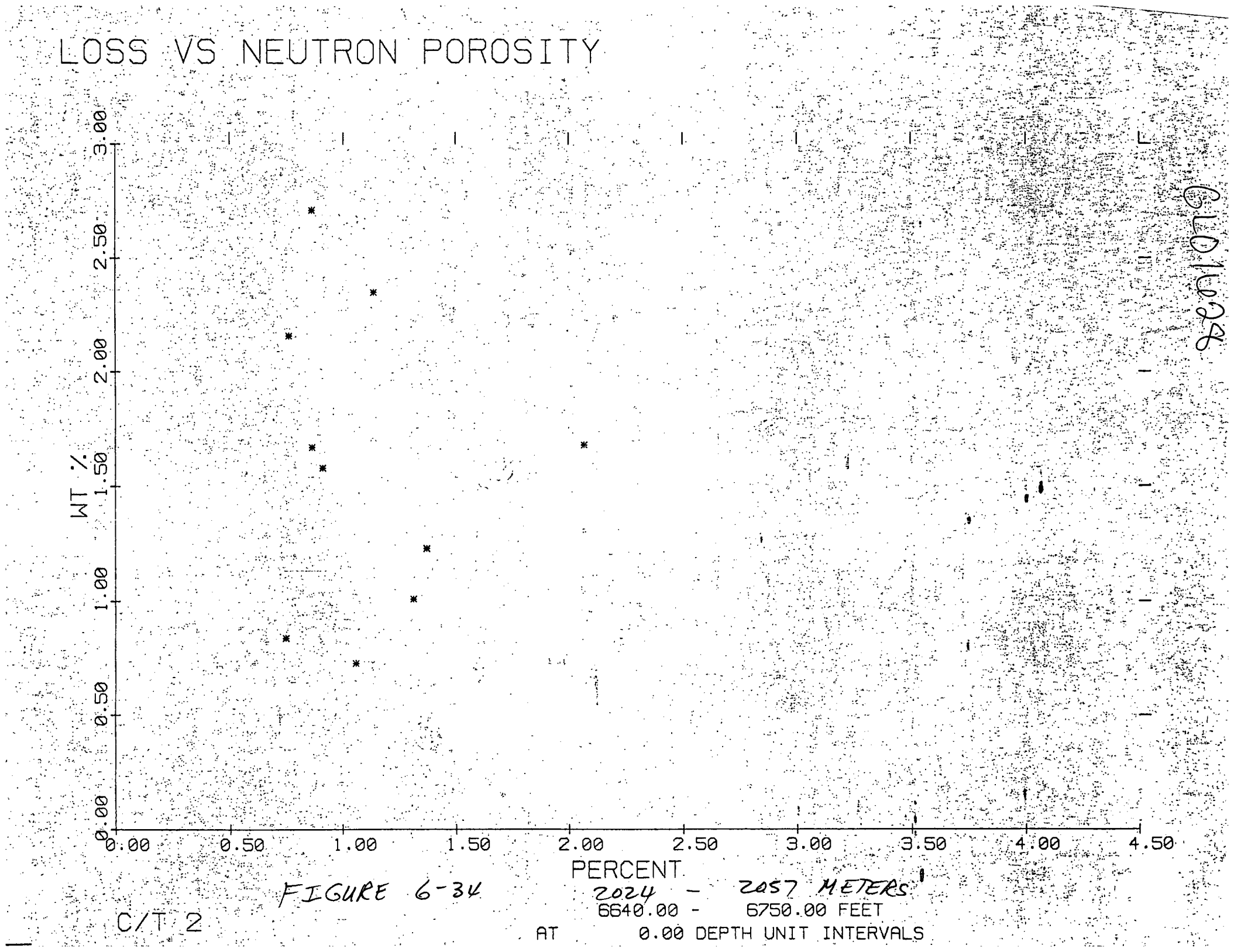
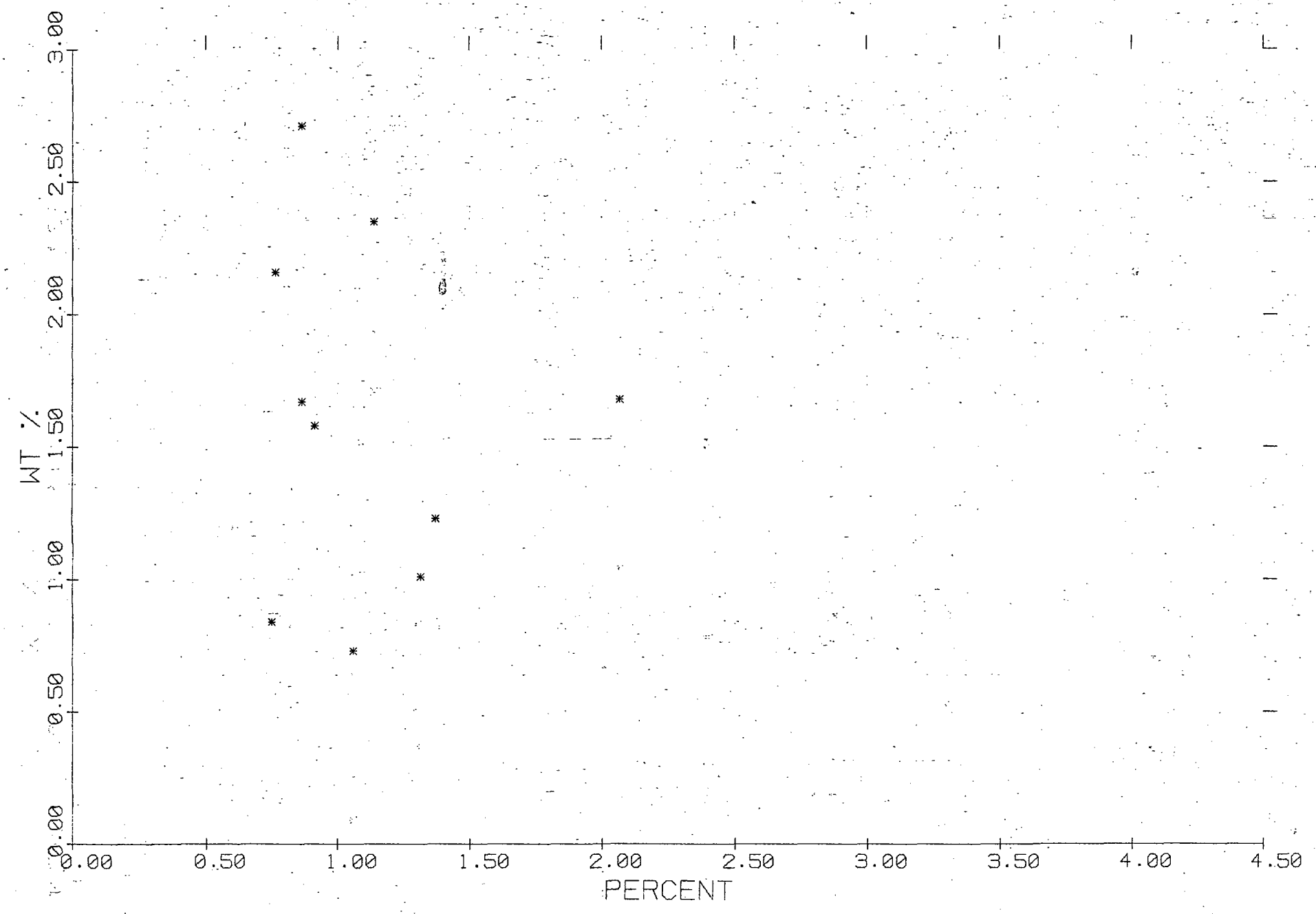


