffs med grey green laminated to massive-foliated more or less broken + rubbly 745 to 790						
800				85									

Recovery	Base Metal Mineralizn	% Sulfide	Alteration-Metamorph	Bedding ∀ to core	Structure tit-frac	Rock Type	PROJECT	INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au

PROJECT _____ Hole No. KM-16
Coord _____ _____
Collar elev _____ By _____ Scale _____ Date _____ P. 3

800

Andesite tuffs, lapilli tuffs massive dk grey green

80

4" gouge f _____ 844

Andesitic tuff - melased hematitic chloritic, schistose

870 broken, gouge

Andesite tuff massive

889

Andesitic lappilli tuff hematitic - calcareous small red carbonate patches

900

95

924

Andesite tuff thin lam. - massive grey-green

960 TD

SAMPLE NO. 99 TYPE HQ CORE

QUAD

DATE SUBMITTED 24.10.82

GEOLOGIST M. FELLOWS

PAGE 1 OF 2

REMARKS 0-250 0-500 0-4000 0-2000 1-20 0-.15

SAMPLE	PPM Cu	% Cu	PPM Pb	% Pb	PPM Zn	% Zn	PPM Mn	% Mn	PPM Ag	PPM Au
10-20	219		26		153			0.12	1	<.02
20-27	150		22		163			0.11	1	<.02
27-30	181		32		224			0.13	2	<.02
30-40	149		22		133			0.20	1	<.02
40-50	117		30		137			0.18	2	<.02
50-60	117		24		117			0.17	2	<.02
60-70	115		30		140			0.16	2	<.02
70-80	130		28		144			0.18	2	<.02
80-90	130		24		154			0.15	2	<.02
90-100	131		20		167			0.15	2	<.02
100-103.5	195		34		189		894		1	<.02
103.5-110	63		14		64		568		1	<.02
110-120	44		12		42		298		1	<.02
120-130	32		6		43		169		1	<.02
130-140	46		<6		66		356		1	<.02
140-150	14		6		44		264		1	<.02
150-160	75		14		101			0.11	2	<.02
160-170	43		12		112			0.10	1	<.02
170-180	34		12		70		527		1	<.02
180-190	23		28		66		639		1	<.02
190-200	54		16		111			0.12	1	<.02
200-210	44		18		121			0.14	1	<.02
210-220	35		18		120			0.14	2	<.02
220-230	91		16		127			0.12	1	<.02
230-240	101		22		129			0.12	2	<.02
240-250	69	15	16		112		859		1	<.02
250-260	12		16		62		268		1	<.02
260-270	17		16		58		431		1	<.02
270-280	23		10		44		267		1	<.02
280-290	92		14		80			0.10	1	<.02
290-300	21		26		90		755		2	<.02
300-310	49		20		79		475		1	<.02
310-320	123		18		81		551		1	<.02
320-330	141		24		96		973		2	.04
330-340	19		16		114		325		1	<.02
340-350	16		16		85		313		1	<.02
350-360	17		82		35		496		1	<.02
360-370	19		42		36		451		1	<.02
370-380	22		62		72		395		1	.04
380-390	21		32		60		434		2	.03
390-400	38		22		53		522		1	<.02
400-410	36		56		73		575		2	<.02
410-420	105		20		78		780		2	<.02
420-430	72		20		85		729		2	<.02
430-440	48		26		75		930		1	<.02
440-445	91		20		86			0.12	1	.03
445-450	49		20		96			0.12	1	.03
450-460	24		110		158		703		1	<.02
460-470	52		70		172		813		1	<.02
470-480	42		112		137		868		1	<.02

EXXON MINERALS CO., USA

SIGNED Martin Hitchette DATE 10/7/82

A7 COUNTY _____ QUAD _____ DATE SUBMITTED 24 AUG 82

SAMPLE NO. 99 TYPE HQ CORE GEOLOGIST M. FELLOWS

PAGE 2 OF 2

REMARKS

SAMPLE		PPM Cu	% Cu	PPM Pb	% Pb	PPM Zn	% Zn	PPM Mn	% Mn	PPM Ag	PPM Au
480-490		73		28		113			0.13	1	<.02
490-500		74		16		110			0.13	1	<.02
500-510		73		16		111			0.12	1	<.02
510-520		45		738		452			0.11	1	<.02
520-530		29		324		391		555		1	<.02
530-540		129		500			0.14	927		2	.02
540-550		128		114			0.24	733		1	<.02
550-560		247		112			0.40	695		2	.15
560-570		120		60			0.14	618		2	.02
570-580		76		22			0.10	573		1	<.02
580-590		98		42		408		889		2	<.02
590-600		44		90		189		996		2	<.02
600-610		29		84		285			0.12	2	<.02
610-620		31		230		388			0.10	2	<.02
620-630		40		100		169		848		2	<.02
630-640		56		152		305			0.11	5	<.02
640-650		70		122		172		885		4	<.02
650-658.5	(.85)	43		88		119		577		6	<.02
658.5-664.5	.6	60		68		149		620		12	.07
664.5-670	.55	26		28		93		233		4	<.02
670-680		235		42		254		845		3	.02
680-690		102		28		145		572		2	<.02
690-700		109		26		217		766		2	<.02
700-710		12		22		129		495		2	<.02
710-720		57		16		66		459		1	<.02
720-730		27		12		79		546		1	<.02
730-740		9		16		90		401		1	<.02
740-750		75		10		114		585		1	<.02
750-760		64		18		126		648		1	<.02
760-770		86		20		158			0.10	2	<.02
770-780		153		26		103			0.16	2	<.02
780-790		86		20		128		927		2	<.02
790-800		120		18		140			0.16	2	<.02
800-810		55		14		134		555		1	<.02
810-820		54		20		113		940		1	<.02
820-830		120		22		79			0.12	2	<.02
830-840		122		18		105		602		1	<.02
840-850		121		20		123			0.10	1	<.02
850-860		100		18		92			0.11	2	<.02
860-870		119		20		94			0.12	2	<.02
870-880		84		20		92			0.15	2	<.02
880-890		101		26		84			0.13	2	<.02
890-900		123		28		81			0.13	3	<.02
900-910		150		26		86			0.11	2	<.02
910-920		133		26		90			0.11	2	<.02
920-930		120		26		82			0.12	2	<.02
930-940		160		32		76			0.13	3	.13
940-950		98		26		76			0.11	2	.09
950-960		112		22		77			0.11	3	.05
TD											

EXXON MINERALS CO., USA

SIGNED [signature] DATE 10/7/82

file loc. ____

PROJECT Kay Mine STATE Az COUNTY Yav DRILL HOLE K-17

LOCATION Sec 4, T8N R2E EXXON COORN. 1,116,570 N 425,720 E ELEVATION: COLLAR 2000 GROUND ____

HOLE DIRECTION S57°E -75° HOLE COMM.(date) 8-9-83 INTERVALS OF INTEREST:

CASING DEPTH: HOLE TERMINATED (date) 8-16-83 FT. ASSAYS

FT.	SIZE
0-10'	NC

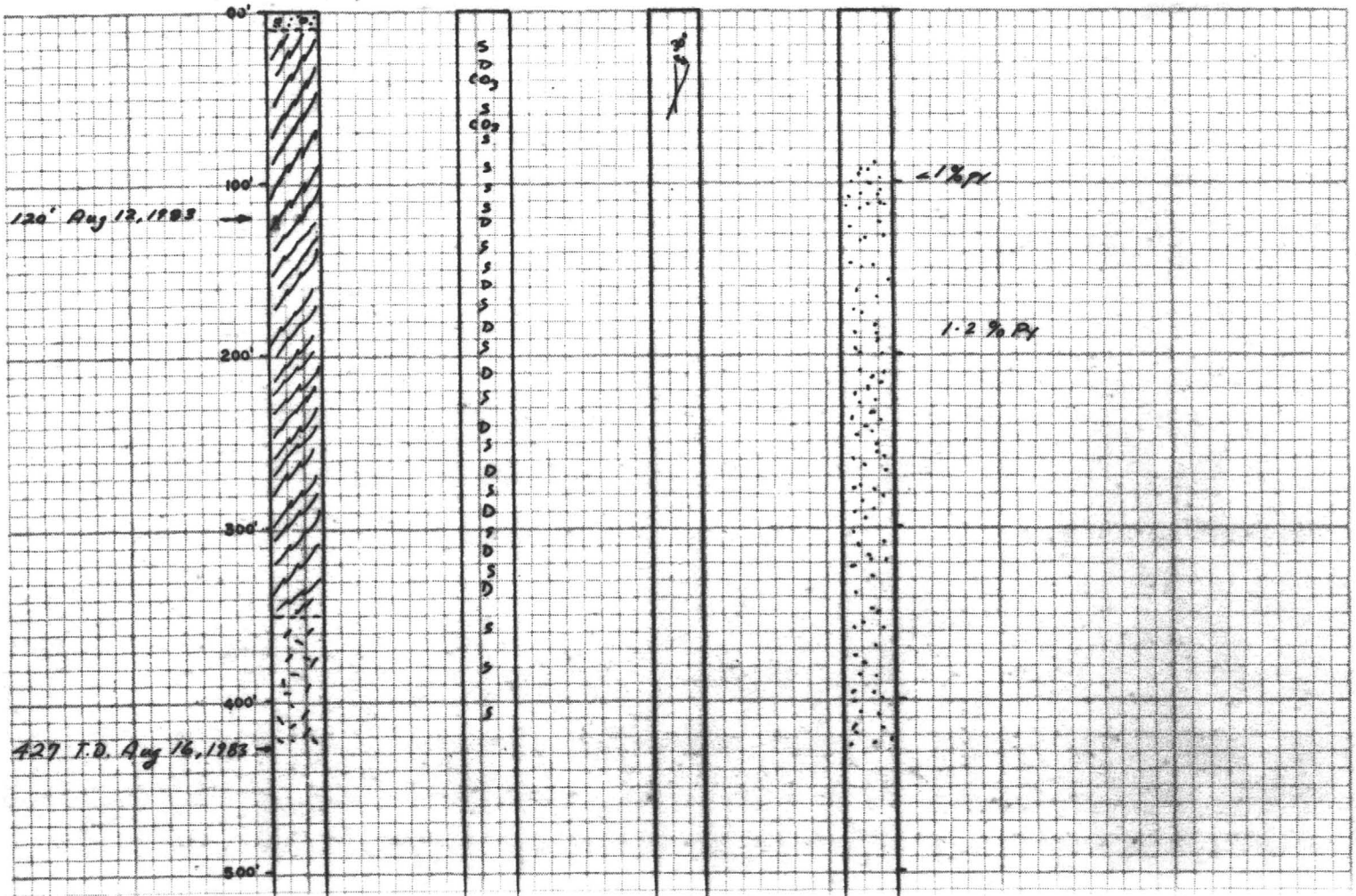
TOTAL DEPTH 427'

HOLE SIZES W/DEPTH
0-10' NC
10-427' NQ

DRILLED BY E. J. Longyear LOGS-SURVEYS RUN NO LOGGED BY M. L. Follows

LITHOLOGY		ALTERATION		STRUCTURE		MINERALIZATION
Rhyolite		S Sericite				diss. pyrite
Dacite		CO_3 calcite				
		D '				
Over-Burden						

DATE-FOOTAGE | LITHOLOGY | ALTERATION | STRUCTURE | MINERALIZATION | ASSAY/GEOCHEM



file loc. ____

PROJECT Kay Mine STATE Az COUNTY Yav DRILL HOLE K-17

LOCATION Sec 4, T8N R2E EXXON COORN. 1,116,570 N 425720 E ELEVATION: COLLAR 2000 GROUND ____

HOLE DIRECTION S59°E -75° HOLE COMM.(date) 8-9-83 INTERVALS OF INTEREST:

CASING DEPTH: HOLE TERMINATED (date) ____ FT. ASSAYS

FT.	SIZE
0-10'	NC

TOTAL DEPTH ____

HOLE SIZES W/DEPTH

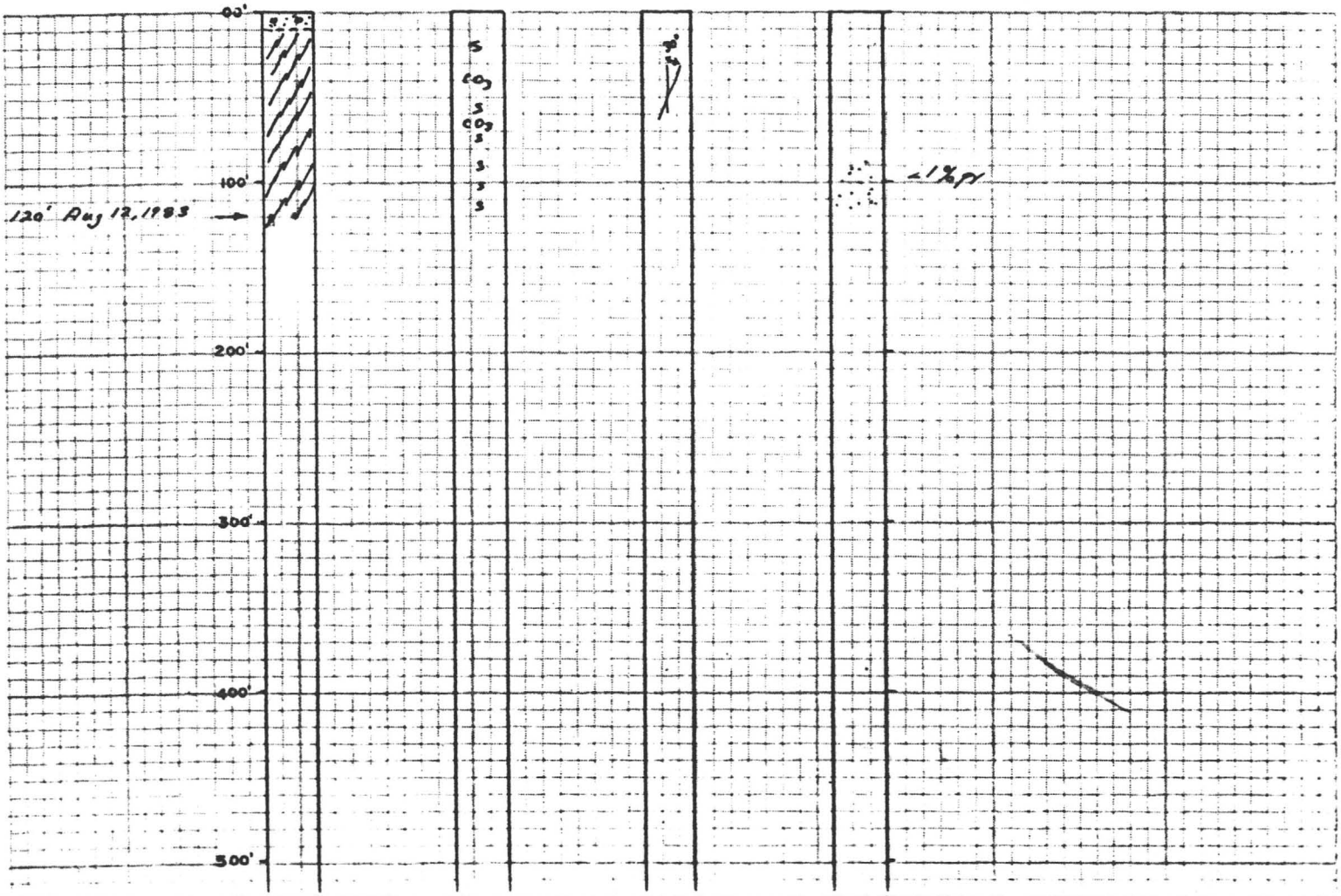
0-10' NC

10- NQ

DRILLED BY E. J. Longyear LOGS-SURVEYS RUN ____ LOGGED BY M. L. Fellows

LITHOLOGY		ALTERATION		STRUCTURE		MINERALIZATION
Rhyolite		S Sericite				diss. pyrite
		CO_3 calcite				
Over-Burden						

DATE-FOOTAGE	LITHOLOGY	ALTERATION	STRUCTURE	MINERALIZATION	ASSAY/GEOCHEM



ANALYTICAL REPORT

PROJECT KAY MINE (K-17) PROJECT NO. 3293 SUBMITTAL NO. 83-46-34

STATE AZ COUNTY QUAD DATE SUBMITTED 23 AUG 83

SAMPLE NO. 42 TYPE NX CORE GEOLOGIST M. FELLOWS.

PAGE 1 OF 1

REMARKS

SAMPLE	PPM Cu	% Cu	PPM Pb	% Pb	PPM Zn	% Zn	PPM Ag	PPM Au
10-20	59		170		119		1.7	<.02
20-30	38		30		83		.4	<.02
30-40	27		15		70		.3	<.02
40-50	35		50		146		.7	.03
50-60	15		10		58		.3	<.02
60-70	22		30		47		.5	<.02
70-80	16		55		73		.8	<.02
80-90	20		90		74		1.4	<.02
90-100	36		45		63		1.1	<.02
100-110	17		15		51		.4	<.02
110-120	31		20		221		.7	.02
120-130	19		20		70		.5	<.02
130-140	18		70		143		.7	<.02
140-150	18		75		156		.7	<.02
150-160	23		35		58		.4	<.02
160-170	25		40		60		.6	<.02
170-180	11		10		37		<.2	<.02
180-190	34		180		418		1.6	.06
190-200	71		15		75		.7	<.02
200-210	50		15		61		.6	<.02
210-220	31		20		50		.5	<.02
220-230	20		10		50		.4	<.02
230-240	52		15		99		.6	<.02
240-250	154		10		72		.7	<.02
250-260	61		10		71		.6	<.02
260-270	53		55		104		.7	<.02
270-280	67		40		87		.7	<.02
280-290	66		45		134		.6	<.02
290-300	114		15		84		.5	<.02
300-310	65		10		85		.6	<.02
310-320	59		15		73		.8	<.02
320-330	17		15		71		.9	<.02
330-340	46		10		69		.6	<.02
340-350	16		10		63		.4	<.02
350-360	38		15		62		.5	<.02
360-370	90		10		51		.5	.02
370-380	54		20		80		1.2	.02
380-390	53		20		77		1.1	<.02
390-400	71		15		86		1.1	<.02
400-410	134		20		81		1.1	<.02
410-420	113		20		70		1.0	<.02
420-427	102		15		75		1.1	<.02
TD								

EXXON MINERALS CO., USA

SIGNED Martin H. Abelle DATE 9/23/83

File loc. ____

PROJECT Kay Mine STATE Az COUNTY Yav DRILL HOLE K-17

LOCATION Sec 4, T8N R2E EXXON COORN. 1,116,570 N 425920 E ELEVATION: COLLAR 2000

GROUND ____

HOLE DIRECTION S59°E -75° HOLE COMM.(date) 8-9-83 INTERVALS OF INTEREST:

CASING DEPTH: HOLE TERMINATED (date) 8-16-83 FT. ASSAYS

FT.	SIZE
0-10'	NC

TOTAL DEPTH 427'

HOLE SIZES W/DEPTH

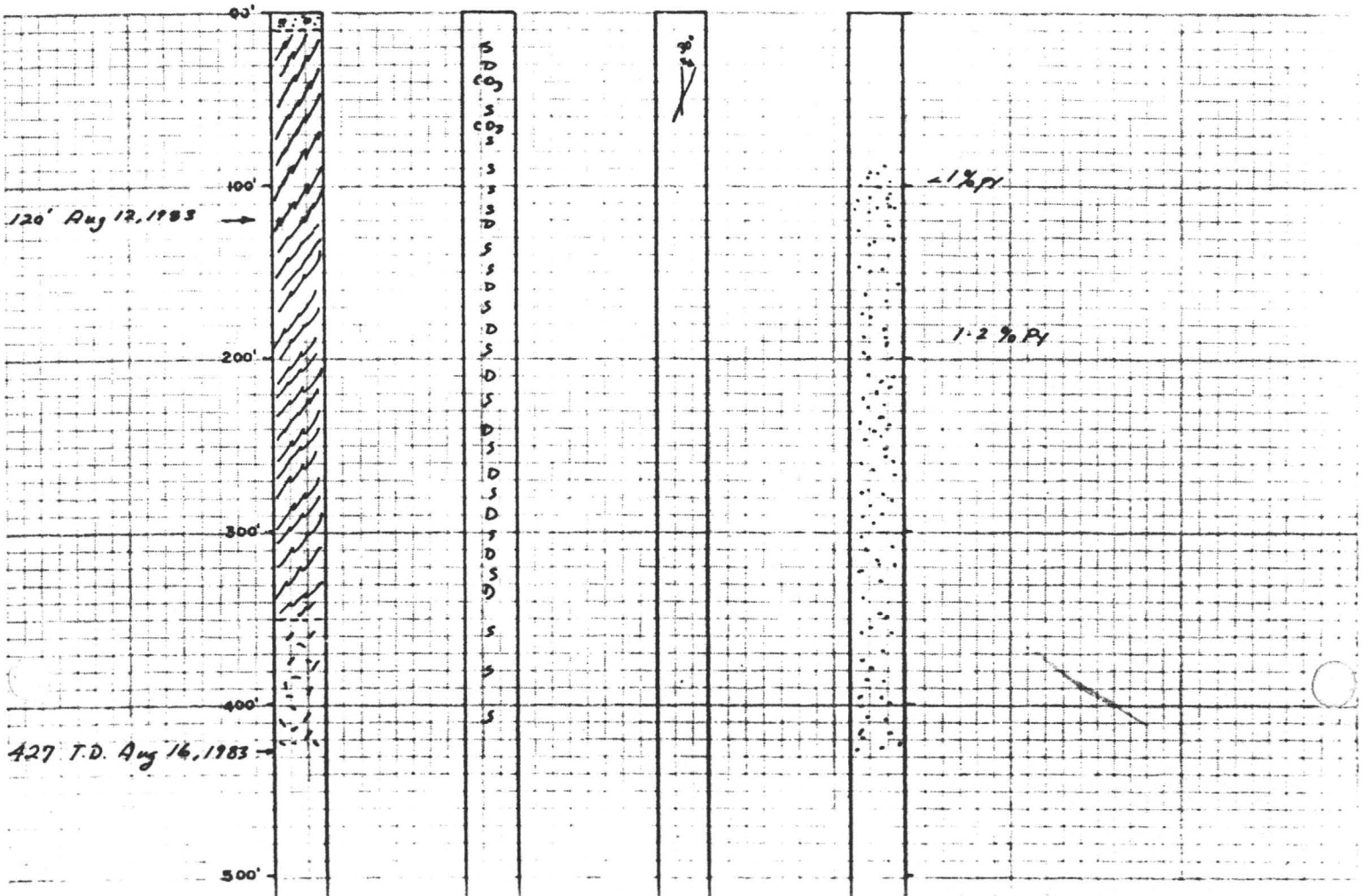
0-10' NC

10-427' NQ

DRILLED BY E. J. Longyear LOGS-SURVEYS RUN NO LOGGED BY M. L. Fellows

LITHOLOGY		ALTERATION		STRUCTURE		MINERALIZATION
Rhyolite		S Sericite				diss. pyrite
Dacite		CO_3 calcite				
		D "				
Over-Burden						

DATE-FOOTAGE | LITHOLOGY | ALTERATION | STRUCTURE | MINERALIZATION | ASSAY/GEOCHEM



file loc. ____

PROJECT Kay Mine STATE Az COUNTY Yav DRILL HOLE K-17

LOCATION Sec 4, T8N R2E EXXON COORN. 1,116,570 N 425 920 E ELEVATION: COLLAR 2000 GROUND ____

HOLE DIRECTION S59°E -75° HOLE COMM.(date) 8-9-83 INTERVALS OF INTEREST:

CASING DEPTH:

FT.	SIZE
0-10'	NC

HOLE TERMINATED (date) ____ FT. ASSAYS

TOTAL DEPTH ____

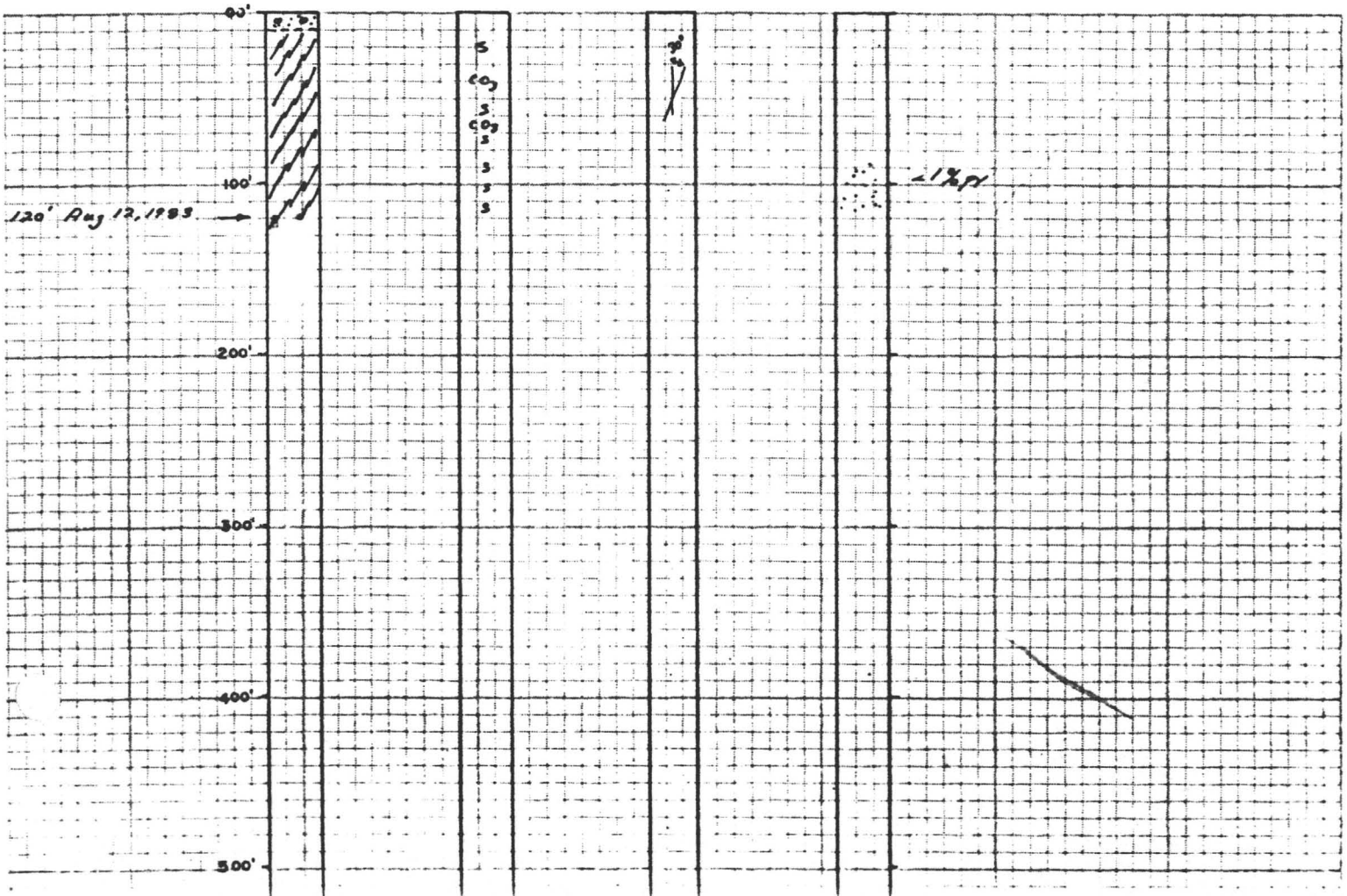
HOLE SIZES W/DEPTH

0-10' NC
10- NQ

DRILLED BY E. J. Longyear LOGS-SURVEYS RUN ____ LOGGED BY M. L. Fellows

LITHOLOGY	ALTERATION	STRUCTURE	MINERALIZATION
Rhyolite	S sericite		dis. pyrite
	CO_3 calcite		
Over-Burden			

DATE-FOOTAGE | LITHOLOGY | ALTERATION | STRUCTURE | MINERALIZATION | ASSAY/GEOCHEM



DRILL HOLE STARTING REPORT

PROJECT KAY MINE PROJ. NO. 3293 HOLE NO. K-17

LOCATION: STATE Arizona COUNTY Yavapai

CLAIM NO./LEASE Kay M 260 T 8 N R 2 E SEC. 4 ELEV. 2000

COORDINATES (if surveyed) est: 1, 116, 570 N 425, 720 W

DISTANCE FROM N AND W SECTION LINES 380' S 2240' E

PROPOSED DEPTH 500' BEARING S59°E INCLINATION -75°

TARGET OBJECTIVE Downdip projection of Lead-Zinc-Copper gossan exposed in creek 100' SE

CONTRACTOR E. J. Longyear

DATE SPUDDED August, 9, 1983

MISC. REMARKS:

Will fulfill remaining 1982-1983 assessment requirements.

DRILL HOLE RECORD

PROJECT Kay Mine #3293 DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 1 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC. NOTES	Pyrite	Galena	hematite	goethite	dolomite	fuchsite	sericite	chlorite	STRUCT.	ROCK	LITHOLOGY, ALTERATION & STRUCTURE
													No Core Rotary
10													Dacite Lapilli Tuff, dolomitic finer grained near top.
											38°		← ∫ ∧ Core axis
													Locally contains very fine quartz eyes
20												20	
											35°		
30		2% dis pyrite										30	Rhyolite Tuff, fine grained Locally dolomitic Pyrite common near top.
											38°		
40		Trace pyrite << 1%										40	
		Pyrite ~ 2-3% wisps											Banded / Laminated Dolomitic Dacite Tuff.
											38°		
50												50	RHYOLITE TUFF, fine grained white Locally dolomitic Very fine quartz eyes
											36		Transitional
													Fine grained DACITE TUFF Greenish with white sericitic bands dolomite fairly common esp. near top.
60												60	
											38°		
70												70	
											38°		

DRILL HOLE RECORD

PROJECT Kay Mine #3293 DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 2 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC. NOTES	pyrite	galena	chalcopyrite	hematite	goethite	quartz	dolomite	fuchsite	gorceite	chlorite	STRUCT.	ROCK	LITHOLOGY, ALTERATION & STRUCTURE
80													30		Fine grained Rhyolite tuff
													36	80	Dacite Crystal tuff transitional down hole to Dacite Lapilli tuff. Locally dolomitic
90		Trace chalcopyrite in dol		•									35	90	
															Lapilli sized frags
100													34	100	
110													35	110	
120		2% wispy pyrite											34	120	Laminated Rhyolite Crystal Tuff - Lapilli Tuff Pyritic
130													35		
140													35		
150													38		

DRILL HOLE RECORD

PROJECT KAY MINE #3293 DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 3 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC. NOTES	pyrite	galena	chalcopyrite	hematite	goethite	ferroxhydrite	sphalerite	dolomite	fuchsite	sericite	chlorite	graphite	STRUCT.	ROCK	LITHOLOGY, ALTERATION & STRUCTURE
		2-3% wispy pyrite															
		2-3% wispy pyrite													41		160
		scattered py															
		2-3% wispy pyrite															
170															41		170
																	Dacitic aerobar
180															42		180
190															42		190
																	Laminated dacite, lapilli tuff
																	Cherty, dolomitic, graphitic tuff
200															38		Fine grained greenish Dacite tuff
																	Ferruginous Chert, pyritic weakly graphitic
210															35		Laminated Dacitic tuff
																	Quartz - Carbonate Clastic ?
		1% wispy py.															Very f. gr. Rhyolite tuff
220															40		

DRILL HOLE RECORD

PROJECT Kay Mine DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 4 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC NOTES	Pyrite	Galena	Chalcopyrite	Hematite	Goethite	Dolomite	Fuchsite	Sericite	Chlorite	Jasperite	STRUCT.	ROCK	LITHOLOGY, Alteration & Structure
230													40		Dacite tuff, dolomitic
240													37		
250													45		
260		≤1% scattered pyrite											42		Laminated Dacitic tuff Becomes more massive towards base
270													40		
280													37		Well Laminated Rhyolitic tuff. sk fuchsite
290													38		
300		1-2% diss euhedral py											36		Rhyolite tuff - Lapilli tuff qtz eyes

DRILL HOLE RECORD

PROJECT Kay Mine #3293 DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 5 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC NOTES	Pyrite	Galena	Malachite	Hematite	Goethite	Ferrugeous chert	Quartz	Dolomite	Tourmaline	Sericite	Chlorite	STRUCT.	ROCK	LITHOLOGY, ALTERATION & STRUCTURE
310														42		
																Tron tourmaline Dacite - Andesite tuff Prob. volcaniclastic
320														39		
330														43		330
340														42		~ chert pebbles
350														38		
360														45		
370														34		Ferrugiious Chert bands

DRILL HOLE RECORD

PROJECT KAY MINE #3293 DRILL HOLE NO. K-17 SCALE 1" = 10' PAGE NO. 6 OF 6

LENGTH	ASSAYS	MINERALIZATION & MISC. NOTES	pyrite	jaksa	sp	hematite	goethite	Fe ring	qtz	dolomite	fuchsite	sericite	chlorite	STRUCT.	ROCK	LITHOLOGY, ALTERATION & STRUCTURE
380														46		
																Well Laminated Dacitic Tuff
390														50		
400														45	400	
410														37	410	
420														41	420	
														47		
430																Total Length: 427' TERMINATED: 8-18-83

File: Kay Mine
Copy to TDI
CLD

EXXON MINERALS COMPANY

October 17, 1984

OCT 1984
RECEIVED
RENO
MINERALS

TO: C. L. Dahl/T. D. Irwin

FROM: J. L. HAGMAIER

RE: Kay Mine

Enclosed for your review find an evaluation of the core and geochemical information obtained from a hole recently completed at Kay Mine. I agree with Richard Chuchla's recommendation that we promptly drill another hole to test the encouragement received from the hole.

Both Nav-Can and Utah International have expressed a strong interest in the property, however Nav-Can recently withdrew an earlier offer to earn an interest in the property. Both companies remain interested in the property and one or both will most likely make an offer later this year or early next year as budget adjustments are made. It is therefore very important that we evaluate the potential of the gold-rich massive sulfide horizon cut by the recent drill hole, as soon as possible. Our intrepretation is that the drill hole cut a tapered edge of a massive sulfide deposit with a potential of 20 million tons of gold-rich ore. The prospect is located in the northwestern portion of the Kay Mine landblock.

Should you decide for some reason not to perform follow-up drilling as recommended, please make arrangements to reclaim the road and drill-site constructed for the recently completed hole. Both were left open for use in conjunction with follow-up drilling.

JLH:ej

Enclosure

c: Richard Chuchla

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

September 28, 1984

TO: J. L. HAGMAIER

FROM: R. J. CHUCHLA

RE: RESULTS AND INTERPRETATION OF KM-18 AND RECOMMENDATIONS FOR ANOTHER DRILL TEST; KAY MINE, #3293, AZ

RECOMMENDATIONS

Drillhole KM-18 cut 135' (387'-522') of mineralized metadacite. This interval contains several zones of ore grade mineralization (e.g., 456'-460' (4') of 0.70% Cu, 0.45% Zn, 0.15 oz. Ag/T, 0.22 oz. Au/T; 516'-522' (6') of 3.83% Cu, 0.13% Pb, 2.51% Zn, 0.41 oz. Ag/T, 0.01 oz. Au/T). Based on the volcanic textures, alteration, mineralogy, and metal zoning, it is clear that we have intersected a significant proximal-type, volcanogenic, massive sulfide system. The drillhole cross-section suggests that KM-18 cut the tapered end of a massive sulfide body. I strongly recommend we promptly follow up KM-18 with another drillhole. This hold, KM-19, would be collared at approxmately the same location and drilled in the same direction, but at a steeper angle (63°).

This target has potential for greater than 20 MT of 2% copper equivalent. Since we are in the process of disposing of this property, it clearly behooves us to act promptly so that we know what we might be giving away.

GEOLOGY

The Kay Mine block is located at the southern end of the Black Canyon Schist Belt in Yavapai County, Arizona. The schist belt is comprised of 1.8 billion-year old volcanic and sedimentary rocks which strike north-northeast and which have been subjected to several periods of intense deformation. This resulted in the development of isoclinal folds and a steeply

dipping regional foliation that approximately parallels bedding. Dips vary within 10° of vertical and are predominantly to the west. Rocks are metamorphosed to the greenschist facies.

The mineralized horizon occurs at the stratigraphic top of a thick pile of metadacitic crystal and lapilli tuffs and flows (Fig. 1). The hangingwall section is composed of interbedded metarhyolitic and metadacitic (rhyolite $\gg$ dactite) crystal and lapilli tuffs. Moderately coarse fragmental textures in the hosting metavolcanic pile suggest proximity to a vent.

The dip of the foliation changes significantly downhole. It shifts from slightly east-dipping near the top of the hole to west-dipping in the mineralized zone. This dip change may be due to deflection of the schistosity by a relatively competent body (such as a proximal-type massive sulfide with attendant widespread silicification) or to the different mechanical properties of the mineralized rock.

ALTERATION

The mineralized horizon and subsurface projection of that horizon manifest the alteration facies of a classic, proximal-type volcanogenic massive sulfide. The zone itself is pervasively silicified and contains abundant silica/sulfide and carbonate exhalites. Locally, stringer chalcopyrite occurs with black magnesian chlorite. Both the hangingwall and the footwall of the mineralized horizon also contain abundant exhalites. Those in the hangingwall are composed of silica and/or dolomite . Those in the footwall are composed of silica and sulfide or dolomite. The considerable stratigraphic thickness over which these exhalites occur suggests a long-lived hydrothermal system which was being continually buried by volcanics. The variation in composition of the exhalites from footwall to hangingwall suggests a cooling trend with time.

MINERALIZATION/GEOCHEMISTRY

Drillhole KM-18 intersected a 135' thick mineralized section (Figs. 2-4). Thin zones within this mineralized interval are ore grade and are dominated by copper, zinc, and gold. Silver values are locally significant and lead is sporadically anomalous. Metal zoning can be clearly portrayed in terms of copper to zinc ratios which increase by a factor of five downhole (from hangingwall to footwall). This is strong evidence that the stratigraphic top of the system is to the east.

Of particular interest is the fact that the ore zone is thicker and generally better mineralized at about 300' below its outcrop. If this massive sulfide is similar to Kay Mine in its configuration, we can expect it to thicken very significantly down-dip and persist for approximately 2,000'.

Mineralization is accompanied by anomalous mercury.

TARGET CONCEPT/POTENTIAL/EXPLORATION APPROACH

The original target concept for this area proposed by John Davidson was a copper-gold volcanogenic massive sulfide with "tops" to the west. Drillhole KM-18 clearly supports this concept, but indicates that "tops" are to the east. In addition, KM-18 suggests that the system becomes stronger and thickens downdip (Fig. 5).

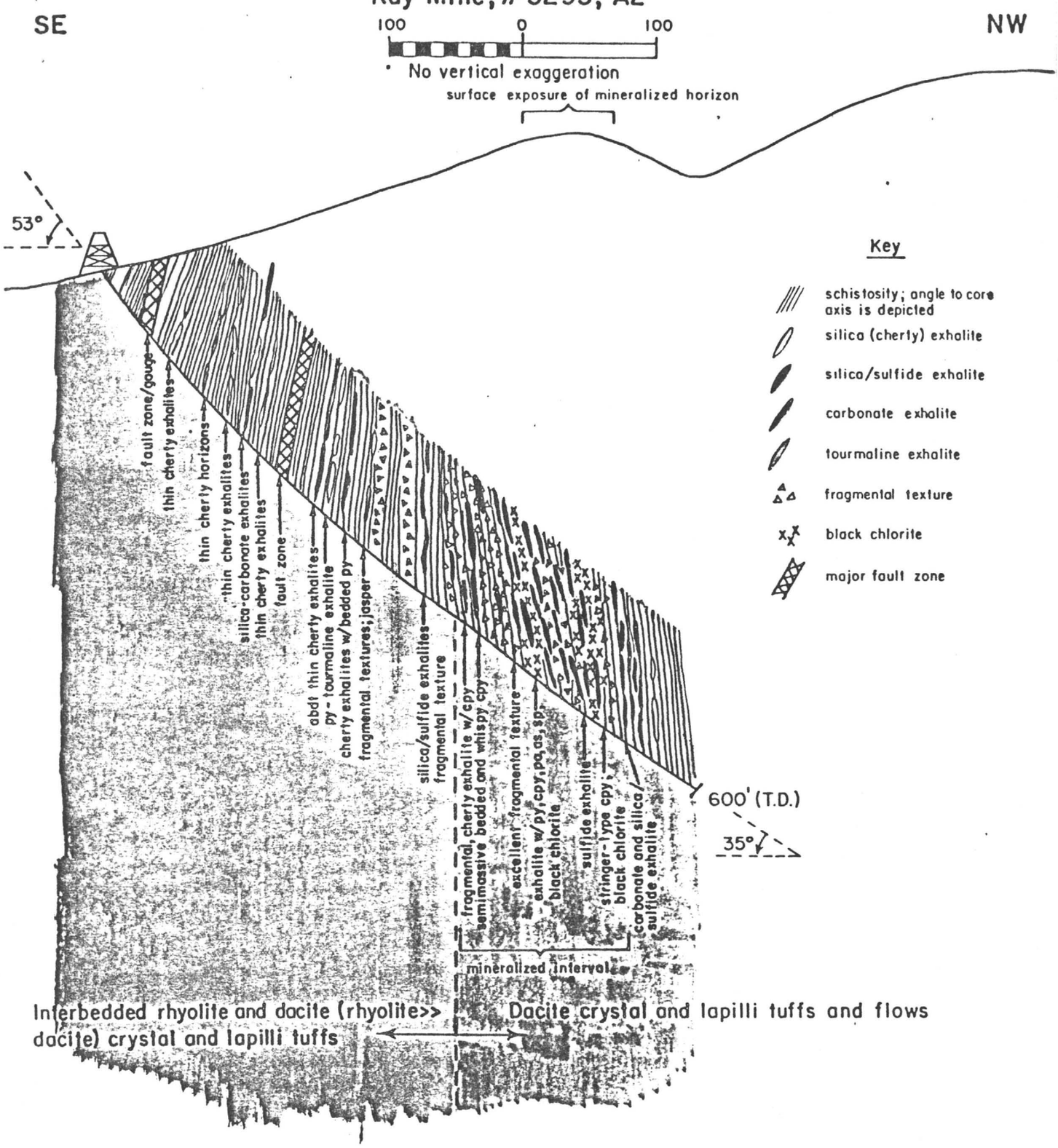
Based on the strike length of the outcropping mineralized horizon (3,600'), an ore zone thickness of 150', and a vertical dimension of 1,000', the upside potential of this system is well over 20 MT of 2+% copper equivalent. Given a realistic gold grade of 0.1 oz. Au/T, this prospect could make an Exxon-size deposit with its gold values alone.

