

PINAL MINERALS & MINING, LTD.
MINERAL EVALUATION AND DEVELOPMENT

HEADQUARTERS OFFICE
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February 23, 1978

Mr. FitzRandolph
Arizona Atomic Energy Commission
2929 West Indian School Road
Phoenix, Arizona 85017

Dear Mr. FitzRandolph:

Re: Our Recent Conversations
Concerning License
Requirements For Pinal
Minerals & Mining's
Operation in Gila County

Due to the uncertainty in interpreting the license requirements from existing State laws and because of possible near future legislation which may have an affect on licenses issued at this time, I would like to make the following suggestions.

As we have discussed, I am concerned and in favor of reasonable controls which will preserve public peace, health, and safety. Likewise, I am in favor of taking time to make logical and equitable decisions which will preserve mining as one of the main industries in Arizona.

After reading H.B. 2324 it appears as though our operation, since we will not have mill tailings, will fall into one of the categories that has little or no significant risk to the health and safety of the public.

For example, the type of operation we are proposing basically uses the same mining methods and technology as many of Arizona's copper mines with the exception that we will be extracting more uranium and less copper.

By way of this letter, I am requesting (if required) a 90-day temporary operating permit with immediate permission to continue with bulk metallurgical testing.

This 90-day period will give you time to become more familiar with the new Arizona industry as well as our particular operation.

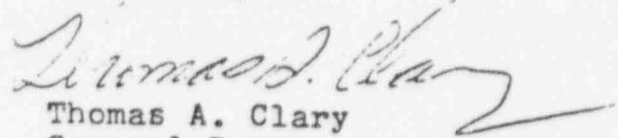
9609270348 780223
PDR ADDCK 04008752
C PDR

Mr. FitzRandolph
Page 2
February 23, 1978

Also by way of this letter, I am requesting any final mine operation permits that may be required, pending receipt and approval of an Environmental/Safety Impact Appraisal to be prepared by me during the aforementioned 90-day period.

Enclosed is a copy of our Geology and Mine Operations Plan which was presented to the Arizona State Land Commission to fulfill requirements for acquiring State Mineral Leases.

Sincerely,


Thomas A. Clary
General Partner

TAC/kb

Enclosure

"LUCKY BOY" ENVIRONMENTAL AND METEOROLOGICAL INFORMATION

Direct Radiation, Radon Daughters, Radionuclide
Concentrations in Soil, Vegetation and
Manure at specific locations.

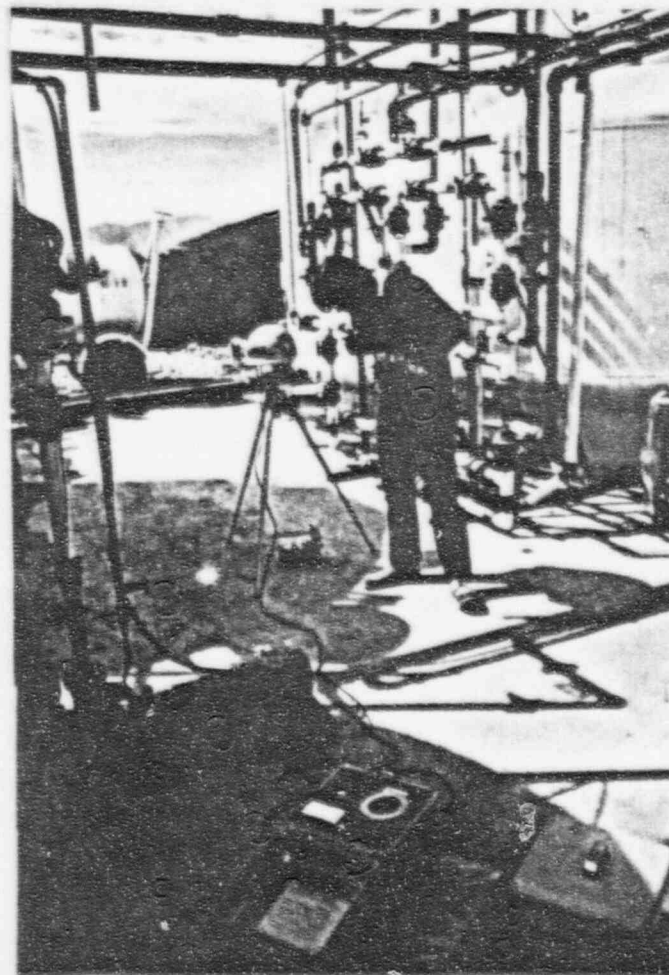
Meteorological parameters including temperature,
pressure, humidity, wind speed and direction
and rainfall for the site.

10 CFR Part 20 Maximum Permissible Concentrations in Water (uCi/ml)

<u>Nuclide</u>	<u>Unrestricted</u>	<u>Restricted</u>
U-nat	3E-5	1E-3
Th-230	2E-6	5E-5
Ra-226	3E-8	4E-7
Pb-210	1E-7	4E-6
Po-210	7E-7	2E-5

ENVIRONMENTAL SURVEY LOCATION #1

Description: Cement pad between 3 resin bed tanks (W) and large collection tank (E) and mill assay data.



A S S A Y S

Date	Sample & Remarks	Uranium mgU/l	^{230}Th pCi/l	^{226}Ra pCi/l	^{210}Pb pCi/l	^{210}Po pCi/l
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[illegible]

*Activity reported as per the suspended matter in one liter of solution.

ENVIRONMENTAL SURVEY LOCATION # 1

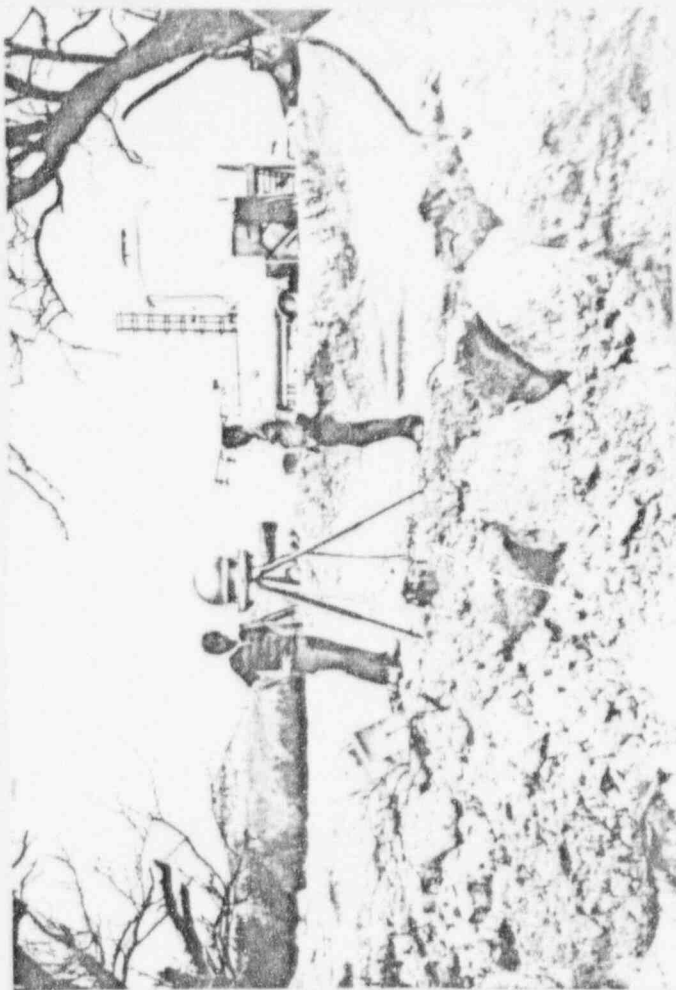
[illegible]

* 1m = 1 meter

** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #2

Description: South of Cement Pad
between two small trees
near aluminum painted
tank with red top.



2

Remarks

* 1m = 1 meter ** WL = Working Levels

** WL = Working Levels

2

SOLID TYPE

Soil

[illegible]

2

SOLID TYPE

Marnure

[illegible]

ENVIRONMENTAL SURVEY LOCATION #3

Description: Inside trailer; carpet
just inside door about
3 feet from sink.

ENVIRONMENTAL SURVEY LOCATION # 3

[illegible][illegible]

* 1m = 1 meter ** WL = Working Levels

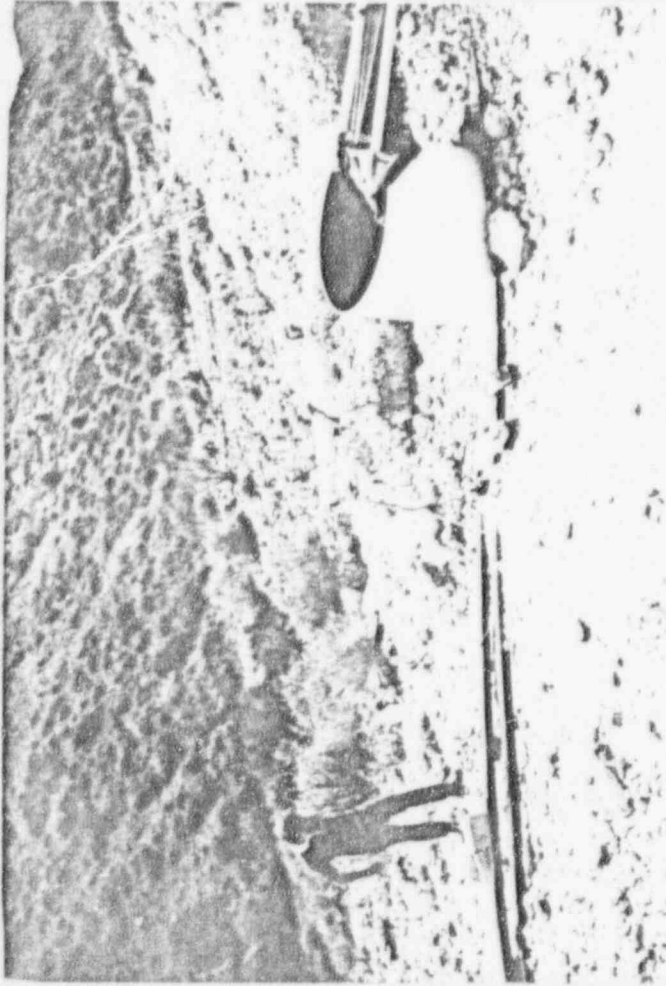
Pioneer Well

R

[illegible]

ENVIRONMENTAL SURVEY LOCATION #4

Description: Acid return sump 3
feet NE straddling
return pipes.