FIGURE 6-34

C/T 2

GLO 1b24

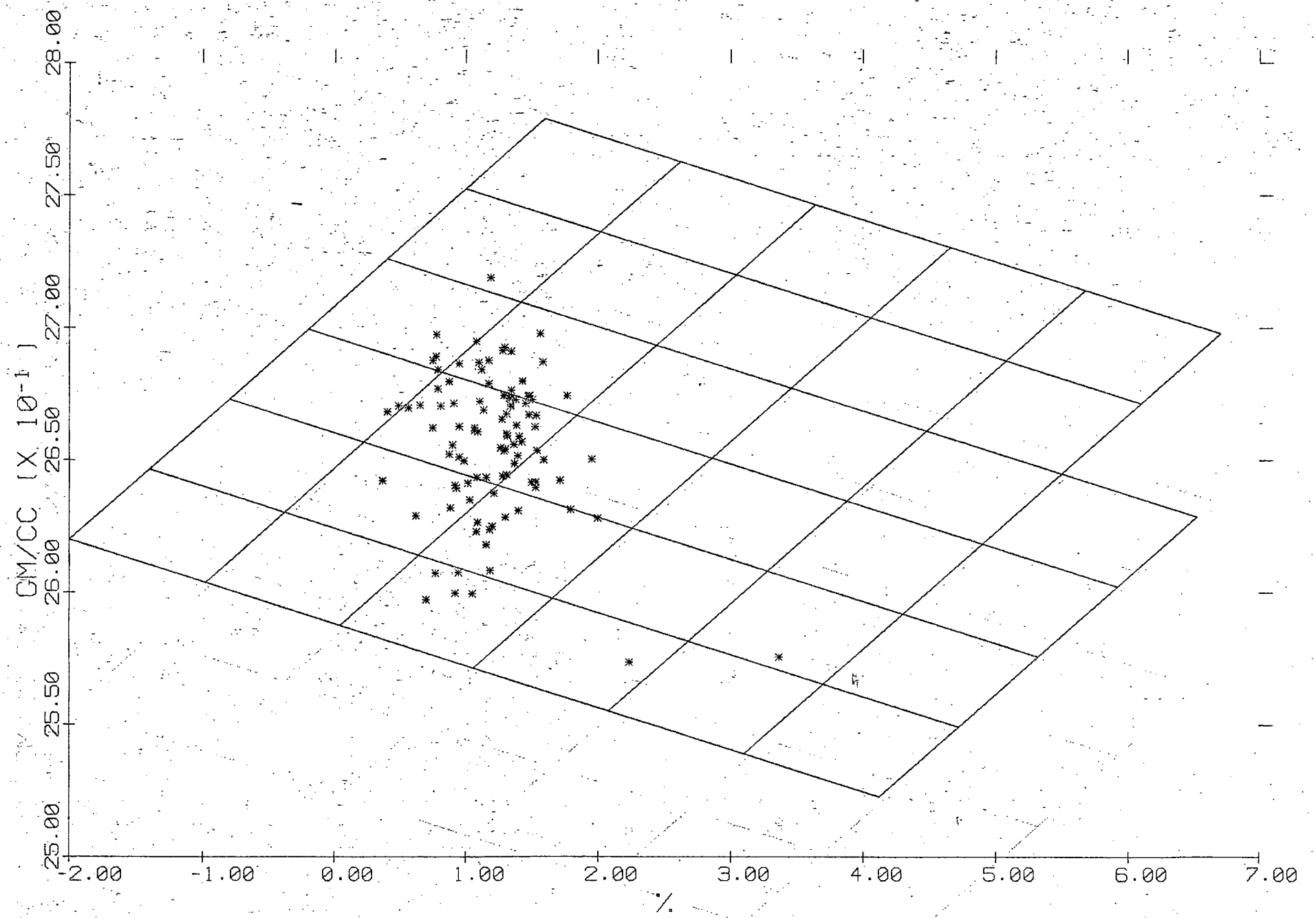
LOSS VS NEUTRON POROSITY



C/T 2

6640.00 - 6750.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

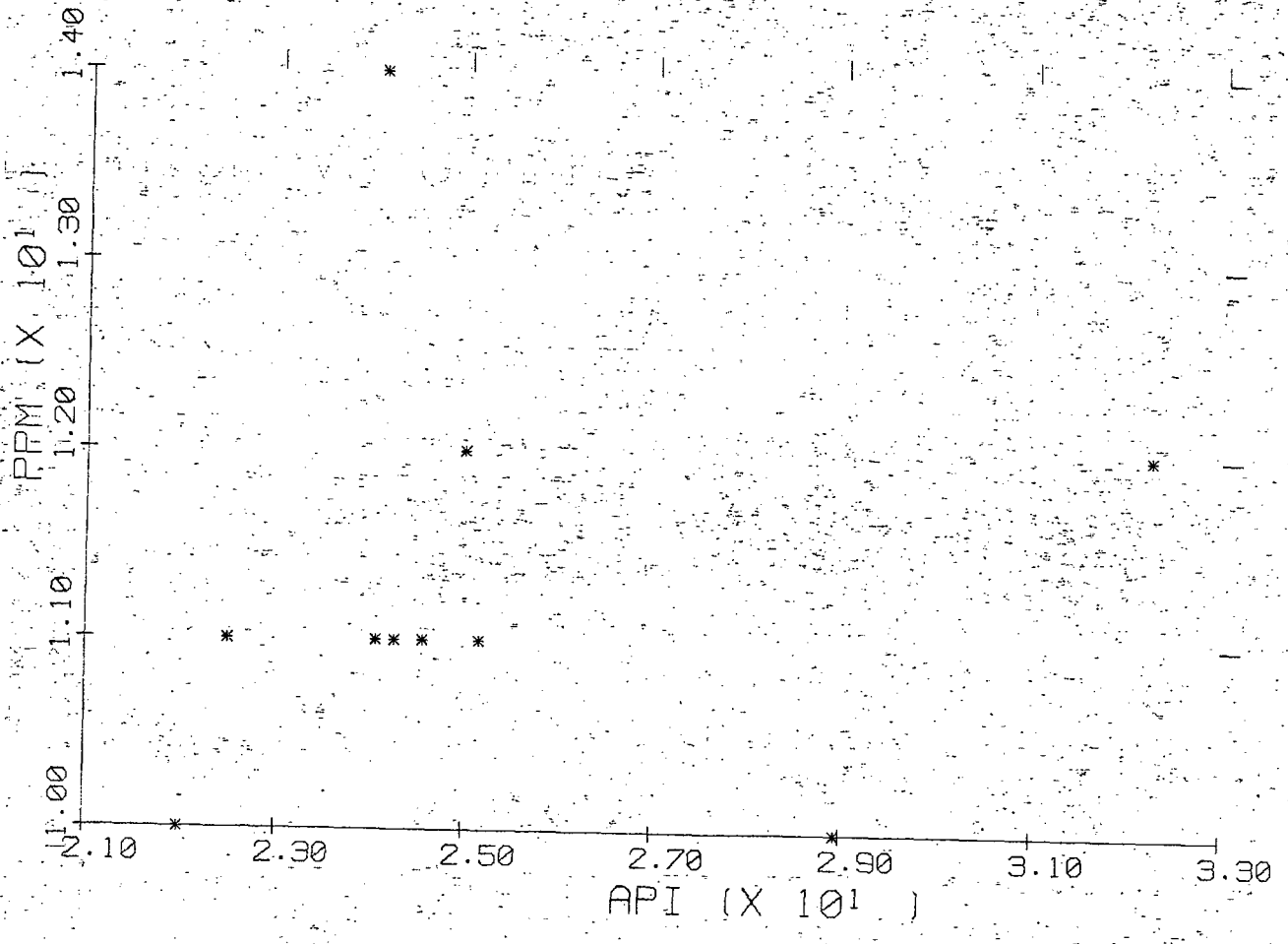
BULK DENSITY VS NEUTRON POROSITY



C/T-2

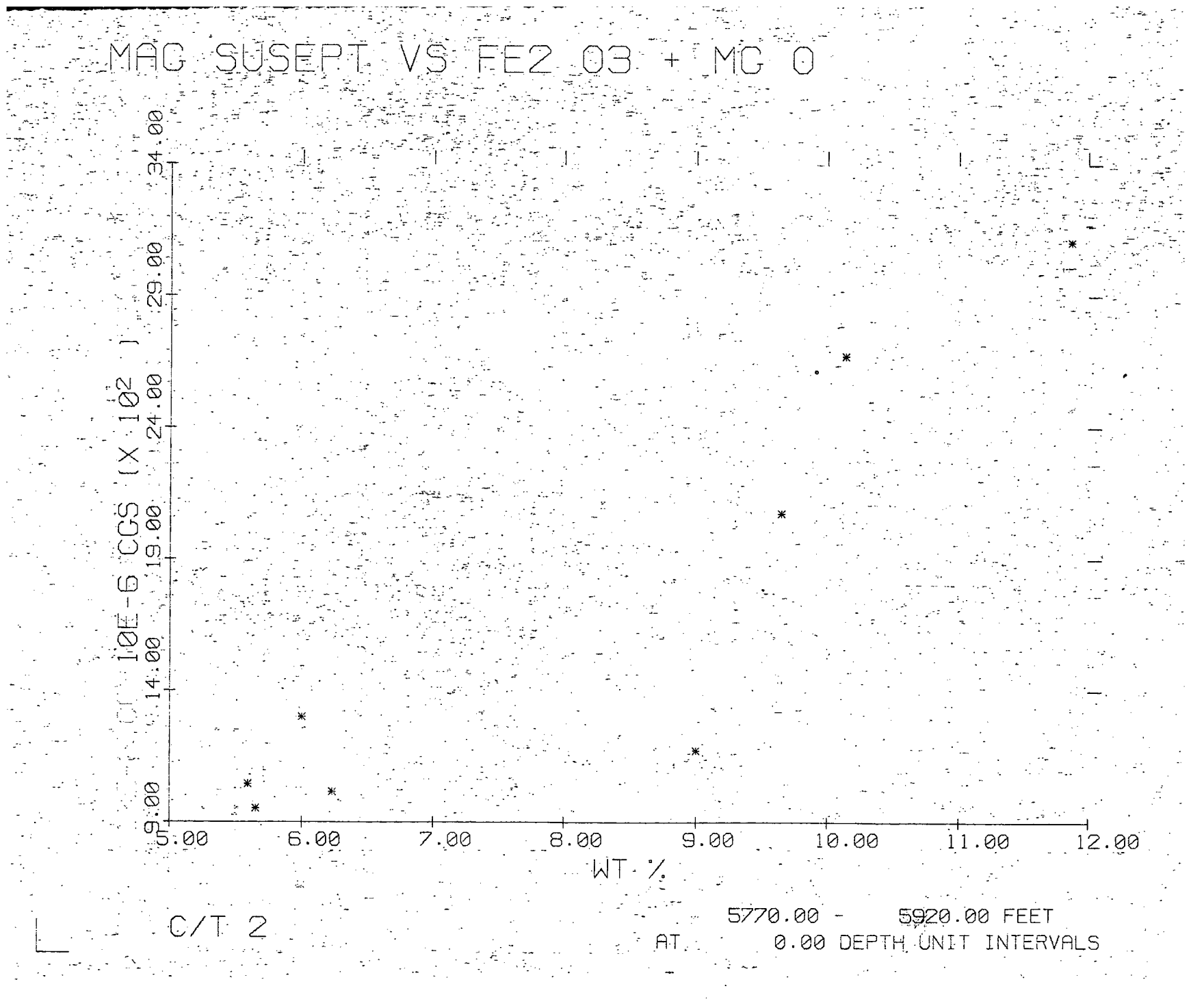
6601.00 - 6799.00 FEET
AT 2.00 DEPTH UNIT INTERVALS