I recommend we drill one additional hole, (KM-19), in the prospect this year. The hole would be collared in about the same location as KM-18, avoiding any expensive road building, would be oriented at N 75° W, and would dip approximately 63°. The estimated cost of an 800' hole is $24,000 at $30/ft. Given minor additional road construction, the total cost of the project would be $26,000. I plan to spend several days mapping the mineralized horizon in detail.

FIGURE 1. SIMPLIFIED CROSS - SECTION (orientation approx. N75°W)

Hole KM - 18

Kay Mine, #3293, AZ



Note: No correction made for deviation in orientation of hole (~10°). Cross section is thus very slightly distorted.

R. J. Chuchla
Sept. 1984

FIGURE 2. GEOCHEMICAL CROSS SECTION - Cu (ppm)

Hole KM - 18

Kay Mine, #3293, AZ

Scale 1" = 50'

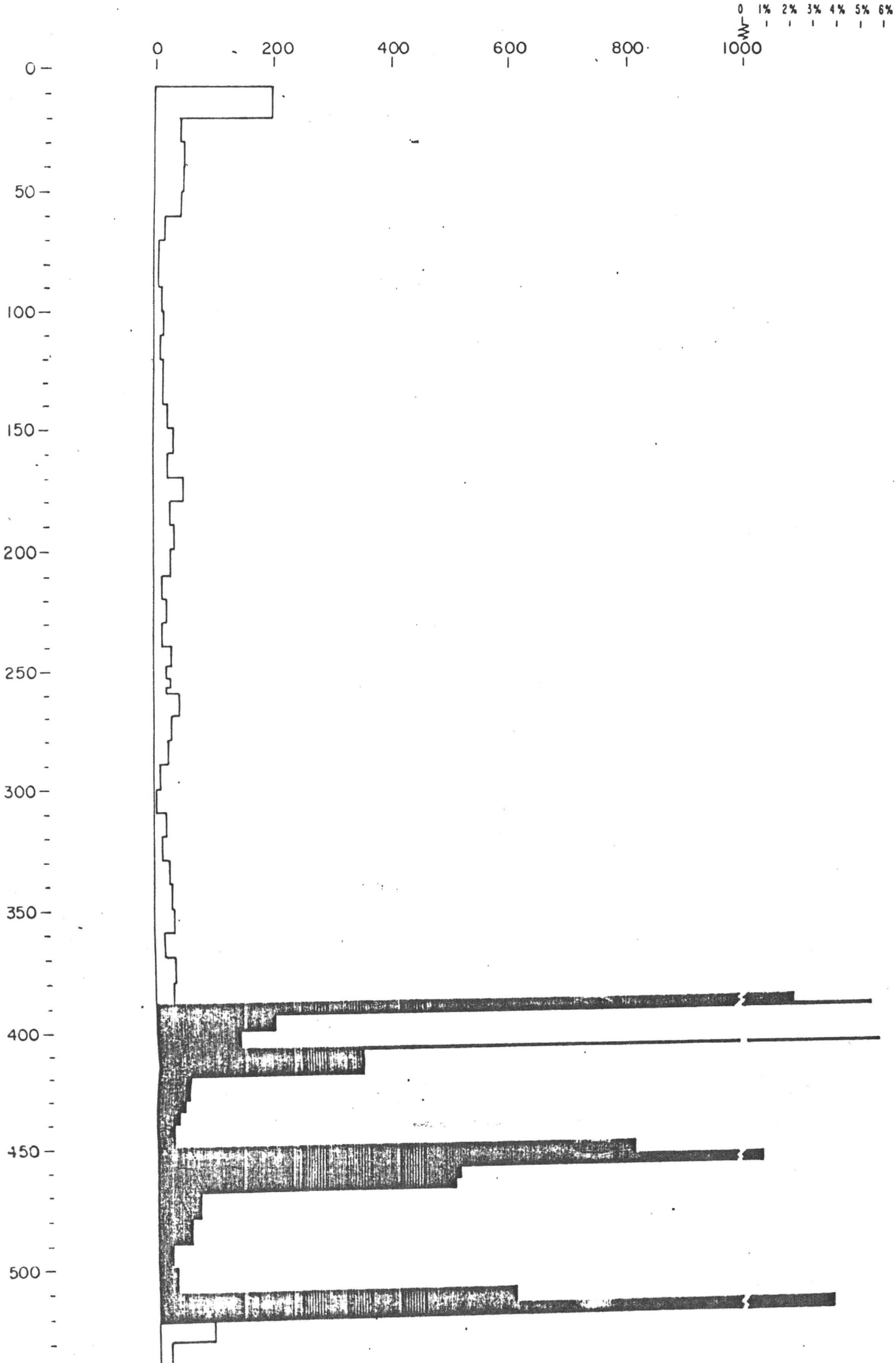


FIGURE 3. GEOCHEMICAL CROSS SECTION - Au (ppm)

Hole KM - 18

Kay Mine, # 3293, AZ

Scale 1" = 50'

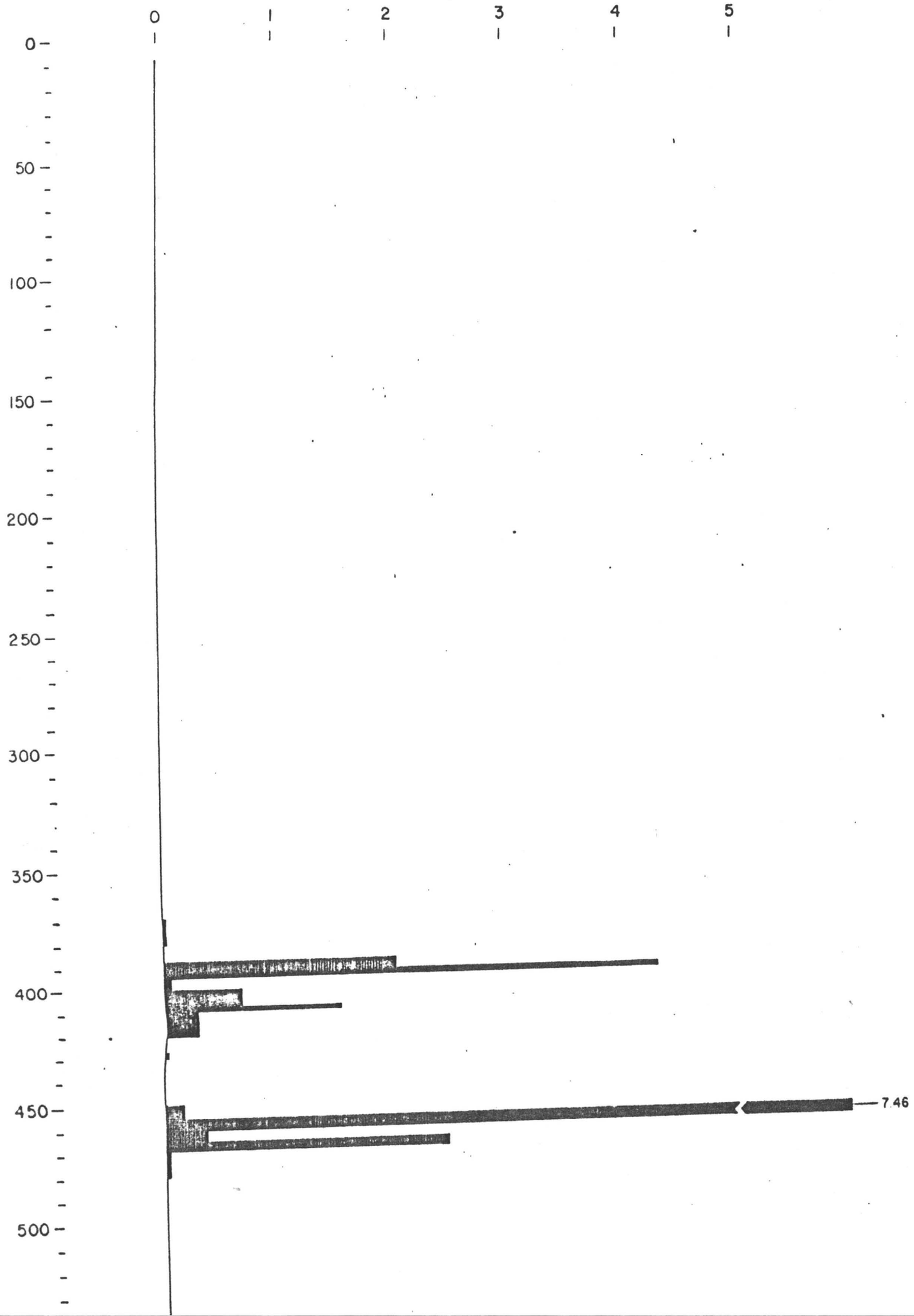


FIGURE 4. GEOCHEMICAL CROSS SECTION - Zn (ppm)

Hole KM - 18

Kay Mine, #3293, AZ

Scale 1" = 50'

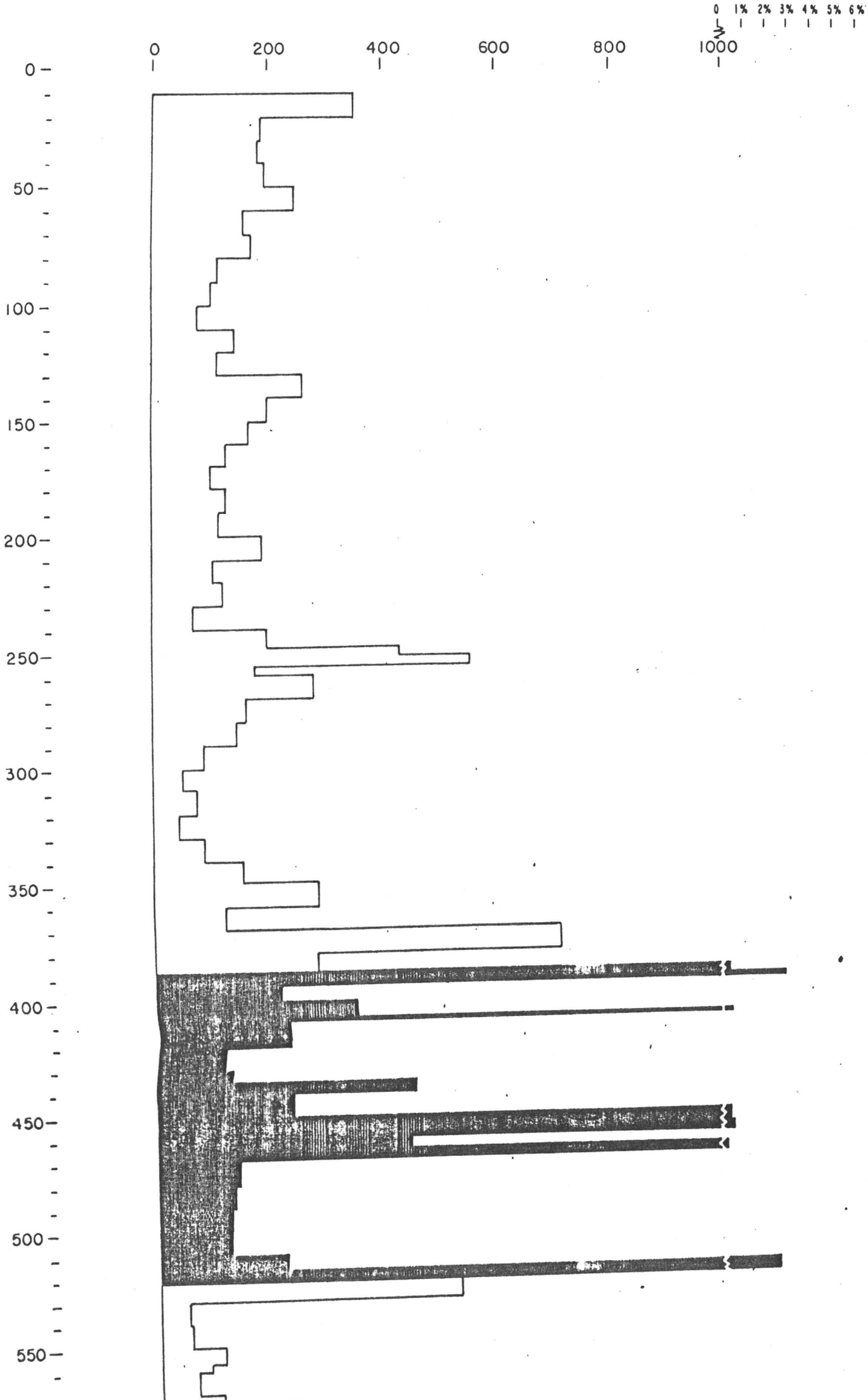
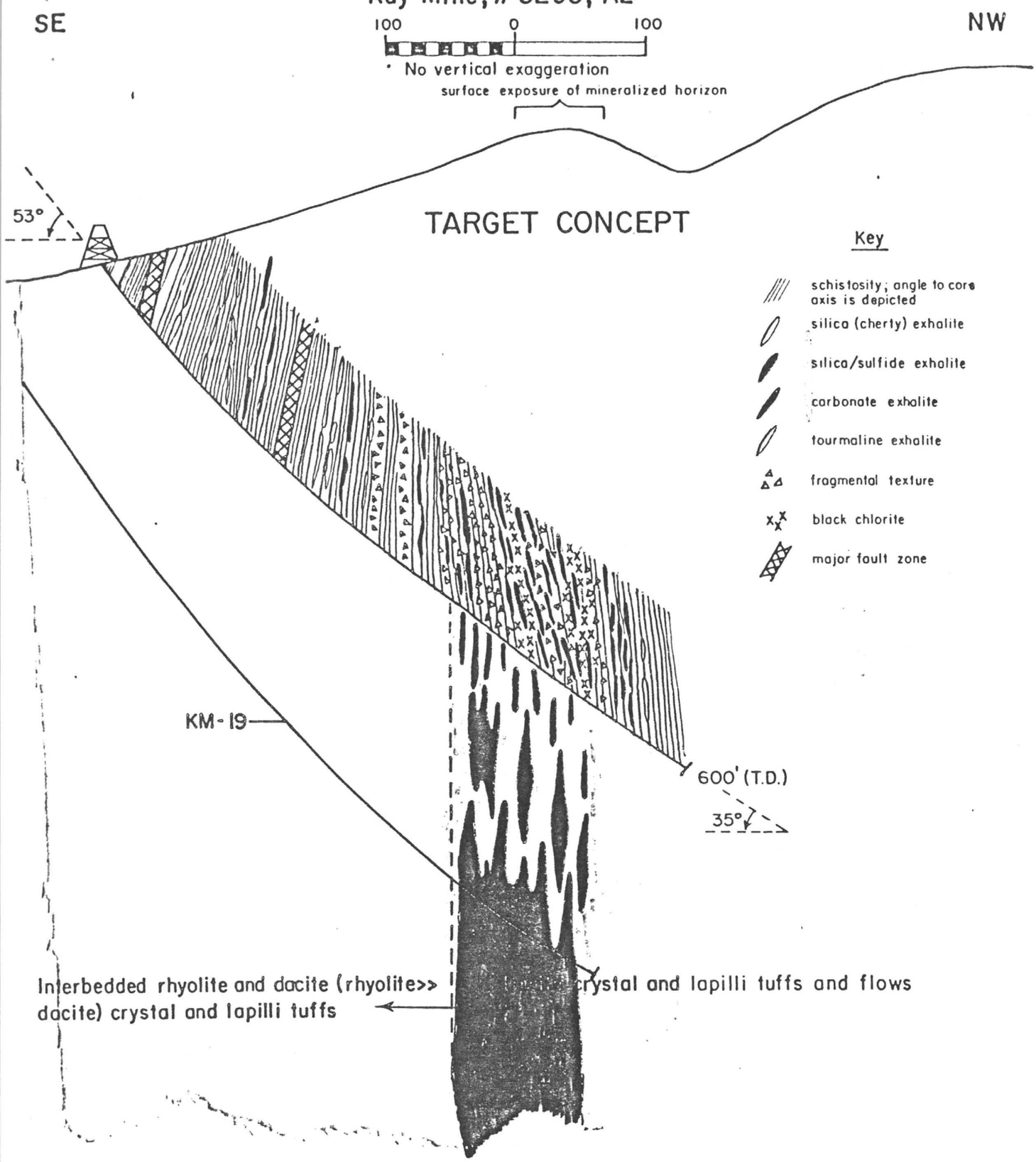


FIGURE 5. SIMPLIFIED CROSS SECTION (orientation approx. N75°W)

Hole KM-18

Kay Mine, #3293, AZ



Note: No correction made for deviation in orientation of hole (~10°). Cross section is thus very slightly distorted.

R. J. Chuchla
Sept. 1984

Recovery	Base Metal Mineralization	% Sulfide	Alteration – Metamorphic	Bedding ∀ to core	Structure tilt – frac	Rock Type	PROJECT Greyhound 3293	INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au

Coord _____ Hole No. KM-18
Logged by PGS Scale 1"=50' Date 9/10/85 P. 1 of ___

Overburden collared _____, completed _____
Bedrock collared _____, completed _____
Owner of surface _____, minerals _____
Location: ___ 1/4 ___ 1/4, Sec ___ Twp ___ Rge ___
Azm. of ddh: ___
Incl. of ddh at surf: ___
___ : ___
___ : ___
___ : ___
___ : ___
___ : ___

Rock Types

350 **Surface**

Py 1-3 — 45

Rhyolite – altered to v fine gr. sericite schist cream to white very schistose – breaks into wedge-like slivers. Qtz eye w/ pyritic clots, strung out, w qtz. Chloritic streaks make irreg blotchy network. Mullion structure + crenulations on schistosity surfaces indicate steep N plunge. Contains clots + irreg masses of qtz w/ Py, CP, sph, chlorite. Grey sericite schist

388
394
398

10

1/2 3

Contains much chlorite in patches + short sections 1-4 ft w/ py, qtz, some stringy masses of cp. Irreg clots of qtz. Schist suggest coarse pyroclastic – why Bx – grey to green

437

<1 1-3

452 do 350-389 cream to white

3/10 10 tr to 1

Chloritic, dk green massive w/ irreg qtz lenses + masses w/ py, CP in patches. Grey to dk green-blk.

470

Chlorite, med green, thinly-streaky-laminated chloritic sericitic rock. Mullion structures steep N plunge, movement up on east

F

Broken zone 501-508

513

Dk chlorite w/ massive grey qtz irreg patches, py cp heavy cp 519-521

524

do 470-513 lt green

Qtz grey massive + thinly laminated cherty + w/ black granular sph. Dk grey-black forest green chlorite

556
557
559

Thinly laminated chert w/ dk forest green chlorite + carbonate + black granular sph Dk grey-black

579

Sericite schist cream to white Calcareous hematite contact – f. v. sharp

600

Andesite tuff fine gr thinly laminated med green calcareous

EOH

PROJECT KAY MINE DH-18 PROJECT NO. 3293 SUBMITTAL NO. 84-52-10

STATE AZ COUNTY _____ QUAD _____ DATE SUBMITTED 20 AUG 84

SAMPLE NO. 7 TYPE DRILL CORE GEOLOGIST J. DAVIDSON

PAGE 1 OF 1

REMARKS _____

SAMPLE		PPM Cu	% Cu		PPM Mo	PPM Pb	% Pb	PPM Zn	% Zn	PPM Ag		PPM Au				
9-20		200			2	40		370		<1		<.02				
20-30		42			3	<10		192		<1		<.02				
30-40		48			3	<10		183		<1		<.02				
40-50		50			4	<10		199		<1		<.02				
50-60		46			4	<10		251		<1		<.02				
60-70		19			4	<10		161		<1		<.02				
70-80		10			2	10		177		<1		<.02				

EXXON MINERALS CO., USA

SIGNED [signature] DATE 8/27/84

PROJECT KAY MINE DH-18 PROJECT NO. 3293 SUBMITTAL NO. 84-52-13

STATE AZ COUNTY QUAD DATE SUBMITTED 22 AUG 84

SAMPLE NO. 7 TYPE DRILL CORE GEOLOGIST J. DAVIDSON

PAGE 1 OF 1

REMARKS

SAMPLE		PPM Cu	% Cu		PPM Mo	PPM Pb	% Pb	PPM Zn	% Zn	PPM Ag		PPM Au				
80-90		12			2	<10		115		<1		<.02				
90-100		15			2	<10		106		<1		<.02				
100-110		17			2	<10		79		<1		<.02				
110-120		14			3	10		146		<1		<.02				
120-130		18			3	10		114		<1		<.02				
130-140		18			2	15		263		<1		<.02				
140-150		22			3	10		203		<1		<.02				

EXXON MINERALS CO., USA

SIGNED Martin W. Hilbetter DATE 8/28/84

PROJECT KAY MINE (DH-18) PROJECT NO. 3293 SUBMITTAL NO. 84-52-10

STATE AZ COUNTY QUAD DATE SUBMITTED 23 AUG 84

SAMPLE NO. 8 TYPE NC CORE GEOLOGIST J. DAVIDSON

PAGE 1 OF 1

REMARKS S. TO FOLLOW.

SAMPLE		PPM Cu	% Cu		PPM Mo	PPM Pb	% Pb	PPM Zn	% Zn	PPM Ag		PPM Au				
150-160		36			3	<10		170	✓	<1		<.02				
160-170		22			3	10		132	✓	1		<.02				
170-180		49			5	10		104	✓	1		<.02				
180-190		26			4	<10		132	✓	<1		<.02				
190-200		36			3	10		117	✓	<1		<.02				
200-210		31			4	25		193	✓	<1		<.02				
210-220		13			2	<10		107	✓	1		<.02				
220-230		22			2	<10		123	✓	<1		<.02				

EXXON MINERALS CO., USA

SIGNED Martin H. Hitchcock DATE 9/5/84

PROJECT KAY MINE KM-18 PROJECT NO. 3293 SUBMITTAL NO. 52-19,20,21,22,23

STATE AZ COUNTY QUAD

DATE SUBMITTED 29 AUG 84

SAMPLE NO. 47 TYPE NC CORE

GEOLOGIST J. DAVIDSON

PAGE 1 OF 1

REMARKS S TO FOLLOW.

SAMPLE	Z/100	PPM Cu	% Cu		PPM Mo	PPM Pb	% Pb	PPM Zn	% Zn	PPM Ag			PPM Au		Au	
230-240	18	14		2		<10		70		<1				<	18	
240-248	19	34		5		<10		202		<1				<	19	
248-252	20	21		6		<10		435		<1				<	20	
252-256	21	29		4		<10		560		1				<	21	
256-260	22	21		2		<10		178		<1				<	22	
260-270	23	43		6		<10		281		1				<	23	
270-280	24	29		2		<10		163		1				<	24	
280-290	25	26		3		<10		144		<1				.02	25	
290-300	26	11		3		<10		92		<1				<	26	
300-309	27	6		4		<10		51		<1				<	27	
309-320	28	21		3		<10		78		<1				<	28	
320-330	29	11		3		<10		43		<1				<	29	
330-340	30	26		3		<10		87		<1				<	30	
340-349	31	27		3		10		158		<1				<	31	
349-360	32	35		2		50		292		<1				<	32	
360-370	33	17		4		25		123		<1				<	33	
370-380	34	36		2		25		713		<1				.03	34	
380-387	35	32		2		10		282		<1				<	35	
387-393	36		0.23	4		85			0.22	1	7%/06 opt	10.1 .27 .30 4.83 1.55 3.12	7.1 0.04 1.0 0.06	2.02	36	
393-394	37		5.54	4		820			2.97	42				4.27	37	.73
394-400	38	201		3		35		220		<1				.05	38	.02
400-407	39	142		6		30		355		<1				.69	39	
407-408	40		5.95	3		150			0.43	5				1.55	40	
408-420	41	353		2		<10		228		<1				.26	41	
420-430	42	57		3		<10		117		<1				<	42	
430-435	43	54		<1		<10		131		<1				<	43	
435-440	44	40		<1		15		457		<1				.04	44	
440-450	45	29		2		<10		239		<1				<	45	135' zone
450-456	46	817		4		15			0.19	<1				.17	46	
456-460	47		0.70	3		270			0.45	5		29.84		7.46	47	
460-465	48	517		2		15		448		<1	13%/099 opt	1.44 9.76	1.1 0.02	.36	48	
465-469	49	511		2		110			0.24	2				2.44	49	
469-480	50	73		3		<10		143		<1				.03	50	
480-490	51	59		4		<10		137		<1				<	51	
490-500	52	22		2		<10		126		<1				<	52	
500-510	53	34		1		10		125		<1				<	53	
510-516	54	610		4		60		225		<1				<	54	
516-522	55		3.83	5			0.13		2.51	14				.48	55	
522-530	56	97		2		25		537		<1				<	56	
530-540	57	20		3		345		47		<1				<	57	
540-550	58	14		6		<10		52		<1				<	58	
550-557	59	11		7		<10		115		<1				<	59	
557-560	60	39		46		10		82		<1				<	60	
560-570	61	15		11		<10		65		<1				<	61	
570-580	62	26		4		<10		111		<1				<	62	
580-590	63	27		2		<10		131		<1				<	63	
590-600	64	16		3		<10		136		<1				<	64	
TD.																

EXXON MINERALS CO., USA

SIGNED DATE

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

July 19, 1984

TO: A. T. JOHNSON

FROM: J. L. HAGMAIER

RE: KAY MINE #3293 - CLEARANCE FOR 1984 ASSESSMENT DRILLING

As we discussed yesterday, the decision has been made to perform 1984 assessment for the Kay Mine land block. Your assistance in acquiring appropriate land clearance for drilling one hole on the property will be appreciated. A signed drilling authority is enclosed for the Houston file. Also enclosed is a map showing the drill hole location, access route and the new road construction necessary for access to the drill site. Timing is obviously important; therefore, any extra effort to expedite the clearance will be appreciated.

I am providing Jeff Lehtinen with a copy of this memo and requesting that he secure appropriate drilling equipment for implementation of the planned drilling. A drill specification form is enclosed for reference.

John Davidson will be the geologist supervising the drilling. Please direct any questions or requests for additional information to him in the Tucson office. If we can be of assistance in helping to expedite the clearance process, give me a call.

J.L.H.

sfl

cc: G. E. Lehtinen
J. W. Davidson

Encl.

File in KAY Mine Proj File
with Copy of Johnson memo
under drilling — gjk 7-19-84

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

July 19, 1984

TO: J. L. HAGMAIER

FROM: J. W. DAVIDSON

RE: TARGET CONCEPT AND DRILLING RECOMMENDATION, KAY MINE PROSPECT #3293 AZ

CONCLUSIONS AND RECOMMENDATIONS

Detailed mapping and sampling in the Kay Mine block indicate that there is excellent potential for the discovery of a significant tonnage of copper-gold-rich volcanogenic massive sulfide mineralization in Section 32, T9N, R2E. The mineralization is confined to a north-south striking zone which ranges in thickness from six inches to ten feet and which can be traced along strike for a distance of 3,600 feet. The zone is strongly anomalous in copper, gold and silver, and is moderately anomalous in lead and zinc.

To evaluate the down dip potential of the mineralized horizon, it is recommended that Exxon Minerals Company drill one 500-foot angle core hole. The hole will be located in Section 32, and drilled from west to east at an inclination of 55° from the horizontal. The estimated expense of testing this horizon is $20,000.00. This estimate consists of approximately $5,000.00 for existing road rehabilitation, 1200 feet of new road construction, and drill site preparation and reclamation. The remaining $15,000 is for drilling costs, calculated at $30.00/ft. An immediate start-up date is recommended since testing the zone prior to September would fulfill our 1984 assessment obligations on the 195 unpatented claims which comprise the majority of the Kay Mine land block. A minimum of $19,500.00 must be spent to maintain the entire block.

TARGET

The Key Mine target is a copper-gold-rich volcanogenic massive sulfide deposit with potential for 20 million tons of 2% to 2.5% copper equivalent.

GEOLOGY

The Kay Mine block is located at the southern end of the "Black Canyon Schist Belt" in Yavapai County, Arizona. The schist belt is comprised of 1.8 billion year old volcanic and sedimentary rocks which strike north-northeast and which

have been subjected to at least one period of intense deformation. The deformational event resulted in the development of isoclinal folds and a steeply dipping regional foliation that approximately parallels bedding. All of the rocks dip between 70° and 85° to the west and are metamorphosed to the greenschist level.

The copper-gold horizon recommended for drill testing occurs at the stratigraphic top of a thick sequence of silicified felsic pyroclastic rocks that have locally experienced black chlorite alteration. Overlying the mineralized horizon are silicified and locally carbonatized dacitic volcanoclastic rocks and chloritic sedimentary rocks. Exhalitive dolomite horizons are common throughout this hanging wall sequence. The strongest carbonitization of the hanging wall units coincides with an area of strong black chlorite alteration in the underlying footwall rocks. This type of strong alteration typically occurs in close proximity to a volcanic vent or fumarole from which mineralization would have been expelled onto the sea floor. The proposed drill hole will be collared in the immediate vicinity of this vent.

The actual copper-gold horizon is comprised of interbedded felsic pyroclastic rocks, sediments, and exhalitive and fragmental dolomites containing numerous thin stratabound beds of oxide copper, massive pyrite, and gossans after massive pyrite and chalcopyrite. The entire mineralized horizon ranges in thickness from six inches to ten feet. It can be traced along strike for a distance of 3600 feet.

GEOCHEMISTRY

Approximately 20 rock chip samples were collected along the entire strike length of the mineralized zone. Analysis of these samples reveal that the zone is strongly anomalous in copper, gold, and silver and moderately anomalous in lead and zinc. The average metal content of the oxidized portion of the zone is 0.7% Cu, 0.29% Pb, 0.24% Zn, 24 ppm Ag, and 6.4 ppm Au. Anomalous concentrations of mercury also coincide with the base and precious metal mineralization.

The range in the metal content of the horizon is tabulated below:

Copper:	49 ppm	-	3.66%
Lead:	10 ppm	-	2.45%
Zinc:	11 ppm	-	1.54%
Gold:	0.05 ppm	-	30 ppm
Silver:	1 ppm	-	70 ppm
Mercury:	65 ppb	-	5.4 ppm

To ensure that the gold content of the mineralized horizon is not falsely elevated due to surface oxidation, leaching and enrichment, several rock chip channel cuts were taken underground in fresh sulfide. These samples revealed that the massive sulfide horizons (four discrete beds over a 2.5' interval) assay 4.89% Cu, 0.67% Zn, 48 ppm Ag and 4.5 ppm Au. In addition, samples of pyritized and sericitized schist between and peripheral to the massive sulfide beds assayed 3.66% Cu, 0.56% Zn, 28 ppm Ag, and 22 ppm Au.

PREVIOUS DRILLING AND DRILLING SPECIFICATIONS

The northernmost extent of the mineralized zone was previously intersected by Greyhound drill hole EGH-1 (#5180 AZ). This hole encountered several centimeters of massive sulfide mineralization which assayed 0.31% Cu, 1.0% Zn and 14 ppm Ag. The interval was not assayed for gold. The footwall of the mineralization coincided with a gouge zone and it was, therefore, concluded that the majority

of the mineralization had been displaced by faulting. Drill hole EGH-2 was also designed to intersect this horizon but due to fluctuations in the dip of the strata, the zone was apparently never intersected.

To evaluate the southern strike extent of this copper-gold horizon, the proposed drill hole will be collared approximately 250 feet west of the target. The hole will be inclined 55° from the horizontal and terminated at a length of 500 feet. To ensure that the horizon is intersected and to aid in the recognition and interpretation of any faults, it is requested that the target be tested with a core rig rather than a down hole hammer reverse circulation rotary rig. A drill site location map and a drilling specification sheet are attached.

CONCLUSIONS

All geological and geochemical data support the contention that a significant tonnage of copper-gold volcanogenic massive sulfide mineralization may be discovered by drilling in Section 32, T9N, R2E. Mapping of carbonate, silica, sericite and black chlorite alteration has led to the recognition of the volcanic vent or fumarole from which the copper-gold mineralization was expelled onto the sea floor. Drill hole K-18 is designed to intersect the down dip projection of the mineralized horizon in the immediate vicinity of this source vent.

J.W. Davidson

J.W. Davidson

sfl

PROJECT NUMBER 3293

TUC AZ 1011-84

EXPLORATION DRILLING AUTHORITY

Minerals Department

BLOCK KAY MINE PRINCIPAL MINERAL Copper-Gold TYPE TARGET Volcanogenic massive sulfide

STATE Arizona COUNTY Yavapai TOTAL AUTHORITY $25000 ~~$20,000~~

APPROXIMATE NO. HOLES One (1) FEET 500'

HOLE LOCATION(S) AS PER ATTACHED PLAT:

Section 32, T9N, R2E

REASON FOR RECOMMENDATION:

Test of possible copper-gold volcanogenic massive sulfide mineralization as suggested by surface evidence of mineralization hosted by a very favorable sequence of Precambrian-age metavolcanic and metasedimentary rocks. Coincident with the thickest and highest grade of mineralization is moderate to strong carbonate, silica, sericite, and black chlorite alteration.

OTHER:

Starting date: an immediate start-up date is requested to ensure that our 1984 assessment obligations on the Kay claims can be fulfilled by September 1st. New road construction will require approval by the Arizona Commission of Agriculture and Horticulture (approximately 1200' in length).

Approval is granted for exploration drilling and related drill hole costs within the above total money limit.

RECOMMENDED BY: J.W. Davidson DATE: July 19, 1984

ENDORSED BY: DATE:

ENDORSED BY: DATE:

AUTHORIZED BY: Jonathan L. Hagmann

DATE: 7-19-84

Noted:

Date :

Kay Mine
File w/ drilling Contract for Kay Mine in KA/Mine Prj file
8-13-84

considered a part of this Contract as fully as if set forth above. (NOTE: IF NO SPECIAL TERMS OR CONDITIONS ARE ATTACHED, INSERT "NONE" ON THE LINE BELOW.)

-NONE-

EXECUTED AND DELIVERED as of the effective date written above.

EXXON MINERALS COMPANY

By

Title Manager, U.S. Exploration

EMC mailing address:

13111 Northwest Freeway

Houston, Texas Zip Code 77040

O.K. as to Trade
O.K. as to Form
O.K. as to Financial

Longyear Company
(Name of Contractor: type or print)

By

Title Mgr. S.W. Zone

Contractor's mailing address:

308 East Pima Street

Phoenix, Arizona Zip Code 85004

Federal Taxpayer Identification No.
41-0382060

AUG 1984
RECEIVED
TUCSON
MINERALS

Kay Mine

considered a part of this Contract as fully as if set forth above. (NOTE: IF NO SPECIAL TERMS OR CONDITIONS ARE ATTACHED, INSERT "NONE" ON THE LINE BELOW.)

-NONE-

EXECUTED AND DELIVERED as of the effective date written above.

EXXON MINERALS COMPANY

By

O.K. as to Trade
O.K. as to Form
O.K. as to Financial

Title Manager, U.S. Exploration

EMC mailing address:

13111 Northwest Freeway

Houston, Texas Zip Code 77040

Longyear Company

(Name of Contractor: type or print)

By

Title Mgr. S.W. Zone

Contractor's mailing address:

308 East Pima Street

Phoenix, Arizona Zip Code 85004

Federal Taxpayer Identification No.
41-0382060

AUTHORITY NUMBER TUC-AZ-1011-84A

PROJECT NUMBER 3293 (AK)

RECEIVED BY CHARLES L. DAHL

NOV 2 1984

EXPLORATION DRILLING AUTHORITY

Minerals Department

BLOCK KAY MINE PRINCIPAL MINERAL COPPER-GOLD-ZINC TYPE TARGET VOLCANOGENIC MASSIVE SULFIDE

STATE AZ COUNTY YAVAPAI TOTAL AUTHORITY $45,000

APPROXIMATE NO. HOLES TWO (2) FEET 1,500 feet

HOLE LOCATION(S) AS PER ATTACHED PLAT:

SECTION 32, T 9 N, R 2 E

REASON FOR RECOMMENDATION:

Follow-up to drillhole KM-18, which intersected 135' of mineralized metadacite. This interval contains several zones of ore grade stringer-type copper-gold, massive sulfide mineralization. Mineralization is along an intermediate-felsic boundary. It is coincident with well-developed carbonate (dolomite-ankerite) and silica-sulfide exhalites and sericite and magnesian chlorite alteration.

KM-19 - Will test the downdip extension of the mineralized horizon intersected in KM-18.

KM-20 - Will test the mineralized horizon intersected in KM-18 approximately 300' south of KM-18.

OTHER: New road construction (300') will require approval by the Arizona Commission of Agriculture and Horticulture.

Approval is granted for exploration drilling and related drill hole costs within the above total money limit.

RECOMMENDED BY: R. J. CHUCHLA DATE: October 15, 1984

ENDORSED BY: DATE:

ENDORSED BY: Steven H. Hughes DATE: 11-27-84

AUTHORIZED BY: Thomas D. Vowin

DATE: 10/30/84

Noted:

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

November 7, 1984

Notice of Intent to
Conduct Exploratory Drilling
Kay Mine, Project 3293
Maricopa and Yavapai Counties, Arizona

Mr. R. A. Countryman
Arizona Commission of Agriculture and Horticulture
1688 West Adams
Phoenix, Arizona 85007

Dear Mr. Countryman:

Pursuant to the Arizona Native Plant Law, ARS Chapter 7, Section 3-904, please be advised that Exxon Minerals Company seeks to conduct exploratory drilling in Section 32, Township 9 North, Range 2 East. Exxon Minerals Company hereby requests permission to drill two holes in the northeast quarter of said Section 32.

We would like to begin operations immediately upon receipt of approval from the Commission of Agriculutre and Horticulture and the Department of Water Resources.

A truck-mounted drilling rig will be used. Road construction as shown on the attached plat will be required. Site preparation will be limited to approximately 0.2 acre of surface disturbance at drill sites. Any support will be provided by four-wheel drive vehicles.

The land described in this letter is the same property described in our letter to you dated August 2, 1984. These activities are a continuation of our recent work in the area.

Should you have any questions, or wish to conduct a surface inspection, please call me or our project geologist, Richard J. Chuchla, at (602) 622-8801.

Very truly yours,

Steven H. Humphreys

Steven H. Humphreys
Staff Landman

SHH:tap

cc: Mr. T. D. Irwin
Mr. R. J. Chuchla
Mr. G. E. Lehtinen

tap

ORATION WELL(S)
ING FEE $10.00

RTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL
EXPLORATION WELL(S)

EXPLORATION WELL(S)

ion 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling one or exploration wells, the well owner, lessee or exploration firm shall file a Notice of Intention to Drill on a form provided by the Department.

./LAND LOCATION

Township 9 North N/S

Range 2 East E/W

Section 32

the case of a single well, 10-acre subdivision

SW ¼, SW ¼, NE ¼

the case of multiple wells, appropriate section(s).

County Yavapai

Activity Filing Notice:
Exxon Corporation
c/o Exxon Minerals Company

e
P.O. Box 4508

ress
Houston, Texas 77210

y State Zip

Steven H. Humphreys
AME OF CONTACT PERSON

hone (602) 622-8801

Applicant is:

Owner ____

Lessee ____

Firm X

Purpose of well(s) drilled pursuant to this Notice:

Mineral Exploration X
Cathodic Protection ____
Grounding ____
Monitor ____
Piezometer ____

Number of wells in project: 2

8. Owner of land:
Bureau of Land Management
Phoenix Resource Area
Name

2935 W. Clarendon Avenue
Address

Phoenix Arizona 85017
City State Zip

9. DESCRIPTION OF WELL:

Diameter 6"

Depth / / 100 feet or less

/X / Greater than 100 feet

Type of Casing ____

None
(If none, so state)

10. Construction will start:

19 November 1984
Day Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO ____
FILED ____ BY ____
INPUT ____ BY ____
DUPLICATE MAILED ____ BY ____
REGISTRATION NO ____
AMA NON EXPANSION AREA ____
W/S S/B

11. For monitoring wells, is pump equipment to be installed? -

(a) If so, what will be the design pump capacity?

- gallons per minute.