ENVIRONMENTAL SURVEY LOCATION # 4

[illegible][illegible]

* 1m = 1 meter ** WL = Working Levels

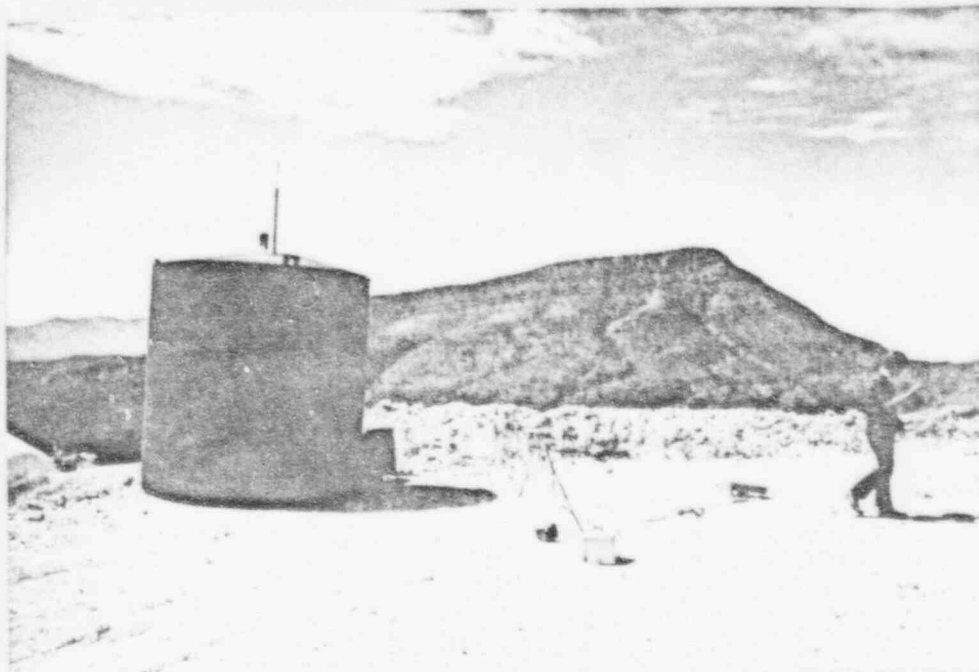
4

Soil

[illegible]

ENVIRONMENTAL SURVEY LOCATION #5

Description: Road by red acid tank
about 15 feet from pipe
which opens out to North.



ENVIRONMENTAL SURVEY LOCATION # 5

Date	Gamma Dose uR/hr 1m* GND	Bkg. TLD mR/Qtr.	Radon Daughters WL**	Remarks
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[illegible]

* 1m = 1 meter ** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #6

Description: Bend in road overlooking
leaching area.



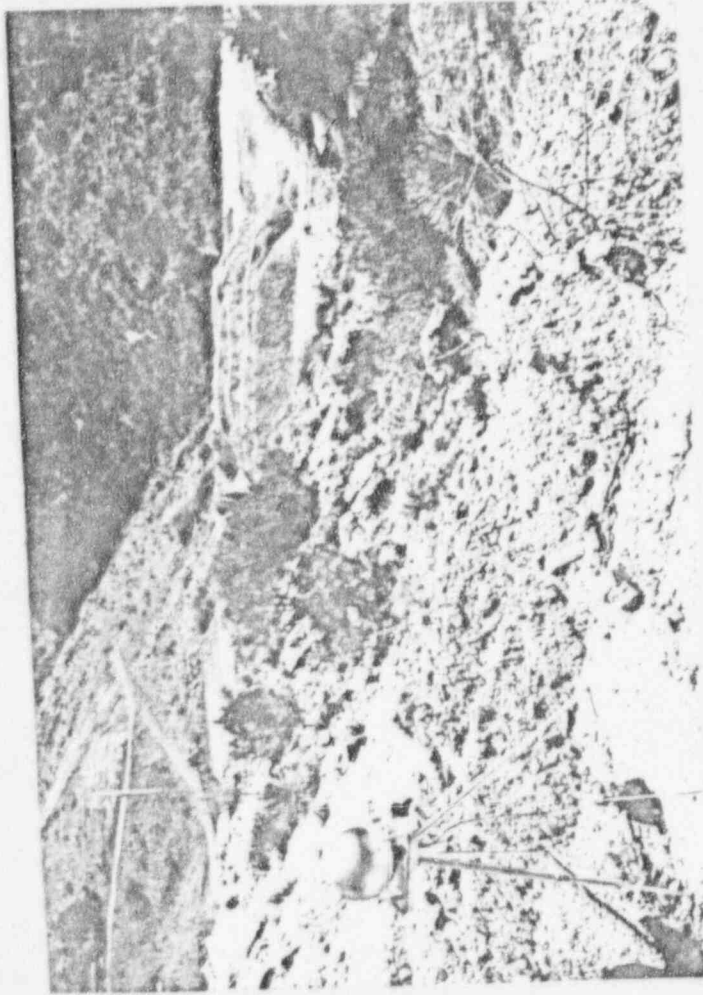
6

Remarks

* 1m = 1 meter ** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #7

Description: Y junction above
leaching pond.



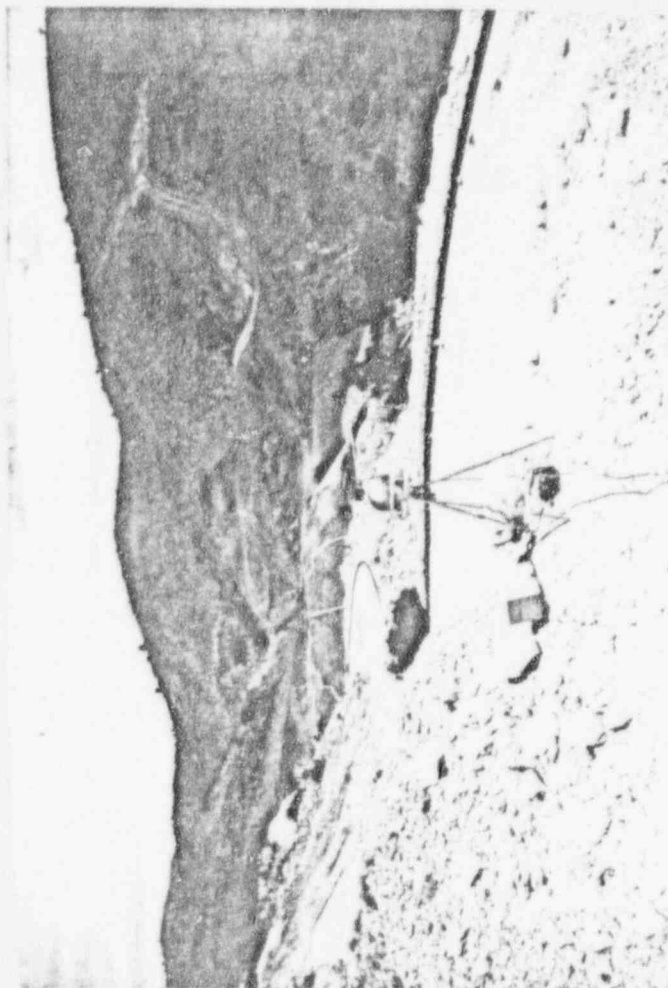
ENVIRONMENTAL SURVEY LOCATION # 7

[illegible]

* 1m = 1 meter ** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #8

Description: Bend in road down towards
leaching pond.



8

Remarks

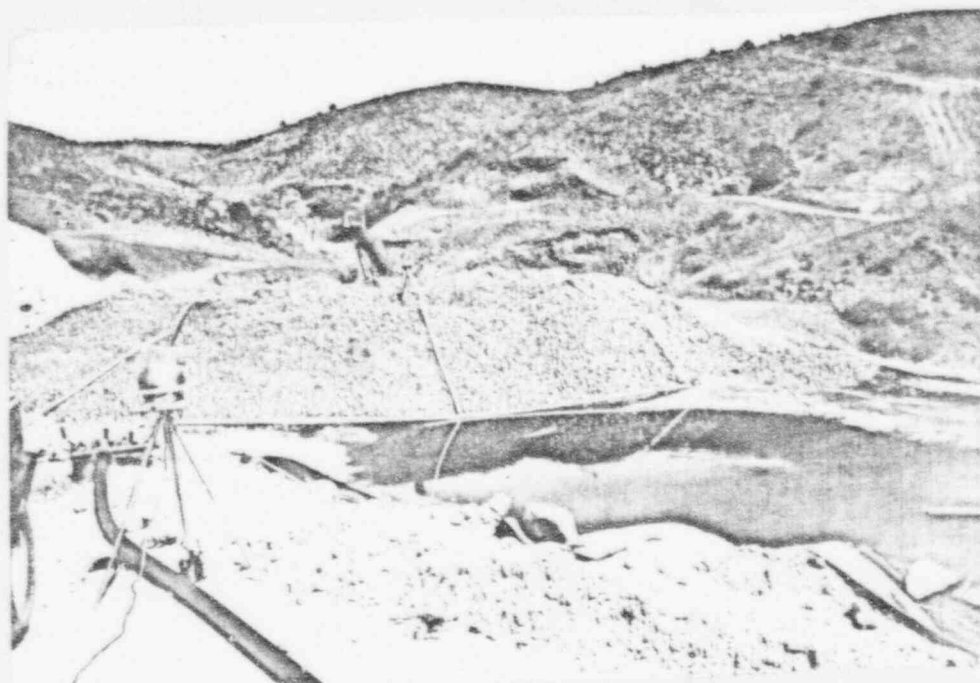
* 1m = 1 meter ** WL = Working Levels

** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #9

Description: About 10 feet above valve
arrangement which controls
acid flow to leach pond
strattle pipe.

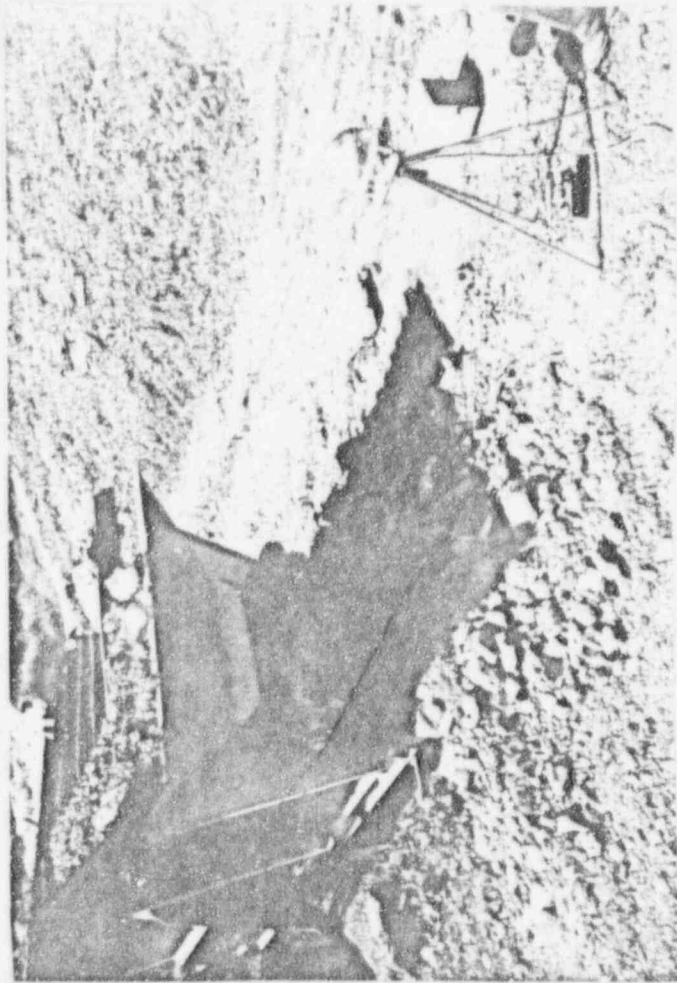
See Location #1 for
additional assays of
leach liquor.