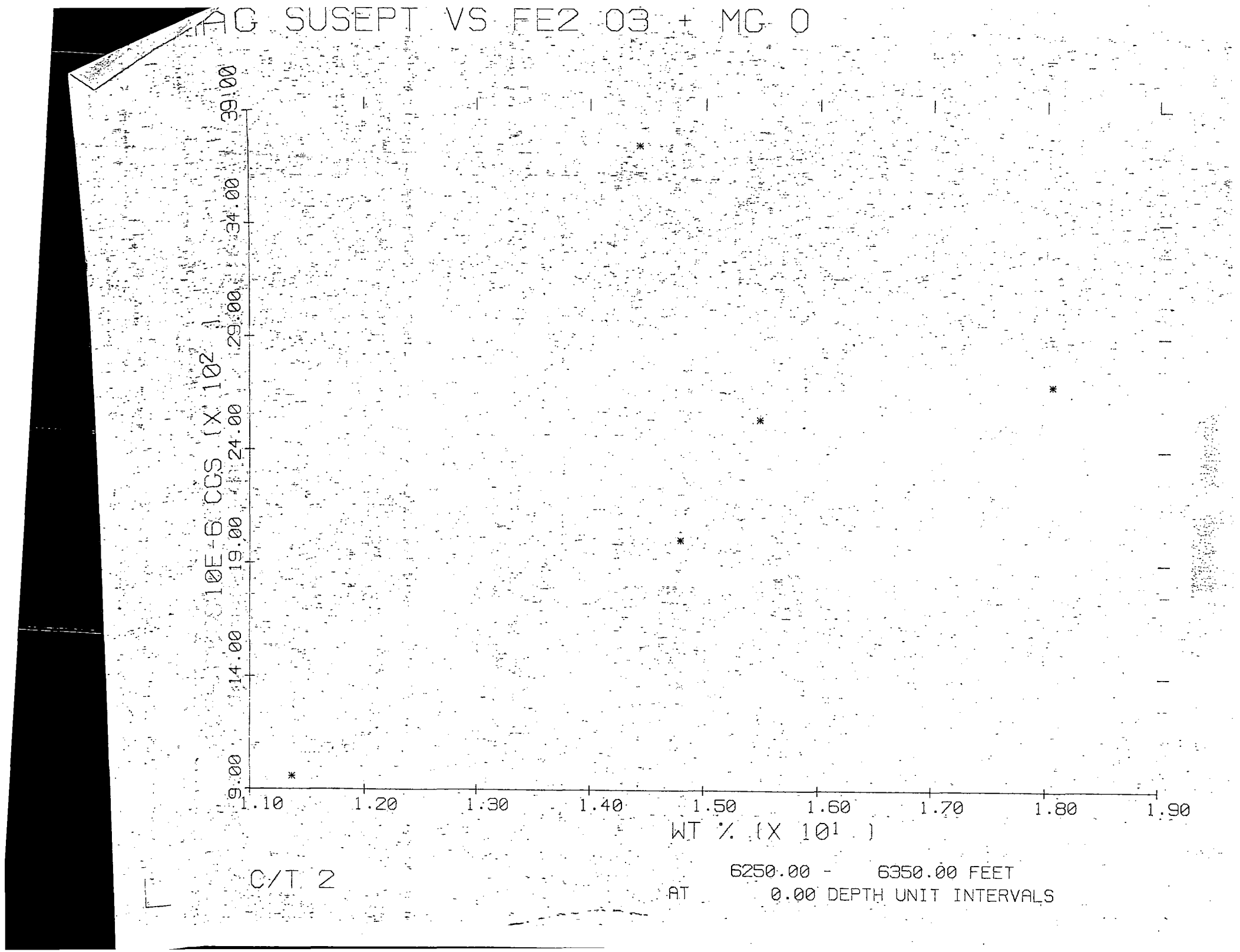
LITHIUM VS GAMMA

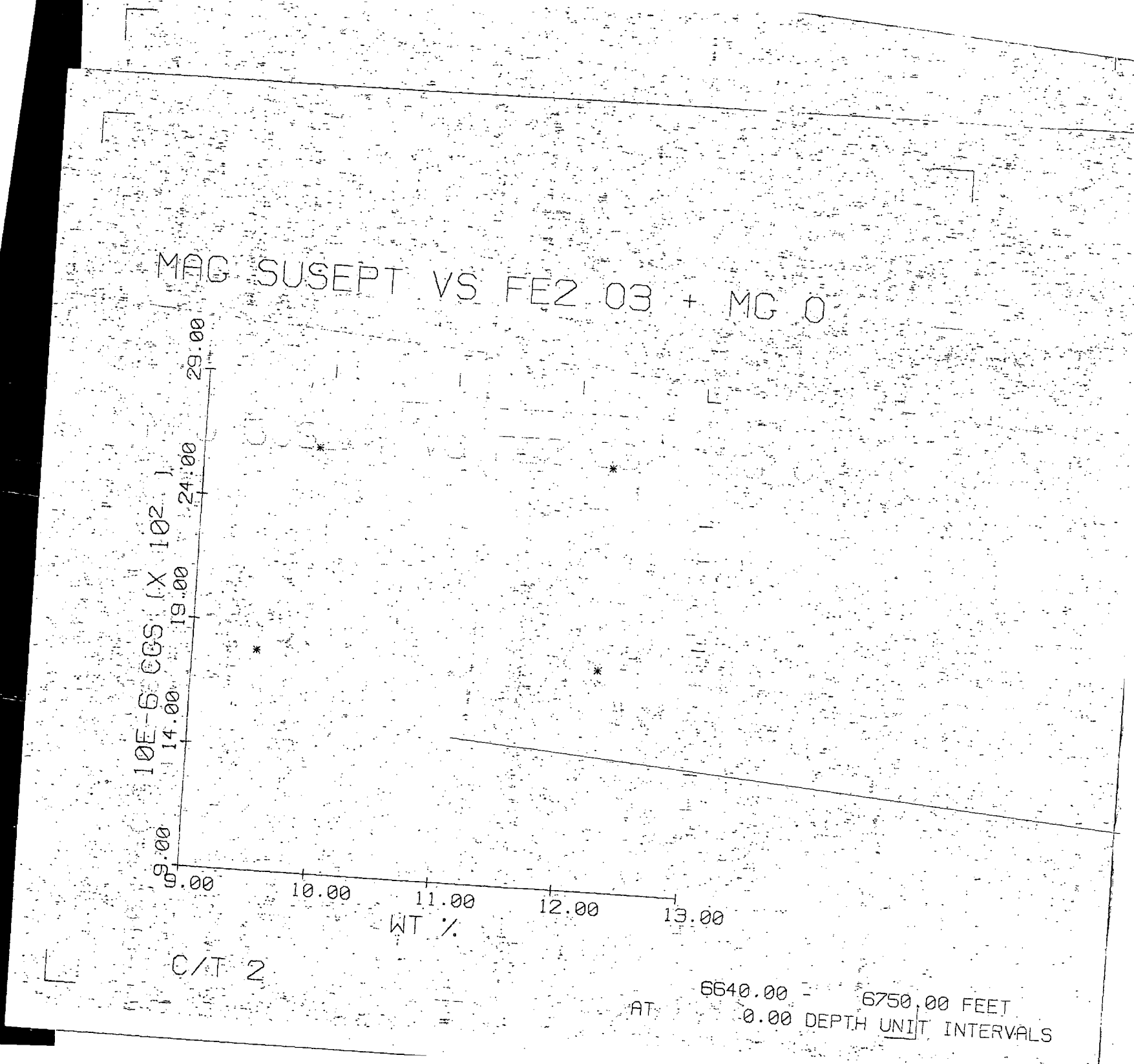


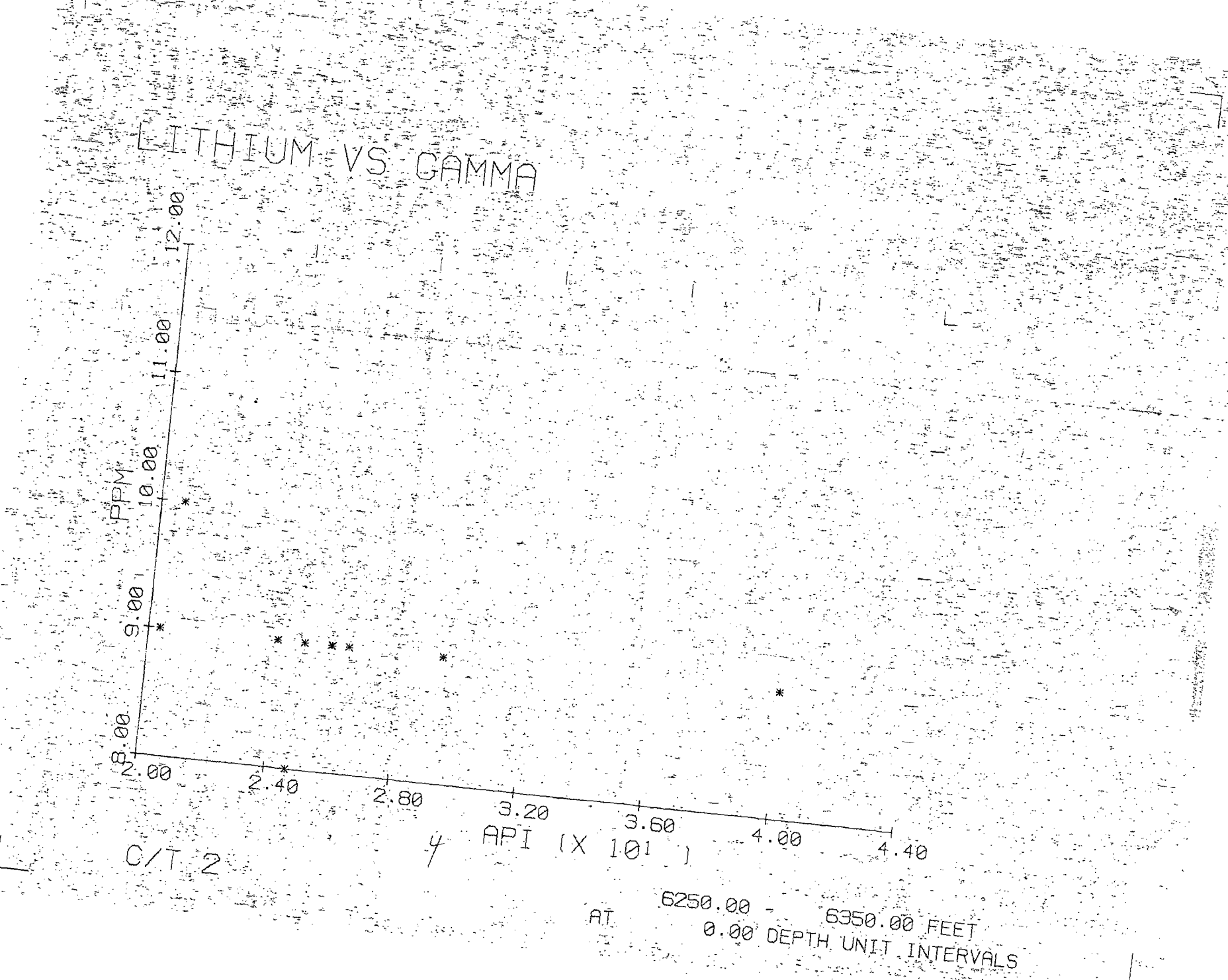
C/T 2

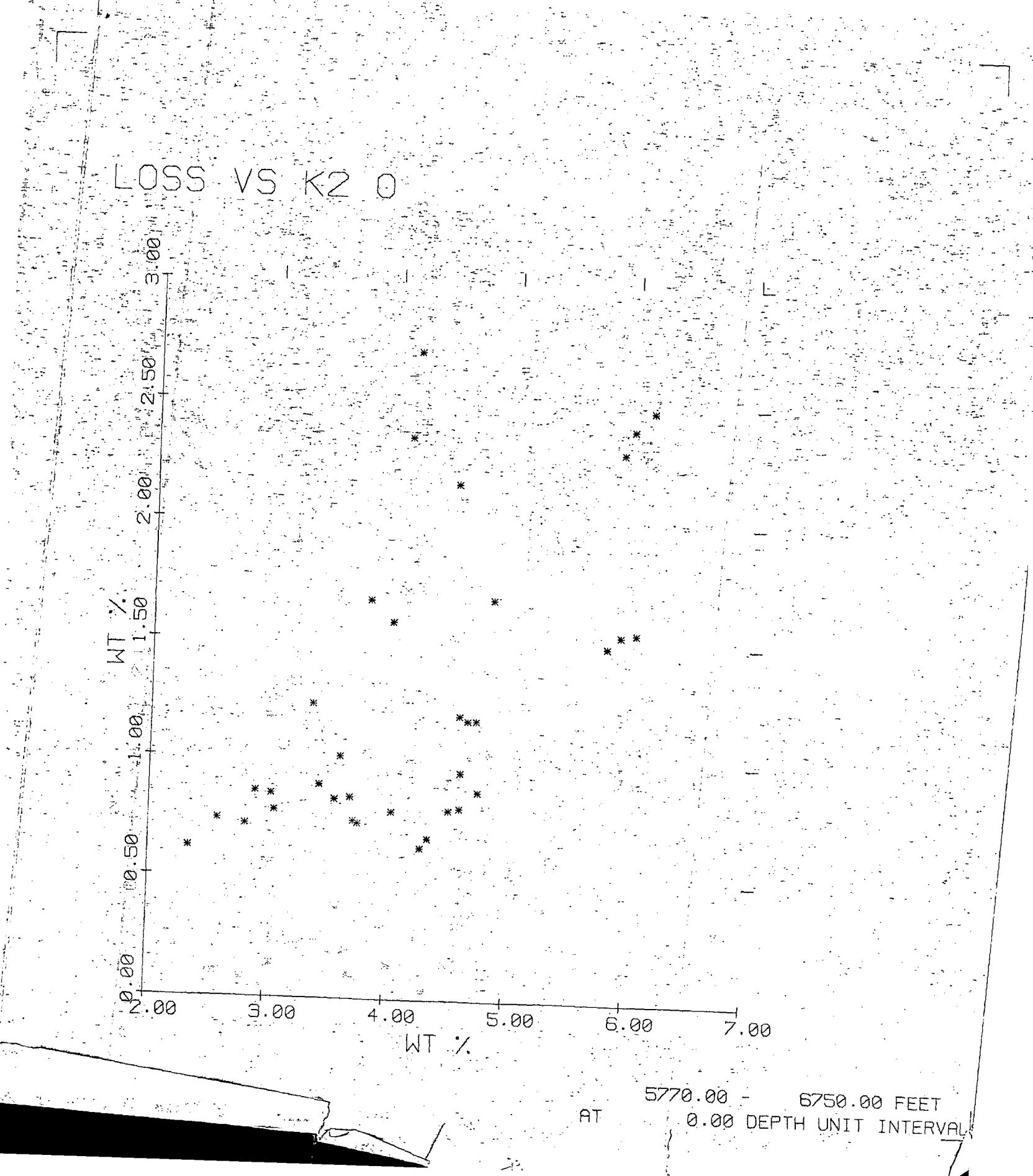
6640.00 - 6750.00 FEET
AT 0.00 DEPTH UNIT INTERVALS


MAG SUSEPT VS FE2 03 + MG 0
34.00
29.00
24.00
19.00
14.00
9.00
10E-6 CGS (X 10²)
