

UTAH  
BEAVER  
PHILLIPS PETROLEUM

3 Roosevelt Observation  
Hole

8-27s-8w SL  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90027 (PI)

Contr: CXM. Spud 4-30-77, 7 @ 286, drld to 2200, ran TMPL, GRL, ran  
tbg, no details, TD 2200 (FM-NR). ... Temperature observation well, comp  
6-19-77. (First report and completion).

UT3-022781



**Petroleum Information.**

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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NE/c 1117s 3135w.

4 Roosevelt Observation  
Hole

33-205-9W 3L  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90028 (PI)

EI: 5700 GR.

Contr: CXM. Spud 2-6-77, 7 @ 305, drld to 1764, ran LITH, TMPL, 2 7/8  
tbg @ 1349, TD 1764 (FM-NR). ...Temperature observation well, comp.  
2-28-77. (First report and completion).

UT2-022781



Petroleum Information.

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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NE/c 1992s 252w.

5 Roosevelt Observation  
Hole

28-26s-9w SL  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90029 (PI)

EI: 5750 GR.

Contr: CXM. Spud 3-12-77, 7 @ 310, drld to 1820, ran LITH, TMPL, 2 7/8  
Tbg @ 1819, TD 1820 (FM-NR). ... Temperature observation well, comp  
3-27-77. (First report and completion).

UT1-022781



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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NW/c 2201s 1914e.

7 Roosevelt Observation  
Hole

1-27s-9w SL  
ROOSEVELT HOT  
SPRINGS TO

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API 43-001-90030 (PI)

EI: 6446 KB.

Contr: Dixie. Spud 9-18-78, 9 5/8 @ 263, drld to 2006, ran LITH, TMPL,  
2 7/8 tbg @ 1997, TD 2006 (FM-NR). ...Temperature observation well, comp  
10-16-78. (First report and completion).

UT4-022781



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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NW/c 2032s 50e.

2 Roosevelt Observation  
Hole

10-27s-9w SL  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90026 (PI)

EI: 5880 GR.

Contr: Loffland Bros #5. Spud 2-1-75; 9 5/8 @ 93, 7 @ 387, drld to  
2250, ran ES, TMPL, tstd, no details, 2 3/8 tbg @ 2225, TD 2250 (FM-NR).

... Temperature observation well, comp 4-18-75. (First report and completion).

UT5-022781



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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NW/c 1861s 176e.

8 Roosevelt Observation  
Hole

14-27s-9w SL  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90031 (PI)

EI: 6355 KB.

Contr: Dixie. Spud 8-1-78, 9 5/8 @ 353, drld to 2095, ran LITH, TMPL,  
2 7/8 tbg @ 2084, TD 2095 (FM-NR). ... Temperature observation well, comp  
9-3-78. (First report and completion).

UT6-022781



Petroleum Information.

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BEAVER  
UTAH  
PHILLIPS PETROLEUM  
NE/c 1917s 1259w.

1 Roosevelt Observation  
Hole

17-27s-9w SL  
ROOSEVELT HOT  
SPRINGS TO

API 43-001-90025

EI: 5639 GR.

Contr: Loffland Bros #5: Spud 3-3-75, 9 5/8 @ 103, 7 @ 300, drld to  
2321, ran ES, TMPL, 2 3/8 tbg @ 2315, TD 2321 (FM-NR). ... Temperature  
observation well, comp 3-13-75. (First report and completion).

UT7-022781

 **Petroleum Information.**  
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1 Subsidiary of P. C. Texas Company

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UTAH  
BEAVER  
MCCULLOCH GEOTHERMAL. 1-28 Acord  
SW/c 1320n 1322e.

26-26s-10w SL  
ROOSEVELT HOT  
SPRINGS GW

10,000. (3-22-79 BK).  
Spud 3-31-79, 13 3/8 @ 1100, drld to 7924, ran ES, TMPL, 9 5/8  
@ 7906, drld to 11,452, ran DI, SONL, TMPL, drld to 12,646, ran  
ES, TMPL, ran 6 5/8 blank lnr 7670-12,600, perf & tstd unrptd int, no flow,  
TD 12,646. ...Susp oper 8-1-79 (est).