ENVIRONMENTAL SURVEY LOCATION #10

Description: Directly in front of
Croster Unit (North).
Crusher removed 6/78

New sump and leach
heap created just north
of here 8/78.



10

Gamma Dose
uR/hr
1m* GND

Bkg. TLD
mR/Qtr.

Radon
Daughters
WL**

Remarks

3/18/78

113

100

5/28

 40.03

Crusher removed

6/17

160

200

8/2

 ≤ 0.03

9/26

110

100

110

10/10

 < 0.03

1/3/79

170

160

244

4/10

 < 0.03

* 1m = 1 meter ** WL = Working Levels

** WL = Working Levels

05

SOLID TYPE

Soil

[illegible]

WATER

#

NO

SURVEY

RONME

142

Remarks

Date	ph	U r a n i u m mgU/l	230Th uCi/ml xE-6	226Ra uCi/ml xE-8	210Pb uCi/ml xE-7	210Po uCi/ml xE-7

[illegible]

ENVIRONMENTAL SURVEY LOCATION #11

Description: Top of hill
East of main ore body
North of E-W ravine
Bladed out area



11

[illegible]

** WL = Working Levels

11

SOLID TYPE

Vegetation

[illegible]

11

S O L I D T Y P E

Mamure

[illegible]

ENVIRONMENTAL SURVEY LOCATION #12

Description: Base of rock pile
below crusher region
by outcropping on west
side about 20' from
rock fill across north
ravine.

H₂O from below tunnel
but before confluence

Mine tunnel assays



12

Remarks

Old mine entrance

** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION # 12

W A T E R

[illegible]

ENVIRONMENTAL SURVEY LOCATION #13

Description: About 50 feet south
of #12.
Edge of stream eroded
by recent rains (3/78).
(Now east of dike) 1/79



ENVIRONMENTAL SURVEY LOCATION # 13

[illegible]

* 1m = 1 meter ** WL = Working Levels

13

S O L I D T Y P E

Soil

[illegible]

ENVIRONMENTAL SURVEY LOCATION	#
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
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86	86
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92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

13

ENVIRONMENTAL SURVEY LOCATION	#
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
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97	97
98	98
99	99
100	100

Remarks

$$\begin{array}{l} 210\text{Po} \\ \text{uCi/ml} \\ \text{xE-7} \end{array}$$

210_{Pb}
uCi/ml
xE-7

226Ra
uCi/ml
xE-8

$$\begin{array}{l} 230\text{Th} \\ \text{uCi/ml} \\ \text{x E-6} \end{array}$$

i u m
Ci/ml
XE-5

U r a
mgU/l

ph

Date _____

[illegible]

ENVIRONMENTAL SURVEY LOCATION #14

Description: Stream bed directly
below sump.

Confluence H₂O assay
reported at this
location.



14

[illegible]

* 1m = 1 meter ** WL = Working Levels

14

SOLID TYPE

Soil

[illegible]

W A T E R

14

ENVIRONMENTAL SURVEY LOCATION

Remarks

210Po
uCi/ml
xE-7

210Pb
uCi/ml
xE-7

226Ra
uCi/ml
xE-8

230Th
uCi/ml
xE-6

U r a n i u m
mgU/l uCi/ml
xE-5

ph

Date

6.8

1/3/79

ENVIRONMENTAL SURVEY LOCATION #15

Description: Across from old
bonehole downstream
from #14. (Center
of new road coming
down from west)



New
Road
Here →

ENVIRONMENTAL SURVEY LOCATION # 15

[illegible][illegible]

* 1m = 1 meter ** WL = Working Levels

15

SOLID TYPE

Soil

[illegible]

15

SOLID TYPE

Vegetation

[illegible]

ENVIRONMENTAL SURVEY LOCATION #16

Description: 50 feet downstream
where runoff comes
downhill from sump
& trailer area (near
big rock)



16

Remarks

39

** WL = Working Levels

16

SOLID TYPE

Soil

[illegible]

16

SOLID TYPE

Vegetation

[illegible]

16

SOLID TYPE

Manure

[illegible]

ENVIRONMENTAL SURVEY LOCATION #17

Description: Stream bed below #16
SE of trailer.
(Open face rock to
east)



17

Remarks

20

** WL = Working Levels

17

SOLID TYPE

Manure

Date	ugU/g
11/1/80	1.0
11/2/80	1.0
11/3/80	1.0
11/4/80	1.0
11/5/80	1.0
11/6/80	1.0
11/7/80	1.0
11/8/80	1.0
11/9/80	1.0
11/10/80	1.0
11/11/80	1.0
11/12/80	1.0
11/13/80	1.0
11/14/80	1.0
11/15/80	1.0
11/16/80	1.0
11/17/80	1.0
11/18/80	1.0
11/19/80	1.0
11/20/80	1.0
11/21/80	1.0
11/22/80	1.0
11/23/80	1.0
11/24/80	1.0
11/25/80	1.0
11/26/80	1.0
11/27/80	1.0
11/28/80	1.0
11/29/80	1.0
11/30/80	1.0
12/1/80	1.0
12/2/80	1.0
12/3/80	1.0
12/4/80	1.0
12/5/80	1.0
12/6/80	1.0
12/7/80	1.0
12/8/80	1.0
12/9/80	1.0
12/10/80	1.0
12/11/80	1.0
12/12/80	1.0
12/13/80	1.0
12/14/80	1.0
12/15/80	1.0
12/16/80	1.0
12/17/80	1.0
12/18/80	1.0
12/19/80	1.0
12/20/80	1.0
12/21/80	1.0
12/22/80	1.0
12/23/80	1.0
12/24/80	1.0
12/25/80	1.0
12/26/80	1.0
12/27/80	1.0
12/28/80	1.0
12/29/80	1.0
12/30/80	1.0
12/31/80	1.0

230Th
pCi/g

 ^{226}Ra pCi/g
$$\frac{210}{\text{pCi/g Pb}}$$
$$^{210}\text{Po} \quad \text{pCi/g}$$

Remarks

10/10/78

Cow Pies

Gross of

$$0.9 + 0.3$$

Gross β	1.5
---------------	-----

 $+ 0.1$

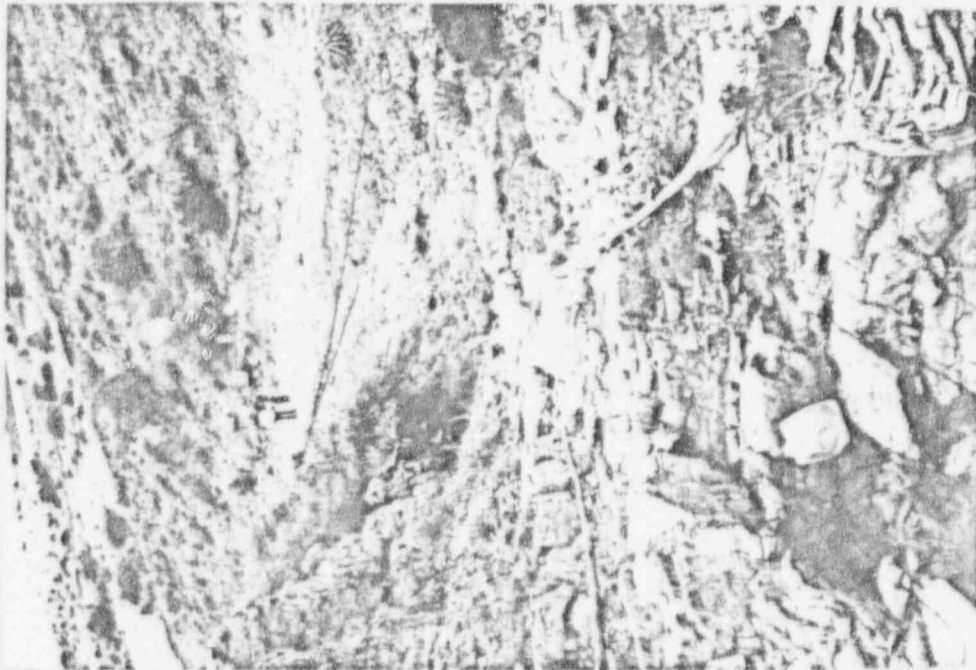
1

100

[illegible]

ENVIRONMENTAL SURVEY LOCATION #18

Description: Runoff area north and
east of north ravine.
Flow comes down over
rocks and enters mine
area.



18

Remarks

95

** WL = Working Levels

W A T E R

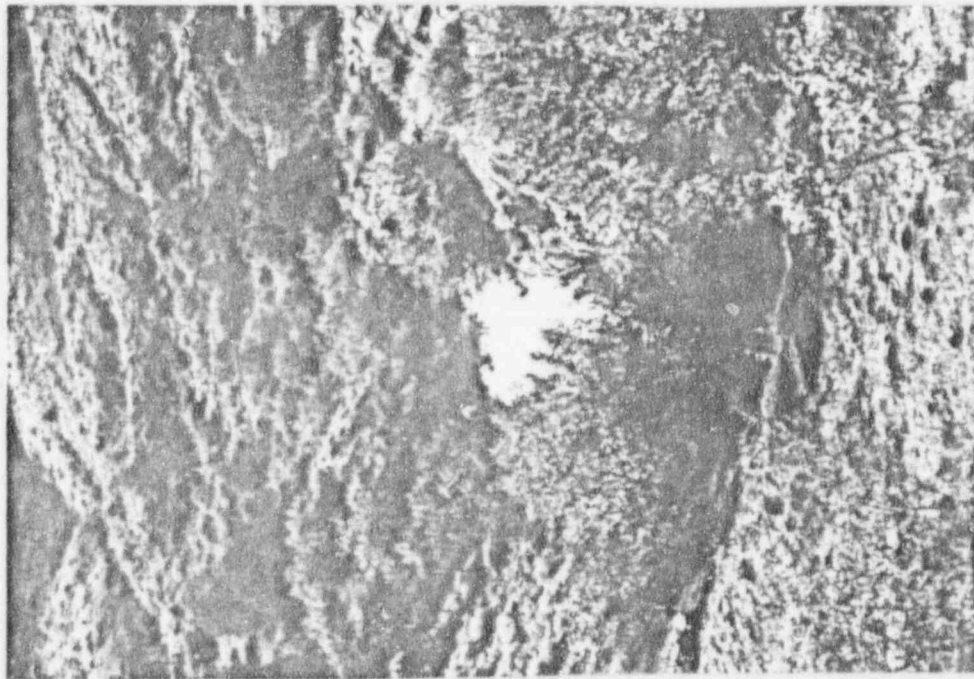
18

W A T E R

[illegible]

ENVIRONMENTAL SURVEY LOCATION #19

Description: Bob's Spring
Entrance to mine.