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
WT %
C/T 2
5770.00 - 5920.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

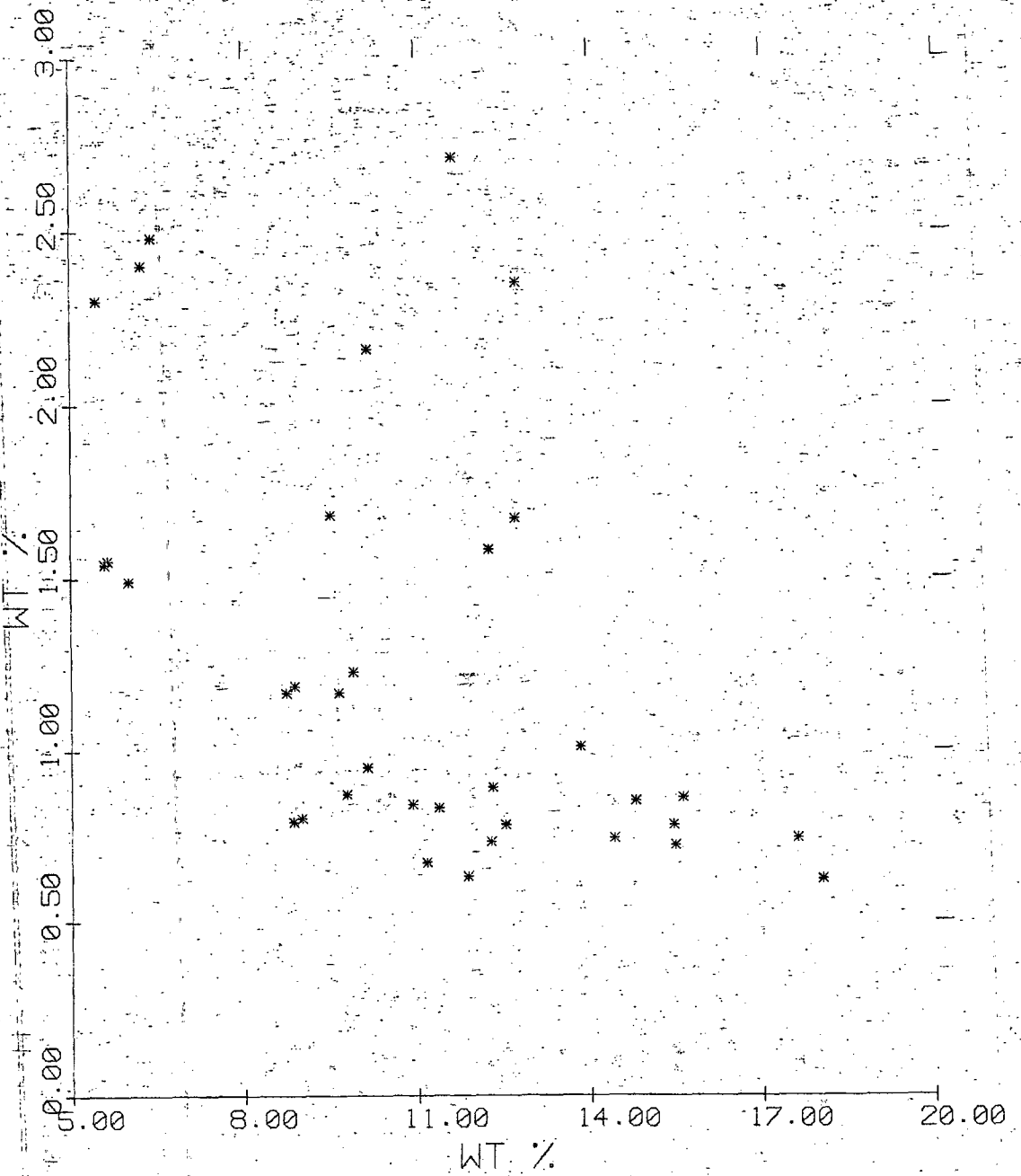

AC SUSEPT VS FE2 O3 + MG O
39.00
34.00
29.00
24.00
19.00
14.00
9.00
10E-6 CGS (X 10²)
1.10
1.20
1.30
1.40
1.50
1.60
1.70
1.80
1.90
WT % (X 10¹)
C/T 2
6250.00 - 6350.00 FEET
AT 0.00 DEPTH UNIT INTERVALS


MAG SUSEPT VS FE2 03 + MG O
10E-6 CGS (X 102)
29.00
24.00
19.00
14.00
9.00
9.00
10.00
11.00
12.00
13.00
WT %
C/T 2
6640.00 - 6750.00 FEET
AT 0.00 DEPTH UNIT INTERVALS


LITHIUM VS GAMMA
PPM
12.00
11.00
10.00
9.00
8.00
2.00
2.40
2.80
3.20
3.60
4.00
4.40
API (X 10)
C/T 2
AT 6250.00 - 6350.00 FEET
0.00 DEPTH UNIT INTERVALS