UT1-110179

 **Petroleum Information.**  
CORPORATION  
(Subsidiary of A.C. Refine Company)

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UTAH  
BEAVER  
UNION OIL OF CALIF  
SE NE NW.

42-7 Cove Fort  
Sulphurdale Unit

7-26s-6w SL  
COVE FORT U

(12-10-78 BK).

Spud 2-10-78, drld to 7705, ran CNL-FDL, BHC, HDT, DIL, 9 5/8 @  
3357; max rec temp = 338 degrees, TD 7705. ...Temperature  
observation well, comp 2-28-78 (est).

UT1-033079



**Petroleum Information.**

CORPORATION

A Subsidiary of A.C. Nielsen Company

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UTAH  
BEAVER  
GETTY OIL  
N/4 990s 330e.

52-21 KGRA

21-27s-9w SL  
ROOSEVELT HOT  
SPRINGS SUS

(2-3-78 BK). El: 5882 KB.  
Contr: Coastal #2. Spud 2-3-78, drld to 6252, ran TMPL,  
BHC-SONL, NEUT-DENL, DILL, "Fracture-Identification" log, drld  
to 7500, ran TMPL, BHC-SONL, NEUT-DENL, DILL, "Fracture-Identification"  
log, TD 7500 (Pre Cambrian-Metamorphics). Sus operations 5-10-78, mud  
loggers were installed @ unrptd depth.

UT2-033079



**Petroleum Information.**

CORPORATION

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UTAH  
BEAVER  
REPUBLIC GEOTHERMAL 57-29  
NW/c 4030s 3280e.

29-30s-12w SL  
WILDCAT (THERMAL  
HOT SPRINGS) SUS

(10-5-77 BK). El: 4400 (approx) KB.  
Spud 10-5-77, 20 @ 1200, 7 @ 4500, drld to 6980, ran ES, TMPL,  
TD 6980. . . . Sus 6-25-78.

UT3-033079



Petroleum Information.

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Sec: /-26S-6W

K1178X	s-2-11-11	1520-7692
K1178Y	s-c-neu-for-den	3358-7679
K1178Z	s-bhc-son	3358-7674
K1179S	s-c-neu	50-3428
K1179W	s-dip	6004-7705
HC1372B	nl-hc	50-7735
HC1372C	hc	40-7730

Thermal Power Company

#14-2 Utah State

Field: Roosevelt

Sec: 2-27S-9W

K363Z	s-ies	650-6118
K364S	s-c-neu-for-den	600-6121
K364W	s-bhc-son-gr	600-6112
K364X	s-hi-res-temp	1500-6121
K364Y	s-temp	100-1810
K364Z	as-pres	0-4387
K365S	as-pres	0-6084
K365W	as-temp	0-6084
K365X	as-temp	0-6091
K365Y	as-temp	0-6106
HC1320D	alpha-temp	79-6100

Los Alamos Scientific Laboratory

#9-1/L.A.S.L. C/t-2 Phillips K.G.R.A.

Field: Roosevelt Hot Springs

Sec: 9-27S-9W

K3347Z	da-i	4258-6844
K3348S	da-temp	0-6823
K3348W	da-c-den	770-6825
K3348X	da-grn	770-6827
K3348Y	da-acs-bnd	760-5800
K3348Z	s-grn	800-6854
K3349S	s-bhc-son	4244-6850

Thermal Power Company

#72-16 Utah State

Field: Wildcat

Sec: 16-27S-9W

K362X	s-bnd	0-999
K362Y	s-hi-res-temp	50-1012
K362Z	s-temp	9-525
K363S	as-pres	0-1460
K363W	as-temp	0-1210
K363X	as-temp	0-1229
K363Y	as-pres	0-1229
HC1320C	alpha-hc	85-1245