ENVIRONMENTAL SURVEY LOCATION # 19

W A T E R

[illegible]

ENVIRONMENTAL SURVEY LOCATION #20

Description: Road to Evaporation
Pond
Wash north side

20

Gamma Dose
uR/hr
1m* GND

Bkg. TLD
mR/Qtr.

Radon
Daughters
WL**

Remarks

[illegible]

** WL = Working Levels

20

Soil

[illegible]

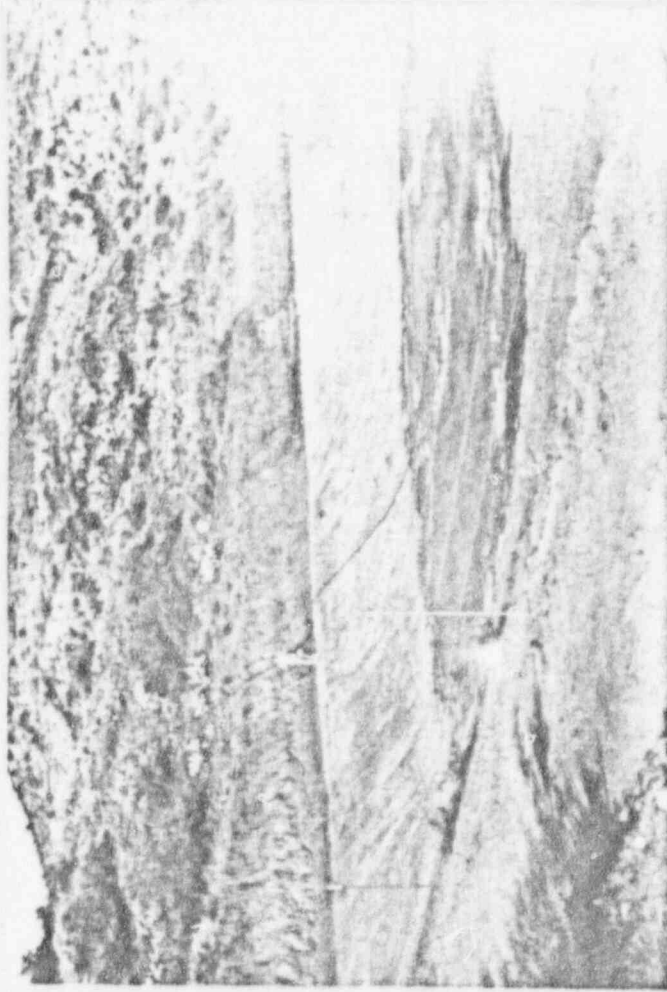
WATER

20

Date	ph	U r a n i u m mgU/l	²³⁰ Th uCi/ml	²²⁶ Ra uCi/ml	²¹⁰ Pb uCi/ml	²¹⁰ Po uCi/ml	Remarks
			x E-6	x E-8	x E-7	x E-7	

ENVIRONMENTAL SURVEY LOCATION #21

Description: Evaporation Pond
North side by fence
and hose.



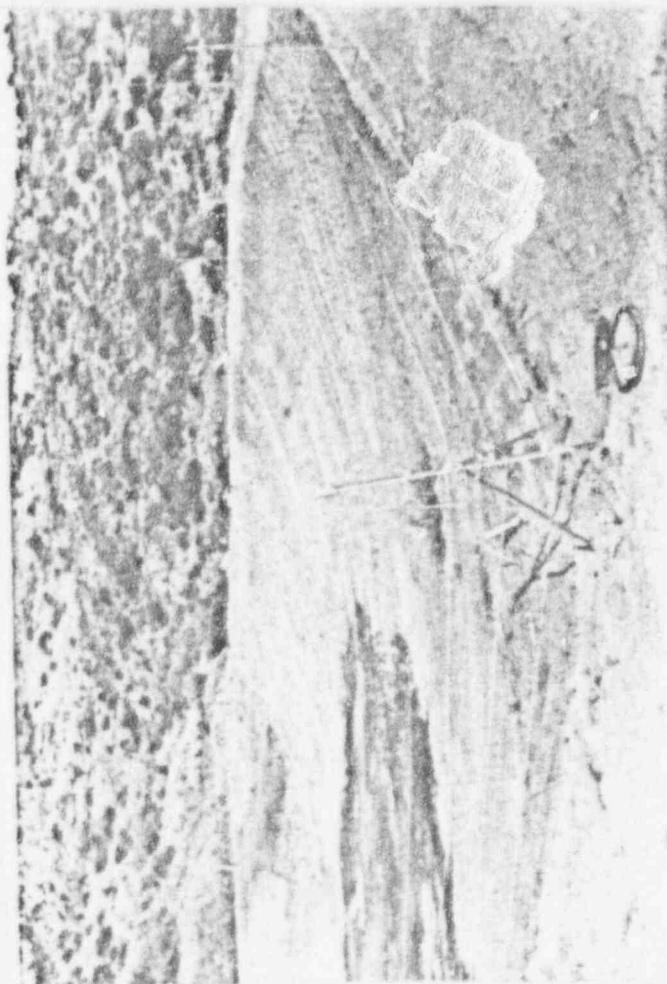
21

Remarks

** WL = Working Levels

ENVIRONMENTAL SURVEY LOCATION #22

Description: Center of Evaporation
Pond.



22

1m* GND

6/22/78

1m = 1 meter

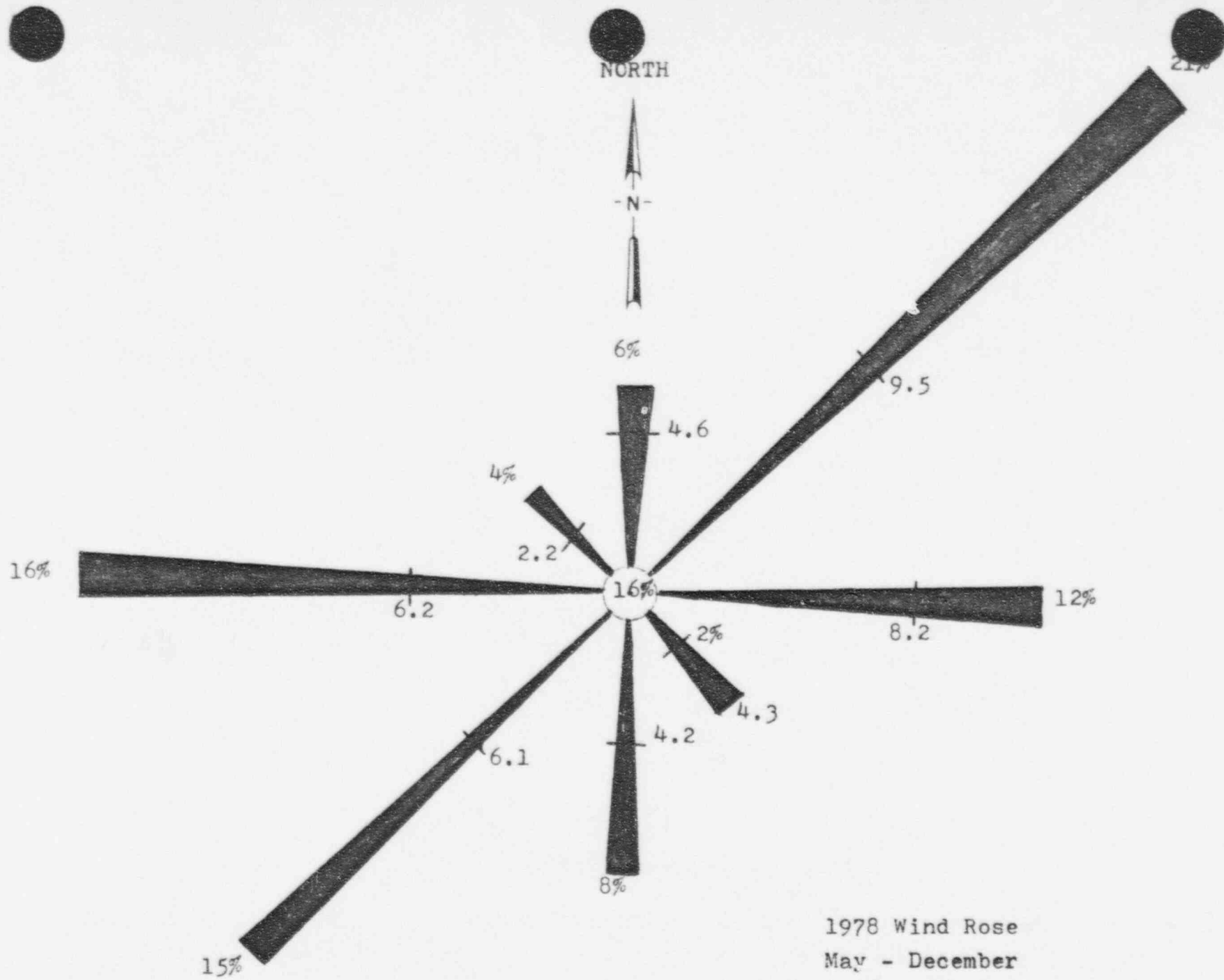
** WL = Working Levels

WIND INFORMATION 1978

Speed (mph)* and Frequency (%)** Averages
for Directions Indicated

Month	N	NE	E	SE	S	SW	W	NW	Calm	Maximum
May	3.0* 4**	9.3 20	8.8 7	5.0 1	3.6 9	4.9 10	8.8 21	3.2 6	22	18:SW
June	2.3 8	4.1 14	7.0 5	4.6 1	3.4 7	6.8 20	7.2 22	3.8 9	14	40:NE
July	3.0 4	5.1 19	10.0 10	5.4 2	3.3 10	6.6 16	6.6 18	3.0 6	15	77:E
August	5	23	18	2	15	18	18	2	--	Speed OOC
September	3	15	9	6	15	23	24	6	--	Speed OOC
October	7.1 12	10.0 35	5.5 13	4.8 2	3.2 4	4.8 4	4.9 8	3.2 3	20	40:NE
November	5.8 5	8.3 16	7.2 20	3.6 4	5.6 4	6.0 12	3.3 13	0.0 0	27	40:SE
December	6.4 6	20.2 29	11.0 11	2.6 1	6.2 4	7.3 17	6.5 9	0.0 0	23	50:NE
Averages	4.6 6	9.5 21	8.2 12	4.3 2	4.2 8	6.1 15	6.2 16	2.2 4	16	