LOSS VS K2 O
WT %
0.00
0.50
1.00
1.50
2.00
2.50
3.00
2.00
3.00
4.00
5.00
6.00
7.00
WT %
AT
5770.00 - 6750.00 FEET
0.00 DEPTH UNIT INTERVAL

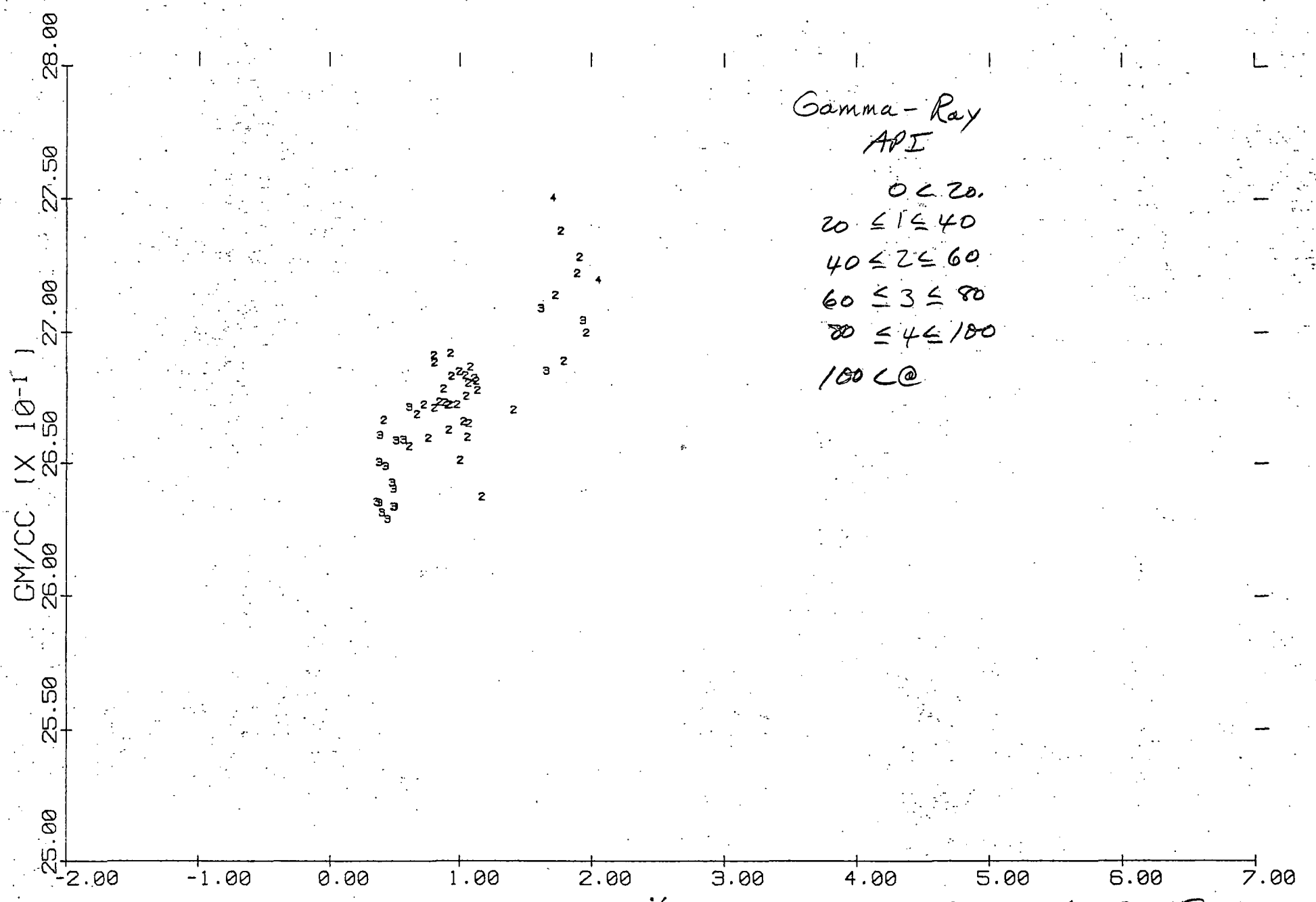
LOSS VS FE2 03 + MG O



C/T 2

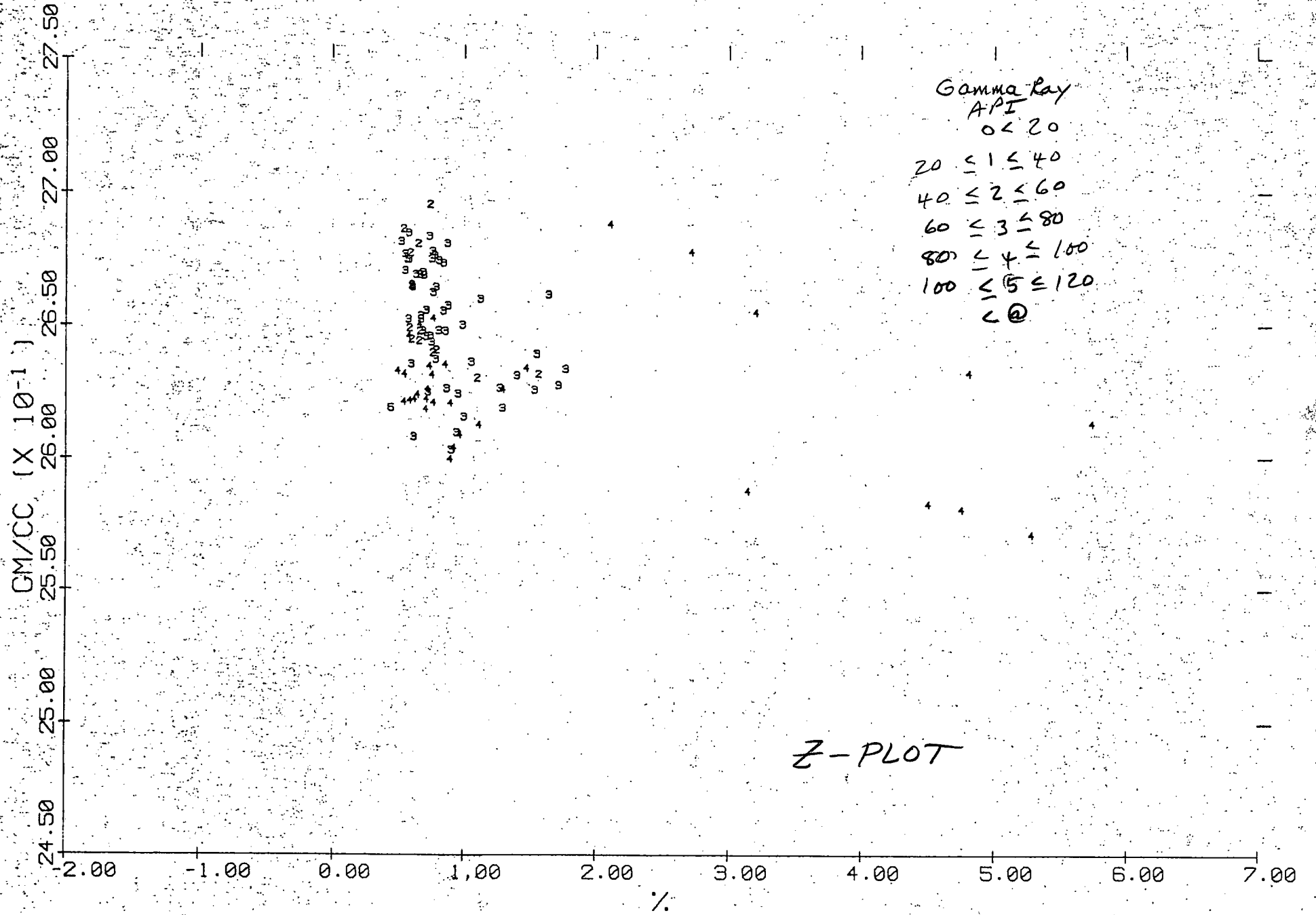
5770.00 - 6750.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