Getty Oil

#52-21 USL U-27-391KGRA

Field: Roosevelt Hot Springs

Sec: 21-27S-9W

K1564X	s-di-ll	183-7508
K1564Y	s-bhc-son	760-7507
K1564Z	s-neu-for-den	183-7512
K1565S	s-ff	2043-7516
K1565W	s-temp	50-7504
K1565X	p-temp	183-7500
HC1335B	hc	184-7500

trical well logs on more than 80 geothermal wells in nine states. Logs on wells in California may be purchased from West Coast Well Log Service, Box 9279, 4300 Easton Drive, Bakersfield, California 93389. Phone is (805) 327-5393. Logs for all other wells may be ordered from Rocky Mountain Well Log Service, 333 W. Colfax Avenue, Suite 10, Denver, Colorado 80202, phone (303) 893-2771; or from Electrical Log Services, 500 N. Baird Street, Midland, Texas 79701, phone (915) 682-0591. Reference numbers listed should be used when ordering all logs. The log list will be published periodically and expanded as new geothermal logs become available.

UTAH

BEAVER COUNTY

Union Oil Company of California  
#42-7 Cove Fort-Sulphurdale Unit

Field: Wildcat

Sec: 7-26S-6W

K4711X s-bnd-gr 162-3314

K4711Y s-temp 0-7550

K4711Y go-temp 200-7332

Geothermal Power Corporation

#15-6 PC

Field: Roosevelt Hot Springs

Sec: 18-27S-9W

K2535X s-c-for-den-gr 60-1890

K2535Y s-bhc-son 50-1889

K2535Z s-ies 40-1885

GAMMA RAY SPECTROMETER STUDY OF MILFORD KGRA

Dr. Stan Ward  
Nancy Benson

UNIVERSITY OF UTAH  
RESEARCH INSTITUTE  
EARTH SCIENCE LAB.

During the period of July 19, 1975 through July 22, 1975, data were collected using an Exploranium portable four channel gama ray spectrometer on various outcrops and alluvium in the Milford KGRA. The data reveal qualitative differences in 1) rock type, 2) rocks with varying degrees of metamorphism, 3) varying mixtures of alluvium, 4) and different aged hot springs deposits overlying the Opal Dome fault.

Site #1 was an outcropping of granite on the Bailey Springs Rd. This site was used as a constant test site every morning before further data were collected. Here also the experiments were performed to determine optimum height between detector and the ground, optimum counting time, and statistical precision of the data. From these experiments, a height of 40 cm and a counting time of 4 minutes were determined sufficient. Statistical evaluations are contained in Appendix 1. Table 1 lists data collected on site 1 and other granite outcrops. Sites 1 and 2 were located within 50 meters of each other. Site 16 was at a Pcm and Tg contact on the Pass Rd. traverse, while site T18 was located at the Rock Corrall Recreational Site. That the standard deviation for all data is from 4 to 14 times the standard deviation at site 1, may indicate that there are significantly different granite types.

SITE	DATE	AVE. TOTAL	AVE. K	AVE. U	AVE. TH
1	7-19-75	15475	1437	299	191
1	7-21-75	15599	1466	297	190
1	7-22-75	15438	1458	294	212
T18	7-22-75	15209	1395	305	182
2	7-19-75	13796	1346	255	122
16	7-20-75	14197	1627	246	76
4	7-19-75	12633	1227	226	130
5	7-20-75	12798	1280	200	88
Ave for all		14393	1404	265	149
		$\sigma = 1220$	$\sigma = 124$	$\sigma = 39$	$\sigma = 52$
Ave Site 1		15504	1453	297	198



There were 38 sites along the Pass Rd., spaced every 0.1 mile, where the alluvium was tested. Table 2 contains the results of this traverse.