OOC = Out of Commission

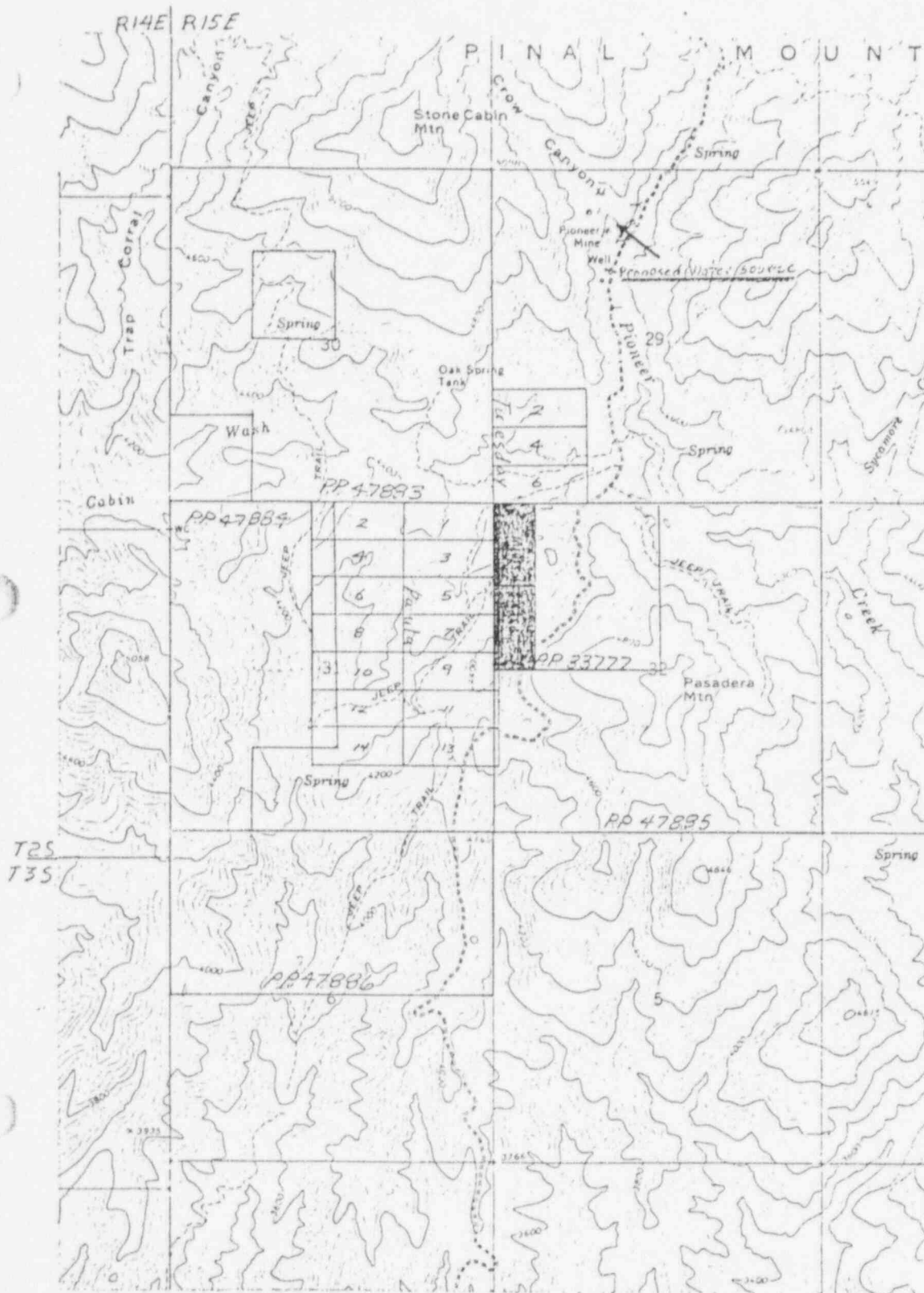


Introduction

The Lucky Boy Mine is located in Sections 31 and 32, T.2S., R.15E., on the Southern slope of the Pinal Mountains. Via the Pioneer Pass Road, the property is approximately 17 miles South of the town of Globe in Gila County, Arizona (figure 1).

Uranium mineralization in the area of the Lucky Boy Mine was discovered in the early 1950's. G. A. Stacey and others of Clifton, Arizona, staked the Lucky Boy deposit in 1953(?). Later the property was leased to Phelps Dodge Corporation and subsequently to Tulsa Minerals Corporation. During the period from March 1956 to June 1957, Tulsa Minerals Corporation shipped approximately 2,430 tons of ore with an average grade of 0.18% U_3O_8 . (Supplement to P.P. 595, Granger & Raup 1969) (See appendix I)

Pinal Properties, Ltd. acquired the property by a mining lease agreement from Sheppard, Johnson, and Clary on April 19, 1977. Since that time Pinal Properties has been actively drilling, metallurgical testing, mine planning, and making feasibility studies.




 Application for Mineral Lease

Fig. 1. Land Status and Location Map for Pinal Properties, Ltd.
Lucky Boy Mine

Land Status

Land Status for the Lucky Boy Mine is as follows:
(See figure 1)

1. Unpatented mining claims, Paula No. 1 through Paula No. 14. Recorded in Gila County Book 381 Pages 708 through 721.

2. Unpatented mining claims, Tuesday No's. 2, 4, and 6. Recorded in Gila County Book 431 Pages 433, 435, and 436.

3. Arizona State Prospecting Permits PP-33777, PP-47883, PP-47884, and PP-47885.

Pinal Properties, Ltd. has applied for an Arizona State Mineral Lease on the W/2, NW/4, NW/4 and the W/2, SW/4, NW/4 of Sec. 32, T2S, R15E all on PP-33777. (See appendix II, III)

It is anticipated that applications will be made for additional State Mineral Leases when the orebody is further delineated.

Geology

Figures 2 & 3 are taken from Geological Survey Bulletin 1046-P, Uranium Deposits in the Dripping Springs Quartzite Gila County, Arizona. These columnar sections show the typical generalized stratigraphy of the Apache group in the area of the Lucky Boy Mine. In most cases the uranium mineralization occurs in the middle of the upper member of the Dripping Springs Quartzite. For a more detailed description of the geology of the Lucky Boy Mine see appendix I, supplement to P.P. 595 and G.S.B. 1046-P, Granger & Raup.

Work done on the mineralized outcrop by Pinal Properties, Ltd. since July 1977 generally verifies work done by Granger and Raup. Rocks in the vicinity of the orebody generally strike North 50° West and dip up to 25° SW. The predominate fractures strike NE and commonly dip NW. Drilling to date indicates a pseudo NE trending orebody of secondary mineralization, whereas it is more likely that the primary mineralization is sinuous, NW trending and bedding controlled. This is due to the predominate fractures being normal to the strike of the beds.

Jarositic leached capping overlies the mineralization outcrop which indicates a plus 5 volume percent sulfide content that would create a high acid environment during oxidation. Within this type of environment

URANIUM DEPOSITS, DRIPPING SPRING QUARTZITE 421

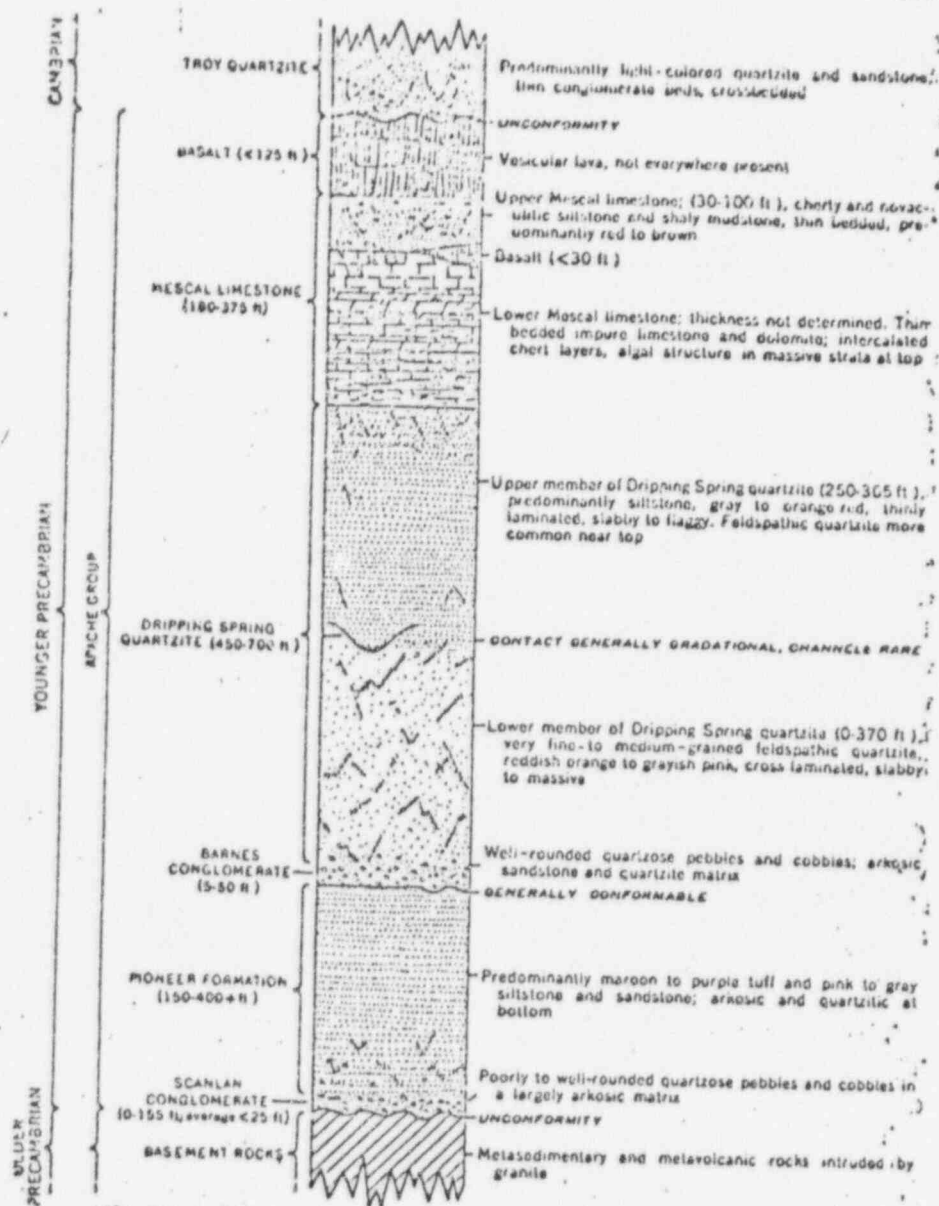


Fig. 2. Generalized Columnar Section of the Apache Group, Gila County, Arizona.