(b) What use will be made of the water? -

12. Driller's name:
Longyear Company
Name

308 E. Pima Street
Address

Phoenix, Arizona 85004
City State Zip

83
DWR License Number

13. Period well will remain in use: 3 months.

14. Proposed method of abandonment of well(s) after project is completed

Well will be abandoned in accordance with R12-15-816 & 817

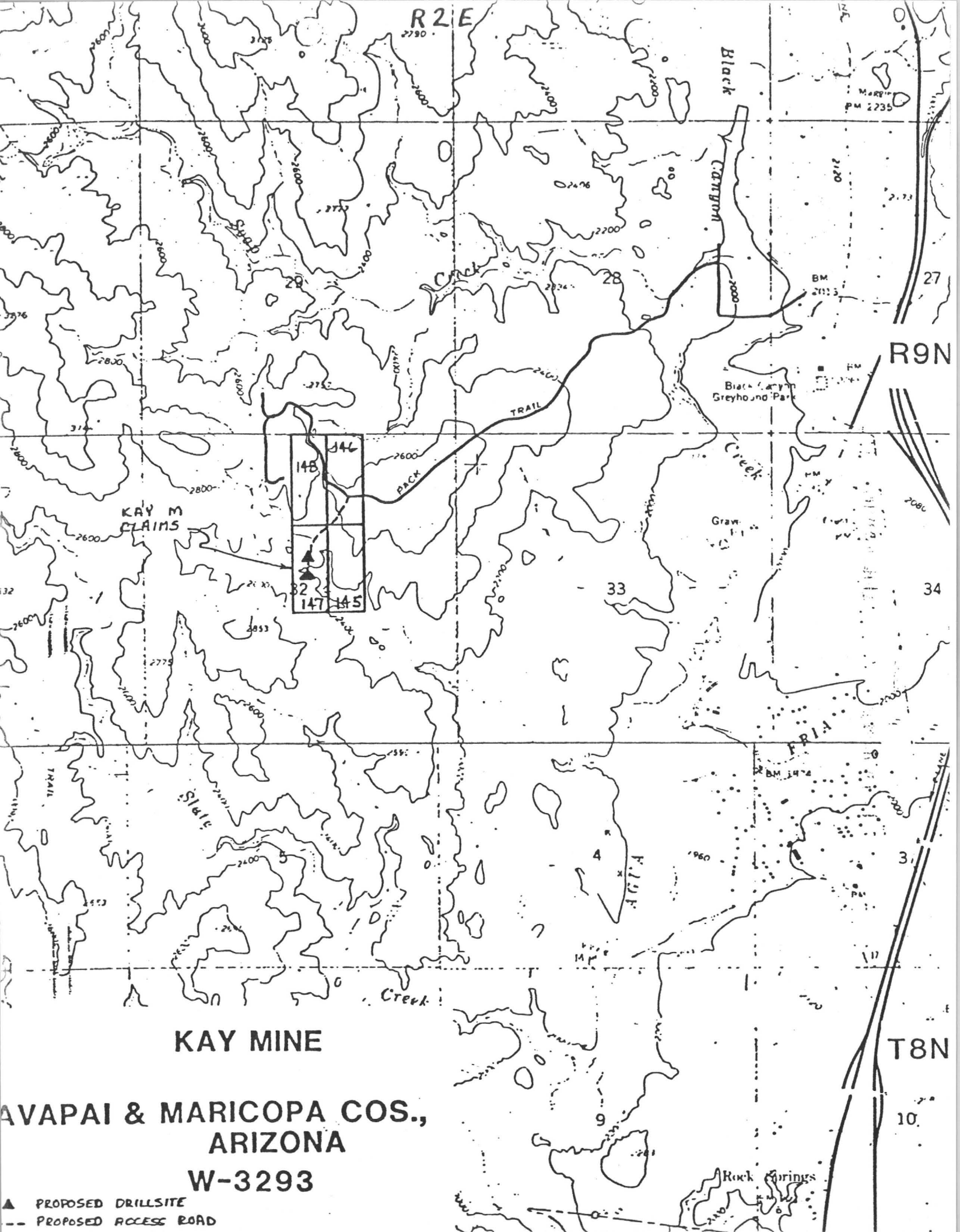
GENERAL INSTRUCTIONS

ll out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East rginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct the best of my knowledge and belief and that I understand the conditions set forth on the verse side of this form.

TE 11/8/84

Signature Steven H. Humphreys


R2E
R9N
T8N
Black Canyon
Shop Creek
Slate Creek
Black Canyon Creek
PACK TRAIL
KAY M CLAIMS
148
146
147
145
32
33
34
28
27
5
4
3
9
10
Black Canyon Greyhound Park
Rock Springs
KAY MINE
AVAPAI & MARICOPA COS., ARIZONA
W-3293
▲ PROPOSED DRILLSITE
-- PROPOSED ACCESS ROAD

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

November 7, 1984

Notice of Intent
Kay Mine Project 3293
Maricopa and Yavapai Counties, Arizona

Mr. Fred Potter
Bureau of Land Management
Phoenix Resource Area
2935 West Clarendon Avenue
Phoenix, Arizona 85017

Dear Mr. Potter:

Please accept this letter as Exxon Mineral Company's Notice of Intent to conduct exploratory activities on unpatented mining claims in your area of responsbility. The claims are owned by Exxon Corporation, c/o Exxon Minerals Company, P.O. Box 4508, Houston, Texas 77210. Exxon Minerals Company is the operator which will be conducting exploration activities.

There will be less than five acres of surface disturbance associated with our proposed activities. The claims on which exploration work will be conducted are described as follows:

Claim Name and No.	BLM AMC No.
Kay M 145 - 148	40681-40684

The drilling program will include drilling two exploration holes in the above-claimed block and building approximately 600 feet of temporary drill road as shown on the attached plat. Two mud pits (15 feet by 10 feet by 5 feet) will be excavated at the site of each hole. Two exploration holes will be drilled using a truck-mounted portable rig. Total surface disturbance should be approximately 0.5 acres.

Access to the claims is provided for by public roads, trails over public lands, and about 600 feet of temporary drill road to be constructed. In doing the road work, only the excavation necessary to provide for the safe passage of men and equipment will be done.

The land described in this letter is the same property described in our letter to you by A. T. Johnson dated August 2, 1984. These activities are a continuation of our recent work in the area.

Operations will begin on or about November 19, 1984. Upon completion of use of disturbed areas, reclamation work will be done in accordance with 43CFR3809.1-3(d). Reasonable measures will be taken to prevent unnecessary

or undue degradation of federal lands during operations.

Please call me or our project geologist, Richard J. Chuchla, at (602) 622-8801 if we may provide any additional information.

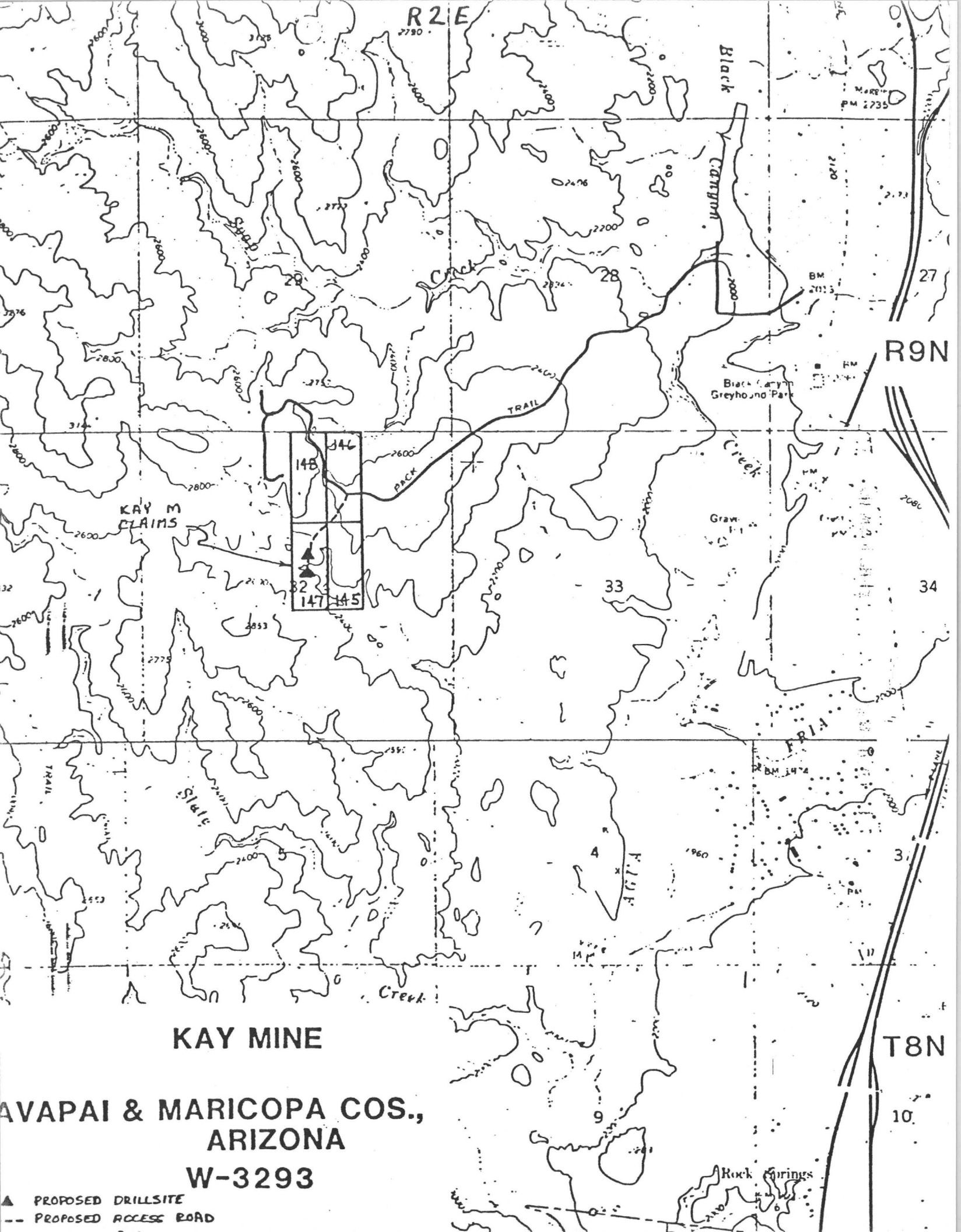
Very truly yours,

Steven H. Humphreys

Steven H. Humphreys
Staff Landman

SLH:tap

cc: Mr. T. D. Irwin
Mr. R. J. Chuchla
Mr. G. E. Lehtinen



KAY MINE

AVAPAI & MARICOPA COS., ARIZONA

W-3293

▲ PROPOSED DRILLSITE

-- PROPOSED ACCESS ROAD

prior treatment shall be disinfected before first use, as provided in Arizona Department of Health Services' Engineering Bulletins 8 and 10.

R12-15-815. Removal of drill rig from well site

A. The drilling rig shall not be removed from the well site for more than two consecutive weeks unless the well is in one of the following conditions:

1. Constructed in full conformance with these minimum construction standards, and either sealed with a water-tight cap or equipped with a pump.

2. Abandoned in accordance with R12-15-816.

B. If the drilling rig is removed from the well site for less than two consecutive weeks, the well shall be equipped with a water-tight cap.

R12-15-816. Abandonment

A. The abandonment of a well shall be accomplished through filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water.

B. A well not penetrating an aquifer shall include a surface seal which shall be accomplished as follows:

(1) If the casing is removed from the top twenty feet of the well, a cement grout plug shall be set extending from two feet below the land surface to a minimum of twenty feet below the land surface, and the well shall be backfilled above the top of the cement grout plug to the original land surface.

(2) If the casing is not removed from the top ten feet of the well, a cement grout plug shall be set extending from the top of the casing to a minimum of twenty feet below the land surface, and the annular space outside the casing shall be filled with cement from the land surface to a minimum of twenty feet below the land surface.

C. In addition to the surface seal required in subsection B:

(1) A well penetrating a single aquifer system with no vertical flow components shall be filled with cement grout, concrete, bentonite drilling muds, or backfilled with cuttings from the well.

(2) A well penetrating a single or multiple aquifer system with vertical flow components shall be sealed with cement grout or a column of bentonite drilling mud of sufficient volume, density, and viscosity to prevent fluid communication between aquifers.

D. Materials containing organic or toxic matter shall not be used in the abandonment of a well.

E. The owner or operator of the well shall notify the Department in writing no later than thirty days after abandonment has been completed. The notification shall include the well owner's name, the location of the well, and the method of abandonment.

R12-15-817. Exploration wells

A. Notification.

1. Prior to drilling one or more exploration wells, the well

owner, lessee, or exploration firm shall file a notice of intention to drill on forms provided by the Department. The notice of intention to drill may be filed for the project as a whole, in which case the drilling card shall be issued on a similar basis.

B. Construction and Abandonment.

1. If an exploration well which is to be left open for re-entry at a later date encounters groundwater, it shall be cased and capped in accordance with R12-15-811 and 812. The minimal length of surface seal shall be either twenty feet, or five feet into the first encountered consolidated formation, whichever is less. If no groundwater is encountered, the well shall be cased, cemented and capped in such a manner so as to prevent contamination of the well bore from the surface.

2. Exploration wells not left open for re-entry shall be abandoned in accordance with R12-15-816, subsections A through D.

C. Completion report.

1. Within thirty days of project completion, the well owner, lessee, or exploration firm shall submit a project completion report on forms provided by the Department. The report shall include:

a. The exact number of wells drilled.

b. The depth to water encountered or detected, with reference to specific wells.

c. The abandonment method utilized, or construction details if completed for re-entry.

d. Any other information which the Director may require.

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

11/13/84

NOV 1984 RECEIVED TUCSON MINERALS

EXON MINERALS CO
2425 N HUACHUCA DRIVE
TUCSON AZ 85745
ATT: STEVEN H HUMPHREYS
STAFF LANDMAN

Dear Applicant:

We are recently in receipt of your filing to drill a well. However, our review indicates that the filing(s) cannot be accepted under the new Groundwater Management Act for the reason as marked below. Upon clarification or correction, we shall move promptly to process your well filing.

_____ Failure to enclose the proper filing fee(s).

_____ Driller and/or license number not designated.

_____ Design pump capacity not specified.

_____ Legal description and/or well location diagram incomplete or inconsistent.

_____ Description of well incomplete.

_____ Principal use of water and/or other uses intended incomplete or not clear.

_____ Location of place of use and/or other uses intended incomplete or not clear.

XXX Other OBSOLETE FORM. PLEASE USE ENCLOSED NEW FORM AND IF REPRODUCING FORMS THE BACK OF THE FORM MUST BE REPRODUCED. FORMS MUST BE FILLED OUT IN DUPLICATE.

If we can be of further assistance, please let us know.

Sincerely,

Richard A. Gessner

Richard A. Gessner
Chief, Operations Division

RAG:
cc:
DWR-55-9-6/83 255-1581

Think Conservation!

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

November 13, 1984

Notice of Intent
Kay Mine Project 3293
Maricopa and Yavapai Counties, Arizona

Mr. Fred Potter
Bureau of Land Management
Phoenix Resource Area
2935 West Clarendon Avenue
Phoenix, Arizona 85017

Dear Mr. Potter:

My letter to you dated November 7, 1984 did not include the formal Notice of Intent document. Enclosed pleased find the document which supplements information contained in my previous letter. Please accept my apologies for any inconvienience caused you by my oversight.

Your cooperation with Exxon Minerals Company on this matter is appreciated.

Very truly yours,

Steven H. Humphreys

Steven H. Humphreys
Staff Landman

Enclosures (1)

cc: Mr. T. D. Irwin
Mr. R. J. Chuchla
Mr. G. E. Lehtinen

SHH:tap

NOTICE OF INTENT

Pursuant to the requirements of 43 CFR 3809, Exxon Corporation submits this notice of intent to conduct operations affecting a cumulative surface disturbance of 5 acres or less on lands managed by the Bureau of Land Management in Yavapai County, Arizona.

1) The mining claimant and operator is Exxon Corporation, c/o Exxon Minerals Company, P.O. Box 4508, Houston, Texas 77210. Additional claimants are: None

2) The unpatented mining claims which may be affected by operations are:

Claim Name	BLM Serial Number
Kay M 145	40681
Kay M 146	40682
Kay M 147	40683
Kay M 148	40684

located in Section 32 of Townships 9 North, Range 2 East.

as shown on the attached plat. (Previously submitted)

3) Exxon proposes to begin operations on November 19, 1984, and continue work through December 15, 1984. Activity on the unpatented mining claims will consist of drilling two holes and building approximately 600 feet of access road, and possibly improving existing roads where necessary for safe passage of vehicles. Please see attached plat for the location of proposed operations.

4) The core holes drilled on BLM land will cause about 0.1 acre of surface disturbance per hole. Further surface disturbance of approximately 0.4 acres (600 feet of road 9 feet wide) will be occasioned by construction of roads necessary for access to proposed drill sites. Total surface disturbance will be approximately 0.5 acres. Surface disturbance occasioned by minor road improvements to existing roads will be negligible.

5) Access is required for vehicles to transport men, drill rigs and water. Access routes shown on the attached plat will have the minimum width needed for the vehicles and follow natural contours where practicable to minimize cut and fill. When the construction of these access routes involves slopes which require cuts on the inside edge in excess of 3 feet, the authorized officer of the BLM will be consulted concerning the most appropriate location of these access routes prior to construction.

6) All deleterious materials or substances, and other waste produced by the operations will be disposed of so as to prevent unnecessary or undue degradation and in accordance with applicable Federal and State laws.

7) At the earliest feasible time, the areas disturbed will be reclaimed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the federal lands. Reclamation shall include:

a) Savings of topsoil for final application after reshaping of disturbed areas have been completed:

b) Measures to control erosion, land slides, and water runoff;

c) Measures to isolate, remove, or control toxic materials;

d) Reshaping the areas disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable.

When reclamation of the disturbed areas has been completed, the authorized officer of the BLM will be notified so that an inspection of the areas can be made.

8) Exxon's project geologist, Richard J. Chuchla, will be the field representative for this project and will be available to meet with you to discuss the program both before and during the conduct of operations. He may be contacted at 2425 N. Huachuca Drive, Tucson, Az 85745 (602) 622-8801.

We appreciate your attention to this notice. Please treat the included information as confidential and direct any questions concerning Exxon's operations to me at the above address, or call me at (602) 622-8801.

Exxon Corporation

By: _____

STEVEN H. HUMPHREYS

EXPLORATION WELL(S) DEPARTMENT OF WATER RESOURCES (DWR) EXPLORATION WELL(S)

FILING FEE $10.00

NOTICE OF INTENTION TO DRILL EXPLORATION WELL(S)

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling one or more exploration wells, the well owner, lessee or exploration firm shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 9 North N/S
   Range 2 East E/W
   Section 32

In the case of a single well, list 10-acre subdivision

____ ¼, ____ ¼, ____ ¼

2. County Yavapai

3. Applicant:

Exxon Minerals Company
Name

P.O. Box 4508
Address

Houston Texas 77210
City State Zip

4. Steven H. Humphreys
NAME OF CONTACT PERSON
Phone (602) 622-8801

5. Applicant is well:
   Owner: ____
   Lessee: ____
   Other: firm

6. Purpose of well(s) drilled pursuant to this Notice:
   Mineral Exploration X
   Geotechnical ____
   Cathodic Protection ____
   Grounding ____
   Monitor ____
   Piezometer ____

7. Number of wells 2
(See Condition 3 on reverse)

8. Owner of land:

Bureau of Land Management
Name Phoenix Resource Area

2935 W. Clarendon Avenue
Address

Phoenix, Arizona 85017
City State Zip

9. DESCRIPTION OF WELL:

Diameter 6 (six) inches

Depth Greater than 100 feet

Type of Casing None
(If none, so state)

10. Construction will start:
19 November 1984
Day Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. ____
FILED ____ BY ____
INPUT ____ BY ____
DUPLICATE MAILED ____ BY ____
REGISTRATION NO. ____
AMA/INA ____
W/S ____ S/B ____

11. For monitoring wells, is pump equipment to be installed? ____

(a) If so, what will be the design pump capacity ____ gallons per minute.

(b) What use will be mad of the water? ____

12. Drilling firm:

Longyear Company
Name

308 E. Pima Street
Address

Phoenix, Arizona 85004
City State Zip

DWR License Number

13. Period well will remain in use 3 months.

14. Proposed method of abandonment of well(s) after project is completed:
Well will be abondoned in accordance with R12-15-816 & 817

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.
2. Item 15 must be completed on the reverse side of this form for monitor wells.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE November 20, 1984

Steven H. Humphreys
Signature of Applicant

RDC

DWR-55-40-8/84

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

November 19, 1984

Ms. Wendy Kristin
Arizona Department of Water Resources
Suite 100
99 E. Virginia
Phoenix, Arizona 85004

RE: Revised Notice of Intention to Drill
Exploration Wells
Kay Mine, Project 3293
Maricopa and Yavapai Cos., Arizona

Dear Ms. Kristin:

I am resubmitting, on your updated form, a duplicate notice of intention to drill two mineral exploration wells. The remainder of our information contained in my November 8, 1984 letter is still applicable.

I am attaching my personal check no. 527 in the amount of $10.00 to cover the filing fee.

Please do not hesitate to contact me, or the project geologist, Richard J. Chuchla at (602) 622-8801 if additional information is required.

Very truly yours,

Steven H. Humphreys

Steven H. Humphreys
Staff Landman

SHH:tap

Enclosures (2)

cc: T. D. Irwin
R. J. Chuchla
G. E. Lehtinen

RJC

Copy

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Phoenix District Office
2015 West Deer Valley Road
Phoenix, Arizona 85027

IN REPLY REFER TO:

3809 (025)
MN 84-P-035

NOV 1984
RECEIVED
TUCSON
MINERALS

November 23, 1984

Mr. Steven H. Humphreys
Exxon Minerals Co.
2425 Huachuca Dr.
Tucson, Arizona 85745

Dear Mr. Humphreys:

This will acknowledge receipt and acceptance of your Notice of Intent to conduct mining operations on your claims:

Kay M. 145 through Kay M 148

I would like to stress that portion of the 43 CFR 3809 Surface Management Regulations which requires that you reclaim the land and to take reasonable measures to prevent unnecessary or undue degradation of the federal lands during your operations.

Water is a very limited resource in Arizona, making it necessary to record and regulate its use. All mining claimants/operators that plan to use, store, or divert water are required under Arizona statute to file an application or Notice of Intent to drill with the Department of Water Resources (DWR) prior to the use of the water source. The DWR can be contacted by telephone at (602) 255-1554 or by letter at 99 E. Virginia, Phoenix, Arizona 85004.

If you have any questions, feel free to call our Phoenix Resource Area Geologist, Fred Potter, at (602) 863-9553, ext. 254.

Thank you for submitting your Notice.

Sincerely,

Fred Potter

Fred Potter
Acting Area Manager
Phoenix Resource Area

FPotter:mcc

EXXON MINERALS COMPANY

2425 N. Huachuca Drive
Tucson, Arizona 85745

November 27, 1984

Re: Kay Mine, Project # 3293
Maricopa and Yarapailos, Arizona

Mr. T. D. Irwin:

Claims shaded in yellow on the attached plat are cleared by the Land Department for exploration drilling. Claims shaded in green are held by Exxon but are not cleared at the present time. N. Wernet informs me that sufficient work was performed to satisfy 1983-84 assessment obligations on all Exxon claims. Timely filing of the affidavits should be accomplished prior to December 31, 1984.

Surface of part of the lands shaded in yellow are managed by the Bureau of Land Management. Your operations should be conducted in accordance with the enclosed Notice of Intent which was approved by letter on November 23, 1984. A small portion of the access road crosses surface shaded yellow owned by G. E. Berryhill whom I have contacted. We have permission to use the existing roadway to cross his land. We have also been advised over the telephone that the enclosed Notices to the Arizona Commission of Agriculture and Horticulture and the Arizona Department of Water Resources have been approved.

Copies of the current Arizona drilling and plugging obligations are enclosed. Please note the procedures in the Revised State Handbook for reporting any oil or hazardous substance spill.

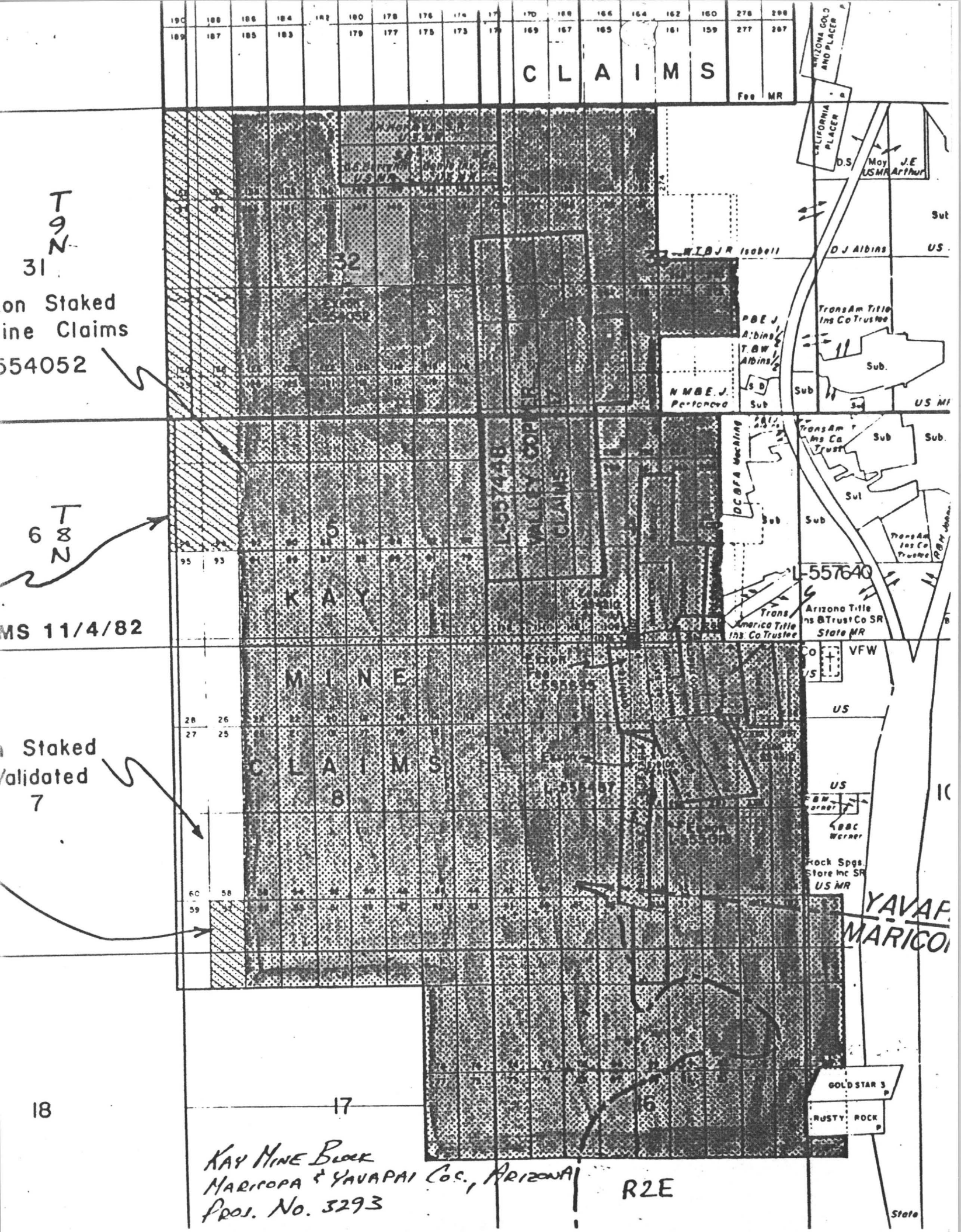
Steven H. Humphreys

Steven H. Humphreys

SHH:tap

Attachments

c-w/enclosure
Mr. C. L. Dahl
Mr. O. R. Humble
Mr. R. J. Chuchla
~~Mr. A. Kirkham~~
Mr. G. E. Lehtinen



Kay Mine Block
Maricopa & Yavapai Cos., Arizona
Proj. No. 3293

DRILL HOLE RECORD

PROJECT KAY MINE #3293 AZ. DRILL HOLE NO. KM-19 SCALE 1" = 20' PAGE NO. 1 OF 5

LENGTH	CORE RECOVERY	ASSAYS Cu (ppm)	Pb (ppm)	Zn (ppm)	Au	Ag	MINERALIZATION (MISC. NOTES)	LIMONITE	PYRITE	CHALCOPYRITE		QTZ VEINS	CARBONATE	SERICITE	BLACK CHLORITE	SILICEOUS		SURVEYS	SCHISTOSITY	STRUCT.	ROCK	LITHOLOGY, ALTERATION, STRUCTURE
							Hole Orientation: N 71° W - 65° Spudded: Nov. 28 1984 Drillers: Longyear - Norman Corless Rotary to 10'															0-10' Rock Bit - No Core RAK - 11/29
	77%	10	<5	80			Limonites confined to foliation planes, dominately goethite												12			Rhyolite Tuff white-buff-pale green, thin bedding-plane schistosity fine-grained, minor (<5%) elongated qtz phenocrysts ~.1" diameter in qtz-sericite ± goethite ± calcite matrix. Strongly fractured. Very fractured 10-16'
20'																						
	100%	10	<5	140			Trace Hematite after <.1" diameter disseminated pyrite Cross Cutting Goethite Veinlets w/ Sericite Selvages.- Minor thin, discontinuous, cross cutting white, "barren" Qtz Veinlets												15			Dacite Tuff, green, thin bedding-plane schistosity, fine-grained, no phenocrysts but granular texture - not cryptocrystalline. Rare .1" diameter lapilli. Qtz-chlorite ± sericite ± goethite
	98%	10	<5	100			Limonites Schistosity-controlled, mainly Hematite.												10			Rhyolite Tuff as above, white, rare <.1" diameter qtz phenocrysts, rare .1" diameter lapilli. Some laminae very chlorite-rich.
40'																						
	96%	10	25	45			Minor (~ ½%) disseminated Hematite after <.1" diameter pyrite. Cemented Hole at 45' ½" thick qtz-calcite-goethite vein												20			Dacite Tuff, as above, green, thin bedding plane schistosity on .1" scale. Abundant green chlorite in matrix. RAK - 11/30 stretched qtz phenocrysts (<4%, <.1" diameter) marked decreased in chlorite
	91%	10	35	45			Goethite along schistosity. Hematite after ~ 1% disseminated pyrite, minor MnOx on fractures. No fresh pyrite												14			Sparse qtz phenocrysts (1-3%) and rare cherty lapilli in quartz-chlorite-sericite-calcite ± goethite green matrix. Calcite both in matrix and with quartz veinlets
60'																						
	99%	5	<5	25			Weak goethite along schistosity, no veining no Hematite after pyrite.												12			8" Layer of Rhyolite (?) Crystal Tuff Dark Green Chlorite laminae
	98%	5	<5	50			Hematite after pyrite increasing in rhyolite (½ to 1%). Crosscutting goethite-sericite fractures												20			Rhyolite Tuff, white to pale green, thin (.1-.3") bedding plane schistosity. Fine-grained with rare (<2%) quartz phenocrysts (<.1") in qtz-sericite-calcite ± chlorite matrix. May be a sediment: Overall lacks phenocrysts & lapilli, rapid assemblage changes, high carbonate content Quartz phenocrysts up to ~ 4%, average 2% RAK - 12/1
80'							Trace fresh, fine-grained pyrite, most remains oxidized. Sparse qtz-calcite veinlets Common cross-cutting goethite-filled fractures												12			
	89%	<5	<5	45															20			Minor chlorite as pale-green coloration of matrix and thin wisps
							Strong hematite ± MnOx on 2-4 fractures/ft															Goethite ± Green Sericite after .1" diameter elongated lapilli
100'							Pyrite mostly oxidized to hematite Gouge-Fault zones are late - no mineralization associated with clay "seams.															No Core Recovery
	80%	5	<5	110															18			Rhyolite tuffs to Crystal tuffs white to pale green, very thin schistosity, 2% quartz phenocrysts 2-5% lapilli — goethite ± sericite Granulated clay rich gouge zone in Rhyolite tuff.
						110	Hole Surveyed at 110', total depth 119', Core barrel at 120' 12-1-84															
	96%	10	<5	55			Common .1 to .3" thick qtz-calcite ± hematite veinlets mainly crosscutting Poor fracture limonite												15			Rhyolite Crystal Tuff white to pale green, very thin bedding plane schistosity, chymic .1 to .3" thick layers of qtz-feldspar versus sericite-calcite ± goethite 2-5% .1" diameter qtz phenocrysts confined to qtz-feldspar matrix ½ to 2% original sulfide
120'																						
	100%	15	<5	90			Brown, Hematite-stained tuff, rare fresh pyrite. Hematite after 1-5% original pyrite as exhalitic layers and disseminated												11			Rhyolite Tuff, as above, 1-2% qtz phenocrysts, very siliceous Numerous thin (.2" thick) silica-sulfide exhalites (now oxidized) RAK - 12/2
	80%	30	<5	90			Several thin (½") siliceous zones → cherty exhalite?												18			Rhyolite Crystal Tuff 2-4% qtz phenocrysts (.05-.1" diameter) in very thin schistose qtz-sericite matrix, rare .1-.4" by .5-.10" silica lapilli Minor wispy chlorite
140'							4" thick qtz-tourmaline vein w/ coarse sericite															Abundant very coarse sericite in broken zone Dacite Crystal lapilli tuff

LEGEND
- ∥ Schistosity angle to Core Axis
- Fractured
- Thin-zone Alteration
- Discontinuous Qtz Vein
- Clay Gouge - Shear Zone
- Exhalite
- Rhyolite
- Dacite
- Rhyodacite
- Mafic dike

DRILL HOLE RECORD

PROJECT KAY MINE #3293 AZ DRILL HOLE NO. KM-19 SCALE 1"=20' PAGE NO. 2 OF 5

LENGTH	CORE RECOVERY	ASSAYS Cu	Pb	Zn	Au	Ag	MINERALIZATION (AND MISC. NOTES)	LIMONITE	PYRITE	CHALCOPYRITE	SILICA EXCESS	QUARTZ VEINS	CARBONATE	SERICITE	BLACK CHLORITE	SUPERGENTAL	PHYSICAL FEATURES	SURVEYS	KAISMICITY	STRUCT.	ROCK	LITHOLOGY, ALTERATION, STRUCTURE
		ppm	ppm	ppm	ppm	ppm																
	75%	25	<5	120	<.02	<.2	Pyrite still dominantly oxidized to hematite. Fractures only weakly limonite.												28			Dacite Tuff, green, thin bedding-plane schistosity. Rare qtz-feldspar lapilli in qtz-feldspar-chlorite groms.
																						Rhyolite Crystal Tuff, 5% quartz phenocrysts (.1" diameter) in white qtz-sericite & limonite matrix. Very thin bedding-plane schistosity. Thin shear zones at 145' and 147'
	30%	10	<5	130	<.02	<.2	Minor white quartz veining. Strongly fractured. No pyrite.															RAK-12/4
160'																						Intensely broken to brecciated Rhyolite Tuff in clay-gouge fault zone.
	98%	5	5	55	<.02	<.2	No sulfides, weak fracture hematite, fair goethite along schistosity. Strong limonite after sulfides with irregular qtz-calcite veining.												0			Dacite Tuff, green, thin bedding-plane schistosity, minor 1-2% qtz phenocrysts (~.05" diameter) in quartz-chlorite matrix. Granulated from 164-166'. Minor-rare evidence for stretched lapilli.
	85%	5	25	65	<.02	<.2	Slight increase in green chlorite - Shearing, very poor in limonite and alteration															Clay-gouge shear zone in Dacite Tuff - poor recovery. Intensely broken-granulated on .1 to .3" scale. - Dacitic tuff, very chlorite rich
180'																						Granulated - intensely fractured to brecciated crystal-lapilli tuff - probably Dacitic
	96%	5	5	60	<.02	<.2													15			½" thick, brown cherty exhalite
							Intensely broken-brecciated, weak bleaching-sericite, poor limonite. Clay-gouge granulated zone parallels schistosity and the core axis															Rhyodacite Tuff, pale green, rare lapilli and qtz phenocrysts in qtz-feldspar-chlorite-sericite groms. Very fractured, clayey, granulated.
	100%	25	<5	80	<.02	<.2													14			
200'							Weak fracture hematite and hematite after pyrite. Increasing red hematitic groms															Dacite Crystal Tuff, green to hematitic-red stained, minor ~2% or less qtz phenocrysts, thin bedding-plane schistosity. Minor groms silicification & very siliceous + chlorite-hematite ± sericite groms
	97%	5	<5	90	<.02	<.2	Minor cross-cutting limonite fractures												16			
							Very siliceous groms, <½% total Original Sulfide															Intensely broken-granulated zone. Rhyolite Tuff, pale green, very siliceous, thin schistosity, qtz-sericite & chlorite groms, rare qtz phenocrysts.
	88%																		11			
220'																	2					Meta-dacite → qtz-muscovite-chlorite schist. 1-2% qtz xtals in qtz-muscovite groms w/ 1-2% Fe-Ti oxides after pyrite. 1-3mm of limonite w/ chlorite increasing downward.
	90%						Abundant transported goethite at bottom & along bedding planes.												17			
																	2					
	98%						Moderate oxidation of primary Fe oxides and Fe-Mg silicates.												22			
240																	2					Meta-rhyolite → qtz-muscovite schist, 2-3% qtz xtals
	95																3		15			2-3cm Qtz exhalite w/ trace CuFe. No sulfides
																						Meta-rhyodacite → qtz-muscovite-chlorite schist
	30%																					Fault zone - poor core recovery.
260'																						
	90%																					
							Scattered clay-filled vugs w/ goethite. Oxidation products appear to be mostly transported.															Meta-rhyodacite → qtz-muscovite schist 1-3% disseminated Fe-Ti oxides.
	95%																					Moderately oxidized w/ pink to yellow orange Fe limonites.
280'																						Bleached meta-rhyodacite. Thin 1-3 mm thick alternating laminae of qtz-muscovite 2-3% diss. Fe-Ti oxide grains
	95																		10			

DRILL HOLE RECORD

PROJECT Kay Mine #3293 DRILL HOLE NO. KM-19 SCALE PAGE NO. 3 OF 5

LENGTH	% Recovery	ASSAYS							Limonite	Pyrite	Iron Sulfate		Quartz Veins	Carbonate	Sericite	Black Chlorite	Silicification	Pyrite	Fe Sulfide	Sulfide %	STRUCT.	ROCK	
	95							Decreased oxidation w/ increased Fe-II oxides.												15			Meta-rhyodacite tuff. Bleached w/ interbedded medium gray & tan laminae and pale green Fe II, schist mercavite laminae. 2-3% diss. Fe oxide grains.
500'																							
	75							Mottled bleaching w/ Fe.												10			
310'																							
	100																						
320'																							Highly broken meta-rhyodacite
	50																						Weak carbonate w/ Fe
330'																							Strong clay fault gouge - shear HP roots.
	50							Weak goethite w/ bedding & Fe: No sulfide related, probably oxidized Fe mag. Groundmass is fine-grained qtz w/ intergrown chlorite.															Meta-dacite dark green very broken chloritic dacite tuff
340'																							
	75																						
350'																							
	85							Same as above												15			352-355' No core recovery
360'																							
	30																						Meta-dacite to rhyodacite → qtz-chlorite-sericite schist, thin bedded w/ rare trace pyrite, extremely friable & sheared.
370'																							
	15							Same as above															No core 376-382'
380'																							
	25																			1			Meta-dacite → qtz-chlorite-sericite schist, very broken zone
390'								Same as above															
	75																			1			
400'																							
	75																			5			Splintery meta-dacite
410'																							
	85							Scattered qtz veins.												7			Broken meta-dacite
420'								Bleaching is increasing.															
	95																			5			Bleached & silicified meta-dacite composed of qtz-sericite w/ chlorite laminae. Thin bedded, wavy schistosity
430'																							
	70																			9			

PROJECT Kay Mine #3293 DRILL HOLE NO. KM-19 SCALE PAGE NO. 4 OF 5

LENGTH	% recovered	ASSAYS						Limonite	Pyrite	Sphalerite	Other Sulfides	Carbonate			Black chloritic	Silicification	Other Alteration	Surveys	Silicification	STRUCT.	ROCK	
450'	10																					Dacite crystal tuff Fault gouge - slay
							Weak oxidation of bedding															
460'	5						Weak pyrite <1% by volume Pervasive bleaching of well fractured meta-volcanics												29			Bleached & silicified rhyodacite to rhyolite crystal tuff → sericite-muscovite & chlorite schist
470'	95																		2			Weak (<1%) pyrite along bedding locally as crystal aggregates up to 1 cm ø. Very broken overall.
480'	100																		2			Relict chlorite/green sericite.
490'	95						Slight increase in pyrite. Pyrite occurs along bedding as fine-grained stringers & locally as aggregates of xtals.												2			Wavy bedding Silicified
500'	95																		2			Meta-rhyodacite. strong bleaching and silicification w/ weak pyrite.
							Scattered white gtz veins															Locally relict chlorite & green sericite
510'	95																		2			
520'	100						Moderate goethitic limonites												10			Rhyodacite Fault zone
530'	100																		10			Moderately bleached meta-rhyodacite broken
540'	75																					Meta-rhyodacite w/ increasing bedded pyrite downwards.
550'	60						Pyrite of bedding w/ moderate silicification															Fault gouge Broken meta-rhyodacite
560'	95						White, sulfide barren gtz exhalite. Recrystallized.															Silica exhalite
570'							pyrite along foliation												15 20 25 20			Silica exhalite meta rhyodacite sericite-chlorite assemblage w/ minor subhedral quartz phenocrysts and carbonate-rich laminae Silica exhalite Bleached meta rhyodacite, as above
580'																						

DRILL HOLE RECORD

PROJECT KAY MINE #3293 AZ DRILL HOLE NO. KM-19 SCALE 1" = 20' PAGE NO. 5 OF 5

LENGTH	CORE RECOVERY	ASSAYS Cu	Pb	Zn	Au	Ag	MINERALIZATION (and misc. notes)	LIMONITE	PYRITE	Chalcopyrite	Silica Sulfide	Qtz Veins	CARBONATE	SERICITE	BLACK CHLORITE	Silicification	SURVEYS	INCLINATION	STRUCT.	ROCK	Lithology, Alteration, Structure
	47%						Thin pyrite-rich laminae. Total sulfide ~ ½-1%											4			Rhyodacite, bleached light greenish-gray, very thin well developed schistocity. Qtz-sericite-chlorite assemblage, rare phenocrysts. Minor folding of schistocity.
							No Recovery 585 to 590 REDUCED TO BQ CORE AT 590'														
	25%						Only 3" of core Recovery From 594 to 600'														Gouge zone from 584 to 604. Finely comminuted rhyodacite. Very fine matrix (10-20%) of clay ± sericite ± limonite. Rhyodacite fragments are soft & clay altered
600																					
	49%																	6			Dacite, green, thin "bedding-plane" schistocity. Quartz-chlorite-calcite-sericite assemblage. No phenocrysts or lithics. Could be a metasediment. Minor transported fracture hematite. Very poor sulfides
							Thin clay-calcite veinlets														
	84%																				Weakly brecciated w/ clay-hematite matrix
																		8			
620							6" breccia zone. Angular fragments in Fe-clay matrix. Minor disseminated pyrite adjacent to dike. 1½" thick quartz euhedral, barren														Calcite content at least 10%, localized along laminae. Sparse pyrite (coarse 1-2mm) along laminae. Laminae somewhat irregular suggesting a weakly fragmental texture. Dike, fine hornblende diorite 3" thick
	90%																				
							Thin irregular quartz-calcite-FeOx veinlets cutting dike.											16			Dacite, as above. Hornblende diorite dike ~2½' thick, green, 90% 1mm hbl phenos in chlorite-feldspar-clay-carbonate matrix, chilled contacts, cuts core axis ~70° cleanly across schistocity. MARKER UNIT
	100%																				
							Increasing sulfides in Rhyodacite. Minor calcite veining in dike. ~5% pyrite along laminae											6			Dacite, as above weakly folded schistocity. Hornblende diorite dike, 8" thick chilled margins ~½" 70° to axis. Rhyodacite Tuff, grey-green, thin bedding-plane schistocity, quartz-sericite-chlorite-pyrite assemblage, 2% qtz phenocrysts. Hornblende diorite dike, as above, 1½' thick.
640																					
	100%						Common calcite veining. Dike is unmineralized														Rhyodacite, as above. Diorite, as above, only slightly porphyritic, weakly chloritized. Common fine-grained biotite in groundmass. Common calcite veining
							Moderate sulfides in rhyolite, also low calcite - mainly on fractures											6			12/30 EAK Rhyolite Tuff to Crystal Tuff, thin "bedding-plane" schistocity, light grey, quartz-sericite ± chlorite ± pyrite assemblage. Calcite only on fractures, 2-5% 2-4mm quartz phenocrysts, no lithics. Much more siliceous than sericitic
	98%																				
							Minor red hematite "veining" & fracture filling											6			
660																					
	95%						Minor pyrite along dacite laminae - decreases downhole away from contact (to <1%). Continuing moderate fracture hematite ± dusty quartz-calcite											8			Rhyodacite Tuff, grey-green, quartz-chlorite-sericite ± calcite assemblage - more siliceous grains and common quartz phenocrysts than dacite. ~2% qtz phenos, aphanitic groundmass. Sericite a pale green color
	65																	5			Rhyodacite Fragmental Tuff(?) - may be volcaniclastic. As above but increasing silica in groundmass, decreasing chl-ser, abundant small broken qtz-feldsp(?) crystals and/or lithics. Biomodal texture w/ 2-3mm qtz phenocrysts and <1mm groundmass fragments. Poor sulfides
680																					
	82						Moderate Fracture hematite calcite mainly on fractures											6			
																					Gouge, extremely clayey - broken rhyodacite tuff along shear zone
	23																				
700							No Recovery 698-702. 5" From 702 to 705, 12" From 705 to 710														Very broken, bleached, clay altered rhyodacite
	12																				Light green siliceous rhyodacite, locally fragmental texture. Low sulfides, highly broken (<½%)
																	N57W				
	45																	3			Rhyolite(?), white, thin foliation, clay & sericite altered, ½% pyrite. Very calcareous - possible metasediment
720																					
	45						Hole T.D. @ 730' due to very bad drilling and target is too deep (1200') for BQ											0			Rhyodacite w/ core axis // to schistocity. Siliceous, minor chlorite, sparse qtz phenos, weak sulfide ~½%. "Watercourse" Fault Zone w/ intensely broken rhyodacite, not much clay present. Recentish alluvial

PROJECT KAY MINE DRILL HOLE NO. ReDrill #2 KM-19 SCALE 1" = 20' PAGE NO. ____ OF ____

LENGTH	Core Recov.		ASSAYS							Fe ox	py	Cuprite	Cu s	clay	other sulf	Carb	sericite	chlorite	silica-carb exhalite		survey	∠	STRUCT.	ROCK	
560									badly broken													15	X		"Metarhyodacite" Strongly foliated sericite - chlorite phyllite w/ few v. small qtz phena common carbonate rich laminae
570																							X		silica-carbonate exhalite - barren
	75%								few v. thin pyritic laminae													20			
																						25			Bleached "rhyodacite"
580																						25			foliation rolls
585																						15			
			rods stuck + twisted off at 585'																						

PROJECT KAY MINE DRILL HOLE NO. ReDrill #1 KM-19 SCALE 1" = 20' PAGE NO. ____ OF ____

LENGTH			ASSAYS						Mineralization	FeOx	FeS2	CuFeS2	Cu2S	clay	qtz vns	CaCO3	sericite	black chlor	silica exhalite	% recovery	surveys	% C-axis	STRUCT.	ROCK	Lithology, Alteration, Structure
520'																									"Meta-rhyodacite"
																						4			Strongly foliated light gray chlorite-sericite phyllite generally aphanitic w/ rare v.f. gr.
																						2			← foliation rolls over qtz. phenocrysts, thin carbonate laminae, rare pyrite
530'									late calcite druses on fractures													5			
									strong carbonate (exhalitive?)													11			
									foliation rolls 0-10° (Kinked)													0			
540'											+											20			
									½" gry qtz. @ 541'		+														
											...											17			Strongly foliated greenish gray sericite-chlorite phyllite
									pyrite along foliation		...											6			local thin carbonate laminae, pyrite locally along foliation laminae
550'									badly broken 551' & 552'		..														
											...											16			
									silicified @ 552'													20			
560'									broken qtz vn w/ CaCO3 in vugs		...											25			
									pyrite along foliation		...											21			
570'											..														
											...											16			

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending November 30, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	35'	0'	35'	1

0 - 15' Rhyolite tuff, strong goethite along schistocity.