CHANNEL	Ave SITES 1-15	Ave SITES 16-27	Ave SITES 28-38	Ave SITES 1-38
total cpm	12673	10450	10746	11417
K cpm	1153	1105	1136	1133
U cpm	239	176	178	202
Th cpm	112	82	107	101

Table 2

Sites 1-15 contain the area approximately between the intersection of the Pass Rd. with the Bailey Springs Road and the intersection of the Pass Rd. and the Schoo Mine Rd. This portion of the traverse showed the highest cpm on all four channels. At site 16 approximately 80 meters from the road is the Pcm and Tg contact. At this point there is a marked decrease in gamma ray detection. This trend continues for the remainder of the traverse, although there is a slight increase from site 28 through site 38. Site 28 occurs approximately where the Pass Rd. crosses the Dome fault.

There were noted direct variations of gamma ray cpm with extent of metamorphism. Table 3 summarizes the data for what has been mapped as pre-Cambrian gneiss. The extent of metamorphism was shown in the progression from almost no visible bands to linear obvious banding to very contorted obvious banding. Sites K,M,N were all in Negro Mag Wash, while the outcrop 16 was located off the Pass Rd. 80 m.

SITE	Extent Metamorphism	Total cpm	k cpm	U cpm	Th cpm
16	mild	9115	848	178	94
N	moderate	12060	998	263	185
M	severe	16878	1208	419	304
V	severe	17400	1400	200	200

... types of volcanics were tested: obsidian conglomerate layer, light gray unit above the basal obsidian conglomerate, basalt, pumice, and perlite. Table 4 lists results of these tests.

SITE	ROCK TYPE	TOTAL cpm	K cpm	U cpm	Th cpm
6	Obsidian	14137	1335	287	125
T2	Obsidian	15999	1584	332	122
7	Lt. Gray	12782	1165	265	121
A1	Basalt	6165	531	108	66
T1	Perlite	14313	1446	290	129
T21	Perlite	16308	1333	381	72
T22	Perlite	17870	1447	447	229
T20	Pumice	14563	1190	355	186
T23	Pumice	17830	1461	454	243

Table 4

A traverse was made across the Opal Dome at 1560 North. Graph 1 illustrates gamma ray total count variations with position relative to the dome. Graphs 2 and 3 show these variations with respect to Uranium and potassium. Note that the three graphs vary identically qualitatively on the west slope of the dome, indicating that the fluctuations are not due just to statistical variations. The graph reflects a generally symmetrical radioactivity across the fault, as well as the increase in total gamma ray activity as the proportion of granitic alluvium to sinter increases. There was also a significantly lower total gamma ray count in the older horizontal layered sinter than in the vertically layered younger sinter. The very low gamma exposure rates directly over the silicious deposits is also in agreement with the findings of Wollenberg.<sup>1</sup>

Background measurements were collected over water at the Minersville Reservoir. Table 5 lists the average background readings.

<sup>1</sup> Wollenberg, Harold A., "Radioactivity of Geothermal Systems," Second United Nations Symposium on the Development and Use of Geothermal Resources

Channel	cpm
Total	928
K	53
U	20
Th	14

Table 5

In the laboratory an attempt was made to calibrate the instrument as well as to compare laboratory with field measurements. The laboratory and field measurements appear to vary in an inconsistent manner. At this point, no correlation has been made. It is, therefore, not possible to calibrate either.

The method used to calibrate the instrument does not even distinguish between the two standards with analyses shown in Table 7.

	Norite	Granite
K <sub>2</sub> O	0.26%	4.98%
U <sup>2</sup>	0.50 ppm	14 ppm
Th	0.50 ppm	56 ppm

Table 7

As table 8 indicates, there is virtually no difference shown in the experimental results.

	TOTAL	K	U	Th
Norite	6158	560	155	72
Granite	6047	542	156	68

Table 8

Table 9 shows incongruent sensitivities.

<del>K - %/count</del>	K - %/count	U-ppm/count	Th-ppm/count
Norite	.000393	.00323	.00694
Granite	.000406	.0897	.824

Table 9

The standard sample was spread onto a paper towel. The sample thickness was 1/8". The towel was 20 inches square and the scintillator held 10 above the towel. It appears that the sample volume was not sufficient for detection. Unfortunately, the desk top, on which the towel sat, was not counted.