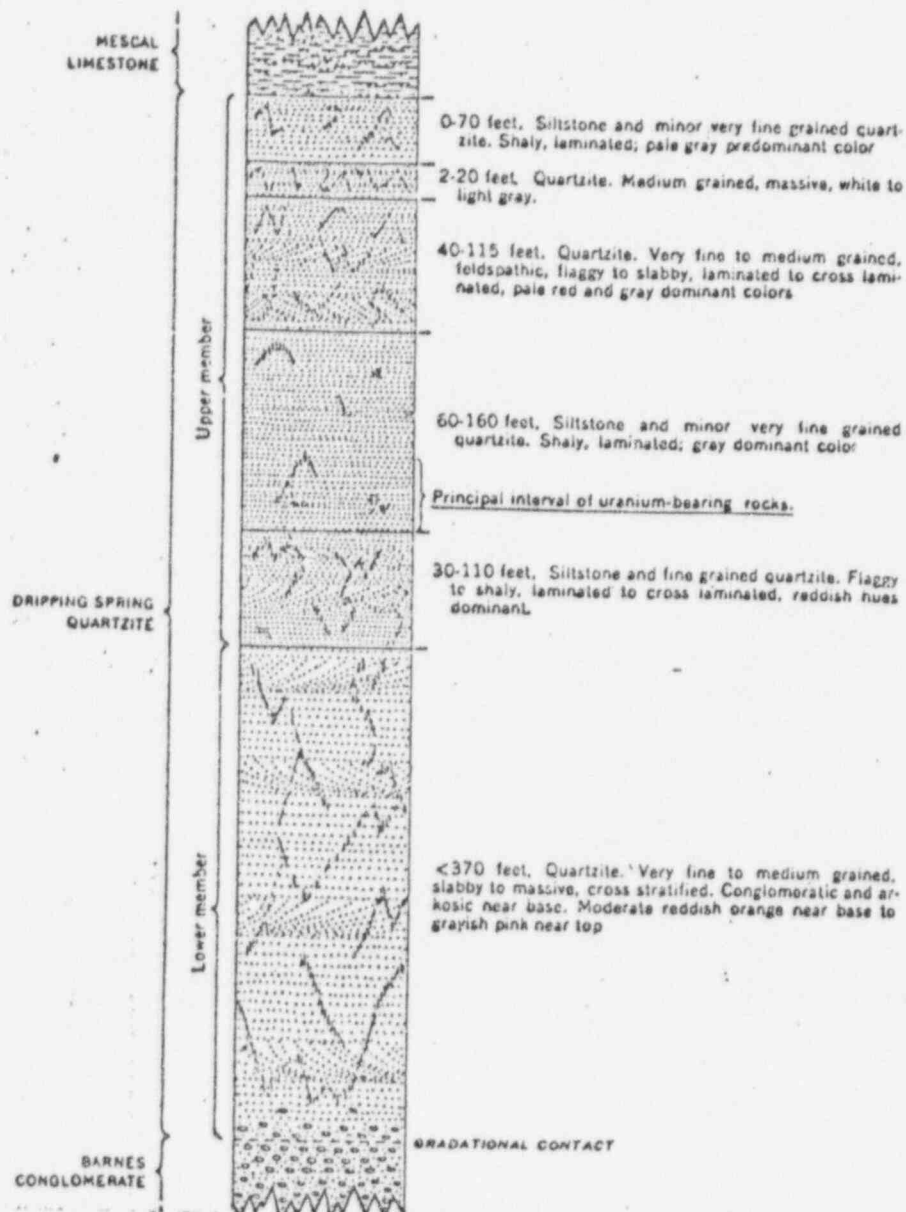


Fig. 3. Generalized Columnar Section of the Dripping Spring Quartzite, Sierra Ancha Region, Ariz.

it is expected that the amount of sulfuric acid generated would make the oxidized mineralization highly mobil, that the grade distribution of the mineralization will be heterogeneous, and it is likely that the ore will be higher grade at the down dip juncture of the beds and predominate fracture system where they intersect the water table.

Sparce hematite in the leached capping indicates oxidation of chalcopyrite to chalcocite and subsequent remobilization of the copper ions. This is further verified by the copper content of the metatorbernite found in the outcrop.

Drilling to date by Pinal Properties, Ltd. has been confined to an area approximately 200 feet in width and 300 feet in length. Using a 0.02% U_3O_8 ore grade cutoff and considering the irregular grade distribution, the boundaries of the orebody have not been defined in any direction. The ore grade cutoff of 0.02% U_3O_8 is determined by using economics of blast inplace--leach inplace mining techniques. Figures 4 & 5 are typical X-sections within the orebody. Figure 6 shows the surface expression of the radiometric anomaly within the immediate vicinity of the Lucky Boy orebody. From this anomaly it appears the primary mineralization trend is striking generally to the Northwest.

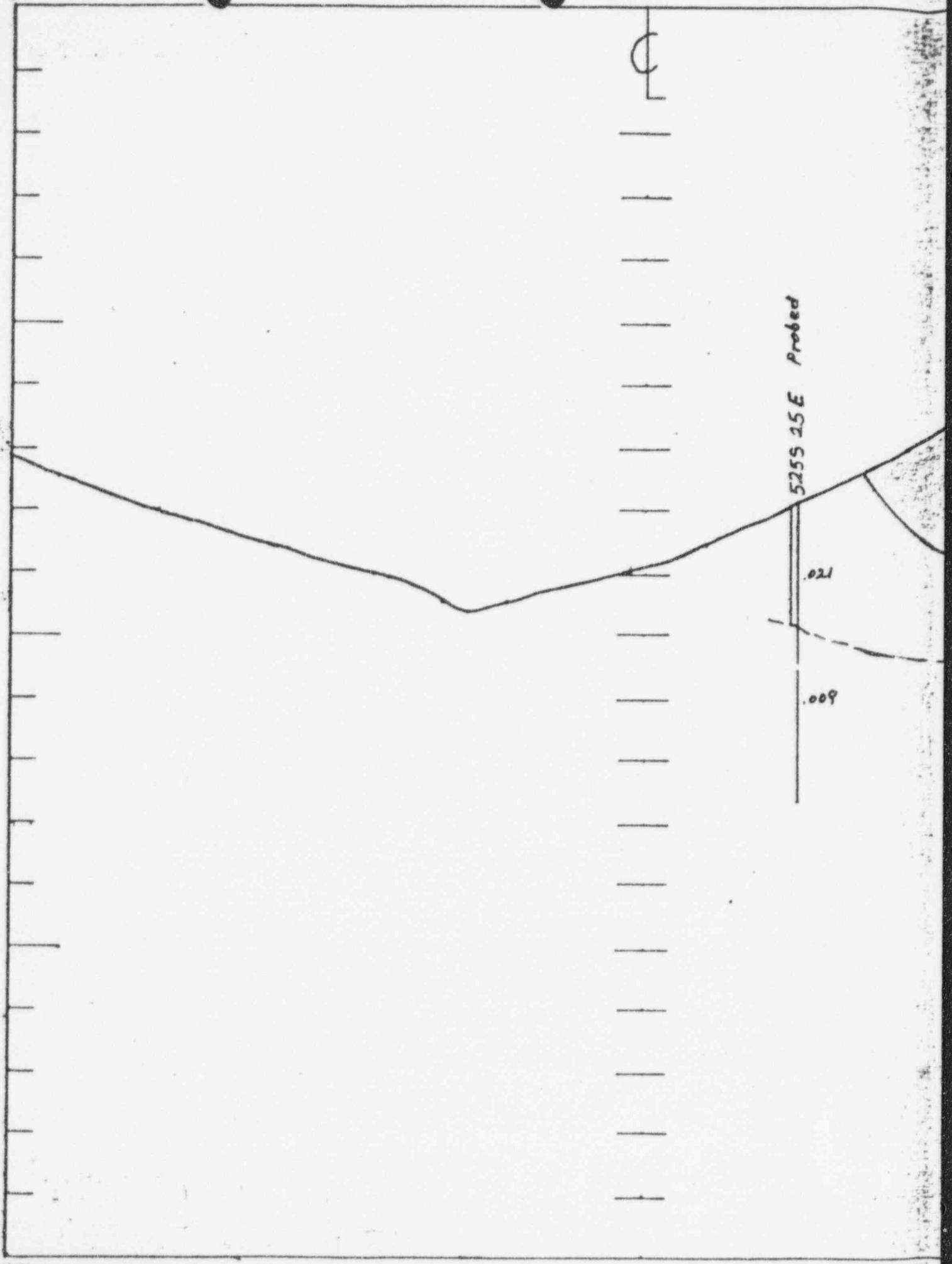
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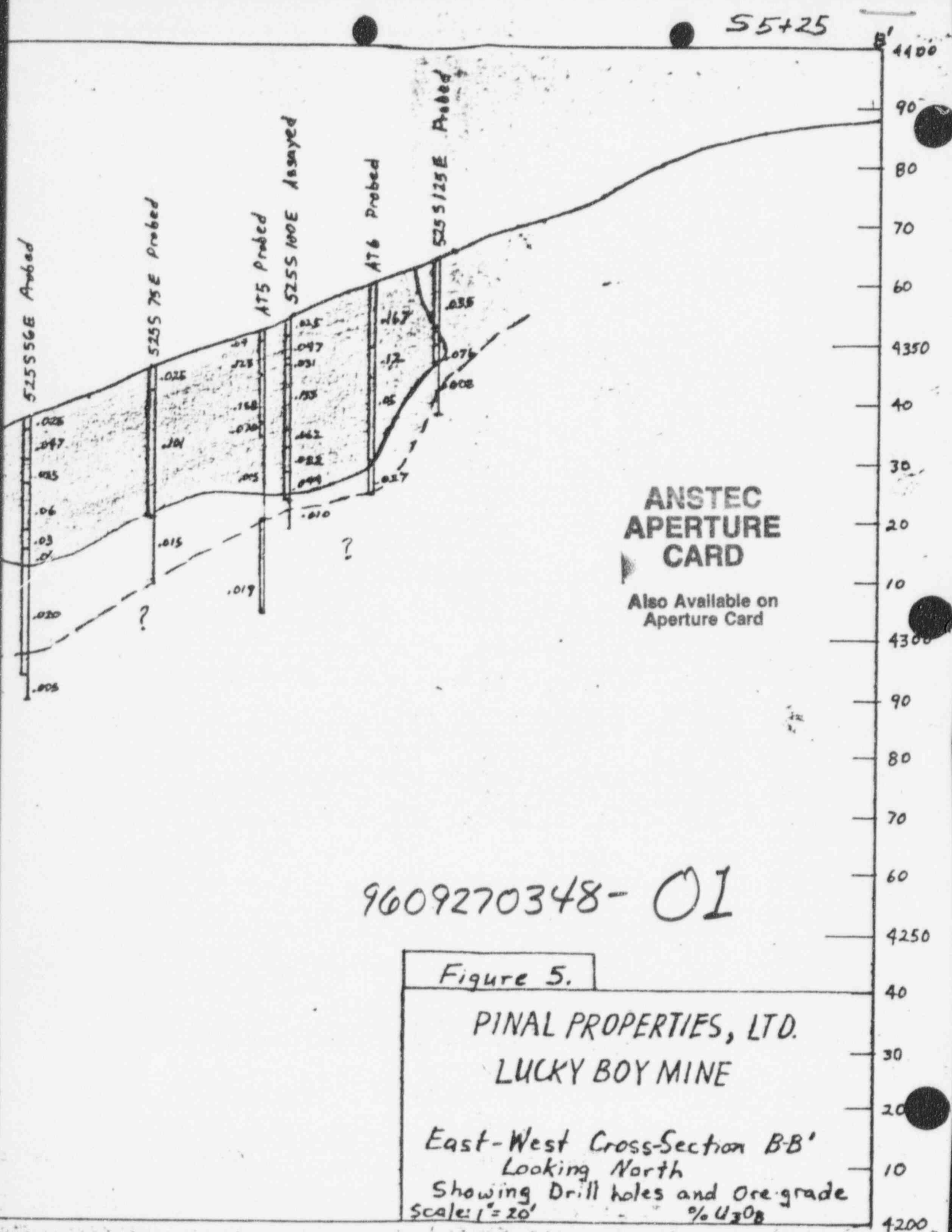