15 - 35' Dacite tuff, contains minor quartz veining.

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 7, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	331'	35'	296'	1

35' - 214' Precambrian metadacite to metarhyolite with minor chlorite and oxidized pyrite.

214' - 246' Precambrian metadacite crystal tuff with moderate hematitic limonites after primary FeTi oxides.

246' - 248' Metarhyolite crystal tuff with 4 cm thick bed of silica exhalite.

248' - 279' Precambrian metarhyodacite.

279' - 293' Precambrian metarhyodacite crystal tuff.

293' - 297' Precambrian metarhyolite crystal tuff containing .5 to 1 cm thick laminae of silica exhalite. 1-2% disseminated FeTi oxides.

297' - 311' Metarhyolite crystal tuff.

311' - 329' Metarhyodacite lapalli tuff with 2-4 cm thick silica carbonate exhalite bands at 326'.

329' - 331' Fault gouge.

Survey camera shows hole is deviating from proposed bearing and inclination by only 1-2° at 300.

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 14, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	566'	331'	235'	1

331 - 420'	Metadacite.
420 - 424'	Bleached and silicified metadacite.
424 - 440'	Metadacite.
440 - 450'	Dacite crystal tuff.
450 - 488'	Metadacite to metarhyolite crystal tuff.
488 - 520'	Metarhyodacite with local bleaching, moderate silicification, weak disseminated pyrite.
520 - 553'	Metarhyodacite.
553 - 554'	Silica exhalite.
554 - 557'	Metarhyodacite.
557 - 558'	Silica exhalite.
558 - 566'	Metarhyodacite.

Hole is cutting schistosity at angles of 2-10°.

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 21, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	585'	566'	19'	1

566 - 585' Metarhyodacite with thin carbonate interbeds and pyritic laminae.

585' rods twisted off, reducing to B.

Rods stuck and twisted off at 577', wedged at 518', rods stuck and twisted off at 575', wedged at 544'.

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 28, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
460	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	609'	585'	24'	1

585 - 602' Gouge.

602 - 609' Metadacite, crystal-poor.

BQ core recovery 25%.

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending January 4, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
460	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	720'	609'	111'	1

609' - 628' Metadacite; weakly calcareous , rare pyrite laminae.

628' - 648' Diorite; hornblende porphyry with chloritized matrix.

648' - 661' Metarhyolite tuff; very siliceous, 1% pyrite.

661' - 684' Metarhyodacite tuff; minor quartz veining, 1/2 to 1% pyrite.

684' - 702' Gouge.

702' - 720' Metarhyolite; sericitized and strongly bleached 713 to 720'.

At 710' hole angle is N57W-62.5°.

Corrected geologic interpretation indicates the target depth is 1200 feet downhole, not 730'.

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REPORT OF ANALYSIS

JOB NO. TBL 006
December 18, 1984
PROJECT NO. 3293
3293 KM-19 10-20
PAGE 1 OF 2

EXXON MINERALS COMPANY U.S.A.
55 Freeport Blvd., Suite 27
Sparks, Nevada 89341

Analysis of 20 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	3293 KM-19 10-20	10.	<5.	80.
2	3293 KM-19 20-30	10.	<5.	140.
3	3293 KM-19 30-40	10.	<5.	100.
4	3293 KM-19 40-50	10.	25.	45.
5	3293 KM-19 50-60	10.	<5.	45.
6	3293 KM-19 60-70	5.	<5.	25.
7	3293 KM-19 70-80	5.	<5.	50.
8	3293 KM-19 80-90	10.	5.	55.
9	3293 KM-19 90-100	<5.	<5.	45.
10	3293 KM-19 100-110	5.	<5.	110.
11	3293 KM-19 110-120	10.	<5.	55.
12	3293 KM-19 120-130	15.	<5.	90.
13	3293 KM-19 130-140	30.	<5.	90.
14	3293 KM-19 140-150	25.	<5.	120.
15	3293 KM-19 150-160	10.	<5.	130.
16	3293 KM-19 160-170	5.	5.	55.
17	3293 KM-19 170-180	5.	25.	65.
18	3293 KM-19 180-190	5.	5.	60.
19	3293 KM-19 190-200	25.	<5.	80.
20	3293 KM-19 200-210	5.	<5.	90.

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ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au* (ppm)
1	3293 KM-19 10-20	<.2	<.02
2	3293 KM-19 20-30	<.2	<.02
3	3293 KM-19 30-40	<.2	<.02
4	3293 KM-19 40-50	<.2	<.02
5	3293 KM-19 50-60	<.2	<.02
6	3293 KM-19 60-70	<.2	<.02
7	3293 KM-19 70-80	<.2	<.02
8	3293 KM-19 80-90	<.2	<.02
9	3293 KM-19 90-100	<.2	<.02
10	3293 KM-19 100-110	<.2	<.02
11	3293 KM-19 110-120	<.2	<.02
12	3293 KM-19 120-130	<.2	<.02
13	3293 KM-19 130-140	<.2	<.02
14	3293 KM-19 140-150	<.2	<.02
15	3293 KM-19 150-160	<.2	<.02
16	3293 KM-19 160-170	<.2	<.02
17	3293 KM-19 170-180	<.2	<.02
18	3293 KM-19 180-190	<.2	<.02
19	3293 KM-19 190-200	<.2	<.02
20	3293 KM-19 200-210	<.2	<.02

*NOTE: Method of analysis by combination fire assay and atomic absorption, based on one assay-ton sample.

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REPORT OF ANALYSIS

JOB NO. TBL 007
December 31, 1984
PROJECT NO. 3293
3293-KM-19 210-220 TO 550-560

EXXON MINERALS COMPANY U.S.A.
55 Freeport Blvd., Suite 27
Sparks, Nevada 89341

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Analysis of 35 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	3293-KM-19 210-220	30.	<5.	45.
2	3293-KM-19 220-230	45.	<5.	95.
3	3293-KM-19 230-240	15.	<5.	90.
4	3293-KM-19 240-250	15.	<5.	130.
5	3293-KM-19 250-260	10.	<5.	135.
6	3293-KM-19 260-270	15.	<5.	210.
7	3293-KM-19 270-280	15.	<5.	60.
8	3293-KM-19 280-290	110.	<5.	85.
9	3293-KM-19 290-300	35.	<5.	65.
10	3293-KM-19 300-310	25.	<5.	105.
11	3293-KM-19 310-320	15.	<5.	90.
12	3293-KM-19 320-330	15.	<5.	95.
13	3293-KM-19 330-340	5.	<5.	110.
14	3293-KM-19 340-350	5.	20.	115.
15	3293-KM-19 350-360	10.	<5.	95.
16	3293-KM-19 360-370	5.	<5.	125.
17	3293-KM-19 370-380	10.	<5.	175.
18	3293-KM-19 380-390	15.	<5.	95.
19	3293-KM-19 390-400	5.	<5.	110.
20	3293-KM-19 400-410	10.	<5.	80.
21	3293-KM-19 410-420	5.	<5.	75.
22	3293-KM-19 420-430	15.	<5.	80.
23	3293-KM-19 430-440	10.	<5.	110.
24	3293-KM-19 440-450	10.	<5.	120.
25	3293-KM-19 450-460	20.	10.	105.

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ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
26	3293-KM-19 460-470	15.	10.	160.
27	3293-KM-19 470-480	35.	<5.	95.
28	3293-KM-19 480-490	15.	<5.	65.
29	3293-KM-19 490-500	5.	<5.	55.
30	3293-KM-19 500-510	10.	<5.	70.
31	3293-KM-19 510-520	5.	<5.	90.
32	3293-KM-19 520-530	5.	<5.	90.
33	3293-KM-19 530-540	5.	<5.	110.
34	3293-KM-19 540-550	15.	15.	165.
35	3293-KM-19 550-560	30.	40.	265.

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ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au * (ppm)
1	3293-KM-19 210-220	<.2	<.02
2	3293-KM-19 220-230	<.2	<.02
3	3293-KM-19 230-240	<.2	<.02
4	3293-KM-19 240-250	<.2	<.02
5	3293-KM-19 250-260	<.2	<.02
6	3293-KM-19 260-270	<.2	<.02
7	3293-KM-19 270-280	<.2	<.02
8	3293-KM-19 280-290	<.2	<.02
9	3293-KM-19 290-300	<.2	<.02
10	3293-KM-19 300-310	<.2	<.02
11	3293-KM-19 310-320	<.2	<.02
12	3293-KM-19 320-330	<.2	<.02
13	3293-KM-19 330-340	<.2	<.02
14	3293-KM-19 340-350	<.2	<.02
15	3293-KM-19 350-360	<.2	<.02
16	3293-KM-19 360-370	<.2	<.02
17	3293-KM-19 370-380	<.2	<.02
18	3293-KM-19 380-390	<.2	<.02
19	3293-KM-19 390-400	<.2	<.02
20	3293-KM-19 400-410	<.2	<.02
21	3293-KM-19 410-420	<.2	<.02
22	3293-KM-19 420-430	.2	<.02
23	3293-KM-19 430-440	<.2	<.02
24	3293-KM-19 440-450	<.2	<.02
25	3293-KM-19 450-460	<.2	<.02

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JOB NO. TBL 007
December 31, 1984

ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au* (ppm)
1	3293-KM-19 210-220	<.2	<.02
2	3293-KM-19 220-230	<.2	<.02
3	3293-KM-19 230-240	<.2	<.02
4	3293-KM-19 240-250	<.2	<.02
5	3293-KM-19 250-260	<.2	<.02
6	3293-KM-19 260-270	<.2	<.02
7	3293-KM-19 270-280	<.2	<.02
8	3293-KM-19 280-290	<.2	<.02
9	3293-KM-19 290-300	<.2	<.02
10	3293-KM-19 300-310	<.2	<.02
11	3293-KM-19 310-320	<.2	<.02
12	3293-KM-19 320-330	<.2	<.02
13	3293-KM-19 330-340	<.2	<.02
14	3293-KM-19 340-350	<.2	<.02
15	3293-KM-19 350-360	<.2	<.02
16	3293-KM-19 360-370	<.2	<.02
17	3293-KM-19 370-380	<.2	<.02
18	3293-KM-19 380-390	<.2	<.02
19	3293-KM-19 390-400	<.2	<.02
20	3293-KM-19 400-410	<.2	<.02
21	3293-KM-19 410-420	<.2	<.02
22	3293-KM-19 420-430	.2	<.02
23	3293-KM-19 430-440	<.2	<.02
24	3293-KM-19 440-450	<.2	<.02
25	3293-KM-19 450-460	<.2	<.02

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ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au * (ppm)
26	3293-KM-19 460-470	<.2	<.02
27	3293-KM-19 470-480	<.2	<.02
28	3293-KM-19 480-490	<.2	<.02
29	3293-KM-19 490-500	<.2	<.02
30	3293-KM-19 500-510	<.2	<.02
31	3293-KM-19 510-520	<.2	<.02
32	3293-KM-19 520-530	<.2	<.02
33	3293-KM-19 530-540	<.2	<.02
34	3293-KM-19 540-550	<.2	<.02
35	3293-KM-19 550-560	<.2	<.02

*NOTE: Method of analysis by combination fire assay and atomic absorption.

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REPORT OF ANALYSIS

JOB NO. TBL 007
December 31, 1984
PROJECT NO. 3293
3293-KM-19 210-220 TO 550-560

EXXON MINERALS COMPANY U.S.A.
55 Freeport Blvd., Suite 27
Sparks, Nevada 89341

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Analysis of 35 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	3293-KM-19 210-220	30.	<5.	45.
2	3293-KM-19 220-230	45.	<5.	95.
3	3293-KM-19 230-240	15.	<5.	90.
4	3293-KM-19 240-250	15.	<5.	130.
5	3293-KM-19 250-260	10.	<5.	135.
6	3293-KM-19 260-270	15.	<5.	210.
7	3293-KM-19 270-280	15.	<5.	60.
8	3293-KM-19 280-290	110.	<5.	85.
9	3293-KM-19 290-300	35.	<5.	65.
10	3293-KM-19 300-310	25.	<5.	105.
11	3293-KM-19 310-320	15.	<5.	90.
12	3293-KM-19 320-330	15.	<5.	95.
13	3293-KM-19 330-340	5.	<5.	110.
14	3293-KM-19 340-350	5.	20.	115.
15	3293-KM-19 350-360	10.	<5.	95.
16	3293-KM-19 360-370	5.	<5.	125.
17	3293-KM-19 370-380	10.	<5.	175.
18	3293-KM-19 380-390	15.	<5.	95.
19	3293-KM-19 390-400	5.	<5.	110.
20	3293-KM-19 400-410	10.	<5.	80.
21	3293-KM-19 410-420	5.	<5.	75.
22	3293-KM-19 420-430	15.	<5.	80.
23	3293-KM-19 430-440	10.	<5.	110.
24	3293-KM-19 440-450	10.	<5.	120.
25	3293-KM-19 450-460	20.	10.	105.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
26	3293-KM-19 460-470	15.	10.	160.
27	3293-KM-19 470-480	35.	<5.	95.
28	3293-KM-19 480-490	15.	<5.	65.
29	3293-KM-19 490-500	5.	<5.	55.
30	3293-KM-19 500-510	10.	<5.	70.
31	3293-KM-19 510-520	5.	<5.	90.
32	3293-KM-19 520-530	5.	<5.	90.
33	3293-KM-19 530-540	5.	<5.	110.
34	3293-KM-19 540-550	15.	15.	165.
35	3293-KM-19 550-560	30.	40.	265.

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ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au * (ppm)
26	3293-KM-19 460-470	<.2	<.02
27	3293-KM-19 470-480	<.2	<.02
28	3293-KM-19 480-490	<.2	<.02
29	3293-KM-19 490-500	<.2	<.02
30	3293-KM-19 500-510	<.2	<.02
31	3293-KM-19 510-520	<.2	<.02
32	3293-KM-19 520-530	<.2	<.02
33	3293-KM-19 530-540	<.2	<.02
34	3293-KM-19 540-550	<.2	<.02
35	3293-KM-19 550-560	<.2	<.02

*NOTE: Method of analysis by combination fire assay and atomic absorption.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
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REPORT OF ANALYSIS

RECEIVED
DEC 1984
RENO
MINERALS

JOB NO. TBL 006
December 18, 1984
PROJECT NO. 3293
3293 KM-19 10-20

EXXON MINERALS COMPANY U.S.A.
55 Freeport Blvd., Suite 27
Sparks, Nevada 89341

Analysis of 20 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	3293 KM-19 10-20	10.	<5.	80.
2	3293 KM-19 20-30	10.	<5.	140.
3	3293 KM-19 30-40	10.	<5.	100.
4	3293 KM-19 40-50	10.	25.	45.
5	3293 KM-19 50-60	10.	<5.	45.
6	3293 KM-19 60-70	5.	<5.	25.
7	3293 KM-19 70-80	5.	<5.	50.
8	3293 KM-19 80-90	10.	5.	55.
9	3293 KM-19 90-100	<5.	<5.	45.
10	3293 KM-19 100-110	5.	<5.	110.
11	3293 KM-19 110-120	10.	<5.	55.
12	3293 KM-19 120-130	15.	<5.	90.
13	3293 KM-19 130-140	30.	<5.	90.
14	3293 KM-19 140-150	25.	<5.	120.
15	3293 KM-19 150-160	10.	<5.	130.
16	3293 KM-19 160-170	5.	5.	55.
17	3293 KM-19 170-180	5.	25.	65.
18	3293 KM-19 180-190	5.	5.	60.
19	3293 KM-19 190-200	25.	<5.	80.
20	3293 KM-19 200-210	5.	<5.	90.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

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DEC 1984 RECEIVED RENO MINERALS

JOB NO. TBL 006
December 18, 1984

ITEM	SAMPLE NUMBER	FIRE ASSAY Ag (ppm)	FIRE ASSAY Au* (ppm)
1	3293 KM-19 10-20	<.2	<.02
2	3293 KM-19 20-30	<.2	<.02
3	3293 KM-19 30-40	<.2	<.02
4	3293 KM-19 40-50	<.2	<.02
5	3293 KM-19 50-60	<.2	<.02
6	3293 KM-19 60-70	<.2	<.02
7	3293 KM-19 70-80	<.2	<.02
8	3293 KM-19 80-90	<.2	<.02
9	3293 KM-19 90-100	<.2	<.02
10	3293 KM-19 100-110	<.2	<.02
11	3293 KM-19 110-120	<.2	<.02
12	3293 KM-19 120-130	<.2	<.02
13	3293 KM-19 130-140	<.2	<.02
14	3293 KM-19 140-150	<.2	<.02
15	3293 KM-19 150-160	<.2	<.02
16	3293 KM-19 160-170	<.2	<.02
17	3293 KM-19 170-180	<.2	<.02
18	3293 KM-19 180-190	<.2	<.02
19	3293 KM-19 190-200	<.2	<.02
20	3293 KM-19 200-210	<.2	<.02

*NOTE: Method of analysis by combination fire assay and atomic absorption, based on one assay-ton sample.

William L. Lehmbeck
Manager

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

DRILL HOLE STARTING REPORT

PROJECT Kay Mine PROJ. NO. 3293 HOLE NO. KM-19

LOCATION: STATE Arizona COUNTY Yavapai

CLAIM NO./LEASE claim #147/lease #554052 T 9N R 2E SEC 32 ELEV 2430 feet

COORDINATES (if surveyed)

DISTANCE FROM N AND W SECTION LINES 2100' from the N and 2900' from the W boundaries of Section 32

PROPOSED DEPTH 900' BEARING N17°W INCLINATION -65°

TARGET OBJECTIVE Downdip projection of the Pre Cambrian-age copper-gold-rich volcanogenic massive sulfide horizon intersected in drill hole KM-18.

CONTRACTOR Longyear

DATE SPUDDED November 28, 1984

MISC. REMARKS:

PROJECT Greyhound #3293 A2 PAGE 1

D.D.H. No. KM-20 SCALE 1"=50' BY D. Dean

CO-OR _____ COLLAR EL _____ DATE 3-86

(DH Initially Numbered KM-19A) (Summary Relog)

% Core Recovery	Mineralizn	Alteration	Structure	Rock Type
Unsplit Core	2-5% diss sul → hmt-gt	chl- cal+	30	
			30	rt
		clay- cal-	25	
		cl+	25	
	6% gt-hmt		20	
No Core Reamed				
Unsplit Core	2-3% 1-3% diss 1m	cl cal + cal+ chl- perv	30	
		cal+ 1mm chl+ perv	28	rt
			25	
	1-2% diss 1m		25	
			35	
			25	
			25	
	2-5% diss - sea 1m		40	
	3-6% 10% lam	cc- chl-	30	
	2-4% 1m	cal+ 1mm chl=	20	
	4-6% 1m 1mm		25	rt
	2-3% 1m 1mm	cal+ 1mm chl-	30	
Sawn Core	1-8% diss-lam py-1m		40	
			40	
	1% py diss		30	
	3-5% 1m		40	
	<1% py diss	cal+ 1mm chl+ perv	45	
	2-4% 1m		35	rt
	1% py 2% 1m		40	
	<1% py 1m	cal+ chl- cl-	40	
	4% 1mm <0.5%	cal- chl-	30	
	2% 1m 4-8% py 1-2% 1mm py=	cal= [cl]	35	
			40	
	2-4% 1m-py <1% py-1m		40	
		cal= chl=	35	
			40	
	2-3% 1m-lam		45	
	5% py lam	chl- cal=	45	
	2% 1m 6% 1m 2% 1m	chl= cal=	45	
			40	

Rotary Drilling - No Core

o = chert bed/lense vol.

26 Lt grn-tan Qz Eye Rhyolite Tuff; thinly lam, ≤ 0.1" Qz Eyes, diss sul → 1m; weak chl. Oxidized. Org, gt stained strat bounded seam & diss of carbonate (sid?)

— weakly sheared zone @ clay- alt'n

— Strongly sheared, oxidized & argillized

78

106
108 Transition from total to partial oxidation

Qz Eye Rhyolite Tuff @ perv. wh carbonate thin beds & lenses & perv. weak chl (no criteria for metam. vs alt'n). weak diss 1m.

Decreasing size & volume of qz eyes downward. more thinly laminated @ more chl

Abu cal laminea.

Hmt > gt as seams ⇒ proximal to sulfide exhaling vent.

— mod strong shearing @ [gouge] zones strongly "diss" sul → 1m in ≤.2" bands @ 212-217 stronger bleaching & sparse chl (acid leading to "ser"?)

minor small scale folding; no major "turn overs"

Fresh py; partially oxid. to hmt seams / diss ± 10% cal laminea. [chert] lenses.

± 50% of hmt-gt on fxs; sul vol probably < 2%. Creamed-pink chert laminea ± 5%.

diss py- & hmt-gt seams / fx fill; orange carb seams (sid?) Abu white chert laminea @ [≤ 2mm] beds generally increasing downward @ [more diss py] in seams

Cal laminea decreasing proportionately @ increasing chert laminea.

456-460
10-15% py bands ≤ 0.5" wide @ chert; stronger exh activity

Thin laminea of Abu py-chert ± chl=

Sparse cal & chl laminea.

CORE ASSAYS					
INTERVAL		MINERAL			
FROM	TO	Cu	Mo		

PROJECT Greyhound #3293 A2 PAGE 2
D.D.H. No. KM-20 SCALE 1"=50' BY D. Dean
CO-OR _____ COLLAR EL _____ DATE 3-86

% Core Recovery	Mineralizm	Alteration	Structure	Rock Type	Description
500	<.05% py	cal- chl+	45	rt	Laminated Qz Eye Rhyolite Abu chert bands & minor white cal bands Dk grn @ [lt grn] chl pervading non-siliceous beds.
		chl= cal=	50		
	2% py x 1% py diss	chl+ cal+	50		— 538-542 strong cal as pink-tan dolomite >> wh cal
550		chl- cal+	60		
		chl- cal-	60		
	5% lm 5-10%	chl= cl+	55		— Clay rich gouge
	1-2% py lam	chl-	50		571-575 5-10% py+ cp- sl- bands; texture => gulescent sulfide deposition.
600	2-3% py lam	chl+ cal- lam	55		— Tightly folded white chert beds; local stx Thinly laminated Rhyolite Tuff @ cal & chl laminea & thin py-chert seams.
			60	rt	
	1% py lam		55		
			60		644-653
650	5-35% sms+	chl+	40		cp-sl-py strongly diss. to semi-massive sulfide assoc @ strong dk grn chl, lensoid chl-chert-sul pyroclastic texture @ sul commonly as bx-matrix but sms as beds, ± 1/3 of mnzn as x-cutting cp-rich zones (651.5-652.5), Cherty lenses 1-3". Strongest sulfide 646.5-652.5.
	<.05% py	chl+ lam			
		chl- cal+	60		
			60		Qz Eye Rhyolite Tuff; thinly laminate @ chert-chl laminea
				db	Dk grn Diabase Dike
	4% py lam				Qz Eye Rhyolite; lam. @ chl+ chert+
700	1% lm- <.5% py	chl+ chl+	50	rt	— 695-696 QER @ chl+ & lam py & chert ≤ 5" wide

TD @ 704'

CORE ASSAYS					
INTERVAL		MINERAL			
FROM	TO	Cu	Zn	Ag	Au
570	575	260	2100	0.4 ppm	.15 ppm
644	652.5	1.85 %	1.98 %	.25 opt	.412 opt

PROJECT Kay Mine # 3293 DRILL HOLE NO. 19A SCALE 1"=20' PAGE NO. 1 OF 5

LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION	Limonite	Pyrite	Magnetite	Sphalerite	Lineation	Alteration	Silicification	Calcite	Bleaching	Lamination	Structure	Fracture	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
0																			SPUD: 1/10/85 @ 11:15 AM Bearing: N 83W (Mag dec 11°E) Inclination: -55°	5 5/8" RB
	0																		DRILLED BY: Longyear Co.; 308 E. Pima St. Phoenix Az 85004	
																			LOGGED BY: J.F. McKnight	
20									5 N										↑ ROTARY CUTTINGS NOT LOGGED	Pulled Csng 4 5/8" Csng
	4/4			Sparce disseminated pt (1%) pseudomorphic after pyrite cons. on ∥ planes Goethite (1%) on fractures w/ Mn oxide	1% mg gd 0.2d 0.5% pt d			g+ bnk	g- pt c	d 58 N			1-3 % smll	f E-J	mf cm		3/4	25		SERICITE SCHIST Metarhyolite Tuff. Pervasive metamorphic sericitization. Cream or tan to pale green. Prominent 2-8 mm schistosity. Sparce (1-2%) qtz lenticles <3mm core on ∥ may be qtz filled pumice fragments. Some 3mm dots of sericite probably metamorphosed Bt books. Sporadic bleached zones probably alteration or surface leaching of metamorphic sericite. Calcite disseminated and in veinlets 0-3%.	HQWL Ream 5 5/8 RB
	4/4																			
	4/4																			
40	5/5			1mm qz lt. ∥ CA					d 80 S		0		+ E-J				26			
	3/3			10mm qtq lenticle zone (exhalite?)										cm		6				
	5/5								d											
	2/2											0-2 % smll	f-m						↓ Intense bleaching of metamorphic sericite from pale-green to white or tan probably caused by surface weathering and acid generated by pyrite oxidation. Sporadic 1cm beds weakly silicified. Calcite to lower in weathered zones, presumably it was leached away	
	2/2									83 N										
	2/2				2% mg			wrp	wtr											
60	3/3	53.25			0.5 pt			g+	+ g	d										
	3/3				c															
	2/2									85 N										
	2/3																			
	3/3																			
	3/3									m				mf						
0.5/1	3/3									87 N										HQWL/5 5/8 RB
80																			↓ ROTARY CUTTINGS NOT LOGGED	5 5/8 RB
	0																			
100		51.5																		pulled Csng LZH 46' 5 5/8 RB/4 5/8" Csng
	4/4			3mm C seam	1% g gr sl 0.1 d			g	g-	d	0	2-5 % smll 1-3 % vol	E-J	mf			25		SERICITE QUARTZ SCHIST Metarhyodacite Crystal-bearing Tuff. Distinctly more qtz lenticles than metarhyolite above, and a darker (but still pale) green cast to the pervasive sericite. Laminae more distinct and greater contrast between lighter & darker zones. Some textures are distinctly clastic.	HQWL Ream HQ 95.25'
	5/5	50.75						wtr, gr E-J		TPA							32			
	3/3									m							23			
120	4/4																			
	4/4			↓ Abundant C3 [f-] seamlets						80 N							26		more massive downward with more diffuse laminations. Calcite in seamlets and vugs (1-5%)	
	4/4			↓ pt fx instead of goethite						d				m			26			
	5/5																26			
	2/2			3mm C3 seam 3mm C3 seam						79 N							25			
140	4/4			3mm C4 g5 seam w/qtz in <3mm lenticles						m				f					↓ more thinly laminated	
										80 N										

PROJECT Kay Mine #3293 DRILL HOLE NO. 17A SCALE 1" = 20' PAGE NO. 2 OF 5

LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION	Limonite	Pyrite	Fracture Fill	Seams	Lineation	Alteration	Silicification	Calcite	Pleochroic	Laminations	Structure	Fracture Freq.	Schistocity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
140																			SERICITE QUARTZ SCHIST Metarhyodacite crystal-bearing Tuff. As above	
	5/5						0H 90% 2% 1%				0	1-5 7% Smd				4	28			
	5/5			2mm cymoid Cq ⊥ CA (not ⊥ ¢)			C	1-5 C				<1% Qz vugs	[-]				29			
	4/4								d											
	5/5			8mm q C¢ seam (3%¢) abundant q C¢q seamlets & lenticle¢					25 b					+			39			
160	3/3								m								28		thin laminated	
	4/4																23		∫# is healed w/ ht	
	2/2						(Cq)	Cq	20N		1	2-4 Smd	=	mf					↓ Less distinct lamellae	
	2/2																			
	3/3			Cqq pervading layers up to 10mm thick. Cq seams as above but less abundant					m			Cl ¢x					24			
	2/3																			
	2/2								75N								26			
180	3/3								m											
	2/2			1cm cqq ⊥ CA					a								27			
	3/3																			
	2/3			Cqq ⊥ encloses + cymoid. ⊥ CA ≤1cm thick					55N											
	2/2																			
	3/3			Cqq seamlets 9" seam of "bull quartz" w stringers of ¢ Zq					m		0			+			25		Thin laminated	HQWL/HQWL osize HQWL osize
	2/2																			
	2/2								85N								26			
200	4/4	49°																		
100%		NTS W																		
	2/2						(¢-)	Cq	m			3-7 Tr Smd	+							
	3/3										1									
	5/3								77N				[+]				28			
	2/2			Abundant Cq ¢q seamlets (7%¢)					m											
	3/3											b					30			
	3/3						5	9+ [C-]	83N		0								Intense shear shatter clay gouge obliterates lamination	
220	5/5																21		Shatter healed w/ ht	
	2/2																			
	4/4								a								18			
	3/3																			
	4/4								87N			2-4 Smd					26			
	4/4																		Shatter healed w/ ht 6" clay gouge	
240	4/4			Cq [¢] seamlets				9+ C	m			o		fm			24		↓ Distinct thin laminations	
	5/5								80S			1-2 Smd								
	4/4																			
	4/4			q c-v @ 45° to CA roughly ⊥ ¢					m				[-]	m			26			
	3/3								76S			2-7 Smd					32			
260	3/3																37			
	2/3								m											
	3/3																32			
	3/3								79S	[¢-]										
	3.5									Smd							35			
	3.5								m				[¢]						↑ Thin distinct lamination	
	3.5			↑ C													33		↓ Less distinct laminations. Sporadic silicification	
	3.5																			
	3/3			3mm Cq seam					76S				[¢]							
280																				

PROJECT Kay Mine #3293 DRILL HOLE NO. 19A SCALE 1" = 20' PAGE NO. 3 OF 5

LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION	Limonite	Pyrite	Fracture Fill	Seams	Limestone	Alteration	Silicification	Calcite	Blendite	Laminations	Structure	Fractures	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
280	2/2																		SERICITE QUARTZ SCHIST	
	4/4																		Metarhyodacite Crystal-bearing Tuff, As above	
				8mm qtz py-- exhalite seam		0.1 to 2% dis	9+	C [q]	m			2-7 Smk	+	Cm		5x	33			
	2/2			Abundant Cq seamlets + q fx					835		[+]						30			
	5/5																			
	9/9								m								33			
	3/3								835											
300	4/4	43.5° N39W		C seamlets									++ [+]			3x				
	2/2			6 mm qtz exhalite seam			C+	C	m								33		Schistosity has wavy undulations absent above	
	2/2			Silicified tuff w/ abundant qtz exhalite seams w/ py--				C+ 95			+						40			
	2/2								835							2 to 6				
	3/3							C			[-]									
	3/3								m						+					
	4/4			Abundant q in seamlets + fx			270 q	C q [q]	775			1-3 Smk		Sm			39			
320	5/5																34			
	0.5																			
	4.5								m			2-7 Smk					40			
	4/4					17% d			875		[+]									
	4/4						[q] [17%]	C [eq]	m	¢	+		++ [+]	mc			40			
	4/4			Silicified chloritized tuff with q py-- exhalite seams															Silicification replaces sericite in tuff, preserving clastic textures	
340	4/4								838			1-3 Smk	[+]				38			
	5/5			7m q py- lenticular exhalite					m								33			
	3/3																			
	4/4			2-5mm lenticular q exhalite seams			270 q		835		+						35			
	4/4			2-1 cm qzf seams												2 to 6				
360	3/3								n		↓			mc			37			
	5/5			0-2cm lenticular qtz exhalite 8 (or more) qzf exhalite seams seamlets					835							4	35			
	5/5											2-10 Smk				1				
	4/4						470 q	Cq	m	¢	+					16				
	4/4			Abundant qzf seams + seamlets					835		[-]	vmq					30			
380	4/4								m				++ [-]							
	3/3																			
	5/5			2 cm qtz seam					875	¢ [¢-]	[-]						35			
	5/5			Silicified Tuff with ca 8 qtz exhalite seams to seamlets, (max 2 cm)			0	C	m	¢	[+]						33			
	5/5						470 q	Cq	855				[+] [-]							
400	5/5			8 cm qtz + q- py-- exhalite py w/ ¢ in wisps					m	[+]						2 to 6			↓ Laminations whispy and feathered	
	4/4	36° N44W		Silicified tuff w/ sporadic qtz exhalite lenticular seams + seamlets [¢-]					555								31			
	5/5			7mm qtz vein looks like exhalite, but cuts ⊥ at 100°					m			2-7 Smk				9	36			
	4/4						<17% q	Cq	875							2 16				
420	4/4			Several 1-2 mm qtz veins @ 0-20° ∠ to CA are offset (↑ = predate) along schistosity. The zone is well silicified + has abundant q py-- exhalite seams + seamlets							+	1-5 Smk					30		Crackeled and healed @ hemlite	
									m		[-] [+]									
									855											

PROJECT Kay Mine #3293 DRILL HOLE NO. 19A SCALE 1" = 20' PAGE NO. 4 OF 5

LENGTH	Recovery	Survey	ASSAYS	Mineralization	Limonite	Pyrite	Fracture Fill	Seam %	Lineation	Alteration	Silicification	Calcite	Bleaching	Laminations	Structure	Fractures/Ft	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
420																			SERICITE QUARTZ SCHIST Metarhyodacite Crystal-bearing Tuff. As above	
	5/5			0-1cm qtz-exhalite seam	1%		4% q	Cg		[-]		1-3 sml		mc		2 to 6	31			
				1cm qtz exhalite seam		5%														
	4/4						1% q	Cg					+			2 to 12			Silicified tuff. w/ abundant qtz exhalite seamlets	
	4/4			4cm qtz py-- exhalite with interlayer of sericite schist. Py in <3mm blebs mostly on edge between qtz & sericite			4% q	Cg	m			0-1 sml	[-]				39			
	5/5								90°		+			cm					Coarse whispy lamellae	
440	5/5																42			
	2/2								m		[-]	1-3 sml					47		Silicified tuff w/ sparce qtz seamlets	
	5/5			1' is 40% exhalitive qtz py-- incl. 3-2 cm seams					85°								47		8" flexure in schist is shattered and healed w/ goethite	HQW/Loose
		33° NTW		2-1cm qtz exhalite seams																standard HQWL stabilizer
	4/5			silicified tuff w/ pyqtz exhalite seamlets													45			
									m											
	3/5			Q tuff w/ 20% exhalitive py qtz seams & sml (2cm thick; 10 cm @ 459.8 is 30% py					85°								43			
460	5/5			1cm py blob			<1 q	C			[-]	0-1 sml								
									m		[-]									
	5/5			Abundant py qtz & sml							[-]						45		Silicified tuff w/ abundant qtz seams & sml also w/ seamlets of py qtz &	
														mc						
	5/5								75°											
				2cm py qtz & seam													42			
	5/5								m											
480											+	1-3 sml					44			
	5/5						42 q	Cg	85°		[-]								Crackle shatter healed w/ wt } Sparce qtz seamlets	
				sparce qtz + qtz g seamlets I after py					m			2-5 sml							Distinctly more mafic rock. Fine fragmental to lapilliform texture. Call it a Decite Tuff	
	5/5						1-5 q	Cg					[-]				42			
									80°										3mm qtz sml 2mm qtz sml	
	5/5																			
									m				+						1cm qtz seamlet	
500	5/5						<1 q	C	85°	Qz			[-]	m			40		Abundant & interlaminated w/ sericite, decreases downward	
	5/6	31° NTW											[-]				51			
									85°											
	5/5								m	[-]			+				43			
									82M		+ [-]		[-]							
	5/5													mc		8%				
									m								40		Sparce Cpy sml	
520	5/5																		2mm qtz seamlet	
									82S								39			5' barrel
	7/9								75											10' barrel
									m								40		5mm qtz seam	
									82S											
									m	Qz									Silicified & chloritized Tuff w/ abundant qtz seams & seamlets	
540	9/9																51			
									80S											
	8/10			py-- pyrite marginal to qtz lenses									+			3%	45		Silicified bleached tuff w/ discontinuous qtz lenses up to 1cm thick. Pyrite in marginal streaks increasing downward in zone	
									m				[-]							
				py-							+						43			
									85S		[-]									
	8/8	29° NTW							65M											
560				Abundant qtz py & streaks Ab		3% Py		py C	65 40S	Qz							53			
							Wt		m 35S											

PROJECT Kay Mine # 3293 DRILL HOLE NO. 19 A SCALE 1" = 20' PAGE NO. 5 OF 5

LENGTH	Recovery	Survey	ASSAYS	Limonite	Pyrite	Chalco-pyrite	Fracture Fill	Seams %	Lineation	Alteration	Silicification	Calcite	Bleaching	Mineralization	Structure	Fractures/ft	Schistosity	ROCK
560	6/6				3%		M	py			+	0-1	+ [-]	C				SERICITE QUARTZ SCHIST Metarhyodacite crystal-bearing tuff. As above Intensely heated w/ sericite, but 2 3" fs remain broken
	6/6							C+	595	+	[-]	%				C/A	55	
	4/4				7% 5%	<1% 5%	O	+ py		++	++	1-2	-	m		4/A	52	Intensely silicified, chloritized and pyritized tuff in streaks. Sporadic blebs & streaks of cp w/ py also cb
			Sporadic blebs & streaks of chalcopyrite w/ pyrite															
580	10/10				3% 5%		O		m 835		++ [-]	O	+ [-]				56	Silicified pyritic tuff w/ abundant qtz py seams. Interval is about 5% qtz seam material. Rock sil'd sericitic; negligible ¢
	10/10		Highly abundant qtz py seams & py streaks						m 805		+ [-]						53	
	7/7		qtz py ¢ streaks abound		3% 5%		7/¢	¢+ ¢+ py	m 755	¢+		0-1	-				55	1cm clear qtz discontinuous seam & 3mm qtz vein @ 30° to CA Lapilli crystal vitric tuff Intensely silicified, chloritized & pyritized tuff Rock is slumped & exhalite seams are contorted and discontinuous. Unslumped below 604
600	6/6	29° N42W							55 105								55	Rock is 25% exhalite seam-slump w/ lenses up to 3 cm thick
	7/7								m 605							6/A	58	2cm qtz lense 3mm qtz lense-seam below 604' rock has abundant <3mm lenticle (1% of rock) of qtz. Larger ones as noted
							O									4/A	59	
620	9/9								m 725		+			m			50	6mm qtz black ¢ seam 1cm qtz black ¢ seam 2cm qtz lenticle Discontinuous qtz black ¢ zone 1-5cm thick
	9/8								5 205			1-3					45	
	10/10								m 805		+	2-5					57	<1cm qtz seams & lenticles make up 5% of rock
640	2/2						g-		m		++							
	10/10		2' zone w/ 2% cp w/ py qtz ¢ [cpI]		7%	[-] ++	g++ ¢+ py++		m 765	¢+	++	0-1		m			58	EXHALITIVE QUARTZ CHLORITE PYRITE ZONE 8.4' thick zone of massive silica w/ inclusions of tuff (9.1-9.2 is mostly tuff) w/ streaks of ¢+ pyt + [cpI] + [cl]
		26° N42W	7" zone ca 50% cp w/ py qtz ¢ @ base of exhalitive zone 3mm qtz cp py seam 6" beneath exhalitive zone		5%	[++]												
					3% 1%			¢+ py	805	¢+ ¢-							59	Intense chloritized tuff, at start grades to sericitic rock downward gl', 2 qtz veins 6mm & 1cm @ 25° @ 15° to CA
660	10/10				<1%				d 605			1-3					57	Rock is well silicified but lacks qtz seams except as noted below.
	6/6								95 2-5		+		[¢]	m			57	3cm qtz ¢ undulating seam
	10/10									[¢]							53	
680									95 755 m				-				50	<1cm qtz lenticle seam
	8/8								824 55			1-5					54	2cm qtz seam w/ marginal ¢ py
	7/7						cz		205 m 854			1-3		m			50	DIABASE DIKE Intensely chloritized w/ bt relicts after ferrags Cuts core @ 45° & b @ 80° Sericitized silicified tuff
700	2½/9														???		50	Shear zone not recovered
									m 695	¢+ ¢-							53	1cm q seam w/ marginal ¢ py 5cm qtz seam w/ marginal ¢ + py TD

Standard HRWL stabilizer
TD 704'

Week 2

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 7, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	331'	35'	296'	1

35' - 214' Precambrian metadacite to metarhyolite with minor chlorite and oxidized pyrite.