## Appendix 1

On July 20th statistical tests were conducted at Site 1 in order to obtain a standard deviation numbers for each of the four channels at the site. After those tests were concluded, the batteries were changed. It now appears that the battery strength, and therefore counts sensed, decreased through these experiments. These tests are not considered valid.

Table 6 compares the std dev. obtained at site 1 with the square roots of the cpm's obtained there.

	TOTAL	K	U	Th
std. dev.	88	15	3	12
Sq. Root counts	125	38	17	14

Table 6

In each case, the standard deviation is smaller than statistically to be expected.

GRAPH 1

TRAVERSE ACROSS OPAL DOME

vertical sinter

horizontal sinter

820

760

700

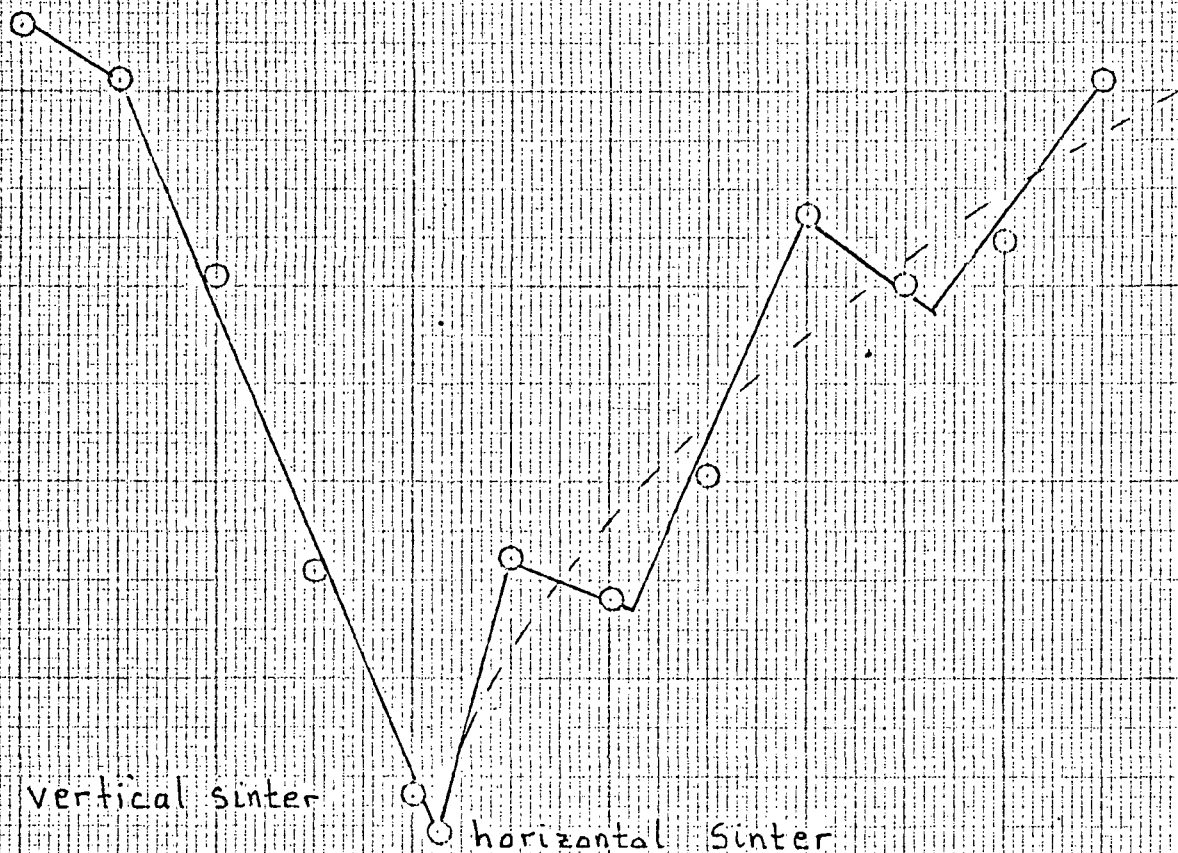
640

580

520

460

East Coordinate on ~1560 N.