BULK DENSITY VS NEUTRON POROSITY



6313.0 – 6423.0 FEET
2.0 Depth Unit Intervals

BULK-DENSITY VS NEUTRON POROSITY

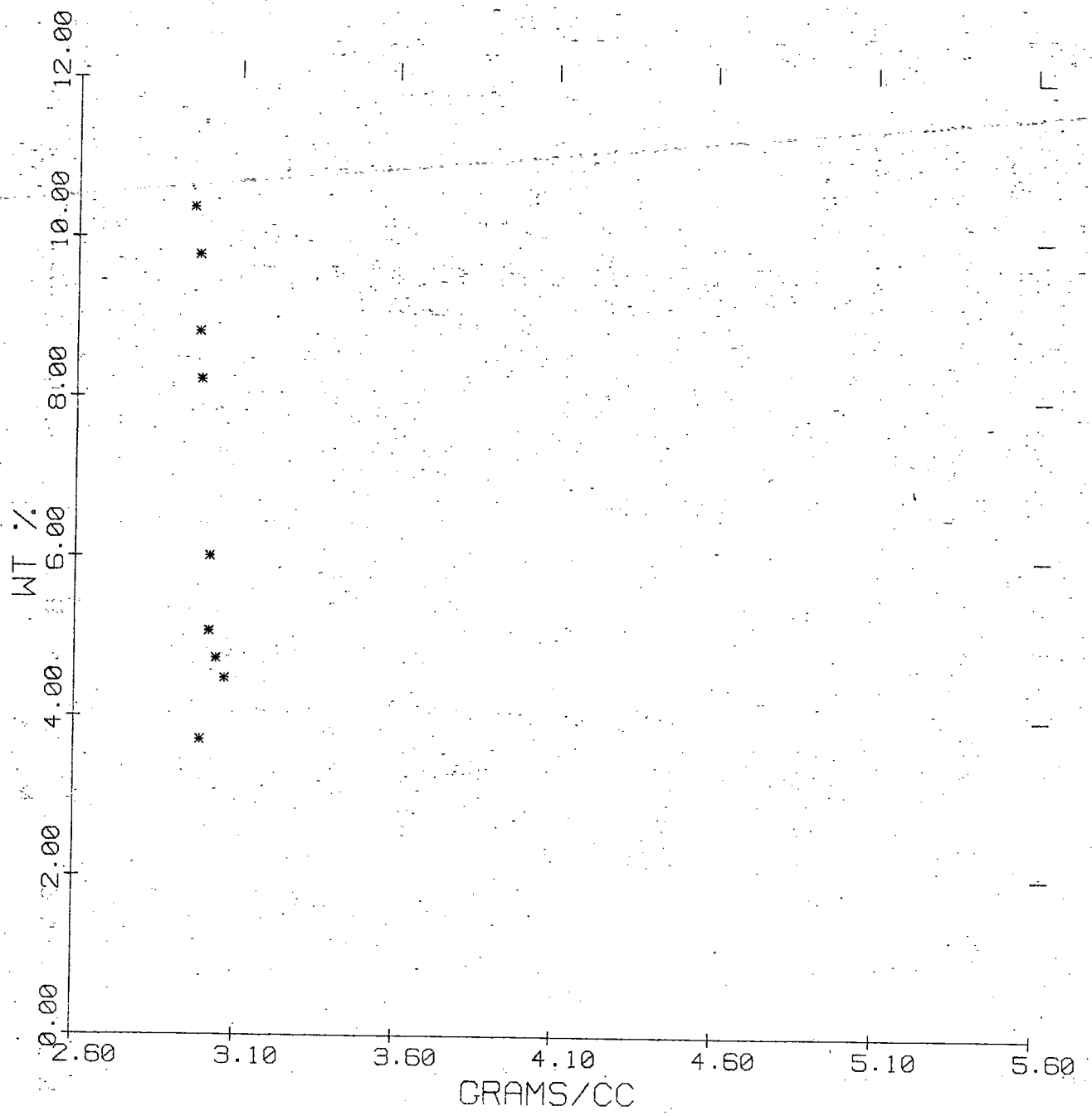


C/T-2

5751.0 - 5949.0 FEET

2.0 Depth Unit Intervals

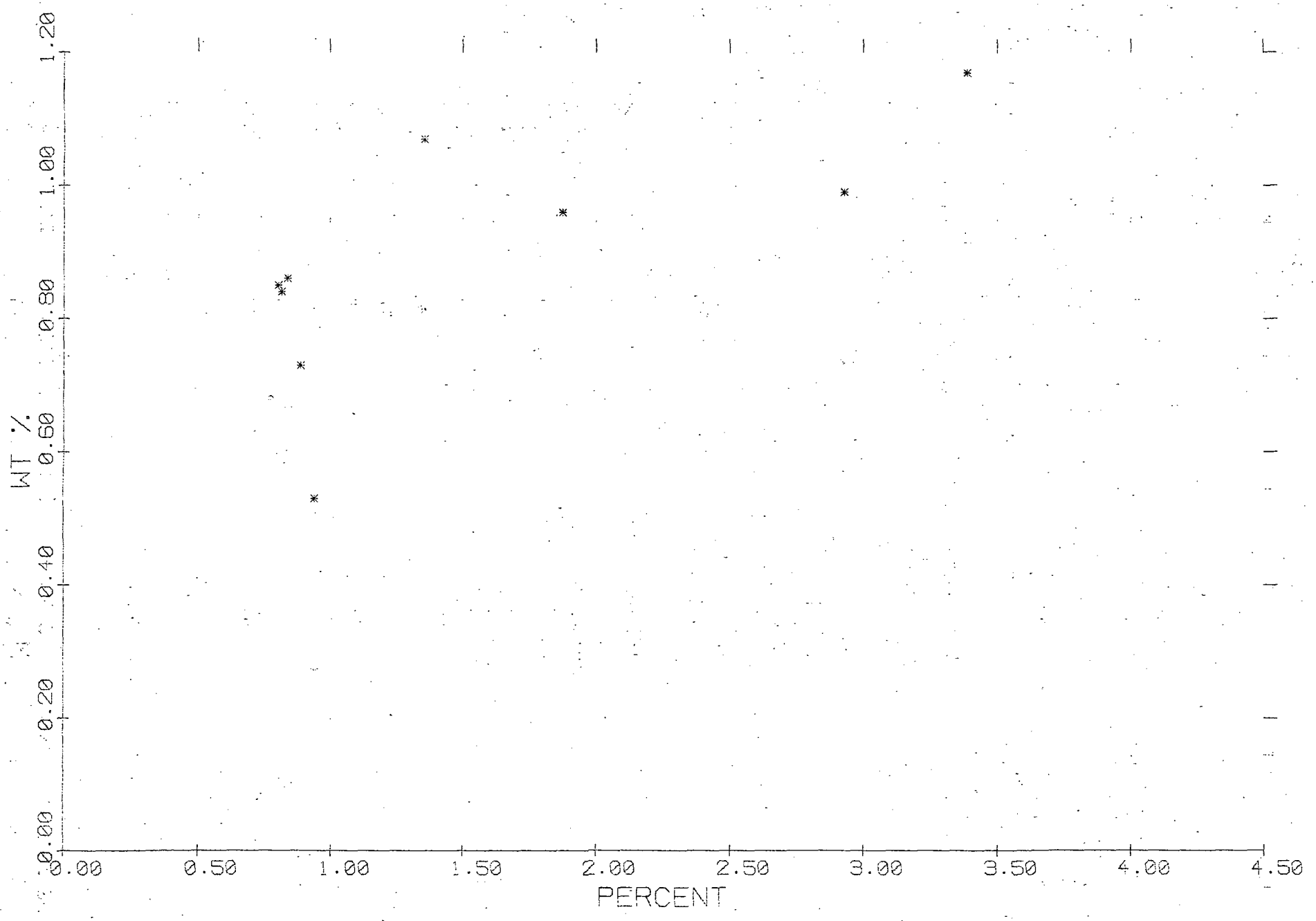
FE2 03 + MG 0 VS BULK DENSITY



C/T 2

3500.00 - 3600.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