214' - 246' Precambrian metadacite crystal tuff with moderate hematitic limonites after primary FeTi oxides.

246' - 248' Metarhyolite crystal tuff with 4 cm thick bed of silica exhalite.

248' - 279' Precambrian metarhyodacite.

279' - 293' Precambrian metarhyodacite crystal tuff.

293' - 297' Precambrian metarhyolite crystal tuff containing .5 to 1 cm thick laminae of silica exhalite. 1-2% disseminated FeTi oxides.

297' - 311' Metarhyolite crystal tuff.

311' - 329' Metarhyodacite lapalli tuff with 2-4 cm thick silica carbonate exhalite bands at 326'.

329' - 331' Fault gouge.

Survey camera shows hole is deviating from proposed bearing and inclination by only 1-2° at 300.

Week 3

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 14, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	566'	331'	235'	1

331 - 420'	Metadacite.
420 - 424'	Bleached and silicified metadacite.
424 - 440'	Metadacite.
440 - 450'	Dacite crystal tuff.
450 - 488'	Metadacite to metarhyolite crystal tuff.
488 - 520'	Metarhyodacite with local bleaching, moderate silicification, weak disseminated pyrite.
520 - 553'	Metarhyodacite.
553 - 554'	Silica exhalite.
554 - 557'	Metarhyodacite.
557 - 558'	Silica exhalite.
558 - 566'	Metarhyodacite.

Hole is cutting schistosity at angles of 2-10°.

Week 4

WEEKLY DRILLING REPORT

SOUTHERN DIVISION

Week Ending December 21, 1984

MINERAL	PROJECT & NO.	COUNTY & STATE	HOLE NO.	ANGLE	PROPOSED DEPTH	DEPTH	PROGRESS FROM	PROGRESS FOOTAGE	DRILLS
Cu-Au	Kay Mine #3293	Yavapai, AZ	KM-19	-65°	900'	585'	566'	19'	1

566 - 585' Metarhyodacite with thin carbonate interbeds and pyritic laminae.

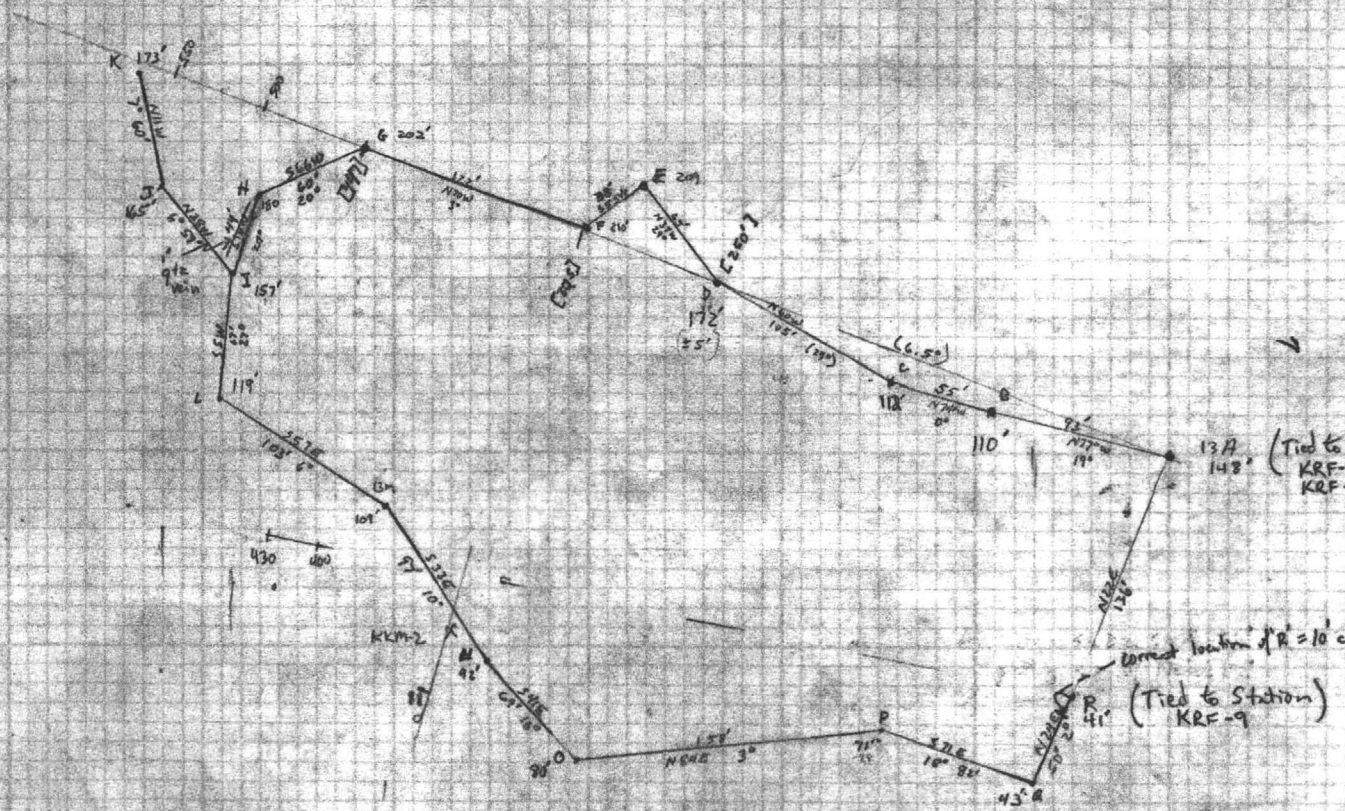
585' rods twisted off, reducing to B.

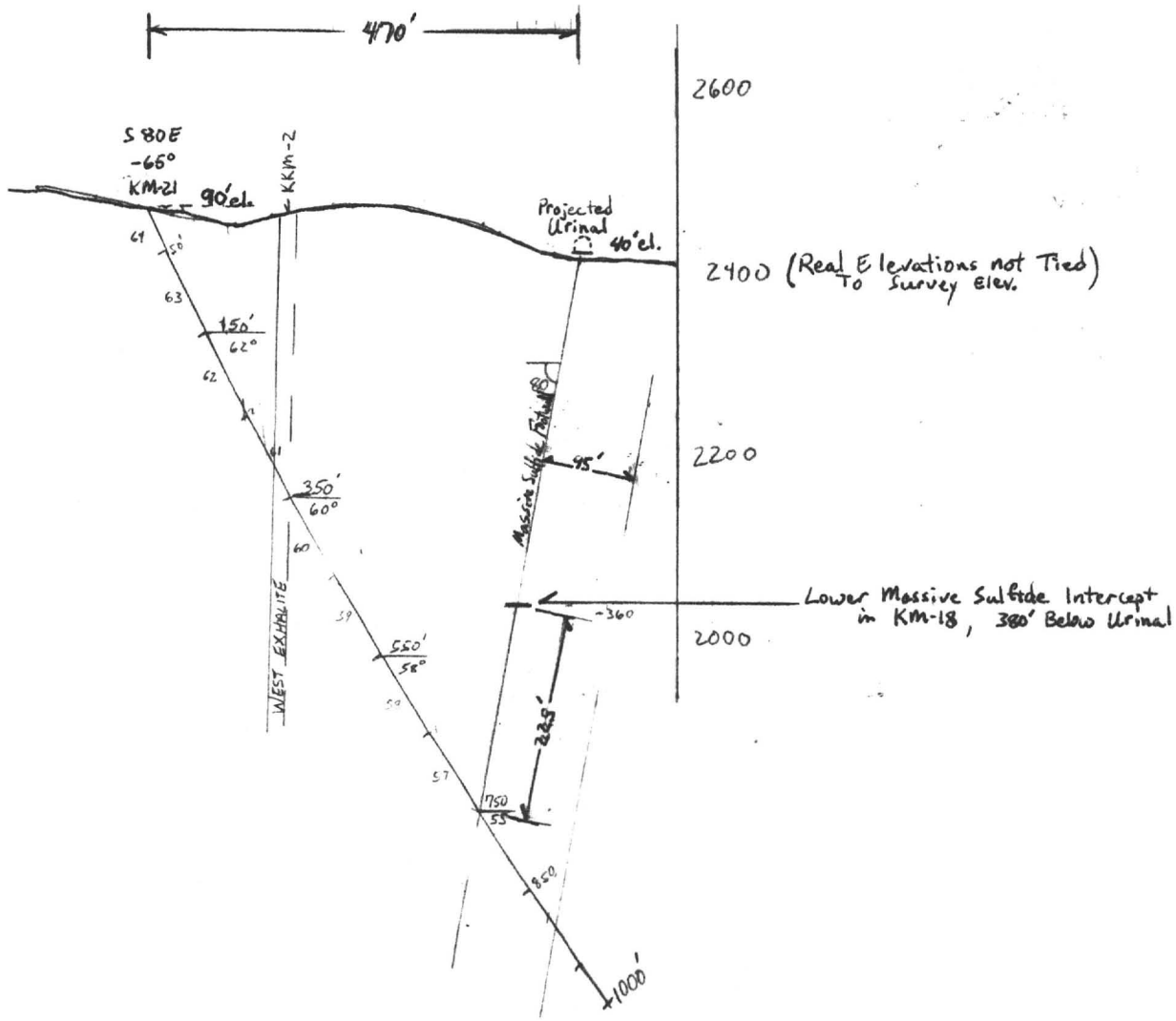
Rods stuck and twisted off at 577', wedged at 518', rods stuck and twisted off at 575', wedged at 544'.

North

Scale 1" = 100'

Closure Within 1' vertical
10' Horizontal





SECTION B
1" = 200'
Horz & Vert
LINE OF SECTION N80W
LOOKING N10E

Kay Mine #3293

Total 1984 Drilling Related Costs of Hole KM-19

Cost (thru 12/31/84) $35,930
Footage 691 ft
Cost per foot _____

Note 1. Includes $1,000 for assaying to be completed in January 1985

Note 2. Only $24,500 has been invoiced to date. The remaining $11,430 cost will be invoiced during January from Longyear, Skyline Labs, Trails End Water Service

Note 3. Total Cost Estimate does not include reclamation.

Note 4. TDI Rounded the Amount to be accrued to $38,000 since Exxon May be charged for >> $1,000 for casing.

Week 5

Drill Report 12/28/84

Mineral

460 Kay Mine #3293 Yavapai AZ KM-19 -65° 609' 585' 24' 1

585 to 602 Gouge

602 to 609 Metadacite, crystal-poor

BQ core recovery 25%

Week 6

Drill Report 1/4/85

460 KAY MINE #3293 Yavapai, AZ KM-19 -65 720 609 111' 1

609 to 628 Metadacite, weakly calcareous, rare pyrite laminae
628 to 648 Diorite, hornblende porphyry with chloritized matrix
648 to 661 MetaRhyolite tuff; very siliceous, 1% pyrite
661 to 684 MetaRhyodacite tuff; minor quartz veining, ½ to 1% pyrite
684 to 702 Gouge
702 to 720 MetaRhyolite; sericitized and strongly bleached 713 to 720

At 710' Hole Angle is N57W, -62.5°

Corrected geologic interpretation indicates the target depth is 1200' downhole, not 730'.

CORRECTED COORDIATES

$\Sigma \Delta N = 426.0$ Closure = +8.0 % = 1.88

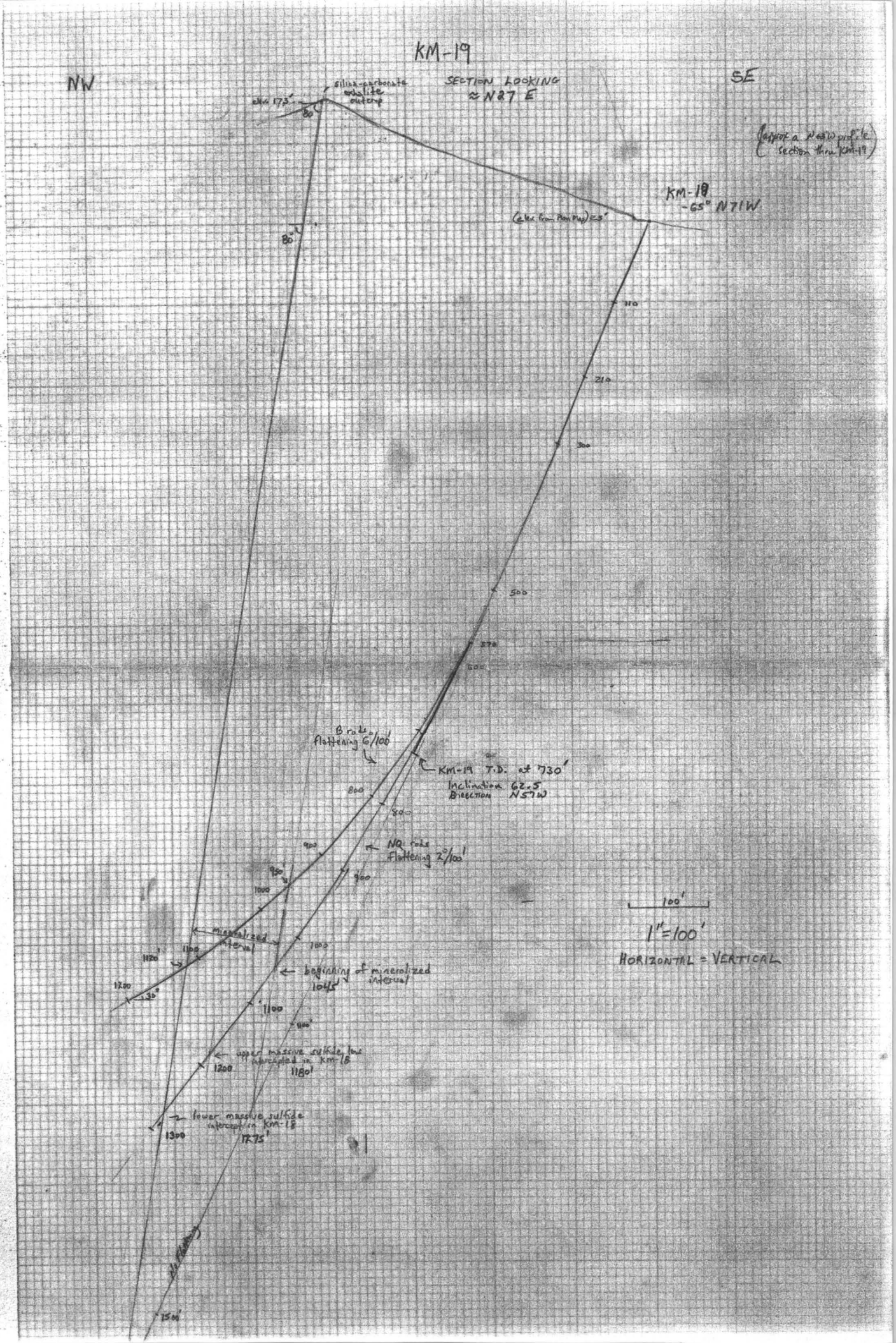
$\Sigma \Delta E = 1028.2$ Closure = +2.40 % = .233

$\Sigma \Delta V = 298.8$ Closure = +8.2 % = 2.744

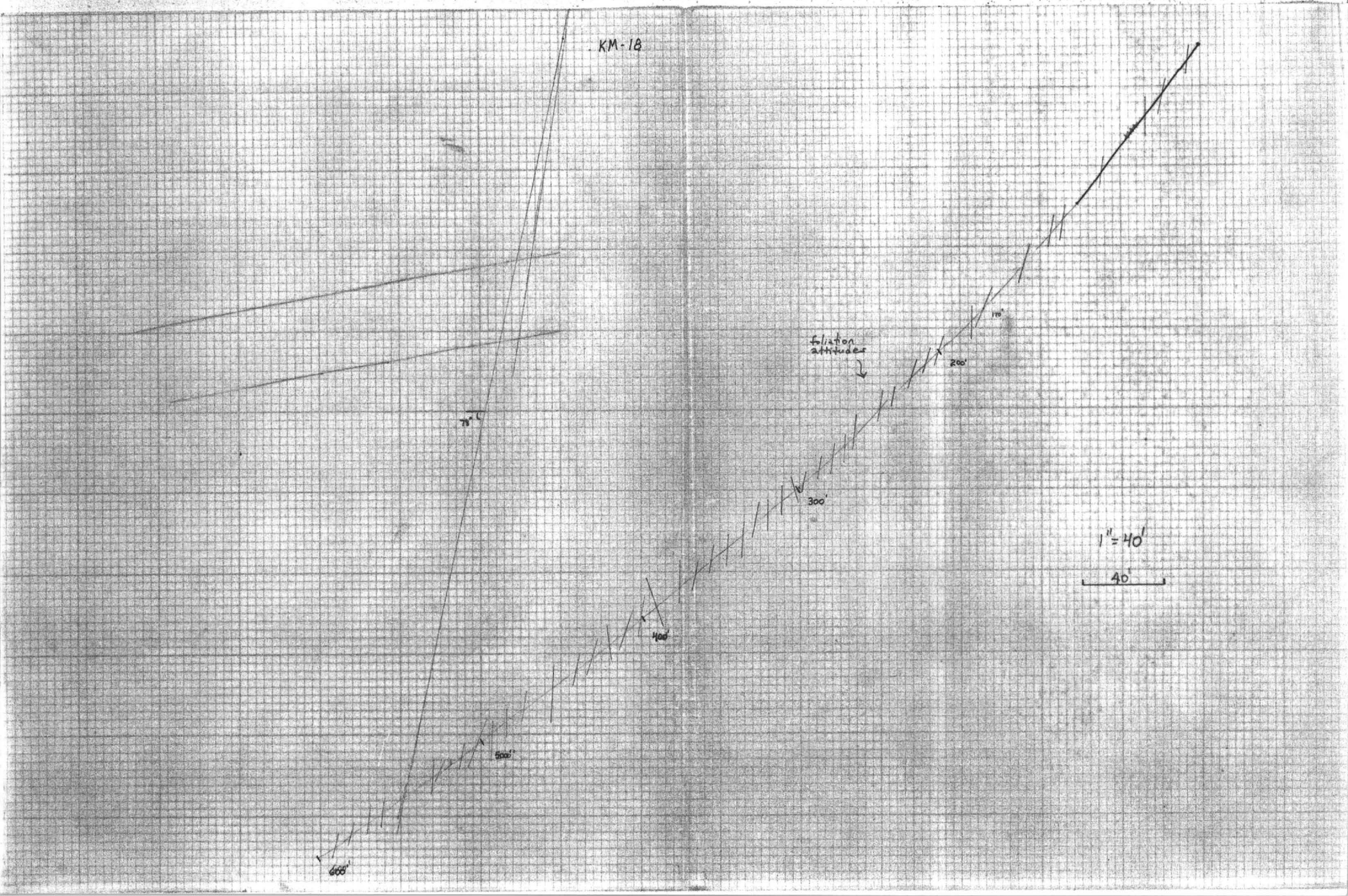
From/To	N corr.	Corrected N Coord	E corr	Corrected E Coord	ΣV	ΔV	V CORR	CORRECTED V
1/3	-.209	10.9	-.150	-63.1	3.3	.09	-.09	3.2
3/4	-.530	4.6	-.294	-125.0	18.8	.43	-.52	18.3
4/5	-.920	24.6	-.450	-192.0	21.2	.66	-1.18	20.0
5/7	-1.46	53.1	-.589	-251.7	34.1	.35	-1.53	32.6
7/8	-1.48	52.0	-.731	-312.6	39.4	.15	-1.68	37.7
8/10	-2.67	114.1	-.823	-273.2	89.7	.93	-2.61	87.1
10/12	-3.43	153.5	-.843	-264.8	121.7	1.04	-3.65	118.1
12/13	-4.22	194.8	-.877	-250.3	149.5	.76	-4.41	145.1
13/33	-4.31	190.3	-.949	-219.3	139.3	.28	-4.69	134.6
33/34	-4.50	179.9	-1.08	-161.4	113.1	.72	-5.41	107.7
34/35	-5.22	140.6	-1.16	-130.2	92.0	.58	-5.99	86.0
35/36	-5.37	132.7	-1.28	-75.8	93.9	.05	-6.04	87.9
36/37	-5.58	143.6	-1.48	9.32	72.6	.58	-6.62	66.0
37/38	-5.58	143.6	-1.68	92.92	51.6	.58	-7.20	44.4
38/32	-5.61	141.6	-1.73	113.6	46.0	.15	-7.35	38.7
32/KM-19	-6.28	105.3	-1.78	135.0	30.8	.42	-7.77	23.0
KM-19/30	-6.75	80.3	-1.92	76.9	26.4	.12	-7.89	18.5
30/KM-18	-7.08	62.4	-2.05	19.4	28.5	.06	-7.95	20.6
KM-18/28	-7.30	50.5	-2.20	85.8	23.8	.13	-8.08	15.7
28/1	-8.23	-.2	-2.40	0	8.2	.43	-8.51	-.3

UNCORRECTED COORDINATES

From/To	Slope Dist	V%	ΔV	Horiz Dist	Bearing	cos ΔN	N coord	sin ΔE	E coord	V
1/3	64.0	+3	+3.3	63.9	N80W	+ 11.1	11.1	− 62.9	−62.9	3.3
3/4	64.0	+14	+15.5	62.1	S84½W	− 6.0	5.1	− 61.8	−124.7	18.8
4/5	69.8	+2	+ 2.4	69.8	N73W	+ 20.4	25.5	− 66.8	−191.5	21.2
5/7	67.5	+11	+12.9	66.3	N64W	+ 29.1	54.6	− 59.6	−251.1	34.1
7/8	61.0	+5	+ 5.3	60.8	S89W	− 1.1	53.5	− 60.8	−311.9	39.4
8/10	90.0	+34	+ 50.3	74.6	N32E	+ 63.3	116.8	+ 39.5	−272.4	89.7
10/12	52.0	+38	+ 32.0	41.0	N12E	+ 40.1	156.9	+ 8.5	−263.9	121.7
12/13	52.5	+32	+27.8	44.5	N19E	+ 42.1	199.0	+ 14.5	−249.4	149.5
13/33	33.0	−18	−10.2	31.4	S82E	− 4.4	194.6	+ 31.1	−218.3	139.3
33/34	64.5	−24	−26.2	58.9	S80E	− 10.2	184.4	+ 58.0	−160.3	113.1
34/35	54.0	−23	−21.1	49.7	S39E	− 38.6	145.8	+ 31.3	−129.0	92.0
35/36	55.0	+2	+ 1.9	55.0	S82E	− 7.7	138.1	+ 54.5	−74.5	93.9
36/37	88.0	−14	− 21.3	85.4	N82⅓E	+ 11.1	149.2	+ 84.7	+10.2	77.6
37/38	87.0	−14	−21.0	84.4	due E	0	149.2	+ 84.4	94.6	51.6
38/32	21.5	−15	−5.6	20.8	S85E	− 1.8	147.2	+ 20.7	115.3	46.0
32/KM-19	44.5	−20	−15.2	41.8	S31E	− 35.8	111.6	+ 21.5	136.8	30.8
KM-19/30	63.2	−4	−4.4	62.0	S67W	− 24.6	87.0	− 58.0	78.8	26.4
30/KM-18	60.0	+2	+2.1	60.0	S73W	− 17.5	69.5	− 57.4	21.4	28.5
KM-18/28	67.8	−4	−4.7	67.6	S80E	− 11.7	57.8	+ 66.6	88.0	23.8
28/1	100.0	−9	− 15.6	98.8	S60W	− 49.4	8	− 85.6	2.4	8.2

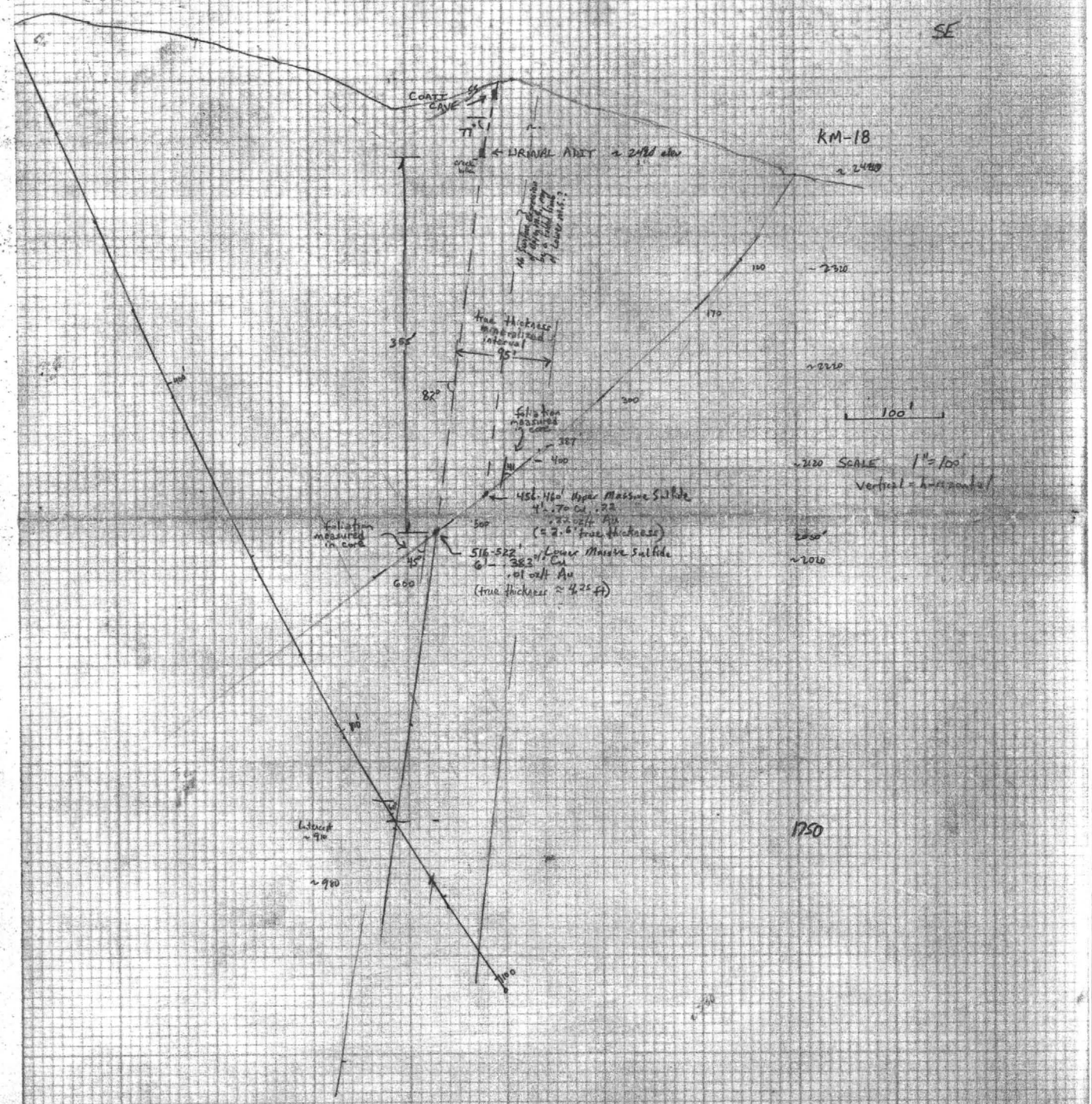

KM-19
NW
SE
SECTION LOOKING ≈N27 E
silica-carbonate exhalite outcrop
elev. 175'
80
(approx a N-S vert. profile section thru KM-19)
KM-18 -65° N71W
(elev. from Plan Map) 25'
110
210
300
500
570
600
Break flattening 6°/100'
KM-19 T.D. at 730'
Inclination 62.5
Direction N57W
800
850
900
NQ rods flattening 2°/100'
950'
1000
100'
1"=100'
HORIZONTAL = VERTICAL
mineralized interval
1120'
1100
1200
35°
1000
beginning of mineralized interval
1045'
1100
1150'
upper massive sulfide lens intercepted in KM-18
1200
1180'
lower massive sulfide intercept in KM-18
1300
1275'
1500'

KM-18



KM - 18

section looking ≈ N20E



LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION GANGUE	Pyrite Limonite	Fracture Fill	Seam Fill	ALTERATION	Laminations	Structure	Lineation	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES

Spud: 3/18/85 @ 6:00 PM

Bearing: S 85E
Inclination: -75°

DRILLED BY: Longyear Co.
308 E. Pima St.
Phoenix, Ariz 85004

LOGGED BY: J. F. McKnight

20

40

60

ROTARY CUTTINGS -- Not logged 60' 4½" Csmg L 1 H 5 5/8 RB

N S

60

[$CaCO_3$ sml] -

1% 9 sml

3- [C/B] 3-

M 3A d 85

80

5mm $CaCO_3$ seam w 5% py dis

0-10 mm $CaCO_3$ seam

6cm q vn A

6A d 38 d 25

100

-74.5° S85E (11° dec)

5mm $CaCO_3$ sm

5mm $CaCO_3$ sm

8A d 82

4A d 80

d 73

120

140

d 75

CHLORITE PHYLLITE (Greenstone) HQWL

Metamorphosed mafic pyroclastics & associated sedimentary strata

Sporadic & sparse calcite seamlets 1-5/ft

Matrix calcite probably syngenetic

LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION & GANGUE	Pyrite Limonite	Fracture Fill	Seam Fill	ALTERATION	Lamination	Structure	Lineation	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
				Fine $CaCO_3$ snl spaced on 1 cm [2-5 mm snl] @ 1/2 ft	d d	c l	C	[bl]		5 d	N 5 d 73	21			
												28			
160									M m		d 75	29			
												27			
180								bl				33			
								[bl]			d 85				
								bl ++		#		27			
200		72.77° S 84 E								10 d 4 d	d 88				
								[bl]							
								C-		x		35		weakly graphitic w/prominent fine laminations beds highly contorted sporadically	
										#					
220				1 cm q seam					P f			40			
	3/4									x	d 87				
	2/3									*					
	9/4							bl ++		x	d 72	35			
240	0/2							C-		§§*					
										§§*		30			
								[bl +]		#[x]					
								c-							
260										x		28			
								[bl]			d 85				
								bl ++		§§*					
										§§*		S			
280										§*§		S			

HQWL Reamed to HQWL

PROJECT [illegible] DRILL HOLE NO. [illegible] SCALE [illegible] PAGE NO. [illegible] OF [illegible]

LENGTH	Recovery	Survey	ASSAYS	Pyrite Limonite	Fracture Fill	Seam Fill	ALTERATION	Lamination	Structure	Lineation	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
	3/4, 2/3, 1/5	58SE		<, 0.1, 2	C-	C-	bl ++, R ++	M, W					Mafic volcaniclastics. Intensely sheared, intensely bleached, highly contorted from vertical to 30° from core axis	
300	5/6	-72.5°												
120	2.5, 2.5, 3, 3, 3/4, 2.5, 4.5													
140			1 cm x 5mm py bleb											
60														
							bl +						Less intensely bleached; some orig chlorite and graphite remain	
80	2/5													HQWL Reamed 03 / HQWL
	1/8													
100											31			
								0					Basalt flow. Chloritized, moderately bleached. Massive & w/o laminations	
													inclusion of volcaniclastics	
													" " "	
120			3mm qvl 1cm qvn										Graphitic volcaniclastics	

PROJECT _____ DRILL HOLE NO. _____ SCALE _____ PAGE NO. ____ OF ____

LENGTH	Recovery	Survey	ASSAYS	MINERALIZATION & GANGUE	Pyrite Limonite	Fracturing Filling	Seam Filling	ALTERATION	Lamination	Structure	Lineation	Schistosity	ROCK	LITHOLOGY, ALTERATION, STRUCTURE	DRILL NOTES
		58SE			<0.1 d	Cal +		bl + R						Basalt	
		-72°		1 cm q vn											
				2 cm q¢-vn		Cal +	C		M m					Volcaniclastics with graphite	
				4 cm Q SM		Cal +		C						Basalt	
440															
												20			
						Cal +	C		M m					Volcaniclastics	
460				3-4 mm Q SM 3 mm Q lense 2 cm Q SM											
				2 cm Q SM 3 5 cm Q SM										Basalt	
				8 cm q blck ¢ vn 3-1 5 mm Q sml 3 cm Q seam		Cal +									
480						Cal +	C		M m	[#]				Volcaniclastics	
		58SE													
500		71°													
				Py dis in graphite SM	1%		SM							Basalt	
				3-1cm q blk ¢ vn	<0.1 d										
				2 cm q vn										volcaniclastic inclusion	
520															
				2-1cm Q SM		Cal +	C		M m					Volcaniclastics	
				4mm Q sml											
				sparce < 1mm Q sml											
				3 mm Q sml											
540				1' bull q vn											
						Cal +	C	bl - C R-						Basalt	
								bl + [bl +]							
560										3R					

PROJECT: _____ DRILL HOLE NO.: _____ SCALE: _____

LENGTH		ASSAYS							Pyrite Limonite	Fractured Pill	Spray Pill	ALTERATION					Lamination	Structure	Lineation	Schistosity	ROCK
580																					
600	578E -70°																				
620																					
640																					
660																					
680																					
700	572E -65°																				

9" interval w/qvn, q soak + black ↓ q

1-3mm Q sml 1-5/ft

1cm Q sm
8cm Q sm
2cm q vn

1.5cm q vn

1-3mm Q sml 10/ft

1cm q vn

1cm Q sm

2-Bull q sm 5cm 3cm

Abundant <1cm cl, c sml, qcl, q sml and Q sml

Volcaniclastics

Basalt

Volcaniclastics

} 3 Diabase dikes

Diabase dike

} 2 Diabase dikes

Diabase dikelet

Basalt

} 2 Diabase dikelets

Volcaniclastics

HQWL Reamed Ds
HQWL Overgrid

PROJECT _____ DRILL HOLE NO. _____ SCALE _____ PAGE NO. ____ OF ____

LENGTH	Recovery	Survey	ASSAYS							Pyrite Limonite	Fracture Fill	Seam Fill	ALTERATION					Lineation	Structure	Lineation	Schistosity	ROCK

Looks like open space fill of QC¢ (black ¢) — 0.1
CQ¢ vn
Abundant C vl & Smal, g Smal, g vl & Q Smal
CT vl, gt vl — Ct Smal, gt Smal, Qt Smal
vl
q C black ¢ vns
q black ¢ clots & veins w/tr. py — 0.5 d
4 0.1 g
1' HQ zone @ base of Basalt @ 5cm q sm — 0.5 d
qc¢py-ms

Structure: 2/ft; X; 4/ft; 4/ft; 4/ft; 3/ft
Lineation: m N90; m N75; m N85; m S55
Schistosity: 56; 46; 48; 50; 48

Volcaniclastics
Diabase dike
Basalt
Volcaniclastics
Basalt
Basalt
Volcaniclastics
Diabase dike
2 Diabase dikes
Basalt
Diabase dike
Diabase dike
volcaniclastics
Basalt
Diabase dike
volcaniclastics

720
740
760
780
800
820
840

E645 -99-

PROJECT: _____ DRILL HOLE NO.: _____ SCALE: _____ PAGE NO.: ____ OF ____

LENGTH	Recovery	Survey	ASSAYS							Pyrite Limonite	Fracture Fill	Veinlet Fill	ALTERATION		Lamination	Structure	Lineation	Schistosity	ROCK
860								Abundant gl cl gsul csul & Q sul			Cl gl gl	Cl sul gsul Q sul			M M C W	2-5 ft/ft	d N 80	48 4-5	volcaniclastics
															M m	1-2 ft/ft [x]			
880								1.5 cm qCvn					bl to bl				d 80s	4-7	
																			Basalt
900													bl + bl [bl -]			x			Volcaniclastics. Graphitic, only weakly sporadically bleached
920																		45	
								2-1.5 cm Q seams					bl +			x		61	
940								tr sl 1/2" q ¢-vn @ thin sl sul		sl			bl ++			# *[x [#]	M N 80		Felsic pyroclastics. Silica soaked intensely bleached w/ qtz eyes. Abundant Q seamlets
								EPY -] fx											1' Q healed breccia
960																	m N 75	55	
980																*#[		49	

PROJECT [illegible] DRILL HOLE NO. [illegible] SCALE [illegible] PAGE NO. [illegible] OF [illegible]

LENGTH		ASSAYS							Pyrite Limonite	Fracture Fill	Seam Fill	ALTERATION			Lamination	Structure	Lineation	Schistosity	ROCK
										qt-	Q	bl + Rt			F t	* #			Felsic Pyroclastics
												[C-]	[Q-]			* #			
000	5715 -629															* #	m S60	54	
								10 cm q vn											
								6" qC filled breccia in diabase		q- C+	[Q-]								2 Diabase dikes, intensely bleached & argillized
120								1cm Q seam			C+					3/ft		46	
								3-1cm Qt sm											
												bl + R	Q+ [Q-]				m N45	29	
040																		9	
																	m N60	38	
060																X X			
																* #	m N70	65	
																* #	m N70	36	
080																* #			
	5715 -717																m N60	42	
100											[Q+]					6/ft			
								13cm zone of 50% Qt bedrock 90%											Diabase dike, dikelet, Diabase dike
																	m N70	49	
120																			

PROJECT _____ DRILL HOLE NO. _____ SCALE _____ PAGE NO. ___ OF ___

LENGTH	ASSAYS	Pyrite Limonite	Fracture Fill	Seams	ALTERATION	Lamination	Structure	Lineation	Schistosity	ROCK
			C+	O	Q rpl		3/4+		55	Dolomite, Massive chloritic calcarenite marble
					[Q]					
				[Q]	C- [C]					Diabase dikelet
140								m N40	45	
										Diabase dikelet
160									40	
	2 cm Q sm									
									35	
180										
	8 cm q vn									
	3 cm q vn									
200					Q+					
								m N80	20	
					[Q] C-					
	6 cm q vn									
	3 - 1 cm q sm								50	
220										
	12 cm q vn									
	10 cm q vn									
	3 - 1 cm Q sm				Q+		X	m N85	45	
240	2 cm Q sm									
	1 cm Q sm				Q+ Q+		55			
							X		50	
60	3 cm Q sm 1 cm Q sm									

3745
3755

oversize HQWL TD 1263'

D.D.H. No. Km-21 SCALE 1" = 10' BY D. Dean

CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recovery	Mineralizn	Alteratio	Structure	Rock Typ	
					DRILLED & LOGGED IN 1984 BY J F McKNIGHT 0 - 1263'
HQ CORE	[Py] diss	cal vls -	55	ft	1263' Begin 11-85 Deepening of 1984 DH. Grn-tan, v.f.g. Ser-Kaol-Qz Schist / f.g. Felsic Tuff @ trace small qz eyes.
	5% py			ch	← 2' brecciated shear zone partially healed by chert* & fx fill py ⇒ shearing pre-FW mn'zn. Abu carb bands & seams = x-cutting fx filling milky qz chert; highly fractured & healed @ py & later white carbonate
		qz-tm vn		ft	
		cal vls -	60		
		cal vls +		gft	Thinly laminated Graphite & Sericite-Kaol-Qz Schist / Qz Eye Felsic Tuff @ minor small qz eyes
		cal vls -	50		← Convoluted bedding accomodated by bdg plane slip & axial plane micro faulting; possibly slump stxs.
				fpd	Lt tan, massive feldspar → kaol xl Dike; massive & textureless @ bleached appearance.
			40	ft	Thin banded Ser-Qz Schist / Qz Eye Felsic Tuff @ cherty bands; v. minor graphite partings locally. Large qz eyes @ ±1290.
		cal vls + (fx fill)	40	gft	Thinly lam. Graphite & Ser Schist / v.f.g. Felsic Tuff or Tuffaceous Sil @ convoluted bdg (slump?) @ abu small scale shearing.