Graph 2  
Uranium TRAVERSE ACROSS OPAL DOME

Uranium Counts per Minute

180  
160  
140  
120  
100  
80  
60  
40  
20  
0

820

760

700

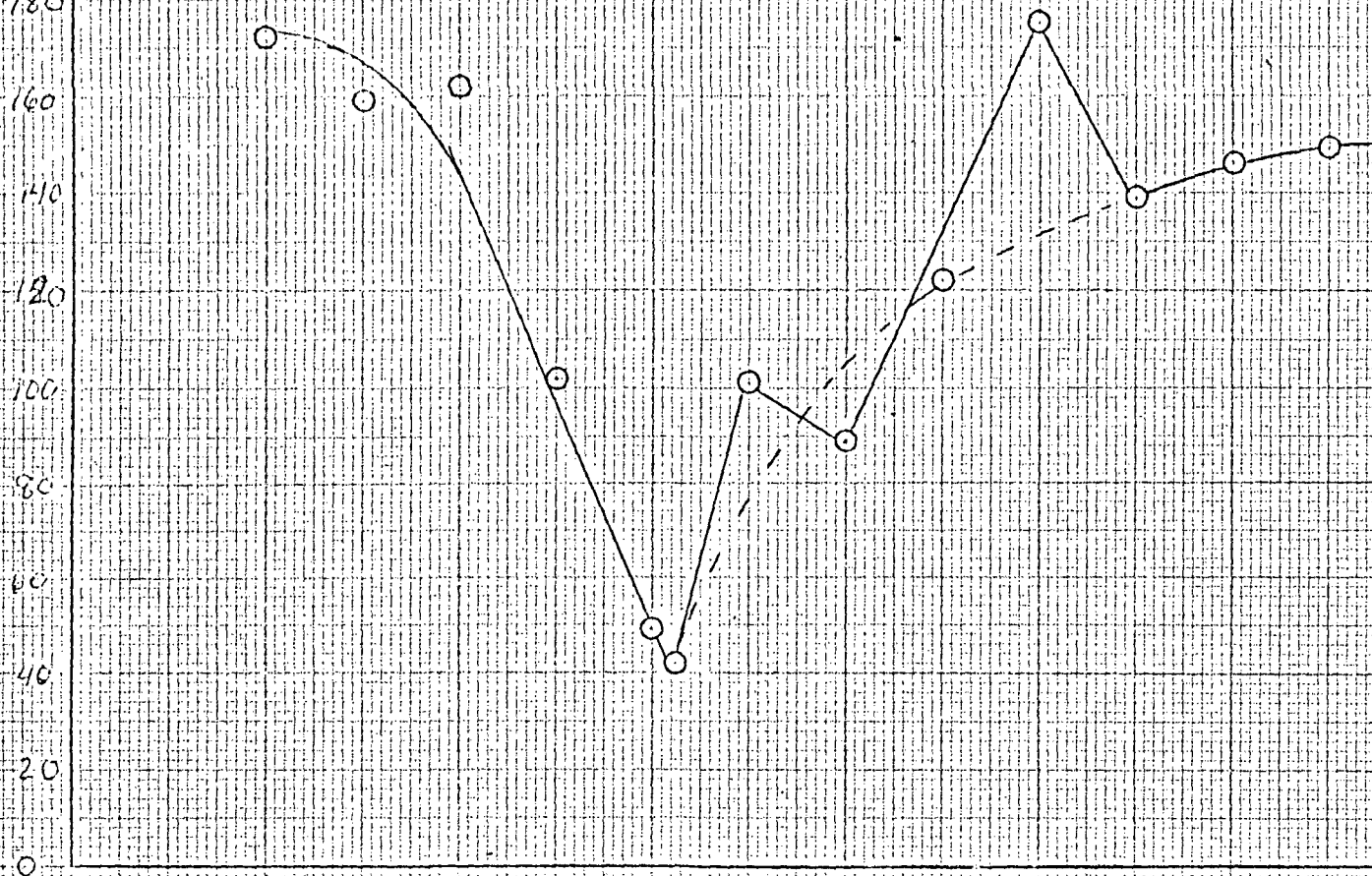
640

580

520

460

East on 1560 North



Graph 3

Potassium Traverse Across Opal Dome



820

760

700

640

580

520

760

East on 1560 North