5255 15 E Probed

120

600





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Figure 5.
PINAL PROPERTIES, LTD.
LUCKY BOY MINE
East-West Cross-Section B-B'
Looking North
Showing Drill holes and Ore grade
Scale: 1" = 20'
% U₃O₈

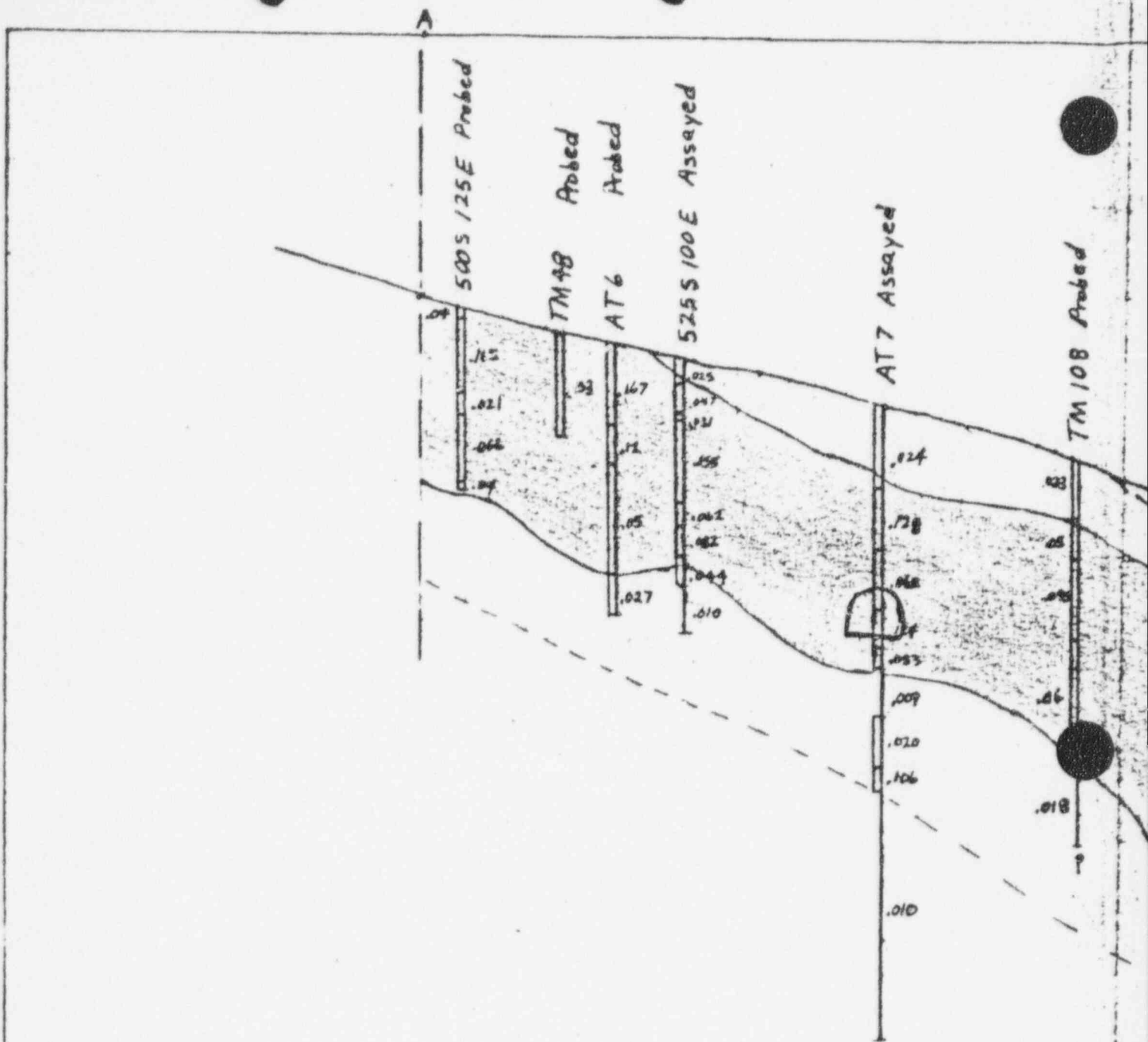


Figure 4.

PINAL PROPERTIES, LTD.

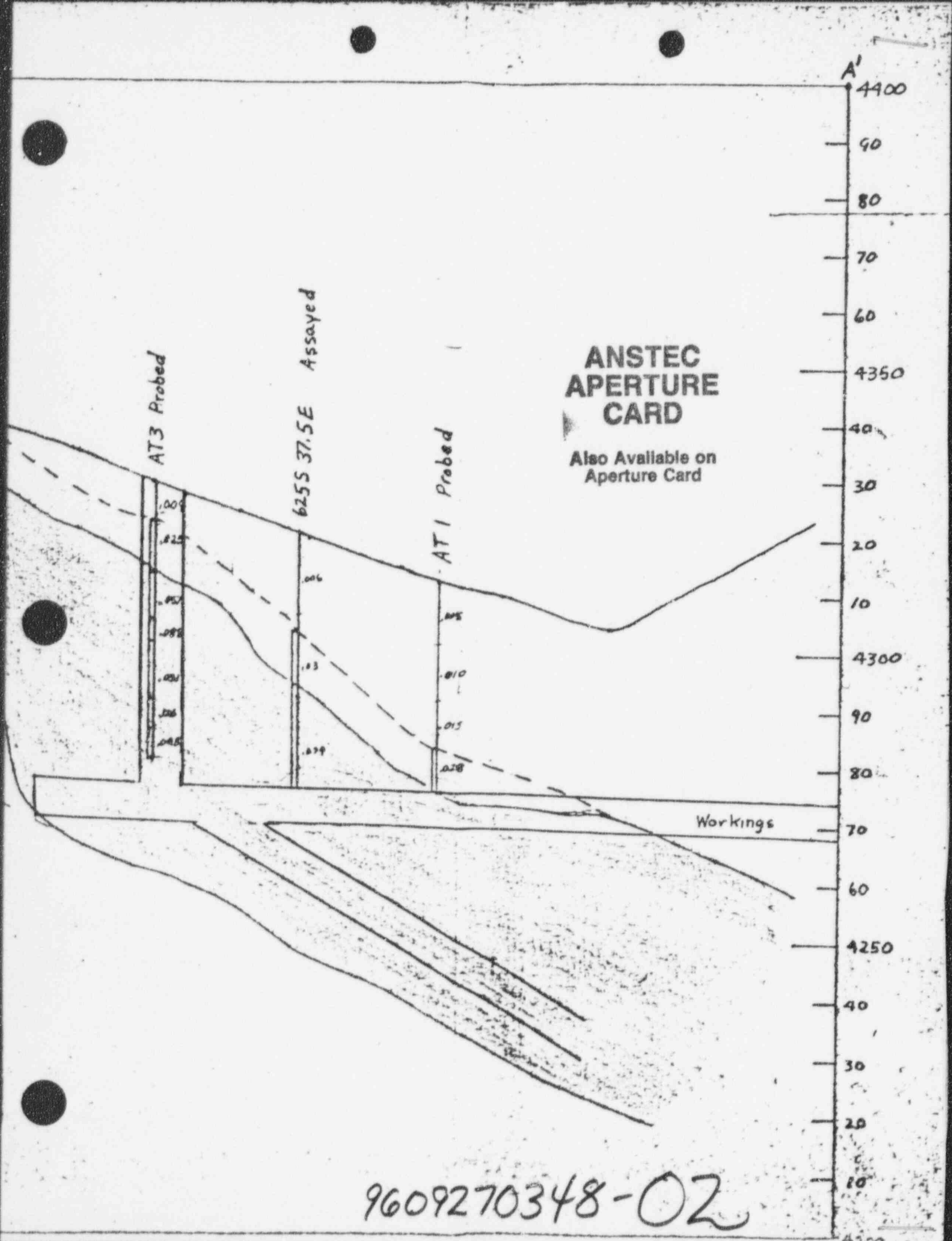
LUCKY BOY MINE

NE-SW Cross-Section AA'

Looking East

Showing Drill holes and Oregrade $\frac{1}{4}$ and Underground Workings

Scale: 1" = 20'



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Radiometric
Anomaly
proposed Heap leach pad
proposed Plant Site

Figure 7.
PINAL PROPERTIES, LTD.
LUCKY BOY MINE
Application for Mineral Lease Submitted
Access from Globe, Arizona
Shows Radiometric Anomaly and proposed
sites
Scale 1" = 400'

To Dripping Springs Rd

32
NW 1/4
State Permit
Sec 32
T2S R15E

(14)

30

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To Globe

Work Performance 7/77-10/77

Since July, 1977, Pinal Properties, Ltd. has drilled 53 test holes amounting to approximately 2,400 feet of drilling. This drilling has been done on a grid pattern and because of relatively steep terrain all drilling has been shallow holes by using a wagon drill. In addition, approximately 3,800 feet of blast hole drilling has been done in preparing drillsite pads and for blasting reliable metallurgical samples. The drillsite pads have been constructed in such a fashion as to permit deep drilling and waste removal compatible with anticipated future mining. Approximately 10,000 tons of ore containing 0.12% U_3O_8 was removed while blasting for the metallurgical sample. At 70% recovery and \$50 per pound on the spot market this material has a gross value of $10,000T \times 2.4 \text{ lbs}/T \times 70\% \text{ rec.} \times \$50/\text{lb.} = \$840,000$. Approximately 10,000 tons of 0.03% U_3O_8 material was removed while preparing the drillsites. At 50% recovery, this material would have a gross value of \$150,000.