Planar Stx measured From Core Axis

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
NO ASSAYS					

1200, 10, 20, 30, 40, 50, 60, 70, 80, 90, 1300

D.D.H. No. Km-21 SCALE 1" = 10' BY D. Dean

CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recovery	Mineralization	Alteration	Structure	Rock Type	Description	CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo
1300		cal vls+	SSSSS 60 55	gft	Lam. Graphite & Felsic Tuff or Tuffaceous Sed as above. Locally contorted but generally evenly bedded.		NO	ASSAYS	
10	0.5% diss py	cal vls- qz vls	40	rt	Thin bdd Qz-Ser Schist / Qz Eye Rhyolite XI Tuff @ cherty interbeds & increasing Graphite partings @ 1312. Small scale shattering & recealing w/ carb.				
20	<1% diss py→hmt	cal vls	35 MASSIVE	fpd	Lt tan, Fs-Qz Porphyry Dike @ bleached appearance & perv. carb. altn. massive. No metamorphic fabric; Laramide? Diss & fx fill hmt after mafics & exotic Fe-O movement. Sparse diss py → hmt. Local felsic tuff block inclusions.				
30									
40				fpd					
50	0.5% diss py	cal vls+		ft	Lt gr-wh, thin bdd Ser-Qz Schist / Felsic Tuff @ abu cherty bands				
60			40 30 45 25	gft	Ser-Qz Schist / Felsic Tuff & finely lam. Graphite (<20% of rock) intercalated.				
70	<0.5% py & hmt	cal vls-		fpd	Fs Porphyry Dike (as above) w/o metamorphic fabric. massive. Hmt on fxs & diss after mafics & diss py ± mgt.				
	1% diss py	cal vls+	35	gft	Ser-Qz Schist / Cherty Felsic Tuff @ <10% Graphite laminea. Diss py esp. abu in Graphite partings.				
80			35		Fs Porphyry Dike				
				gft	Ser-Qz Schist / Cherty Felsic Tuff @ loc. strong graphite @ 1382'				
		cal & qz vls+		fpd	Fs Porphyry Dike @ block inclusions of graphitic felsic tuff				
90		cal vls+	35 40	gft	Thin to med laminated Graphitic Felsic Tuff @ 10-20% graphite intercalated @ cherty v.f.g. cream colored tuff.				
1400	<0.5% py	cal vls-	40	rt	Cream colored Ser-Qz Schist / Qz Eye Rhyolite Tuff; thinly lam.; diss py				

D.D.H. No. KM-21 SCALE 1" = 10' BY D. Dean
CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recover	Mineraliz	Alteratio	Structur	Rock Ty	Description	CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
1400	diss py =	cal vls -		rt	Ser-[Qz] Schist / Qz Eye Rhyolite Tuff (as above) @ perv. weak to mod white carbonate admixed (exhalative) as well as cal vls. Trace diss py & graphite streaks. Highly sheared & shattered @ dip change due to flt's rather than folding. Qz eyes v. sparse & decreasing downward. Local cherty bands.						
		cal vls +	15								
10			45								
			40								
20		weak perv cal laminea									
30			40								
			50								
40			45	gft	Cream colored v.f.g. laminated Ser Schist / Felsic Tuff intercalated @ increasing Graphite Schist downward (5-15%)						
			45	gs	Black Graphite Schist @ 30-60% intercalated Ser Schist / Felsic Tuff. Strong shearing @ local drag folding & possible isoclinal folding + axial plane flt's @ 1453'						
50		Qz + cal vls +	55								
		cal vls +		gft	Gradually decreasing graphite (< 50%) to Ser Schist / Felsic Tuff & interbedded Graphite (15-30%). Perv. cal laminea as well as cal vls ⇒ at least partly syngenetic; abu vls in microfld zone possibly carb. mobilization.						
60		Perv. cal laminea	54		← Tight isoclinal folding @ 70° to core axis; similar style @ 1459' but disturbed by axial shearing.						
70			85								
80			85		← Contorted bedding assoc. @ intense shearing & brecciation; probably slip along graphitic beds rather than slumping.						
90			50	rt	Lt gr, thinly bdd Ser-Qz Schist / Qz Eye Felsic Tuff @ cherty beds & local bull qz "veins" (mobilized chert ?) @ minor graphite at margins.						
1500											

D.D.H. No. KM-21 SCALE 1" = 10' BY D. Dean

CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recover	Mineraliz	Alterati	Structur	Rock Ty	Description	CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
1500		lam-cal-Cal vls	50		Lt tan, thinly bedded Ser-Qz Schist / [Qz Eye] Rhyolite Tuff @ sparse small qz eyes & chert laminea. Perv white carbonate as laminea (syngenetic) & vls (mobilization?).						
				rt							
10			45								
			50								
20			40								
	Diss py	Perv Cal lam-Cal vls+	30	gft	Lt to med gray Ser-Qz-Graphite Schist / Graphitic, Qz Eye Felsic Tuff @ thin bedded Graphite interbeds & chert lenses & beds locally.						
30			35								
NO CORE					Only washed in sand @ diss lm recovered for 2.5'						
		Cal lam-Cal vls+	40	gft	(Same as above)						
					Lt tan, thinly laminated Ser-Qz Schist / Qz Eye Rhyolite Tuff Abu Cal laminea (± 10%) & sparse chert beds ≤ 0.5" wide						
40		Perv Cal lam+ Cal vls	35		← White qz vn paralell to S_0; mobilized exhalative chert?						
				rt							
50			40								
60		Perv chl+ Cal+	40 50		Weak, wispy dark grn chl altn parallel to bddg.						
		Cal+ lam & vls									
			50		← 7" wide white chert bed						
70					← weak to mod shearing @ low angle slicks						
	<0.5% py diss	Perv chl+ Cal+	45		Qz Eye Rhyolite Tuff (as above) @ mod strong dark green chl altn @ intercalated ser zones (later than chl; loc x-cutting). Abu thin Cal laminea & thin, common white chert beds.						
80		Cal+ lam & vls		rt							
			50		chl altn (as above)						
		Perv chl+ Cal+									
90		Cal+ lam & vls chl+	55								
1600		Cal+ lam & vls									

D.D.H. No. KM-21 SCALE 1" = 10' BY D. Dean
CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recover	Mineraliz	Alteration	Structure	Rock Ty	Description	CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
1600		Cal+ lam & vlts	45, minor Fold, 55, 60	rt	Lt tan Ser-Qz Schist / Qz Eye Rhyolite Tuff @ sparse, small (≤0.1") qz eyes & mod abu white carbonate laminea (2-5% vol) & sparse white chert beds @ local mobilization into x-cutting habit.						
10	3% diss hmt		55, 50		Diss red-brn hmt after mgt (or sulfide??). Chert bands stained red @ hmt						
20			60								
30				rt							
40	diss µvl py+ graph <0.5%		40		Very weak diss & µvls of py-graphite						
50		Cal+ lam & vlts kcol+	55	gft	Strong shear zone @ local weak brecciation & clay alt'n. Lt tan Ser-Qz Schist / v.f.g. laminated Felsic Tuff & thinly laminated Graphite						
60		Clay+ Cal+ lam; Cal+ lam	30	rt	Lt tan-white Ser-Qz Schist / Chert-rich Felsic Tuff @ 10-30% white chert bands. 1659-1662 @ strong lime grn-tan & bright green nontronite(?) clay (could include some malachite)						
70	2-4% py bands & diss	Cal++ lam	30	gft	Thinly laminated Graphite & v.f.g. Lt tan Felsic Tuff @ strong cal laminea (20-40%) & locally strong py+ bands.						
80		Clay+ Cal+; Cal+ lam & vlts	35	rt	Lt brn-tan Ser-Chl-Qz Schist / Qz Eye Rhyolite Tuff. @ cal laminea. more abu & slightly larger qz eyes than HW tuffs above & chl reflecting slightly more Fe ± mg rich host rock comp; not alt'n. minor chert beds						
90			40, 45								
1700											

D.D.H. No. KM-21 SCALE 1"=10' BY D. Dean
CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recovery	Mineralization	Alteration	Structure	Rock Typ	Description	CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
				rt	Ser-Chl-Qz Schist / Qz Eye Felsic Tuff (as above)						
	<0.5% py diss	Cal+ lam chl+		dol	Chl-Ser-Cal Schist / Chl-Carb Exhalite & Fig. Felsic Tuff; thinly laminated @ diss py =						
	<1% diss py	Cal+ lam chl- clay	Gouge	rt	Lt tan Ser-Qz-Schist / Qz Eye Felsic Tuff @ small abu qz eyes & abu cal laminae & sparse chert beds. Diss py.						
	<0.5% diss py	Cal+ lam		gft	Finely laminated & contorted Graphite & Ser-Cal Schist / Felsic Tuff @ sparse v. small qz eyes						
					← Tight isoclinal folding @ similar style throughout gft interval. Small scale isoclinal folding @ shallow (≤65°) @ respect to -60° DH => steeply plunging fold axes						
No Core											
	5-15% diss py	Cal+ Clay in gouge zones		gft	Locally strong diss v.f.g. py; strongest as matrix to small graphite balls						
	1 to 0.01% diss py		Gouge Local Intense Elt		Intensely sheared zone						
	<0.5% py diss	Cal+ lam	55	rt	Lt tan, thinly laminated Ser-Qz Schist / Felsic Tuff @ sparse, small qz eyes & common white chert beds.						
No CORE											
		Cal+ lam & vls	65	rt	Felsic Tuff (as above) but @ slightly larger & more abundant qz eyes & more abu chert beds.						
			30								
					Weakly Sheared						

Depth scale: 1700, 10, 20, 30, 40, 50, 60, 70, 80, 90, 1800

D.D.H. No. Km-21 SCALE 1" = 10' BY D. Dear

CO-OR _____ COLLAR EL _____ DATE 2-86

% Core Recover	Mineralization	Alteration	Structure	Rock Type		CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
1800			Cal lam v/s 10	rt	weakly to mod. sheared zone						
					Qz Eye Rhyolite Tuff @ coarser (0.1-0.2") qz eyes & less cal laminea						
10			Cal lam 40								
			15 5	rt							
					TD @ 1816'						

SKYLINE LABS, INC.
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REPORT OF ANALYSIS

MAY 1985 RECEIVED RENO MINERALS

JOB NO. TBL 014
May 17, 1985
PROJECT NO. 3293
3293-K21-78-87/3293-K21-1090-1100

EXXON MINERALS COMPANY U.S.A.
260 B Coney Island Drive
Sparks, Nevada 89431-6314

Analysis of 44 Rock Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Zn (ppm)	Pb (ppm)	Au (ppm)	Ag (ppm)
1	3293-K21-78-87	20.	75.	<5.	<.02	<.2
2	3293-K21-133-141	35.	55.	<5.	<.02	<.2
3	3293-K21-172-179	30.	65.	<5.	<.02	<.2
4	3293-K21-402-406	50.	95.	<5.	<.02	<.2
5	3293-K21-457-465	60.	65.	30.	<.02	<.2
6	3293-K21-477-485	30.	70.	<5.	<.02	<.2
7	3293-K21-491-495	55.	80.	<5.	<.02	<.2
8	3293-K21-500-505	80.	70.	<5.	<.02	<.2
9	3293-K21-505-507	105.	40.	<5.	<.02	<.2
10	3293-K21-510-515	105.	85.	<5.	<.02	<.2
11	3293-K21-534-540	85.	75.	<5.	<.02	<.2
12	3293-K21-540-544	40.	65.	<5.	<.02	<.2
13	3293-K21-554-559	45.	130.	<5.	<.02	<.2
14	3293-K21-609-616	45.	65.	<5.	<.02	<.2
15	3293-K21-646-654	45.	85.	<5.	<.02	<.2
16	3293-K21-679-687	55.	90.	<5.	<.02	<.2
17	3293-K21-687-692	40.	90.	<5.	<.02	<.2
18	3293-K21-699-706	45.	70.	<5.	<.02	<.2
19	3293-K21-706-716	60.	90.	<5.	<.02	<.2
20	3293-K21-716-727	80.	95.	<5.	<.02	<.2
21	3293-K21-734-742	60.	70.	5.	<.02	<.2
22	3293-K21-789-799	50.	90.	<5.	<.02	<.2
23	3293-K21-823-829	60.	50.	<5.	<.02	<.2
24	3293-K21-866-869	35.	85.	65.	<.02	<.2
25	3293-K21-873-880	40.	70.	<5.	<.02	<.2

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TBL 014
May 17, 1985

ITEM	SAMPLE NUMBER	Cu (ppm)	Zn (ppm)	Pb (ppm)	Au (ppm)	Ag (ppm)
26	3293-K21-880-890	120.	80.	<5.	<.02	<.2
27	3293-K21-890-900	125.	65.	15.	<.02	<.2
28	3293-K21-940-941	10.	20.	<5.	<.02	<.2
29	3293-K21-941-950	25.	60.	<5.	<.02	<.2
30	3293-K21-950-960	40.	50.	<5.	<.02	<.2
31	3293-K21-960-970	10.	50.	<5.	<.02	<.2
32	3293-K21-970-980	15.	45.	<5.	<.02	<.2
33	3293-K21-980-990	25.	20.	5.	<.02	<.2
34	3293-K21-990-1000	20.	40.	5.	<.02	<.2
35	3293-K21-1000-1010	45.	95.	20.	<.02	<.2
36	3293-K21-1010-1022	30.	60.	<5.	<.02	<.2
37	3293-K21-1022-1028	30.	60.	<5.	<.02	<.2
38	3293-K21-1028-1040	80.	85.	<5.	<.02	<.2
39	3293-K21-1040-1050	80.	115.	5.	<.02	<.2
40	3293-K21-1050-1060	25.	45.	<5.	<.02	<.2
41	3293-K21-1060-1070	25.	55.	<5.	<.02	<.2
42	3293-K21-1070-1080	35.	75.	75.	<.02	<.2
43	3293-K21-1080-1090	20.	70.	<5.	<.02	<.2
44	3293-K21-1090-1100	25.	60.	<5.	<.02	<.2

William L. Lehmbeck
Manager

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REPORT OF ANALYSIS

JOB NO. TBL 015
May 20, 1985
3293-K21-1100-1110/3293-K21-1260-TD
P.O. NO. 10126

EXXON MINERALS COMPANY U.S.A.
260 B Coney Island Drive
Sparks, Nevada 89431-6314

Analysis of 17 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (ppm)	Ag (ppm)
1	3293-K21-1100-1110	30.	<5.	65.	<.02	<.2
2	3292-K21-1110-1120	25.	<5.	70.	<.02	<.2
3	3293-K21-1120-1130	30.	<5.	60.	<.02	<.2
4	3293-K21-1130-1140	40.	<5.	75.	<.02	<.2
5	3293-K21-1140-1150	25.	<5.	80.	<.02	<.2
6	3293-K21-1150-1160	30.	<5.	70.	<.02	<.2
7	3293-K21-1160-1170	10.	<5.	65.	<.02	<.2
8	3293-K21-1170-1180	20.	<5.	75.	<.02	<.2
9	3293-K21-1180-1190	10.	<5.	75.	<.02	<.2
10	3293-K21-1190-1200	30.	<5.	60.	.02	<.2
11	3293-K21-1200-1210	40.	<5.	50.	<.02	<.2
12	3293-K21-1210-1220	40.	<5.	60.	<.02	<.2
13	3292-K21-1220-1230	25.	<5.	60.	<.02	<.2
14	3293-K21-1230-1240	25.	<5.	55.	<.02	<.2
15	3293-K21-1240-1250	35.	<5.	40.	<.02	<.2
16	3293-K21-1250-1260	30.	<5.	35.	<.02	<.2
17	3293-K21-1260-TD	70.	<5.	70.	.02	<.2

MAY 1985
RECEIVED
RENO
MINERALS

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

File cy
DOA

REPORT OF ANALYSIS

JOB NO. TBL 015
May 20, 1985
3293-K21-1100-1110/3293-K21-1260-TD
P.O. NO. 10126
PAGE 1 OF 1

EXXON MINERALS COMPANY U.S.A.
260 B Coney Island Drive
Sparks, Nevada 89431-6314

Analysis of 17 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (ppm)	Ag (ppm)
1	3293-K21-1100-1110	30.	<5.	65.	<.02	<.2
2	3292-K21-1110-1120	25.	<5.	70.	<.02	<.2
3	3293-K21-1120-1130	30.	<5.	60.	<.02	<.2
4	3293-K21-1130-1140	40.	<5.	75.	<.02	<.2
5	3293-K21-1140-1150	25.	<5.	80.	<.02	<.2
6	3293-K21-1150-1160	30.	<5.	70.	<.02	<.2
7	3293-K21-1160-1170	10.	<5.	65.	<.02	<.2
8	3293-K21-1170-1180	20.	<5.	75.	<.02	<.2
9	3293-K21-1180-1190	10.	<5.	75.	<.02	<.2
10	3293-K21-1190-1200	30.	<5.	60.	.02	<.2
11	3293-K21-1200-1210	40.	<5.	50.	<.02	<.2
12	3293-K21-1210-1220	40.	<5.	60.	<.02	<.2
13	3292-K21-1220-1230	25.	<5.	60.	<.02	<.2
14	3293-K21-1230-1240	25.	<5.	55.	<.02	<.2
15	3293-K21-1240-1250	35.	<5.	40.	<.02	<.2
16	3293-K21-1250-1260	30.	<5.	35.	<.02	<.2
17	3293-K21-1260-TD	70.	<5.	70.	.02	<.2

RECEIVED MAY 1985 RENO MINERALS

William L. Lehmbeck
Manager
5/23/85

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

Recovery	Base Meta Mineralizat	% Sulfide	Alteration Metamorph	Bedding to core	Structure flt – frac	Rock Type
						Graphite
		tr-1				
		1 py		50		
				55		
				35		
				55		
				40	B	
				55	B f	
				10	B B B	
				40 to 10		
				45	B	
				45	f	
				50		

PROJECT: [illegible]

Coord _____ Hole No. KM-21

Logged by PGS Scale 1"=50' Date 9/10/85 P. 1 of 3

Overburden collared _____, completed _____

Bedrock collared _____, completed _____

Owner of surface _____, minerals _____

Location: ___ 1/4 ___ 1/4, Sec ___ Twp ___ Rge ___

Azm. of ddh: ___

Incl. of ddh at surf: ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

Rock Types

INTERVA	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au

800' ~~Surface~~

Andesite tuff finely banded v fine gr. med green

813 Siliceous sed v finely laminated chert hard dense graphitic grey to lt green

829 Mafic tuff massive w v fine laminations

831 845 Siliceous graphitic thin laminated chert

Mafic (Andesite) tuff thinly laminated w/ thin chert laminae

862 Sed - v. fine andesitic tuff w/ chert laminae

880 hard siliceous lt green

881 chert tan thinly laminated

Sed - v. fine gr. tuffaceous (andesitic) siliceous w/ chert lam. lt green

897 Sed - graphitic, + v. thin banded chert tan to dk grey

909 Andesite tuff v fine w/ minor chert laminae med green

930 Rhyolite tuff, xtl tuff w/ qtz eyes, lapilli tuff w/ clasts to ¼", shards, flattened pumiceous frags, siliceous chert laminae. very finely laminated. tan to cream. Individual tuff beds range from 2" to 2 or 3 ft but all are finely laminated. Broken, sericitic slickensides 970 – 982, 991 – 1016

1016 Rhyolite tuff - sed, v. fine gr. v thinly bedded - laminated w/ very thin - 1/16" to ¼" chert - graphite laminae. Tan to cream, grey w/ graphite. Broken 1060 – 1092 sericitic slickensides 1070-1075, 1087-1092 Heavy graphite 1092-1073

1103 Tectonic Bx sharp & frags healed w/ only qtz + fine gr massive tan carbonate, crosscutting

1110 do 1016-1103 heavy graphite 1121-1123

1123

Recovery	Base Metal Mineralization	% Sulfide	Alteration Metamorphism	Bedding to core	Structure flt – frac	Rock Type	Coordinates	Hole No. LCM-21	INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au
							Logged by PGS Scale 1"=5' Date 12/9/85	P. 2 of 3						

altered dike?

1123 — 1123 Carbonate massive fine gr. brownish gray

1128 — Structureless. Appears crosscutting or contact. Dike? fault filling?

Rhyolite tuff, fine gr. thinly laminated occ fine chert laminae slightly graphitic lt tan-cream units 2" to 1-2 ft thick, some have abundant fine qtz eyes. Heavy chert-graphite laminae 1156-1159 Hematitic chert 1155-1156

Contorted banding 1175- may be slump - soft sed deformation or fault

4" gouge-rubble at 1180'

2" bx qtz healed at 1203 laminae & goes from 10° to 35° across this structure

Becomes broken 1229 - EOH with slickensides - gouge at 1236, 1239-1242, 1252-1262. Deepening begins at 1265

1263

1268 healed f

EOH bull qtz & bx

1279 becomes graphitic - v. thinly laminated graphite & tuff, siliceous, creamy colored v. thin chert laminae, slump structures.

1298 -1310 Heavy black graphite, contorted, broken, healed.

1314

Dike - v fine to fine gr. cream colored massive chalky small white feld phenos no metamorphic texture

1346

Chert, v. fine gr. laminated 1/16" - 1/4", broken & healed, slightly graphitic, lt grey-creamy-dk grey

1367 — Contorted, crazed, bx, healed.

1370 — Dike do 1314-1346

1373 — do 1346-1367 dike 1378-1379 Broken, strongly

1379 — contorted & healed 1370-1380 ~~dike~~

1398 — dike do 1314-1346 w/ chert-graph inclusions

Chert & graphite, heavy graphite, broken, gouge

Rhyolite (tuff?) soft, sericitic - talcose, shistose lt grey - cream, much broken to ~1420, waxy slivers, pieces. Clay gouge w/ rhy frags

1436 — 1403-1405 - fault, rubbly & broken 1400-1410

Graphite, heavy w/ thinly laminated tuff & chert much contorted, broken. slickensides

1484 — fault zone - heavy gouge, bx

1494

Rhyolite - sericite schist - talc schist, soft waxy broken, slickensides, qtz veins, rubbly - slivery

Becomes slightly graphitic, cherty 1525 - 1532

Vein qtz, broken 1549-1551

1532 — sand - ~~dth problem~~

1534

becomes thinly laminated rhyolite tuff 1551 qtz-eye tuffs w/ v. thin siliceous interbeds 1/16 - 1/4" talcose - schistose

1560 — Broken, slickensides, rubbly

1574 — Chlorite flt. thin bed dk green laminated v fine gr.

1539 — 91 broken zone

1591 — Rhyolite cream v. thinly laminated siliceous - talc

Coord: _____ Hole No. KM-21

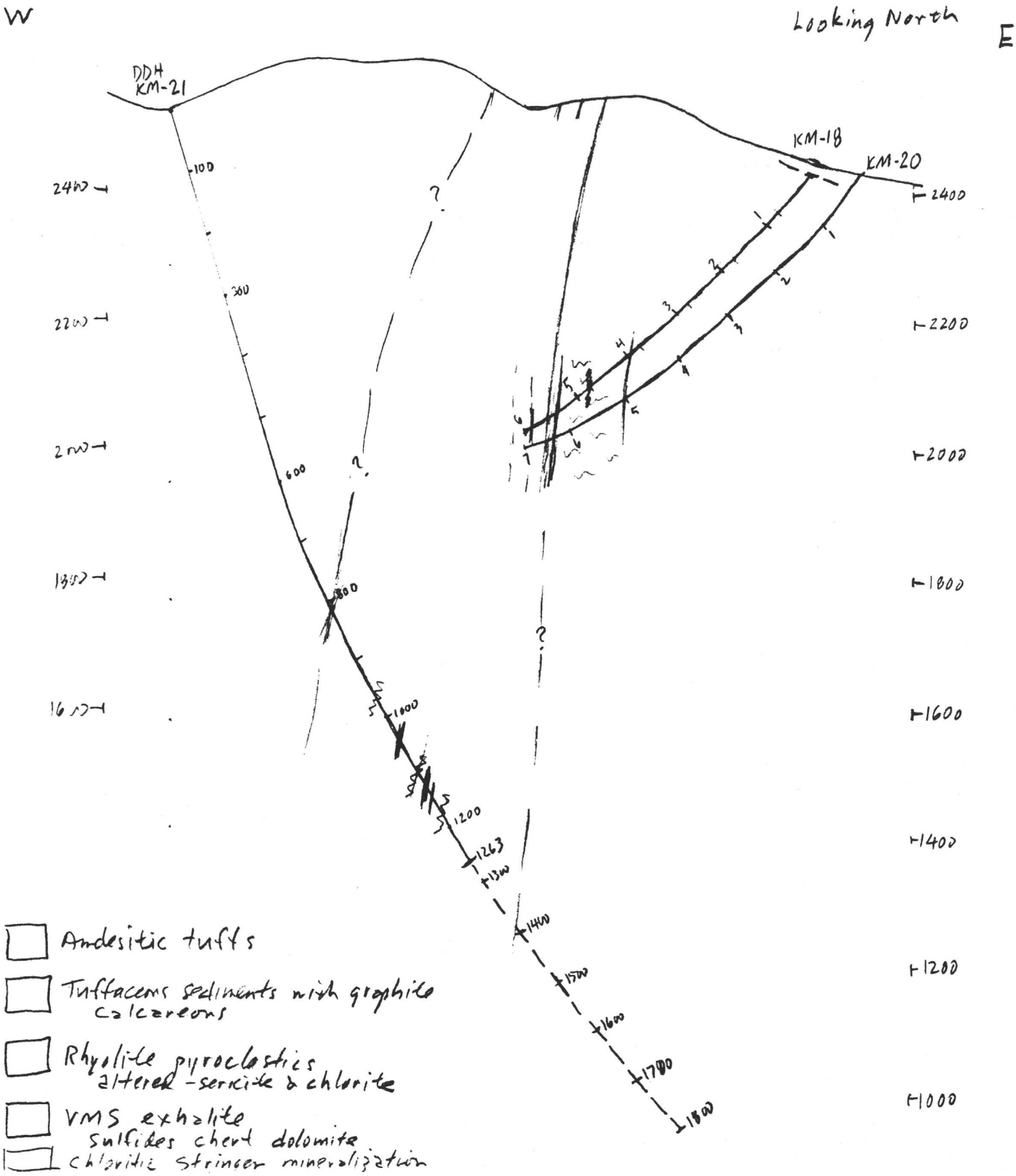
Logged by PGS Scale 1:50 Date 12/12/85 P. 3 of 3

Recovery	Base Metal Mineralization	% Sulfide	Alteration Metamorph	Bedding to core	Structure fit – free	Rock Type	Description	INTERVAL	ANALYSES ELEMENT Cu	Zn	Pb	Ag	Au
				45			Rhyolite dg 1591 –						
				50			becomes broken, rubbly ~1650						
				55			contact at 1654 is slickenlined						
				55									
							1654 felsic tuff, chert, graphite thinly laminated contorted broken rubbly patches of green chlorite alteration heavy graphite 1654-55, 1667-1671 Cherty 1671-1700, ribbonned with fine laminae of dk chlorite. Rubbly & broken 1698, soft, broken, f gouge 1699-1727, v heavy graphite 1738-1771 broken, rubbly, graphite fault gouge - soft, bx 1758-1766						
				75									
				35									
				40									
				30									
							1771 Graphitic tuff v fine gr & v. thinly laminated with thin 1/8" to 1" chert beds, slightly pyritic Sericite-talcose soft, breaks into polyhedra. Slickenlined surfaces - contorted sections with chert beds broken.						
				45									
				50									
				50			1815						
				R			EOH						
							terminated 12/11/85 @ 1816'						

GREYHOUND 3293

Proposed deepening DDH KM-21
from 1263' to ~1800 ft

1" = 200' =
Looking North



KAYMINE # 3293 A2
GREYHOUND AREA
KM-21 EXTENSION (1263-1816')
SURVEY
(D Dean)

Camera Depth	Bit Depth	Inclination (from 90°)	Observed Direction	Mag. Corrected Direction	Incl. (From Horiz)
1355	1341	32°45'	S 80 E	S 67 E	57¼°
1466	1455	33°00'	S 82 E	S 69 E	57°
1632	1642	33°00'	S 82 E	S 69 E	57°
1744	1754(?)	34°00'	S 82 E	S 69 E	56°
1780	1788'	34°00'	S 83 E	S 70 E	56°

(≈ 785' S82E offset from spud in map view)

DRILL HOLE COST SUMMARY

PROJECT Kay Mine (Greyhound) PROJ. NO. 3293 HOLE NO. KM-21

DRILL SITE PREPARATION		
DRILL SITE RESTORATION		
ROAD BUILDING (ROAD MAINTAINENCE)		1515
DIRECT DRILLING COSTS		
CORE *	553 FT. (1263 - 1816')	24,090
HAMMER/ROTARY	FT.	
CORE GEOCHEMISTRY		
THIN SECTIONS		
MISCELLANEOUS (Reaming to 1263' & fishing out geophysical wire & probe)		7360

TOTAL COST	32,965
TOTAL FOOTAGE	553
COST PER FOOT	59.61

IF DRILLING CONTINUED THROUGH THE SEPT. 1 ASSESSMENT DEADLINE, PLEASE FILL IN THE FOLLOWING INFORMATION:

DRILLING EXPENSE UNTIL NOON, SEPT. 1	
DRILLING EXPENSE AFTER NOON, SEPT. 1	32,965

DADeen

DRILLING COST: PROJECT NAME & NO. Longyear

BUDGET _____ DRILL AUTHORITY _____ CONTRACTOR Longyear

KM-21 (Greyhound)	UNIT COST $/UNIT	DATE	DATE	DATE	DATE	DATE	DATE	DA
350 RECLAMATION		11/6/85	11/7	11/8	11/9	11/11	11/12	11/13
351 SURVEYING-LAND Down Hole Surveying Labor								
352 ROAD-SITE PREPARATION (access roads, drill site prep-pits water lines)	Mob-Demob @ 50/hr Dozer @ 85/hr							
353 DRILLING:								
OVERBURDEN	18/ft							
HQ 0 to 500	22/ft							
501 to 1000	23/ft							
1001 to 1500	24.60/ft							
1501 to 2000	26.55/ft							
NQ _____ to _____								
_____ to _____								
_____ to _____								
CORING								
RIG OPERATING WITH CREW (Fishing, cementing, hole prep., set casing, reaming)	68/hr		272	544	1156	816	1020	1088
STANDBY WITH CREW	55/hr							
STANDBY WITHOUT CREW								
OTHER ITEMS (Bits) _____								
TRANSPORTATION (helicopter support-walking rate-driving hours, etc.)								
354 LOGGING (applicable to project only)								
355 SAMPLING-ASSAYING (assays & sample determination on cores-core boxes-freight, etc.)								
356 DAMAGES-LAND, LIVESTOCK, ETC.								
357 CIRCULATING FLUIDS (mud, chemical, water, foam, cement, etc.) (see Back)					539	354		
WATER TRUCK WD	$1250/mo (62.5/day)		63	63	63	63	63	63
MILEAGE	0.50/mi		6	6	6	6	6	6
DRIVER								
358 EQUIP RENTALS (any rental items used w/project-core shack, air compressor, office, etc.)								
359 MOBILIZATION	800	800						
DEMOBILIZATION	800							
MOVING BETWEEN TWO SITES (should include rigging up & down)	55/hr							
OTHER ITEMS Setup over 1hr @ 55/hr								
Water @ 2.07/load			2		2		2	
DAILY COST		800	343	613	1766	1239	1091	1157
CUMULATIVE COST		800	1143	1756	3522	4761	5852	7009

DRILLING COST PROJECT NAME & NO. Key Pine

BUDGET _____ DRILL AUTHORITY _____ CONTRACTOR Longyear

KM-21 (Greyhound)	UNIT COST $/UNIT	DATE 11/14	DATE 11/15	DATE 11/16	DATE 11/18	DATE 11/19	DATE 11/20	DA 11/2
350 RECLAMATION								
351 SURVEYING-LAND								
352 ROAD-SITE PREPARATION (access roads, drill site prep-pits water lines)								5[illegible]
353 DRILLING:								
OVERBURDEN								
_____ to _____								
_____ to _____								
1001 to 1500	24 60/ft		172	886	1107	1968	1722	
1501 to 2000	26 55/ft						212	98[illegible]
_____ to _____								
_____ to _____								
_____ to _____								
CORING								
RIG OPERATING WITH CREW	68/hr	1088	952	272	68	136		136
STANDBY WITH CREW								
STANDBY WITHOUT CREW								
OTHER ITEMS (Bits) _____								
TRANSPORTATION (helicopter support-walking rate-driving hours, etc.)								
354 LOGGING (applicable to project only)								
355 SAMPLING-ASSAYING (assays & sample determination on cores-core boxes-freight, etc.)								
356 DAMAGES-LAND, LIVESTOCK, ETC.								
357 CIRCULATING FLUIDS (mud, chemical, water, foam, cement, etc.)			13	451	202		331	6[illegible]
WATER TRUCK		63	63	63	63	63	63	6[illegible]
MILEAGE								
DRIVER								
358 EQUIP RENTALS (any rental items used w/project-core shack, air compressor, office, etc.)								
359 MOBILIZATION								
DEMOBILIZATION								
MOVING BETWEEN TWO SITES (should include rigging up & down)		Complete roading & finishing						
OTHER ITEMS _____ water					2			
DAILY COST	—	1151	1200	1672	1442	2167	2328	175
CUMULATIVE COST	7009	8160	9360	11,032	12,474	14,641	16,969	18,7[illegible]

DRILLING COST PROJECT NAME & NO. Day Mine

BUDGET _____ DRILL AUTHORITY _____ CONTRACTOR Longyear

KM-21 (Greyhound)	UNIT COST $/UNIT	DATE 11/22	DATE 11/23	DATE 12/2	DATE 12/3	DATE 12/4	DATE 12/5	DATE 12/6
350 RECLAMATION								
351 SURVEYING-LAND								
352 ROAD-SITE PREPARATION (access roads, drill site prep-pits water lines)		255		325 340	85			
353 DRILLING:								
OVERBURDEN								
_____ to _____								
1501 to 2000	26.55/ft	664	1593	-	372	159	903	
_____ to _____								
_____ to _____								
_____ to _____								
_____ to _____								
_____ to _____								
CORING								
RIG OPERATING WITH CREW @ 68/hr		204	136	-	340	272	68	136
STANDBY WITH CREW								
STANDBY WITHOUT CREW								
OTHER ITEMS (Bits) _____								
TRANSPORTATION (helicopter support-walking rate-driving hours, etc.)								
354 LOGGING (applicable to project only)								
355 SAMPLING-ASSAYING (assays & sample determination on cores-core								
WATER TRUCK								
MILEAGE		6	6		6	6	6	6
DRIVER								
358 EQUIP RENTALS (any rental items used w/project-core shack, air compressor, office, etc.)								
359 MOBILIZATION								
DEMOBILIZATION								
MOVING BETWEEN TWO SITES (should include rigging up & down)								
OTHER ITEMS _____								
Water		2	2		2	2	2	
DAILY COST	-	1521	1960	665	1038	754	1005	20
CUMULATIVE COST	18,724	20,245	22,205	22,870	23,908	24,662	25,767	↑

(Page 1)

DRILLING COST **PROJECT NAME & NO.** Kay Mine #3253

BUDGET _____ **DRILL AUTHORITY** _____ **CONTRACTOR** Longyear

KM-21 (Greyhound)	UNIT COST $/UNIT	DATE	DATE	DATE	DATE	DATE	DATE	DATE
350 RECLAMATION		12/7	12/8	12/9	12/10	12/11	12/12	12/13
351 SURVEYING-LAND								
352 ROAD-SITE PREPARATION (access roads, drill site prep-pits water lines)								
353 DRILLING:								
OVERBURDEN								
_____ to _____								
1501 to 2000'	26 $/ft	1248	982	80	770	133 (TD @ 1816')		
_____ to _____								
_____ to _____								
_____ to _____								
_____ to _____								
_____ to _____								
CORING								
RIG OPERATING WITH CREW	68/hr	204	136	408	136			
STANDBY WITH CREW								
STANDBY WITHOUT CREW								
OTHER ITEMS (Bits) _____ Hole Completion						748	272	
TRANSPORTATION (helicopter support-walking rate-driving hours, etc.)								
354 LOGGING (applicable to project only)	Included in rig op & crew							
355 SAMPLING-ASSAYING (assays & sample determination on cores-core boxes-freight, etc.)								
356 DAMAGES-LAND, LIVESTOCK, ETC.								
357 CIRCULATING FLUIDS (mud, chemical, water, foam, cement, etc.)		596		121	67		14	
WATER TRUCK		63	63	63	63			
MILEAGE		6	6	6	6			
DRIVER								
358 EQUIP RENTALS (any rental items used w/project-core shack, air compressor, office, etc.)								
359 MOBILIZATION								
DEMOBILIZATION								800
MOVING BETWEEN TWO SITES (should include rigging up & down)								
OTHER ITEMS _____ Water	2 $/load			2				
DAILY COST		2117	1187	680	1042	881	286	800
CUMULATIVE COST	25,972	28,089	29,276	29,956	30,998	31,879	32,165	32,965

EXXON MINERALS COMPANY

PGS

September 13, 1985

TO: M. J. Mackenzie

FROM: P. G. Schmidt

PGS

SUBJECT: Proposed deepening DDH KM-21 from 1263 ft. to approx. 1800 ft.

FILE: 3293 Greyhound

The Greyhound prospect lies a few miles north of our Kay Mine property, in rhyolite-andesite volcanics. It consists of a weak but very interesting surface copper and gold geochem anomaly in a narrow zone about 800 feet long, hosted in altered rhyolite. Considerable chloritic alteration is visible on the surface in this zone.

Three holes have been drilled to evaluate the zone. The first two, KM-18 and 20, cut a mineralized zone about 130 feet thick which contained an interval about 6 feet thick that assayed 1.85% Cu, 1.98% Zn, .25 oz Ag, .412 oz Au and 3.93% Cu, 2.51% Zn, .41 oz Ag, .01 oz Au respectively. Stratigraphically underlying this unit, to the east, each hole cut a thick section about 120 feet thick of chloritic rhyolite with quartz-pyrite-chalcopyrite stringer mineralization.

The third drill hole, KM-21, was designed to test the mineralized unit below KM-18 and 20, but did not flatten as was expected and carried deeper than planned. The lower part of the hole cut a section of fine tuffaceous (rhyolitic) sediments with abundant thin chert beds and graphite. No rock like that cut in holes 18 and was was cut, and vice versa. It appears to me, after relogging these holes, that hole 21 was not drilled deep enough and was stopped short of target (please refer to the attached section). I recommend very strongly that hole 21 be deepened at least 500 feet to evaluate the down dip potential of the very significant intercepts of holes 18 and 20.

The cost of this work is estimated at $25,000 maximum; about $15,000 for coring, $5,000 mob-demob and related costs, and $5000 road clearing, site prep, and contingency.

PGS/jw

AUTHORITY NUMBER _____
PROJECT NUMBER 3293

EXPLORATION DRILLING AUTHORITY

Minerals Department

BLOCK Kay Mine PRINCIPAL MINERAL Cu TYPE TARGET VMS
STATE Arizona COUNTY Yavapai TOTAL AUTHORITY 25,000
APPROXIMATE NO. HOLES 1 FEET 500

HOLE LOCATION(S) AS PER ATTACHED PLAT:

Greyhound prospect

REASON FOR RECOMMENDATION:

Deepen DDH KM-21 to approx 1,800', to intersect the target unit intersected in holes KM-19 and 20. DDH KM-21 was stopped short of target.

Approval is granted for exploration drilling and related drill hole costs within the above total money limit.

RECOMMENDED BY: Barry Schmidt DATE: 12/13/85

ENDORSED BY: _____ DATE: _____

ENDORSED BY: _____ DATE: _____

AUTHORIZED BY: _____

DATE: _____

DRILLING AUTHORITY
LAND CLEARANCE

Date _____

Landman's
Initials _____

MINERALS DEPT.: Drill Request and Project Specifications

Date 9/13/85

Project Name, No. and Geologist Kay Mine 3293 PG Schmidt

8 Miles NW (direction) From Black Canyon City (town)

County Yavapai State Arizona Sec., T&R(s)

Starting Date Oct 15 Approx. Completion Date Nov 15

Possibility oil/gas sands (flow) penetrated? no

Artesian flow? no

Type of Drill Wireline Core No. of Drills 1 Shifts/Day 1 or 2 (12 hr)

No. of Holes 1 Est. Total Footage 500'

Max. Hole Depth ~~1,000~~ 2,000 Sample Requirements NQ core

Vertical and/or Angle angle Min. Degrees from Hor. 50

Core Size (Bedrock) NQ Hole Size (T.D.) NQ

Overburden Lithology none Est. Thickness none

Bedrock Lithology and Depths greenstone

Drill Site(s) Accessibility bulldozer trail

Will any drill sites be located where a drill fluid or cuttings spill/ discharge could get into stream, river, lake, marsh, etc. Yes X No

Water Source River or town

Water available within 10 (~~feet~~) (miles) from drill area

Max. elev. diff. between water source and drill sites 1,000'

Est. drilling contractor money that must be spent: $ none by

Project on Indian lands or on US Gov't land that is not claims. Yes No X

Do permits (USFS etc) issued to Exxon involve contractor compliance: Yes No

Contractor Preference Longyear

Special Problems - Note on back of this page (over)

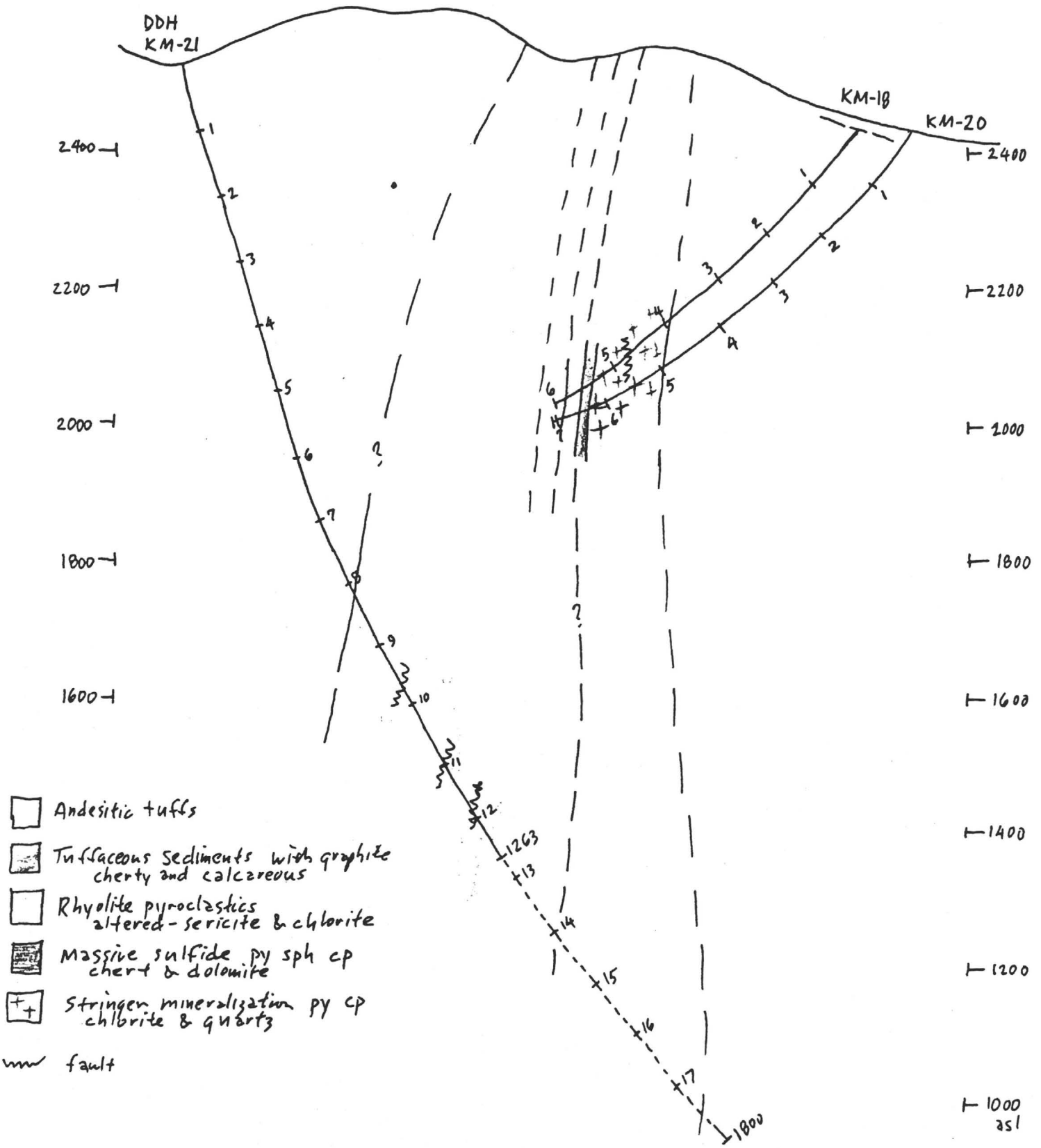
NOTE: Access roads, drill sites, pits, core boxes and sample sacks to be furnished by Exxon unless otherwise noted.