GAMMA RAY SPECTROMETER STUDY OF MILFORD KGRA

Dr. Stan Ward  
Nancy Benson

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SITE	DATE	AVE. TOTAL	AVE. K	AVE. U	AVE. TH
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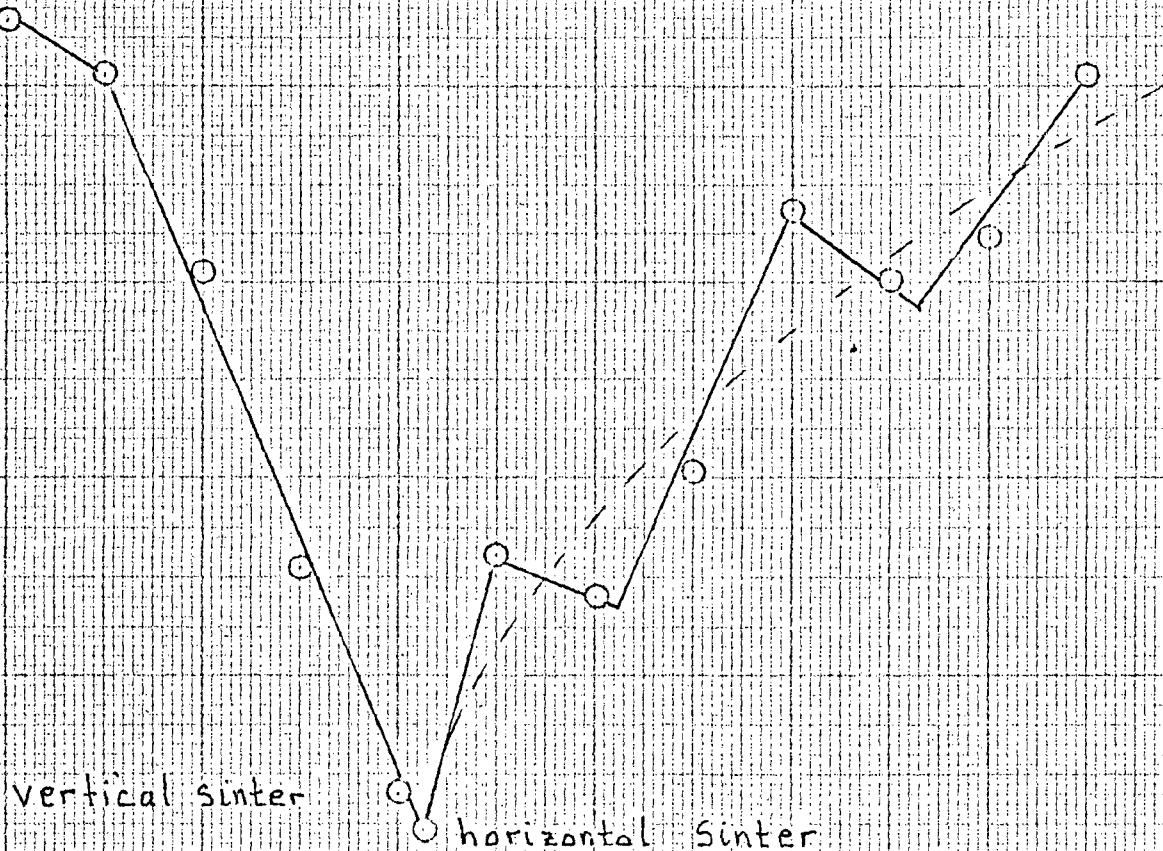
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640