On BLM land a 100 ft. by 200 ft. pad has been graded for construction of a possible future heap leach pad. A 100-foot square pad has been graded for planned future pilot plant operations, and a 25 foot by 50 foot pad has been graded for planned acid storage facilities.

Under the direction of Dr. Roshan Bhappu, Mountain States Research & Development of Tucson, Arizona, is

presently designing and fabricating a 100-gpm fixed bed ion exchange pilot plant. Depending on time restraints required for compliance with various regulatory agencies, on site plant installation can begin during November, 1977. Based on this schedule it is anticipated the operation would be producing a yellow cake slurry product during the latter part of January, 1978.

Mine Operation Plan

Plans are to open-cut mine and heap leach all ore having a stripping ratio of 1:1 or less. Future plans include the possibility of underground operations or blast inplace--leach inplace or a combination of both mining techniques.

Heap leach pads will be lined and constructed on Mescal Limestone to provide double assurance that leach liquors will not escape.

Restoration plans include removal of all facilities, clean up, reasonable contouring to natural conditions, and neutralization with Mescal Limestone.

Plant Operations Plan

Preliminary plans are to construct a 100-gpm ion exchange fixed bed pilot plant. All plant operations will be constructed on Mescal Limestone which will provide minimal environmental damage and provide immediate neutralization of any unanticipated spillage. As a further backup system the plant will be constructed on a concrete slab with graded drainage to a common sump.

A 100-gpm plant requires 10 gpm make-up water due to evaporation. This type of plant will require a leaching area of 25,000 sq. ft. at 0.004 gpm per sq. ft. of surface area. This equates to a heap leach pad area of 100 ft. by 250 ft. = 25,000 sq. ft.

The proposed plant will recycle and reuse the leaching liquors with the exception of less than a 1/2 gpm bleed stream which will be evaporated under ambient conditions.

Production from a 100-gpm plant will be proportional to the plant solution feed grade minus the plant return tail solution grade. Assuming 150 ppm feed grade, a 100-gpm plant will produce $100 \text{ gpm} \times 0.012 \times 150 \text{ ppm}$ $\text{U}_3\text{O}_8 = 180 \text{ lbs.}$ of yellow cake per day. Should the plant feed grade run 300 ppm, then the daily production will be 360 lbs. of yellow cake per day.

Figure 7 shows the proposed plant site and proposed

heap leach site.

Appendix IV is a schematic diagram of the plant. The Pregnate solution and Barren solution tanks are glass lined 5/8" steel tanks. These surge tanks are 12 feet in diameter and 45 feet in length and hold approximately 40,000 gallons of each solution. This is more than 10 times the required surge capacity; however, this extra capacity serves as an environmental backup system in the event of a major plant malfunction.

Water Resources

Tentative plans are to use water from the Pioneer Mine Workings located approximately one mile upgrade from the proposed plant site. (See figure 1) Although the exact water production capacity of the mine workings is not known, it is unlikely that 10-15 gpm production will noticeably lower the hydrostatic head. Written approval for use of the water has been granted by Lynn Sheppard who has a royalty interest in the Lucky Boy operation.

Tentative plans are to install a 3" black PVC buried line along existing access roads. Thus minimizing the environmental damage.

Metallurgy

Bottle leach test and column leach test performed by Mountain States Research & Development of Tucson, Arizona, indicated a heap leach uranium recovery of 55% on a 10-day cycle. It is envisioned that a slightly longer cycle will give a 60% recovery and that subsequent flushing through time will give even a higher recovery.

Appendix VI shows Mountain States' test results.

During the initial drilling, Pinal Properties drill hole probe was calibrated in a calibration barrel owned by another company. Assay data proved the resulting readings were off approximately 50%. Therefore, it is necessary to divide the values on the drill logs in appendix V by 2.

Pinal Properties has since constructed a 0.10% U_3O_8 calibration barrel (figure 8) from Mountain States' metallurgical rejects.

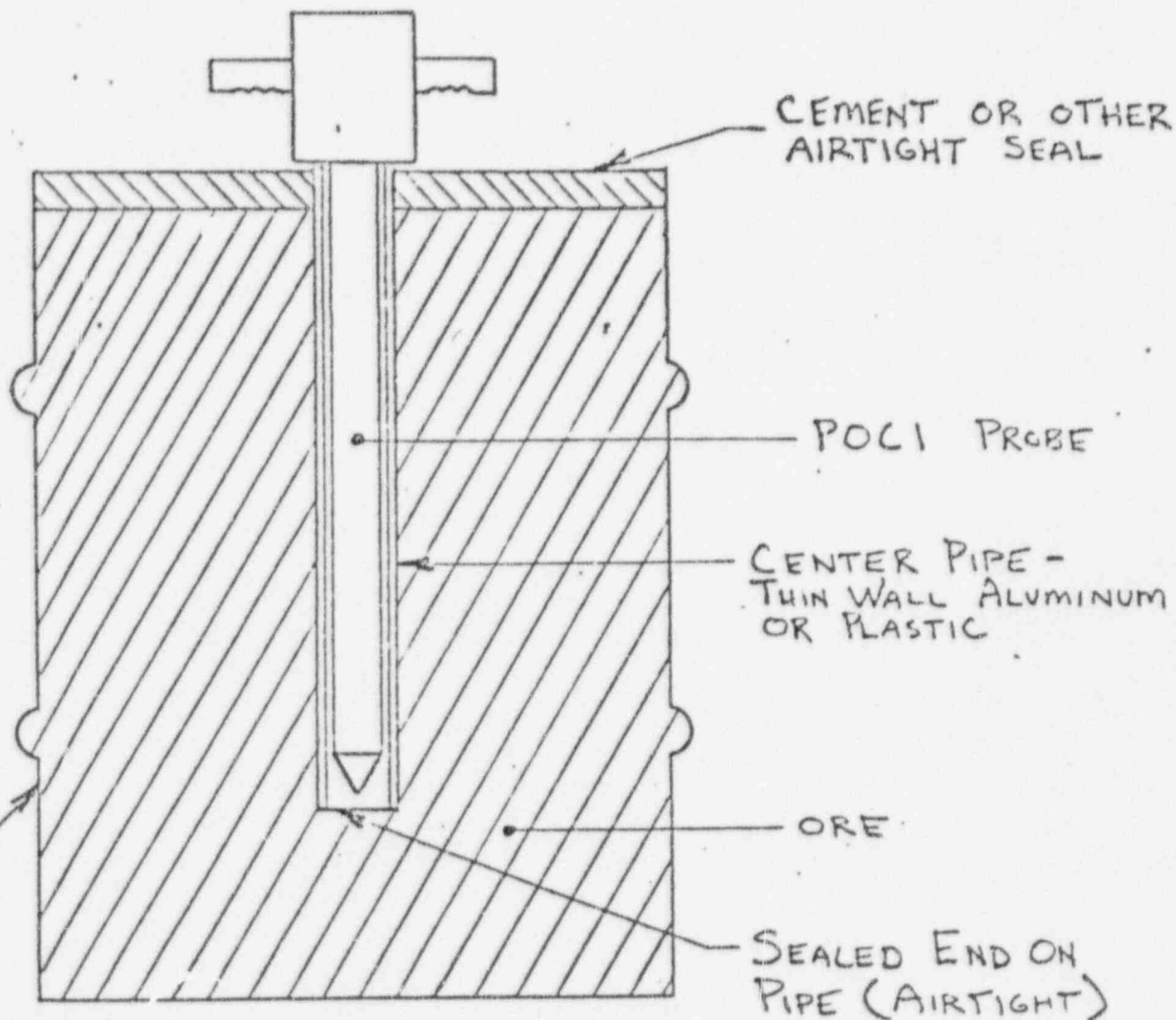


Fig. 8. Calibration Cell for POCI Probes.

DRAWN BY: KG

APPROVED:

REVISED:

6-13-77

MDA MDA

808 Busse Highway,
(312) 696-4250

Park Ridge,
Telex: 28-3

Ore Reserves

Although the Lucky Boy orebody has not been delineated in any direction, close space drilling (25' centers) shows proven minable ore reserves in an area 100' x 300' with an average ore thickness of 50' and with an average grade of plus 0.075% U_3O_8 when disequilibrium factors are considered.

Using 12.5 in place cubic feet per ton this area contains:

$$\frac{100' \times 300' \times 50'}{12.5 \text{ cu. ft.}} = 120,000T @ 0.075\% U_3O_8$$

This equals 1.5 lbs. per ton x 120,000T = 180,000 gross pounds of U_3O_8 . 180,000 lbs. of U_3O_8 x 70% recovery = 126,000 recoverable pounds of U_3O_8 .

Projections from drilling today indicates the mineralization trend is greater than 200 feet in width and greater than 450 feet in length. Radiometric surveys show an anomalous area 1,000 feet in length and several hundred feet in width.

Although the Lucky Boy deposit has geologic potential for containing plus 1,000,000 pounds of recoverable U_3O_8 , additional exploration drilling is not justified until pilot testing proves mining feasibility, metallurgical amenability, and until economic optimization has been demonstrated.

Conclusion

Drilling to date has proven 126,000 recoverable pounds of U_3O_8 with a gross value of \$6,300,000. Pilot testing will require approximately \$1,000,000 of which approximately \$500,000 will be preproduction costs.

Exploration drilling should be continued at the earliest possible date after demonstrating favorable economic parameters from the pilot testing.