6/78

GREYHOUND 3293

Proposed deepening DDH KM-21
from 1263′ to ~ 1800′

1″ = 200′
Looking north



PGS 9/85

Kay Mine Exxon Submittal

2 steeply plunging bodies Mass Sulf Zn-Cu-Pb-Au-Ag
65° → 75° W.

200 x 40 x 1850 ~ 1 Mt ~ N body

300 x 65 x 1600 ~ 2 Mt S body(?)
open downdip

1600
300
480000
480,000
65
2400000
2880000
31,200,000

End of Rhyolitic complex might be explored
NW side also

ore above 350' level stoped (#1 shaft)

Old Maps & sections by ALRAE estimate 60-100 gpm @ 600-800' & rising w/ depth of dewatering
↓
(ALREA Eng. 1971)

Au, Ag appear to follow Cu & Zn values w/ no systematic variations
all old shipments show 0.06+ Au & 1.0+ Ag ores were contained in 5%+ Cu or 1.0% Zn ores
↓
better grade Au & Ag ~ Au 0.1+ → Ag 1 → 3
common below ~800' level
better Zn & lower Cu values, as well

Source & Tabulation of Old data w/ ore blocks & sections in Rept To Exxon by Roger G Rowe, 1977 (in house)

J.S. Redpath
N. Bay Ontario

[1974 estimate to dewater & recondition #4 to 1500' 1.3 x10^6 dollars
w/ hoist, headframe etc. & rehab of workings 7 x10^6' 3 comp.]

S zone 0-4000'

Av thickness 65'
av strike length 275 → 300'

S Zone Geol. Potential ~ 9 Mt

N. zone Geol Potential ~ 6 Mt

Zone appears to be blossoming at depth w/ better ore grades
Kay mine is 2end largest (?) Massive sulfide in S.W

Graphitic schist marker horizon suggests depo' not folded or repeated

None of Old Kay Cu Co rept's even mention Zn (ratio in depo 2:1 Zn:Cu)
few assays for Zn, Au, & Ag given in old data
much of core not logged or assayed → only high grade Cu zones where evaluated or assayed

Kay Copper (pre 1923) ~ 90+ holes U.G.
(S. body) NJZ 1951-53 - 13 core holes U.G.
only assayed high grade zones w/ Cu

NJZ did not explore N. zone - All data pre 1923

on 1500' level one old zone drilled pre 1923 showed several v. high grade Au zones 1 → 3 oz/t.

R.G. Rowe (1977) Case hist & progress Rept } level maps & old
Westra, E (1978?) progress Rept } assay data

Zn (& Au?) increase downward & To S
Cu increases up & To N.

Best Bets at this Pt are deep (~2500') hole to S of R-8 to test S. extension of Ore Body & thickening as shown on level maps & xsections in Rowe (1977) & another hole (~1500') in Center of body between 1200 & 1500' levels to test grade; if these two don't pan out - no hope

Exxon has $1 x10^6 in project & size appears too small for Envir ?? Target requirements

Peal -

Kay Mine

2.2% Cu × 20 lbs/T = 44 lbs/T × .75/lb = $33.00 /T

3.0 % Zn × 20 lbs/T = 60 lbs/T × .55/lb = $33.00 /T

1.6 oz/T Ag × 10.00/oz = 16.00 /T

.08 oz/T Au × 400.00/oz = 32.00 /T

$114.00 /T GMV

Recoveries
Cu × .85 × 33.00 = 28.05
Zn × .85 × 33.00 = 28.05
Ag × .85 × 16.00 = 13.60
Au × .90 × 32.00 = 28.80
98.50

Concentration Ratio of 15:1
Smelt. / Refining Charge of ~ $150/Ton = $10.00 /T.
/ trucking

98.50
− 10.00
$88.50 /T − 5% NSR (4.43) = $84.07

Mill operating costs (1000 T.P.D.) − $17.50 /T (prob. low)

Mine operating costs (1000 TPD) − $20.00 /T (prob. low)

37.50 /T

+ 8.50 G&A

40.00 /T operating cost

Based on weighted averages. – grade-foot products, etc.

for holes K-6, K-7, K-8 (most significant intercepts)

the average grade is 1.34% Cu, 2.23% Zn, .96 oz/T Ag, .029 oz/T Au

∴ Must have ~~much~~ most of tons indicated from higher grade underground workings to upgrade ore from

quoted 2.2% Cu, 3.03% Zn, 1.6 oz/T Ag, .082 oz/T Au

optimistic use

~~$100~~ $.75 ¢ Cu	× 2.2 × 20 =	44 lbs × .75 =		33
$50 ¢ Zn	× 3.0 × 20 =	60 lbs × .50 =		30
$16 Ag	× 1.6	=		16
$400 Au	× .082	=		32.80
				~~$~~ $111.80 /T

Area is immediately under the Agua Fria River

No present access to workings and, as shown above, most data probably come from underground sampling but no way to verify now.

From underground workings, etc. have defined configuration of ore shoots

In Tucson: 1. Try and locate old underground assay maps showing assays, etc. in an attempt to find criteria for defining above quoted grades - tons.

2. Determine how Exxon came up with quoted grades

3. Environmental problems?, note that mine directly under Agua Fria River, water problems?

RECEIVED MAR 19 1984

EXXON MINERALS COMPANY

POST OFFICE BOX 4508 • HOUSTON, TEXAS 77210

March 15, 1984

Kay Mine Project
Yavapai County, Arizona
Project #3293

Nicor Mineral Ventures, Inc.
390 Freeport Blvd., Suite #12
Sparks, Nevada 89431

Gentlemen:

Exxon Minerals Company is seeking proposals for its Kay Mine, Massive Sulfide Project in Yavapai County, Arizona. Attached is a brief geologic report of the property. Interested companies may arrange to review property data at our Tucson, Arizona, office by calling Mr J. L. Hagmaier, Tucson District Exploration Manager, 602/622-8801. Mr. Hagmaier will arrange for your representatives to have access to drill core data and other technical information at a mutually convenient time.

Exxon Minerals will require that all parties that are given access to the data execute an agreement to keep the information confidential and acknowledge that Exxon has made no representations about the accuracy or completeness of information examined. Two copies of the required agreement are attached. If you wish to examine the data, please sign the agreements and return one copy, with attachments, to me.

Exxon Minerals will entertain any reasonable proposal, whether it is for lease, outright sale, or some similar arrangement.

We anticipate that we will consider only those proposals received by April 16, 1984. We must, however, reserve the right to conclude an agreement prior to that date, or to accept later proposals. We intend to select the proposal that seems most favorable to us and then negotiate privately with the company which submitted it.

If you do not choose to pursue this proposal, please return the enclosed geologic report.

Very truly yours,

Christopher H. Dunbar

CHD:nl
Enclosures

UNPATENTED MINING CLAIMS
KAY MINE M-3293
YAVAPAI AND MARICOPA COUNTIES, ARIZONA

Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
554052	Exxon Unpatented Mining Claims, Kay M. Group 2-24, 29-32, 35-56, 61-92, 97-107, 109-126, 131-154, 256-275, 291, 292 156 Claims Staked by Exxon 4/13/72 Yavapai County	$11,465.58	100%	Assessment dollars required by 9/1/83: $15,600.00	3120.00	
	Exxon Unpatented Mining Claims, Kay M. Group 107-A, 258-A Two Claims Staked by Exxon 4/28/73 Yavapai County	$ 2.00	100%	Assessment dollars required by 9/1/83: $ 200.00	27.00	
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Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
554052 (cont)	Total: 161 Exxon Unpatented Mining Claims	Total: $11,617.58	 100%	Total assessment dollars required by 9/1/83: $16,100.00	Total: 3207.00	
557448	Exxon Unpatented Mining Claims Valley Copper Group 1-17 17 Claims Staked by Charles C. Goulding, et al 4/27/72 Yavapai County	$90,000.00	100%	Assessment dollars required by 9/1/83: $ 1,700.00	340.00	Exercise of Option to purchase (L#553869) dated 4/26/72 from Charles C. Goulding, et al to Exxon
556487	Exxon Unpatented Mining Claims Blue Eagle, Golden Eagle Two Claims Staked by Charles C. Goulding, et al 4/8/71 Yavapai County	$11,850.00	100%	Assessment dollars required by 9/1/83: $ 200.00	40.00	Exercise of Option to purchase (L#553879) from Charles C. Goulding, et al to Exxon dated 5/11/72. Warranty deed dated 5/10/77.

Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
557640	Exxon Unpatented Mining Claim Golden Jim One Unpatented Claim staked by Philip Albins 10/2/69 Yavapai County	$116,240.00	100%	Assessment dollars required by 9/1/83: $ 100.00	20.00	Exercise of Option to purchase (L#555020 from Philip Albins, et ux to Exxon dated 6/4/74. Warranty deed dated 6/8/79.
557224*	Exxon Unpatented Mining Claims Greyhound 101-114	$ 2,143.12	100%	Assessment dollars required by 9/1/83: $ 1,400.00	280.00	

* Claims carried under Greyhound, Project 5180

PATENTED MINING CLAIMS
KAY MINE M-3293
YAVAPAI AND MARICOPA COUNTIES, ARIZONA

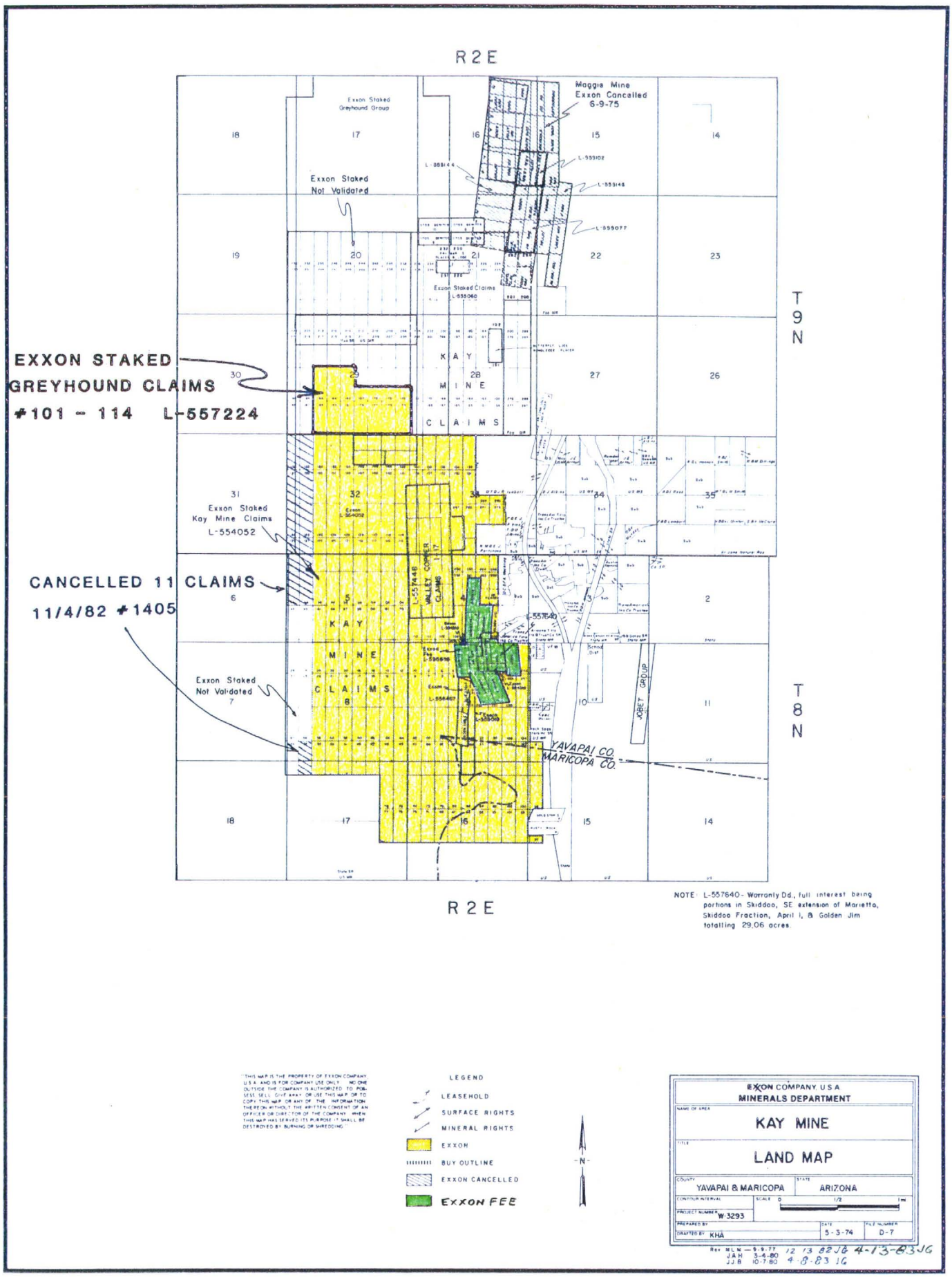
Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
557640 (See Unpat. Mining Claims L#557640)	Exxon Patented Claims, a portion of Skiddoo, SE Ext of Marietta, Skiddoo Fraction and April I (portions of MS 3512 and MS 3743). Portions of Four Patented Claims	Aforelisted in L#557640; captioned under "Unpatented Mining Claims" above.	See L#555695	N/A	0.00**	See type of instrument as referenced above in L#557640. Same data applies. **9.06 gross being the same acreage controlled by L#555695
555695	Exxon Patented Claims, portions of MS 3512: Buckeye, Marietta, Skiddoo SE Ext of Marietta. Also portions of MS 3743: Diorite, Skiddoo Fraction, April I, April 2, Harriet, Portions of 10 patented claims.	$104,000.00	L#557640 as referenced above and L#555695 as herein described: 100% Caveat Excepting minerals lying within 100' from surface of certain claims.	N/A	191.00***	Exercise of Option to purchase (L#553870) from Anna M. Judd, Trustee and Lewis E. Foster, et al to Exxon dated 5/1/72. Warranty Deed dated 4/28/76. ***Acreage determined by mineral surveys and patents - land record shows 200.00.
TOTALS:	195 Unpatented Clms 10 Patented Claims	$335,850.70	100%	Assessment dollars required by 9/1/83: $19,500.00	3887.00 - Unpatented Claims 191.00 - Patented Claims 4078.00 - Total Net Acres	

	Cu	Zn	Ag	Au
Total 44.7 / 77.7 / 136.0 / 258.4	335.92 / 258.4 = 1.3	576.37 / 258.4 = 2.23	8040.46 / 258.4 = 31.1 = .91	257.94 / 258.4 = ~~2.99~~ = 1.0 = .029

Table 2: Kay Mine ore intercepts

	From	To	Measured Interval	True Thickness	% Cu	% Pb	% Zn	ppm Ag	ppm Au
K-6	2013	2020	7.0	4.9	1.14 5.59	.05	0.22	12	.29
	2220	2230	10.0	7.7	.79 6.08	.03	0.32	5	.07
	2244	2259	15.0	11.5	3.06	.05	0.06	12	---
	2305.6	2329.6	24.0	18.4	1.82	.01	0.03	8	.04
	2371.6	2381.6	10.0	7.1	2.11	.06	0.25	9	.34
			66.0	44.7	95.33/44.7 = 2.13		6.56/44.7 = .147	464.4/44.7 = 9.99	~4.0/44.7 = .09
K-7	2129.2	2161.7	32.5	18.2 } 38	2.82	.05	2.53	86	2.25
	2200	2223.6	23.6	16.7	1.04	.71	4.80	38	.93
	2244.8	2289.5	44.7	25.6	.63	.27	2.32	24	.72
	2335.6	2365.8	30.2	17.2	.13	.29	2.19	21	1.45
			131.0	77.7	87.1/77.7 = 1.12		223.2/77.7 = 2.87	3175/77.7 = 40.9	99.86/77.7 = 1.28
K-8	2218.2	2270.8	52.6	33.8	3.91	.11	1.34	25	1.72
	2298.5	2434	135.5	95.8	.21	.41	2.67	35	.82
	2490	2500	10.0	6.4	.11	.67	7.04	34	2.55
			198.1	136.0	152.99/136 = 1.125		346.1/136 = 2.55	4416/136 = 32.5	153.2/136 = 1.13
K-9	2165.5	2174	8.5	4.9	1.28	.07	.28	7	.08
K-10A	2890	2896.7	6.7	3.6	5.03	.04	.09	15	.33
	2916.4	2925	8.6	5.5	.53	.03	.38	12	1.14
	2948.5	2955	6.5	3.6	2.00	.01	.22	6	.26
			21.8	12.7					
K-12	928.4	945.0	16.8	16.2	1.95	.04	.14	15	.34
	968.0	978.3	10.3	9.5	.34	.20	1.17	24	.42
			27.1	25.7					

ATTACHMENT I



NOTE: L-557640 - Warranty Dd., full interest being portions in Skiddoo, SE extension of Marietta, Skiddoo Fraction, April 1, & Golden Jim totalling 29.06 acres.

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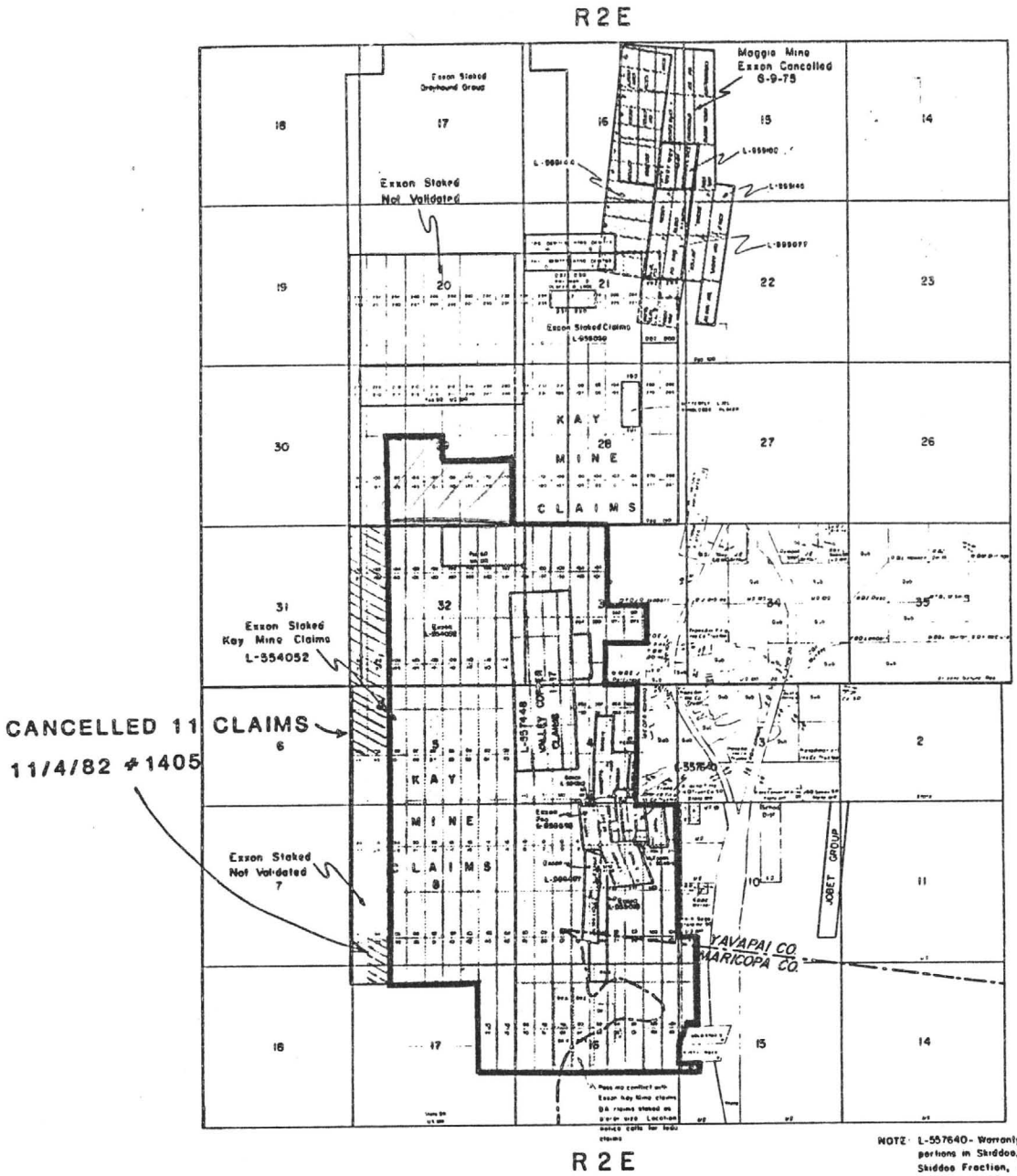
LEGEND

- LEASEHOLD
- SURFACE RIGHTS
- MINERAL RIGHTS
- EXXON
- BUY OUTLINE
- EXXON CANCELLED
- EXXON FEE

N

EXXON COMPANY U.S.A. MINERALS DEPARTMENT		
NAME OF AREA: KAY MINE		
TITLE: LAND MAP		
COUNTY: YAVAPAI & MARICOPA	STATE: ARIZONA	
CONTOUR INTERVAL	SCALE 0 1/2 1 mi	
PROJECT NUMBER: W-3293		
PREPARED BY:	DATE:	FILE NUMBER:
DRAFTED BY: KHA	5-3-74	D-7

Rev MLM - 9-9-77 12 13 82 JG 4-13-83 JG
JAH 3-4-80
JJB 10-7-80 4-8-83 JG



NOTE: L-557640 - Warranty Dd, full interest being portions in Skiddoo, SE extension of Mariette, Skiddoo Fraction, April I, & Golden Jim totalling 29.06 acres.

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LEGEND

- LEASEHOLD
- SURFACE RIGHTS
- MINERAL RIGHTS
- EXXON
- BUY OUTLINE
- EXXON CANCELLED

-N-

EXXON COMPANY U.S.A.
MINERALS DEPARTMENT

NAME OF AREA: KAY MINE

TITLE: LAND MAP

COUNTY: YAVAPAI & MARICOPA	STATE: ARIZONA
CONTOUR INTERVAL	SCALE: 0 1/2 1 MI
PROJECT NUMBER: W-3293	
PREPARED BY:	DATE: 5-3-74
DRAFTED BY: KHG	FILE NUMBER: D-7

Rev. W.L.W. — 6-9-77 12 13 82 JG
JAH 3-4-80
JJB 10-7-80

EXXON MINERALS COMPANY

POST OFFICE BOX 4508 • HOUSTON, TEXAS 77210

March 15, 1984

Re: Kay Mine Project
Yavapai County, Arizona
Project #3293

Nicor Mineral Ventures, Inc.
390 Freeport Blvd., Suite #12
Sparks, Nevada 89431

Gentlemen:

This letter states our agreement concerning data and information (the "data") to be furnished by Exxon Minerals Company ("Exxon") to Nicor Mineral Ventures, Inc. ("Prospective Buyer") concerning Exxon's Kay Mine Project located in Yavapai County, Arizona. For purposes of this agreement, Exxon's Kay Mine Properties consist of the following:

- 10 patented lode mining claims (191.00 acres)

- 195 unpatented lode mining claims (3887.00 acres)

Attached as "Attachment I" is a map showing the mineral rights and "Attachment II" is a list of the properties of Exxon in the Kay Mine Project.

In consideration for the examination of the additional data, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the parties, IT IS AGREED:

1. All information and data given to Prospective Buyer by Exxon may be used by Prospective Buyer only for the purpose of evaluating proposals which may be discussed or negotiated between Prospective Buyer and Exxon.

2. All of the data, and all additional data and information discussed with, given to, or obtained by Prospective Buyer at any time pertaining to any of the Kay Mine Properties or to any of Exxon's plans, activities or operations, shall be confidential and proprietary. Prospective Buyer shall not disclose, transmit or

impart any of the subject data or information to any third party or persons other than an affiliate, subsidiary, agent or consultant whom it shall obligate to be bound by the same confidentiality obligations as are required of Prospective Buyer in this agreement.

3. Exxon shall be free at all times before final execution of a farmout contract or purchase agreement with Prospective Buyer to negotiate with and enter into any farmout contract or other instrument or agreement with any persons or corporations, pertaining to any or all of the Kay Mine Properties, without any liability or obligation to Prospective Buyer or any affiliates, officers, or representatives of Prospective Buyer.

4. EXXON MAKES NO REPRESENTATIONS OR WARRANTIES TO PROSPECTIVE BUYER CONCERNING ANY OF THE KAY MINE PROPERTIES OR THE TITLE THERETO OR RIGHT TO POSSESSION THEREOF. EXXON SHALL HAVE NO OBLIGATION OR LIABILITY TO PROSPECTIVE BUYER FOR OR AS A RESULT OF THE FURNISHING OF DATA HEREUNDER. PROSPECTIVE BUYER AGREES THAT IF IT ELECTS TO RELY ON ANY OF THE DATA OR OTHER INFORMATION, IT DOES SO AT ITS SOLE RISK. PROSPECTIVE BUYER ACKNOWLEDGES THAT IT IS AWARE OF THE FACT THAT EXXON HAS A SUBSTANTIAL QUANTITY OF ADDITIONAL DATA AND INFORMATION RELATIVE TO THE KAY MINE PROPERTIES WHICH EXXON IS NOT MAKING AVAILABLE TO PROSPECTIVE BUYER, AND PROSPECTIVE BUYER AGREES THAT IT SHALL NOT MAKE ANY CLAIMS AGAINST EXXON FOR NOT HAVING SUPPLIED SUCH ADDITIONAL DATA OR INFORMATION. ?

5. Prospective Buyer's obligation hereunder shall not apply to (a) any of the data which Prospective Buyer can demonstrate was in its possession before the disclosure or delivery thereof by Exxon to Prospective Buyer, (b) any of the data which is, or becomes, part of the public domain by means other than a violation of this agreement, or (c) any information contained in the data which was acquired by Prospective Buyer from third parties.

6. This agreement shall enure to the benefit of, and shall be binding upon, Prospective Buyer and Exxon, and their respective successors and assigns. In addition, all of the obligations of Prospective Buyer hereunder shall be binding upon any and all shareholders, directors, officers, employees, contractors, agents, and affiliates of Prospective Buyer. Prospective Buyer shall secure the compliance by all of the foregoing with all of the terms and conditions of this agreement required to be observed or performed by the Prospective Buyer.

7. This agreement shall remain in effect as long as Exxon owns or holds any interest in any of the Kay Mine Properties, unless otherwise limited by applicable law.

Please acknowledge your agreement with the foregoing by signing one or more counterparts of this letter agreement as indicated below, and returning a fully-executed counterpart to Exxon. We will then consider this letter agreement to be in effect.

Very truly yours,

EXXON MINERALS COMPANY

By _____
Christopher H. Dunbar
Supervisory Landman

Accepted and agreed to, as
of the date of this letter

Nicor Mineral Ventures, Inc.

By _____

MEMO TO: File - April 9, 1984

FROM: K.M. Emanuel

SUBJECT: Kay Mine Submittal (Exxon), Yavapai Co., AZ

The Kay Mine is a massive sulfide deposit located in the Black Canyon District of Yavapai Co., Arizona and is exposed in the bottom of the Aqua Fria River Canyon, just west of I-17. The deposit consists of two steeply plunging Zn-Cu-Au-Ag sulfide lenses. These bodies coalesce at a depth of about 1200 feet, and have been developed by 600 and 1200 foot shafts that are connected by numerous crosscuts and raises below the 500 foot levels. Although thousands of feet of workings are present, less that 50,000 tons of high grade copper ore was mined from the North zone between 1918 and 1923. All of the workings are currently flooded and caved at the surface. Exxon has outlined 1.9 million tons above the 3000 foot level with a reasonable potential for three to six million tons at a grade estimated at 3.03% Zn, 2.2% Cu,.082 oz/t Au and 1.6 oz/t Ag. These estimates were drawn from a combination of deep drilling below the bottom of current workings (approx. 1500 feet) and from old assay maps and underground drilling data done by New Jersey Zinc - Shattuck Denn in 1952-53.

The data on the Kay Mine was reviewed by myself on April 4 and 5, 1984 at the Exxon offices in Tucson, Arizona. All of the project reports, old mining and milling records, drilling and geophysical data and core were put at our disposal at this time. The following is a summary of my notes and observations:

The drilling (23,000 feet) done to date by Exxon has NOT verified the grades stated, but old mine maps suggest that most of thier "ore" holes are disposed peripheral to the downward projection of the main shoots. Most of the grades and tons postulated are between the lower levels of the south lense and where drill holes have confirmed sulfide mineralization at depth. Exxon's grade estimates are highly dependant on old mine assay maps; this old data shows Zn,Au,Ag increasing with depth and to the south with Cu decreasing. The data is somewhat fragmentary however and most assays were concentrated on higher grade Cu zones. The "ore" lenses are quite large, but of low overall grade when compared to other Au rich massive sulfides in the region (Iron King, Jerome). Lenses average 65 feet thick with strike lengths of 275 to 300 feet, and are known to continue to at least the 3000 foot level. The overall geologic potential for the north zone is roughly six million tons and that for the south zone is about nine million tons. Drilling and old mine level data show the deposit to be widening significantly with depth and open to the south below the 1200 foot level. The deposit, as it appears from drilling, level map data, and surface geology, may be the distal edge of a Zn-Au rich "Iron King"-type deposit at depth and to the south. As such, it is an attractive target because it hasn't been gutted and Exxon appears very flexible as to any deal to acquire part or all of the deposit. They require only that their joint-venture partner eventually match the $1,000,000 they have into

the project to acquire 50%. On the negative side are the depth, high cost of exploration, and apparent low grade.

It is recommended that a preliminary feasibility study using the grades and tons estimated by Exxon be done to determine the sensitivity of a deposit of this type to such parameters as grade, tons, recovery, mining method and depths. Rough calculations suggest that at the grades given by Exxon and a reserve of 1,500,000 tons the property may be of interest. If this should prove favorable the following steps should be taken:

1) Open negotiations with Exxon to acquire a short term, work commitment only, deal.
2) Get access to all of Exxon data and use to construct our own mineralization model
3) Refine the previoous feasability study using our new model of the previous data base.
4) Test upper parts of north and south ore zone with two to four shallow (600 feet) holes to check accuracy of old map assay data.
5) If 4) is favorable, drill a deep (2500 feet) hole to the south of hole K-8 to test southern extension and thickening of sulfide body (as implied on Exxon level maps and drill cross-sections) and wedge off same hole at 1500 feet to test center of ore body between 1200 and 1500 foot levels for grade.
6) Make recommendations to continue or drop property.

ATTACHMENT II

UNPATENTED MINING CLAIMS
KAY MINE M-3293
YAVAPAI AND MARICOPA COUNTIES, ARIZONA

Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
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PATENTED MINING CLAIMS
KAY MINE M-3293
YAVAPAI AND MARICOPA COUNTIES, ARIZONA

Lease #	Lessor	Capital Cost	Interest	Annual Assessment	Net Acres	Type of Instrument
557640 (See Unpat. Mining Claims L#557640)	Exxon Patented Claims, a portion of Skiddoo, SE Ext of Marietta, Skiddoo Fraction and April I (portions of MS 3512 and MS 3743). Portions of Four Patented Claims	Aforelisted in L#557640; captioned under "Unpatented Mining Claims" above.	See L#555695	N/A	0.00**	See type of instrument as referenced above in L#557640. Same data applies. **9.06 gross being the same acreage controlled by L#555695
555695	Exxon Patented Claims, portions of MS 3512: Buckeye, Marietta, Skiddoo SE Ext of Marietta. Also portions of MS 3743: Diorite, Skiddoo Fraction, April I, April 2, Harriet, Portions of 10 patented claims.	$104,000.00	L#557640 as referenced above and L#555695 as herein described: 100% Caveat Excepting minerals lying within 100' from surface of certain claims.	N/A	191.00***	Exercise of Option to purchase (L#553870) from Anna M. Judd, Trustee and Lewis E. Foster, et al to Exxon dated 5/1/72. Warranty Deed dated 4/28/76. ***Acreage determined by mineral surveys and patents - land record shows 200.00.
TOTALS:	195 Unpatented Clms 10 Patented Claims	$335,850.70	100%	Assessment dollars required by 9/1/83: $19,500.00	3887.00 - Unpatented Claims 191.00 - Patented Claims 4078.00 - Total Net Acres	

KAY MINE MASSIVE SULFIDE DEPOSIT

Exxon Minerals Company

M. L. Fellows

November 1982

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INTRODUCTION

Exxon Minerals Company's Kay Mine property contains a Proterozoic copper-zinc-gold volcanogenic massive sulfide deposit in the 1 to 6 million ton size range with exploration potential for increasing tonnage as well as discovering additional massive sulfide bodies. Exxon's activities over the past 10 years lead to the discovery of significant mineralization at depth beneath the old underground workings of the Kay Mine proper, as well as the discovery of another mineralized zone two miles to the northwest. Based on information available from the underground workings and limited drilling, the tonnage of proven and probable ore (using a cut-off grade of 2.5% copper equivalent) above the 3000 foot level is approximately 1.9 million short tons (Westra, 1977; p. 1). This mineralization is present in two adjacent steeply plunging ore bodies. With a 2% copper equivalent cut-off grade, the total tonnage is estimated at 6.4 million short tons. Average grade is estimated at 2.2% copper, 3.03% Zn, 1.6 ounces per ton Ag, and 0.082 ounces per ton Au. Additional drilling is needed to verify these estimates.

In the northwestern portion of the land block a 3500 foot long mineralized zone has many of the geologic characteristics of the Kay proper. This zone, called Greyhound, was prospected with three exploration diamond drill holes. One intersected a thin massive sulfide zone which assayed 1% Zn, 0.31% Cu and 0.41 ounces per ton Ag.

The Kay property is located 45 miles north of Phoenix, Arizona (Figure 1), adjacent to the community of Black Canyon City. Exxon Minerals Company controls the mineral rights to approximately 3800 acres in 195 unpatented claims (3,620 acres) and in 10 patented claims (200 acres) which Exxon owns in fee (Figure 2). These claims cover a significant part of sections 4, 5, 8, 9, 16 and 17 of T8N, R2E, and sections 29, 32 and 33 of T9N, R2E, Gila and Salt Rivers Baseline and Meridian.

EXPLORATION HISTORY

Kay Mine was discovered prior to 1900 and mined on a small scale up to 1916, producing some 700 tons of ore, 470 tons of which ran 9.1% copper, 1.06 ounces per ton silver and 0.072 ounces per ton gold. It was during this period that the No. 1 shaft was sunk (Figure 3). The major underground development of the mine took place between 1918 and 1923 when the No. 1 shaft was deepened and the

1200 foot vertical No. 4 shaft (with an internal winze to 1500 feet) was sunk and several thousand feet of development drifts were driven but no ore was shipped. The property was dormant due to litigation until 1949 when New Jersey Zinc in partnership with Shattuck-Denn Mining Company opened up the underground workings and began a program of resampling and diamond drilling. During this time 1,571 tons of ore were shipped from underground workings and from dump material, the total averaging 5.67% Cu, 0.98 ounces per ton Ag and 0.059 ounces per ton Au. Between 1953 and 1971 there were various unsuccessful efforts to revive the property. The three shafts which once provided access to the mine are now caved.

Since acquiring the property in 1972, Exxon Minerals Company has drilled 23 exploration (rotary/core) drill holes and 10 shallow air-track claim validation drill holes on various parts of the property (Figure 4). See also Table 1.

Total footage of the 23 exploration drill holes is 26,554 feet. The major part of this drilling is in the immediate vicinity of the Kay Mine where 22,333 feet were drilled in 14 holes. Ore grade intercepts were drilled in 6 of these holes, primarily at depths greater than 2000 feet below surface and beneath mineralization exposed in the underground workings. The other 9 holes were drilled on various parts of the property.

REGIONAL GEOLOGY

The Kay Mine area is at the southern end of the "Black Canyon Schist Belt" which is composed of metavolcanic and metasedimentary rocks roughly correlative with the Spud Mountain Volcanics of the Big Bug Group mapped farther to the north (Anderson, 1972). These rocks are part of a Proterozoic greenstone belt (1820 to 1770 million years old) which contains numerous volcanogenic massive sulfide deposits (Anderson & Guilbert, 1978). The rocks are metamorphosed primarily to the greenschist facies but locally reach lower amphibolite grade and have been subjected to dynamic metamorphism which has produced a strong, steeply dipping regional foliation which strikes from N-S to N30E. The rocks and contained mineralization have been subjected to a passive-slip style of deformation. Isoclinal folds are common throughout the area.

LOCAL GEOLOGY

The property covers an area of complexly interbedded volcanic, volcaniclastic and sedimentary rocks. Felsic to mafic volcanic material dominates in the east,

Figure 4. Kay Mine drill hole locations

- K-1 Exploration diamond-rotary drill holes
- KV-2 Validation diamond drill holes
- KA-3 Air-track validation drill holes
- EGH-4 Exxon Greyhound diamond drill holes

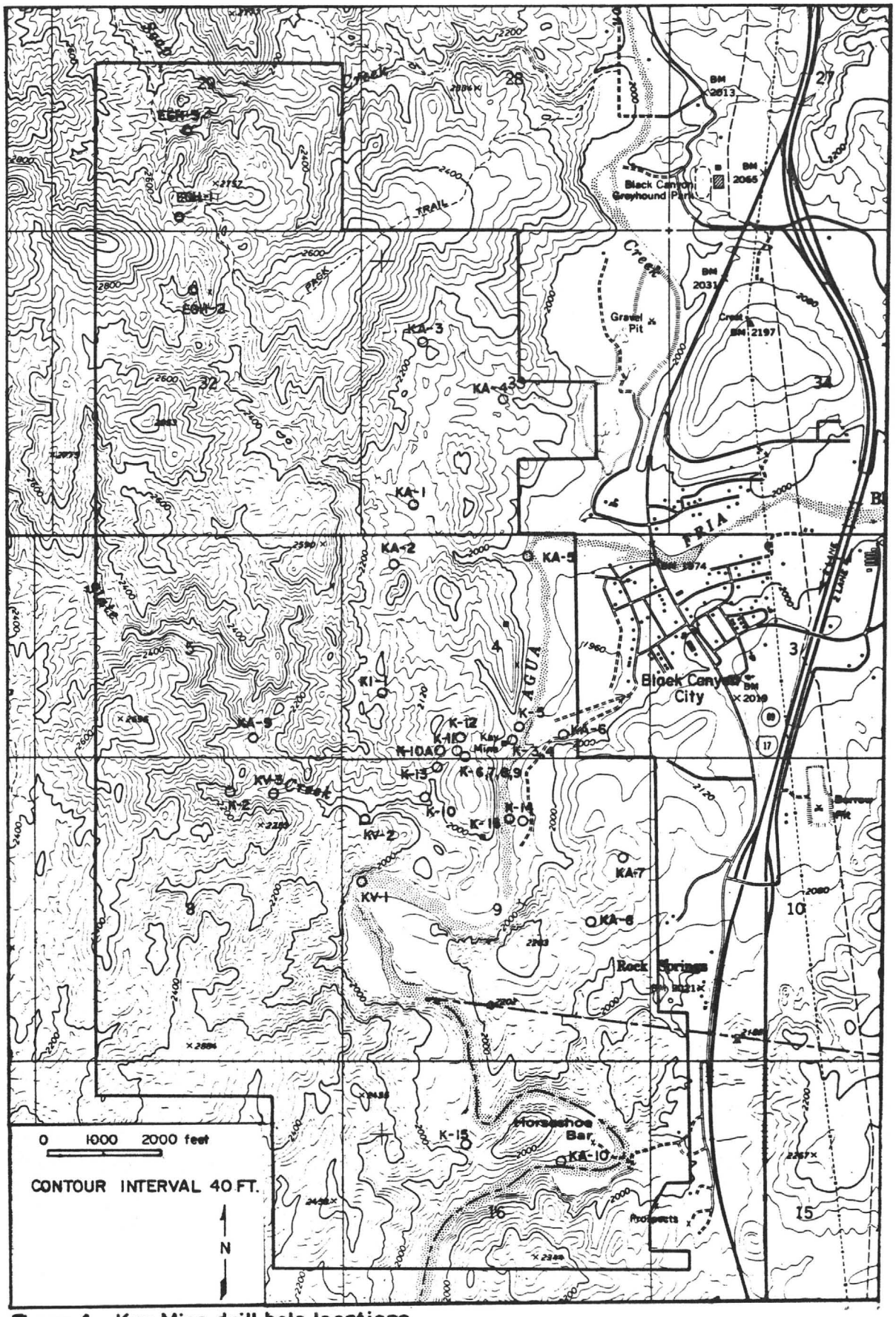


Figure 4 . Kay Mine drill hole locations.