580

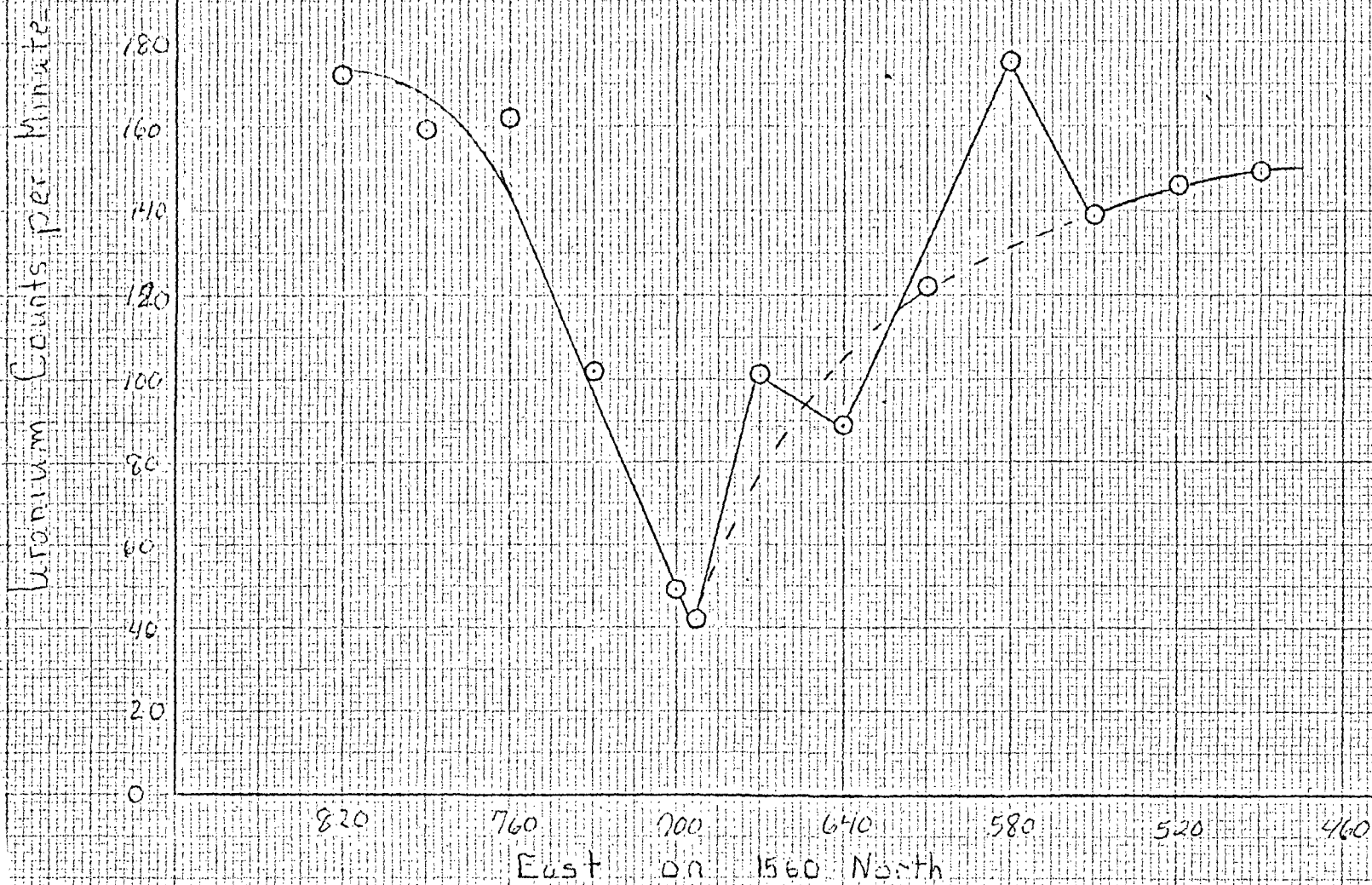
520

460

East Coordinate on ~1560N.



Graph 2  
Lithium TRAVERSE Across Opal Dome



Graph 3

Potassium Traverse Across Opal Dome



East on 1960 North