Table I. Exxon Kay Mine drillholes

GREYHOUND #5180 AZ

Exploration Diamond Drill Holes

Drill Hole Designation	Angle from Horizon	Total Length(ft.)	Bearing	Arizona Coordinate System(ft.) North	East	Elevation (ft.)	Horizontal Departure (ft.)	True Vertical Depth(ft.)	Drill Hole Type[1]	Type Downhole Survey
EGH-1	-55°	895'	S71°E	(1,122,560)[2]	(420,820)	(2640)	644	611	D	Single Shot
EGH-2	-55°	502'	S80°E	(1,121,430)	(421,070)	(2590)	323	381	D	Acid
EGH-3	-60°	476'	S87°E	(1,124,080)	(421,000)	(2390)	266	394	D	Single Shot

Notes:

1. D = all diamond drill
2. Figures in parentheses estimated.

Table I. (Continued)

KAY MINE #3293

Exploration Diamond Drill Holes

Drill Hole Designation	Angle from Horizon(°)	Total Length(ft.)	Bearing	Arizona Coordinate System (ft.) North	East	Elevation (ft.)	Horizontal Departure	True Vertical Depth(ft.)	Drill Hole Type 1	Type Downhole Survey
K-1	-45	510	S75E	(1,114,320)2	(424,460)	(2100)	(417)		D	Acid
K-2	-30	590	N75W	(1,112,500)	(421,665)	(2100)	(550)		D	"
K-3	-45	663	N75W	(1,113,463)	(426,649)	(1925)	(583)		D	"
K-4	-35	398	N75W	(1,113,463)	(426,649)	(1925)	(366)		D	"
K-5	-45	450	N75W	(1,113,704)	(426,709)	(1925)	(404)		D	"
K-6	-90	2469	N89E	1,113,164	425,758	2084	329[3] (335)	(2419)	R/D	Gyro
K-7	-90	2532	S56E	"	"	"	423	2452	R/D	Single shot
K-8	-90	2598	S40E	"	"	"	326	2554	R/D	"
K-9	-90	2700	N61E	"	"	"	503	2550	R/D	Single shot & gyro
K-10	-90	838	S28E	(1,112,450)	(425,080)	(2000)	177	816	R	Gyro
K-10A	-90	3430	S72E	1,113,287	425,325	2086	543	3360	D	Single shot Gyro
K-11	-67	1663	S73E	1,113,265	425,648	2083	1159	1125	D	"
K-12	-62	1464	S74E	1,113,477	425,684	2109	1065	962	D	Single shot
K-13	-90	1355	S77E	(1,113,085)	(425,090)	2120	(336)	1354	R/D	Gyro & single shot
K-14	-56	813	N77W	1,112,083	426,797	1954	500	639	D	Single Shot
K-15	-59	614	S66E	(1,106,328)	(425,670)	(1940)	(365)	(490)	D	Single Shot
K-16	-60	960	S78E	1,112,101	426,586	1921	717	609	D	Single Shot

Note: Some of the coordinates listed on drill hole logs are very rough estimates. The figures above are preferred values based on a careful re-evaluation in April, 1982.

1 : D = all diamond drill R/D = combined rotary and diamond drill
2 : (925) estimated figure, measured from a map or section
3 : upper figure is last measured departure; lower figure is estimated departure at T.D.

Table I. (Continued)

KAY MINE #3293

Validation Diamond Drill Holes

Drill Hole Designation[1]	Angle from Horizon(°)	Total Length (feet)	Bearing	Arizona Coordinate System North	East	Elevation (feet)	Horiz. Departure	True Vert. Depth	Drill Hole Type	Type Down Hole Survey
KV-1	-45°	204	S75°E	(1,111,020)[2]	(423,890)	(1900)	(144)	(144)	Diamond	Acid?
KV-2	-45°	319	S75°E	(1,112,010)	(424,065)	(1960)	(226)	(226)	Diamond	Acid?
KV-3	-45°	111	?	(1,112,440)	(422,490)	(2050)	?	?	Diamond	None

1. Also called KM- and KMV-

2. (321) Estimated figure, measured from a map or section.

whereas volcaniclastics and sediments characterize the western part of the block. Several felsic pyroclastic units are present and mineralization associated with two of these units has been explored by Exxon.

Mineralization at the Kay Mine is situated at the top of a felsic volcanic edifice (called the Kay felsic pile) composed of dacitic to rhyolitic pyroclastic fragmentals ranging from fine tuff to tuff breccia (with fragments up to 12 inches long). The Kay felsic pile is roughly triangular, 5000 feet long in a north south direction and 1000 to 1500 feet wide. At the surface these rocks are heavily sericitized, limonite-stained and contain several volume % pyrite. Irregular, sporadic patches of dark green, magnesium-rich "black" chlorite with copper oxide staining are also present (Figure 3).

Massive and disseminated sulfide mineralization occurs near the top of the Kay felsic pile (southwestern side) (Figure 3), approximately 150 to 350 feet below the contact with the overlying mafic volcanic rock sequence. Intrusive or extrusive irregular quartz porphyry bodies also occur along this contact. The mafic sequence consists of thin flows of andesite and basalt separated by mafic tuffs, sedimentary rocks and chert beds. A large gabbro intrusion(?) south of Kay Mine is also part of the mafic sequence. A series of fine-grained, generally calcareous chloritic sedimentary rocks overlies the mafic sequence. A prominent pyritic-graphitic-cherty zone comprises part of the sedimentary package. Rhyolitic and dacitic tuffs and lapilli tuffs wrap around the Kay felsic pile to the north and northwest. Locally these rocks contain scattered sulfides but few discrete mineralized zones. Far to the northwest in the Greyhound area, dacitic and rhyolitic pyroclastic rocks are interbedded with andesitic tuffs and flows. As at Kay Mine proper, these volcanic rocks give way westward to sedimentary rocks containing iron formation and graphite. At Greyhound, mineralization expressed as limonite, gossan and copper oxides is spread along a strike length of 3500 feet.

In the underground workings and in drill core, low angle lamprophyre dikes cut ore and are undeformed. Plio-Pleistocene or older gravel-boulder terraces and recent river gravels cover much of the Precambrian east of Kay Mine and along the Agua Fria River which cuts through the mineralized zone.

SUBSURFACE GEOLOGY OF THE KAY MINE

Mineralization at the Kay Mine consists of at least two cigar-shaped, steeply plunging, westerly-dipping discontinuous massive and semi-massive sulfide bodies; the north ore zone and the south ore zone (Figure 3). These ore zones may once have been part of a single lens segmented during dynamic metamorphism. Economic sulfide mineralization is 150 to 350 feet stratigraphically below the mafic-felsic contact. A series of rhyolitic pyroclastic rocks, locally sulfide-bearing, separate the ore from the mafic sequence (Figures 5 & 6). One or two prominent pyritic-graphitic tuff bands occur 100 to 150 feet above the ore in these hanging wall pyroclastics.

The north ore zone breached the surface immediately north of the No. 1 shaft and is expressed as a siliceous gossan of short strike length overlain by a 1-2 foot thick siliceous dolomite bed. The immediate footwall of the north ore zone is a rhyolite tuff. At depth, these tuffs are variably chloritized and mineralized. The thickness of the north ore zone is quite variable, reaching a maximum of 80 feet on the 500 level. Maximum strike length is 400 feet on the 1000 level. Mineralization extends at least 1850 feet down plunge.

The south ore zone is not exposed at the surface, having been discovered by underground drilling. Mineralization of the south ore zone consists of massive and disseminated sulfides and fine-grained sedimentary rocks sandwiched between rhyolite lapilli tuffs (Figure 6). At depth in drill holes K-7 and K-8 there are four massive sulfide layers. Two of the massive sulfide layers are overlain by thin (3 to 15 feet thick) beds of dolomite. The rock below each massive sulfide bed is variably chloritized and in some places is massive "black" chlorite crosscut by irregular chalcopyrite and pyrite veins and veinlets--the classic stringer ore. The repetition of massive sulfide layers and dolomite beds may be due to multiple episodes of sulfide deposition or to isoclinal folding. Maximum thickness of the south ore zone is 136 feet (estimated true thickness) in drill hole K-8. Maximum strike length is 650 feet on the 1200 level. On the 1200 level a zone of disseminated sulfide with local pods of high grade copper connects the north and south ore zones. Mineralization in the south ore zone extends to at least 2,350 feet below surface.

Mineralization is of several types:

(1) Massive and semi-massive sulfide composed of variable amounts of pyrite, sphalerite, chalcopyrite, arsenopyrite, tetrahedrite and galena in quartz, sericite and chlorite gangue. In many specimens mineralogic and grain size variations impart a prominent banding to the ore.

Figure 5. Simplified east-west cross-section through the North Ore Zone at Kay Mine. (From Westra, 1977)

KAY MINE NORTH ORE ZONE

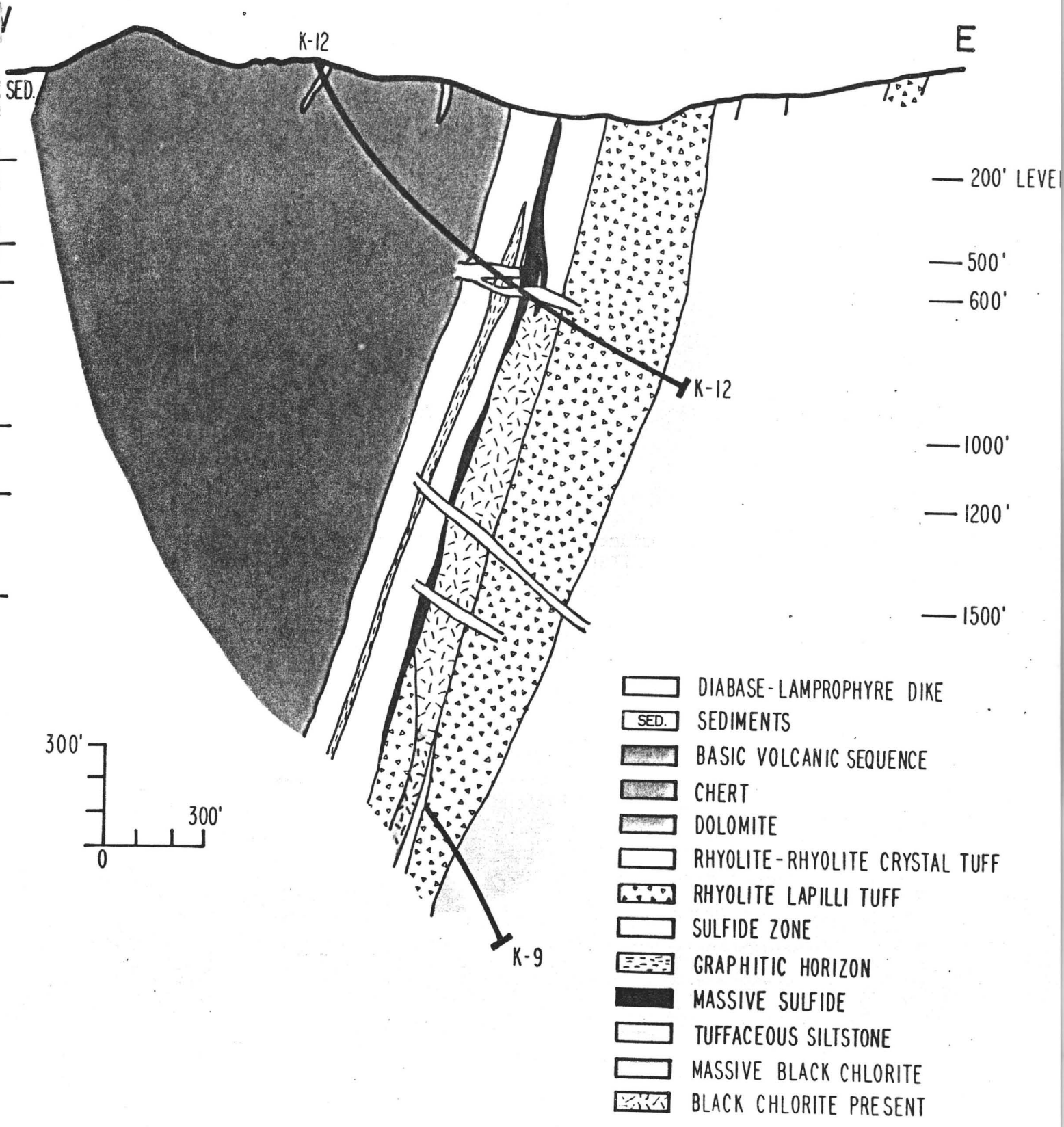
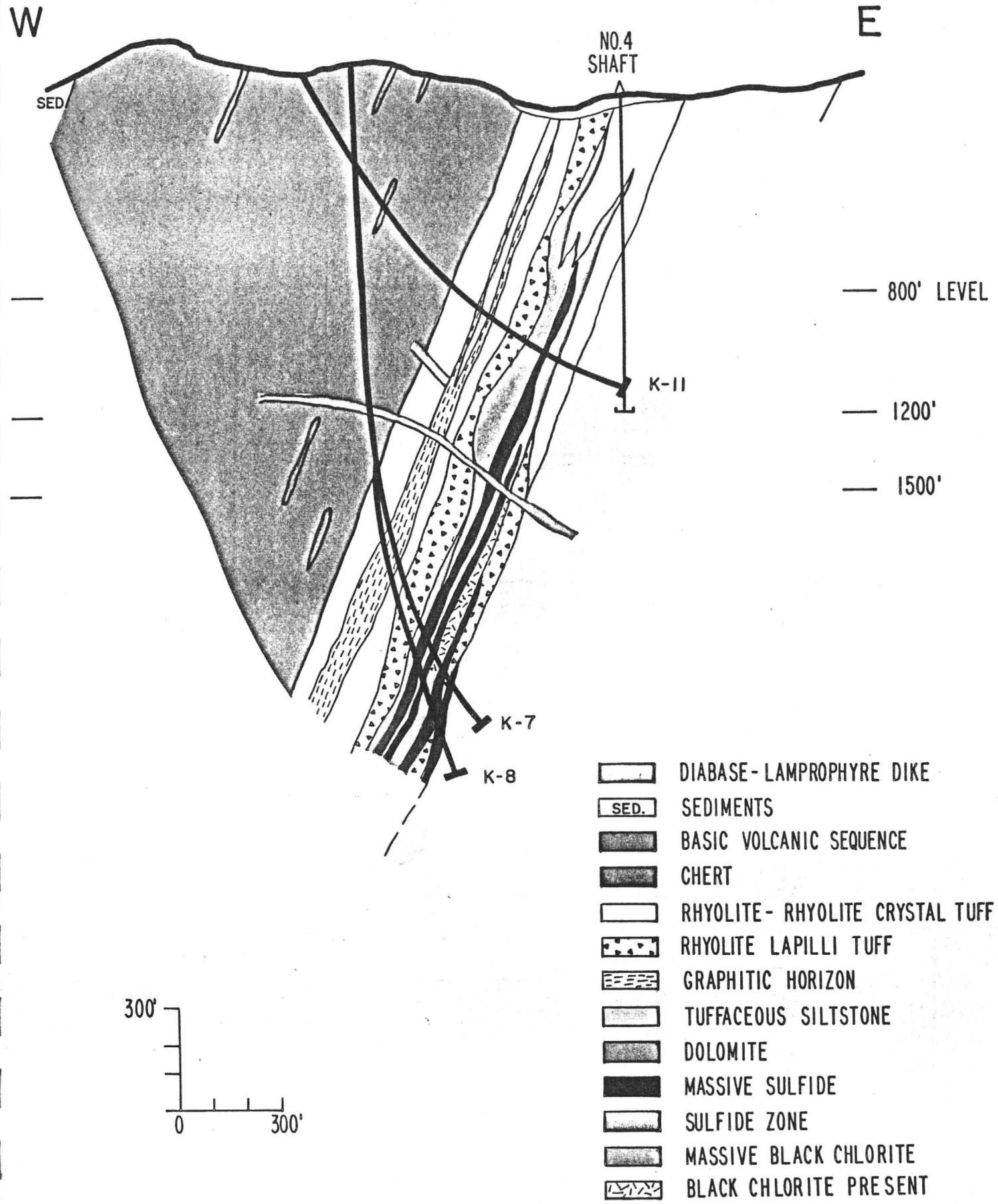


Figure 6. Simplified east-west cross-section through the South Ore Zone at Kay Mine (modified from Westra, 1977).

KAY MINE SOUTH ORE ZONE



MLF 2-81

Table 2: Kay Mine ore intercepts

	From	To	Measured Interval	True Thickness	% Cu	% Pb	% Zn	ppm Ag	ppm Au
K-6	2013	2020	7.0	4.9	1.14	.05	0.22	12	.29
	2220	2230	10.0	7.7	.79	.03	0.32	5	.07
	2244	2259	15.0	11.5	3.06	.05	0.06	12	---
	2305.6	2329.6	24.0	18.4	1.82	.01	0.03	8	.04
	2371.6	2381.6	10.0	7.1	2.11	.06	0.25	9	.34
			66.0	44.7					
K-7	2129.2	2161.7	32.5	18.2	2.82	.05	2.53	86	2.25
	2200	2223.6	23.6	16.7	1.04	.71	4.80	38	.93
	2244.8	2289.5	44.7	25.6	.63	.27	2.32	24	.72
	2335.6	2365.8	30.2	17.2	.13	.29	2.19	21	1.45
			131.0	77.7					
K-8	2218.2	2270.8	52.6	33.8	3.91	.11	1.34	25	1.72
	2298.5	2434	135.5	95.8	.21	.41	2.67	35	.82
	2490	2500	10.0	6.4	.11	.67	7.04	34	2.55
			198.1	136.0					
K-9	2165.5	2174	8.5	4.9	1.28	.07	.28	7	.08
K-10A	2890	2896.7	6.7	3.6	5.03	.04	.09	15	.33
	2916.4	2925	8.6	5.5	.53	.03	.38	12	1.14
	2948.5	2955	6.5	3.6	2.00	.01	.22	6	.26
			21.8	12.7					
K-12	928.4	945.0	16.8	16.2	1.95	.04	.14	15	.34
	968.0	978.3	10.3	9.5	.34	.20	1.17	24	.42
			27.1	25.7					

(2) "Grey copper" ore which consists of tetrahedrite in siliceous dolomite beds.

(3) Stringer ore as mentioned above with anastomosing chalcopyrite and pyrite veins and veinlets in a massive black chlorite matrix.

DRILLING RESULTS

Of the 14 holes drilled in the Kay Mine area, six intercepted ore grade intercepts; these intercepts are shown in Table 2. Approximately 70% of all core was split and assayed. These data are useful in establishing zoning patterns.

GEOPHYSICS & GEOCHEMISTRY

Over the years a variety of electrical surveys have been conducted over the surface in different parts of the Kay block. A complex resistivity survey covered the Kay mine proper while conventional I.P. surveys of several generations were conducted over various parts of the property. CSAMT and Turam surveys were run with indifferent success. The location of each survey line is indicated in Figure 7. Some of the anomalies observed in these surveys were drilled with mixed results. There have been no systematic geochemical surveys over the entire property. A soil mercury survey and base metal anomalies in stream sediment samples confirm the known mineralization in the Kay area and identify other possible mineralized zones. Grid geochemistry over the Greyhound zone was instrumental in finding this mineralized zone.

REFERENCES

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Anderson, P., and Guilbert, J.M., 1979, The Precambrian massive sulfide deposits of Arizona - a distinct metallogenic epoch and province: Nevada Bureau of Mines and Geology, Report #33, pp. 39-48.

Westra, G., 1977, Kay Mine Project #3293, Yavapai County, Arizona: A progress report; Exxon Minerals Company proprietary report, 26 p.

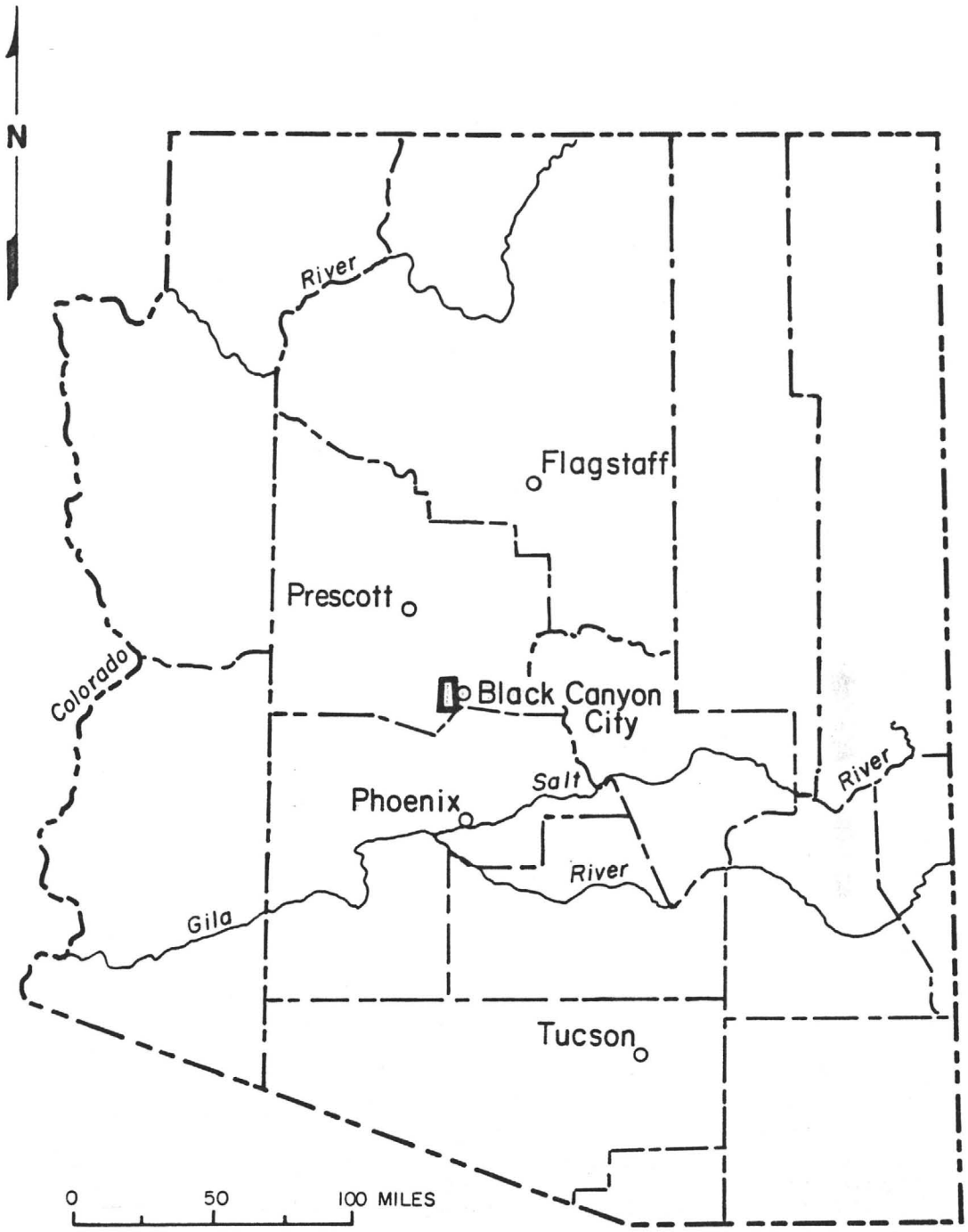


Figure 1. Index map of Arizona showing the location of the Kay property.

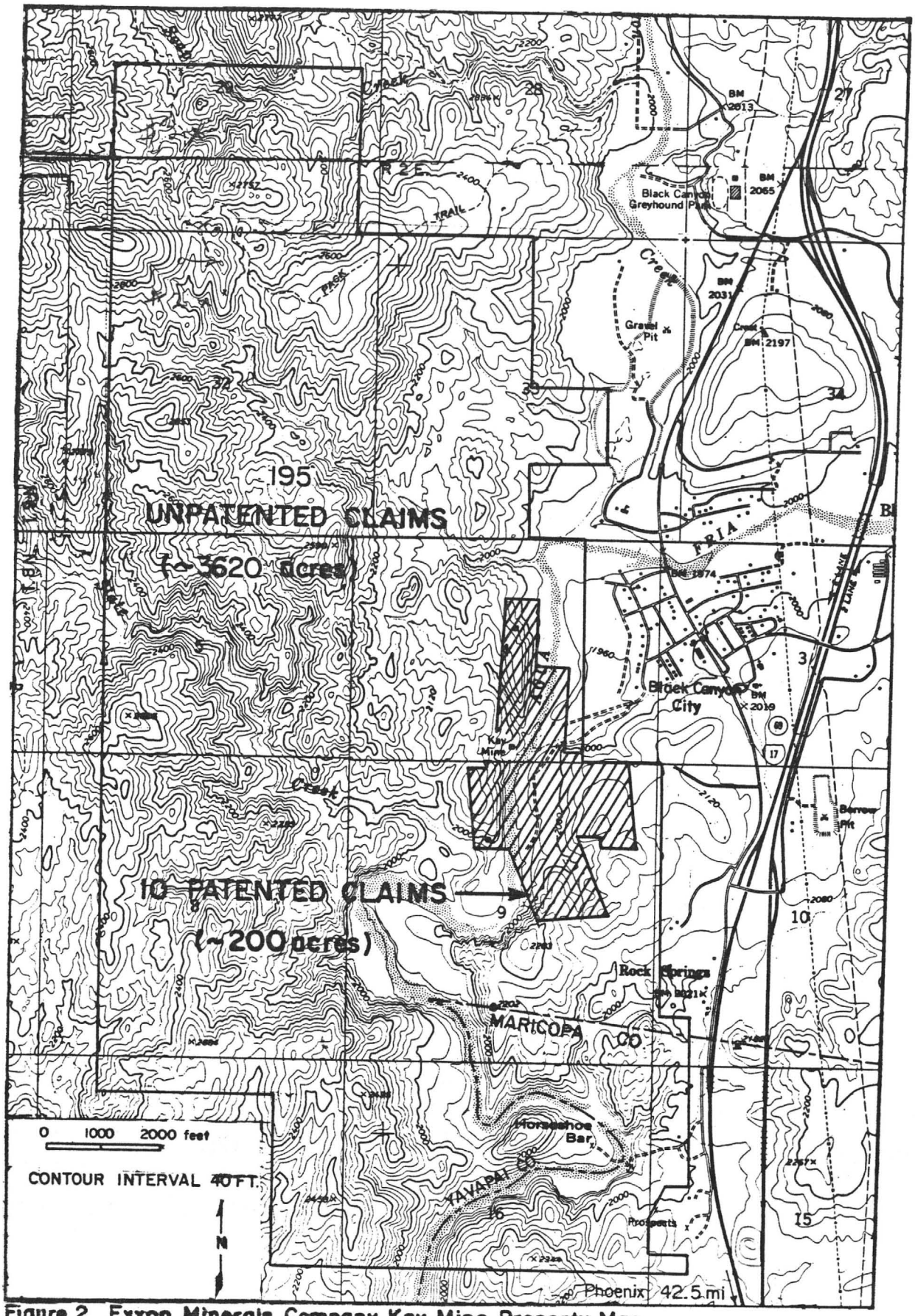
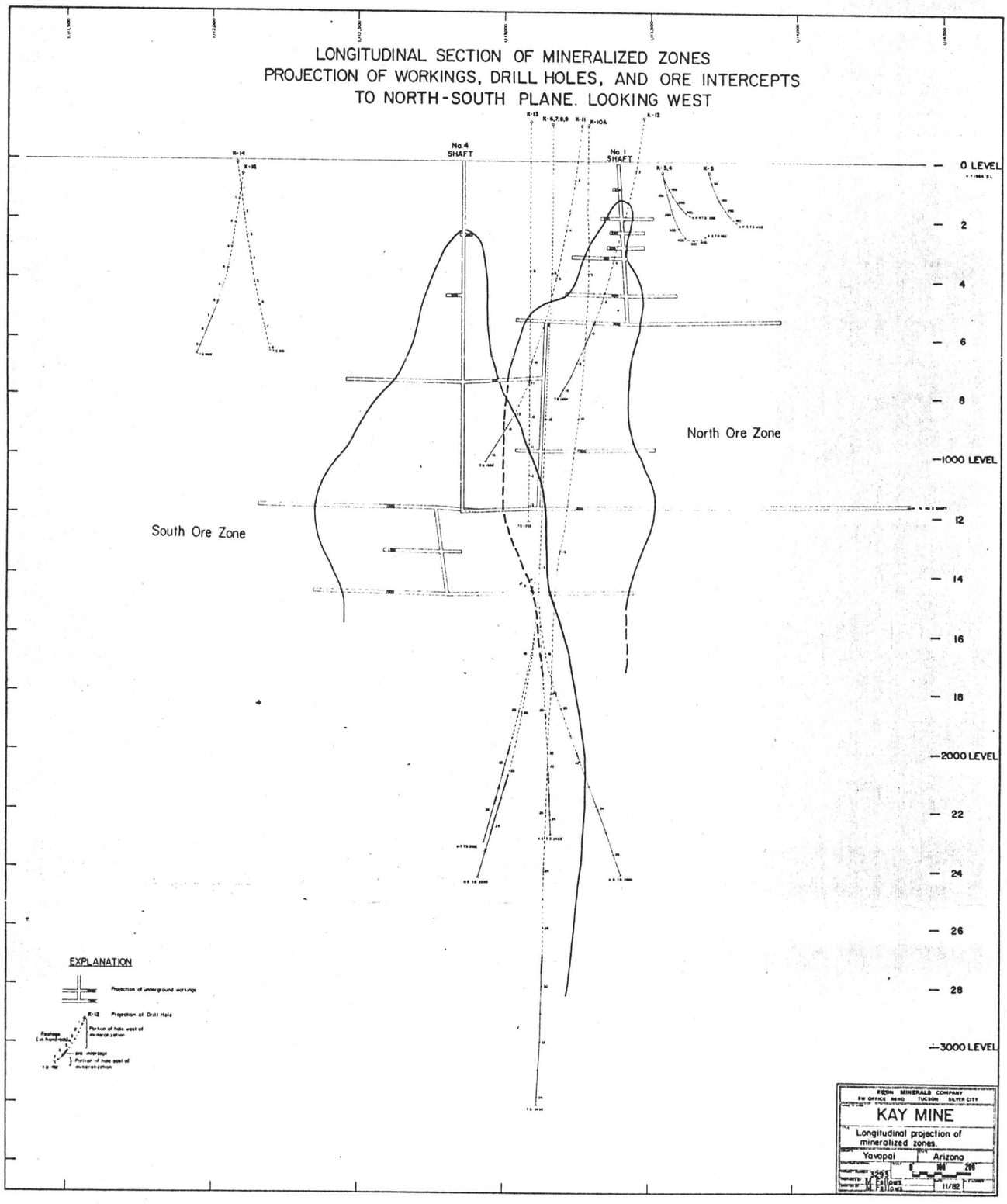


Figure 2 . Exxon Minerals Company Kay Mine Property Map.

Figure 3. Generalized geologic map of the Kay Mine area showing location and vertical projection of Exxon drill holes.


LONGITUDINAL SECTION OF MINERALIZED ZONES
PROJECTION OF WORKINGS, DRILL HOLES, AND ORE INTERCEPTS
TO NORTH-SOUTH PLANE. LOOKING WEST
No.4 SHAFT
No. 1 SHAFT
K-14
K-12
K-13
K-6,7,8,9
K-11
K-10A
K-3,4
K-5
0 LEVEL
2
4
6
8
1000 LEVEL
12
14
16
18
2000 LEVEL
22
24
26
28
3000 LEVEL
North Ore Zone
South Ore Zone
EXPLANATION
Projection of underground workings
K-12 Projection of Drill Hole
Portion of hole west of mineralization
Portion of hole east of mineralization
KAY MINE
Longitudinal projection of mineralized zones.
Yavapai
Arizona
11/82

KAY MINE MASSIVE SULFIDE DEPOSIT

Exxon Minerals Company

M. L. Fellows

November 1982

Capital Costs – reopen shafts – 2,000,000 (prob low)

new shafts to 3500 ft. level – $700/ft.

= $4,200,000 (prob. way low)

total pre-production – development costs – exploration
~ $12,000,000

mill ~ $9,000,000

Total	$25,000,000

Assume 5% NSR to EXXON = $4.43 /ton

$88.50
– 40.00 /T
– 4.43
$44.08 /T "Profit"

1.5 MM Tons × $44.08 = $66,120,000

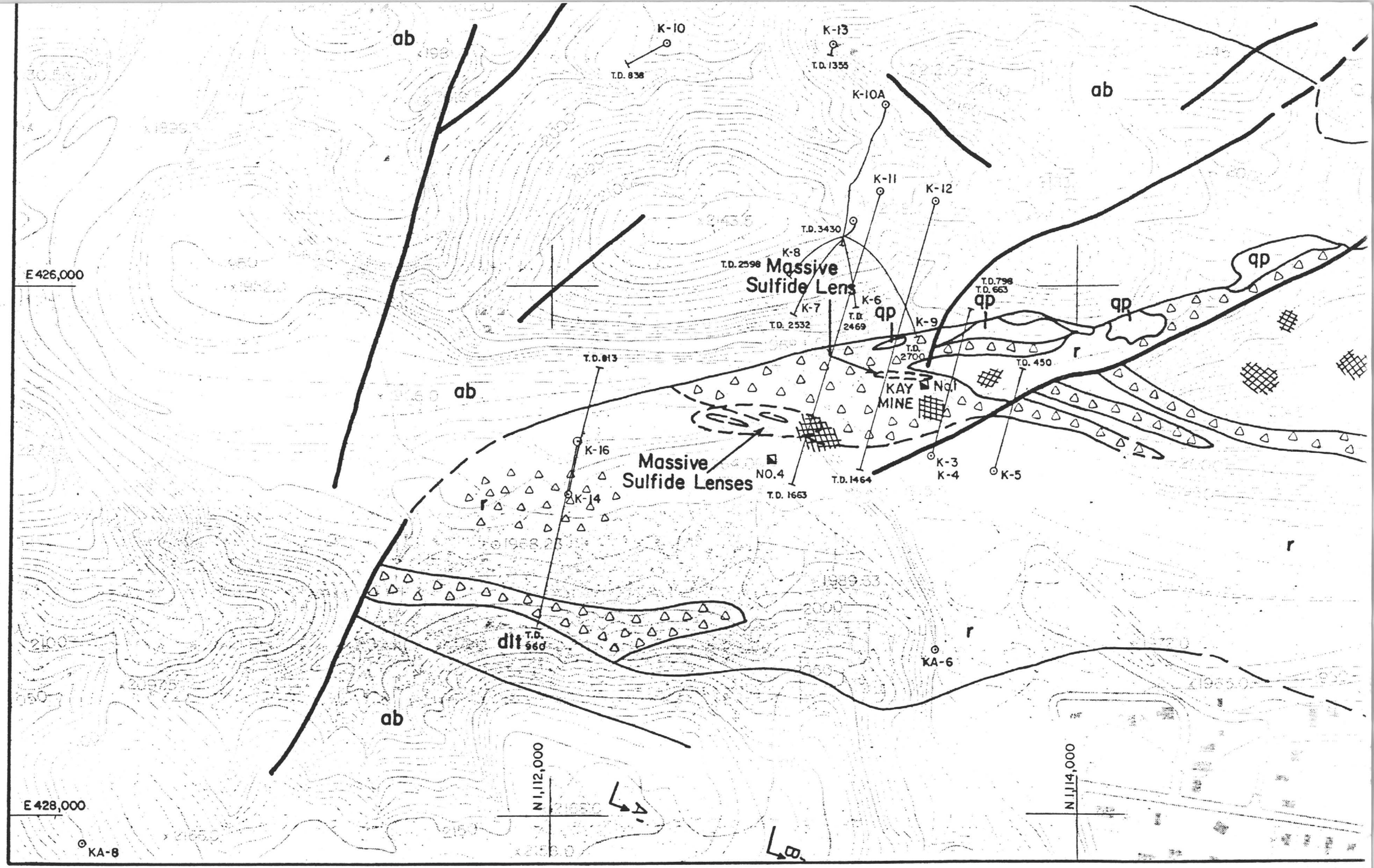
– $21,000,000
$45,120,000

Total Revenue = 1,500,000 × $84.07 ≐ T $126,105,000
(low than Cochise)

Total Costs = 1,500,000 × $40/T = $60,000,000
operating

Direct Costs – Capital, Devel., Expl. etc. = 21,000,000
81,000,000

Diff. $45,105,000


ab
K-10
T.D. 838
K-13
T.D. 1355
K-10A
ab
K-11
K-12
T.D. 3430
K-8
T.D. 2598
Massive
Sulfide Lens
K-6
T.D. 2469
qp
K-7
T.D. 2532
K-9
T.D. 2700
T.D. 798
T.D. 663
qp
qp
qp
r
T.D. 450
E 426,000
T.D. 813
ab
KAY
MINE
No.1
K-16
Massive
Sulfide Lenses
NO.4
T.D. 1663
T.D. 1464
K-3
K-4
K-5
r
K-14
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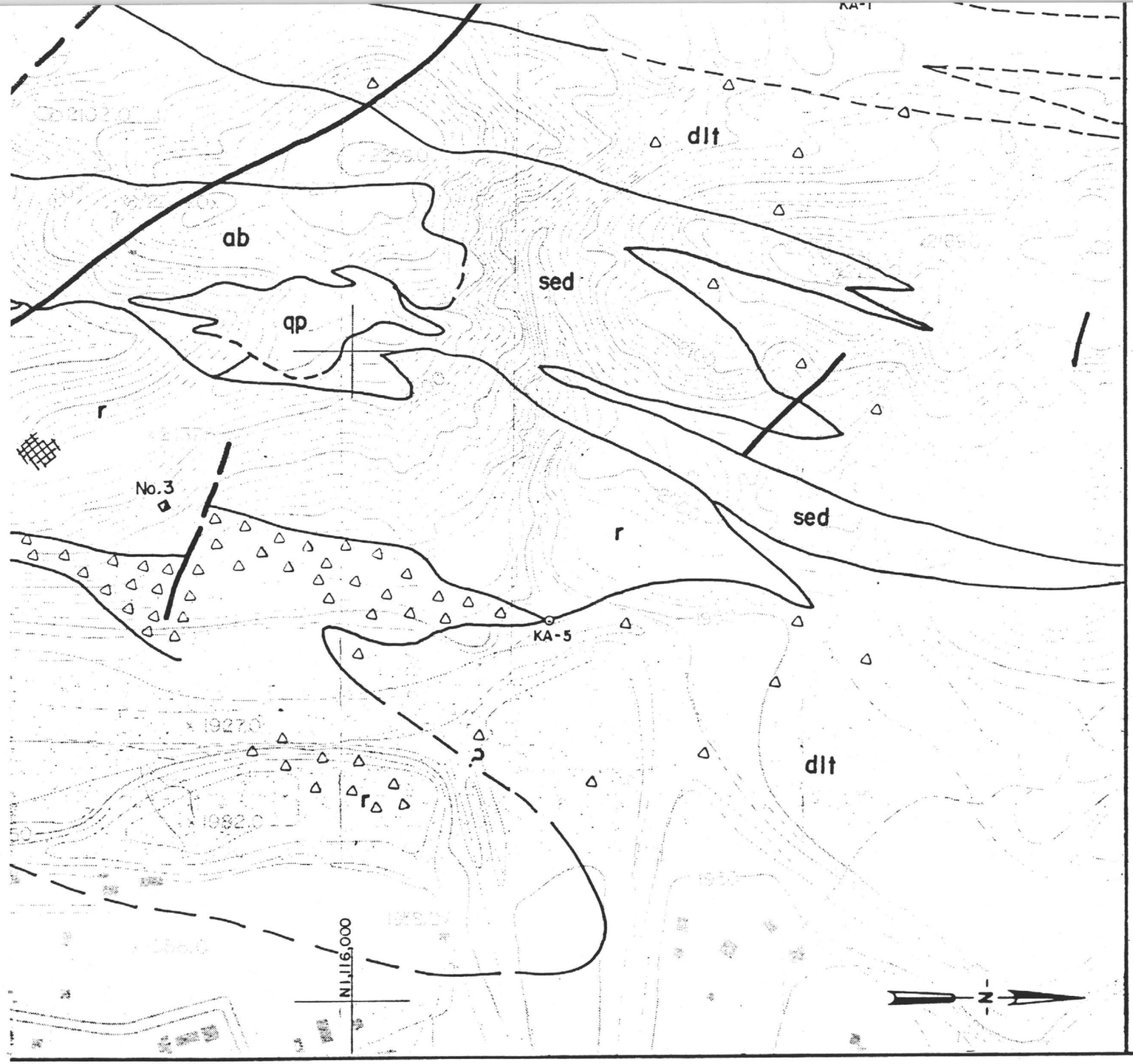
dit
T.D. 660
KA-6
ab
N 1,112,000
N 1,114,000
E 428,000
KA-8
A
B



r	Rhyolite tuff breccia - lapilli tuff
r	Rhyolite crystal tuff - tuffaceous siltstone
dlt	Rhyolite-dacite lapilli tuff, coarse to fine tuff, and minor sediment
ab	Andesite-basalt flows and tuffs with intercalated argillite and chert strata. Also includes some mafic intrusions
sed	Argillite and siltstone generally calcareou and chert bearing ; includes thick pyriti and graphitic argillites
	Massive sulfide lenses (schematic) projected to surface
	Magnesium rich chlorite ("black chlorit with copper mineralization
	Fault

0 400 800 1200 FEET

Geology by G. Westra, 1977

Project no. 329
Exxon Minerals
1982 M. L. Fello