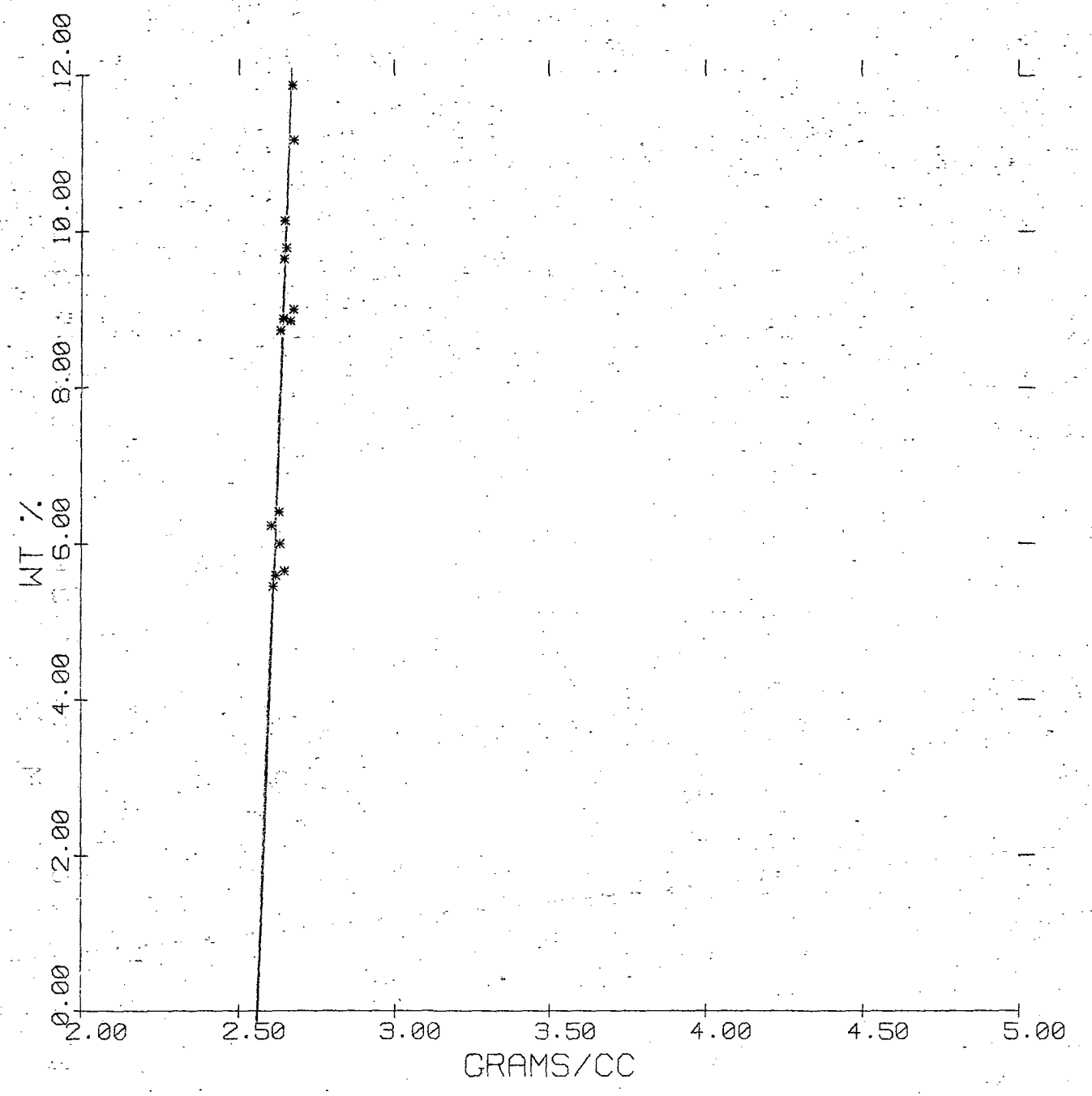
LOSS VS NEUTRON POROSITY



C/T 2

3500.00 - 3600.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

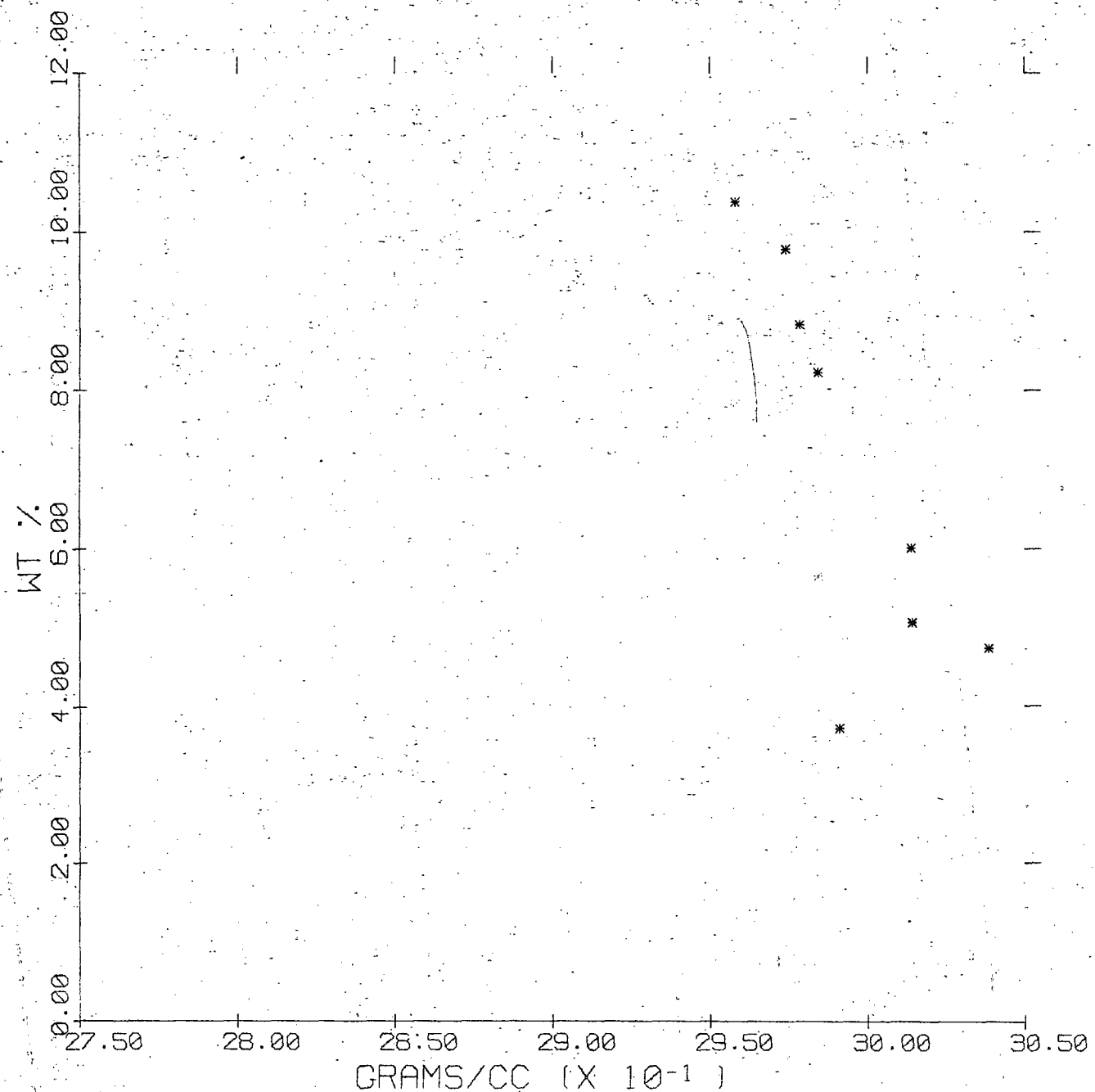
FE2 03 + MG O VS BULK DENSITY



C/T 2

5780.00 - 5920.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

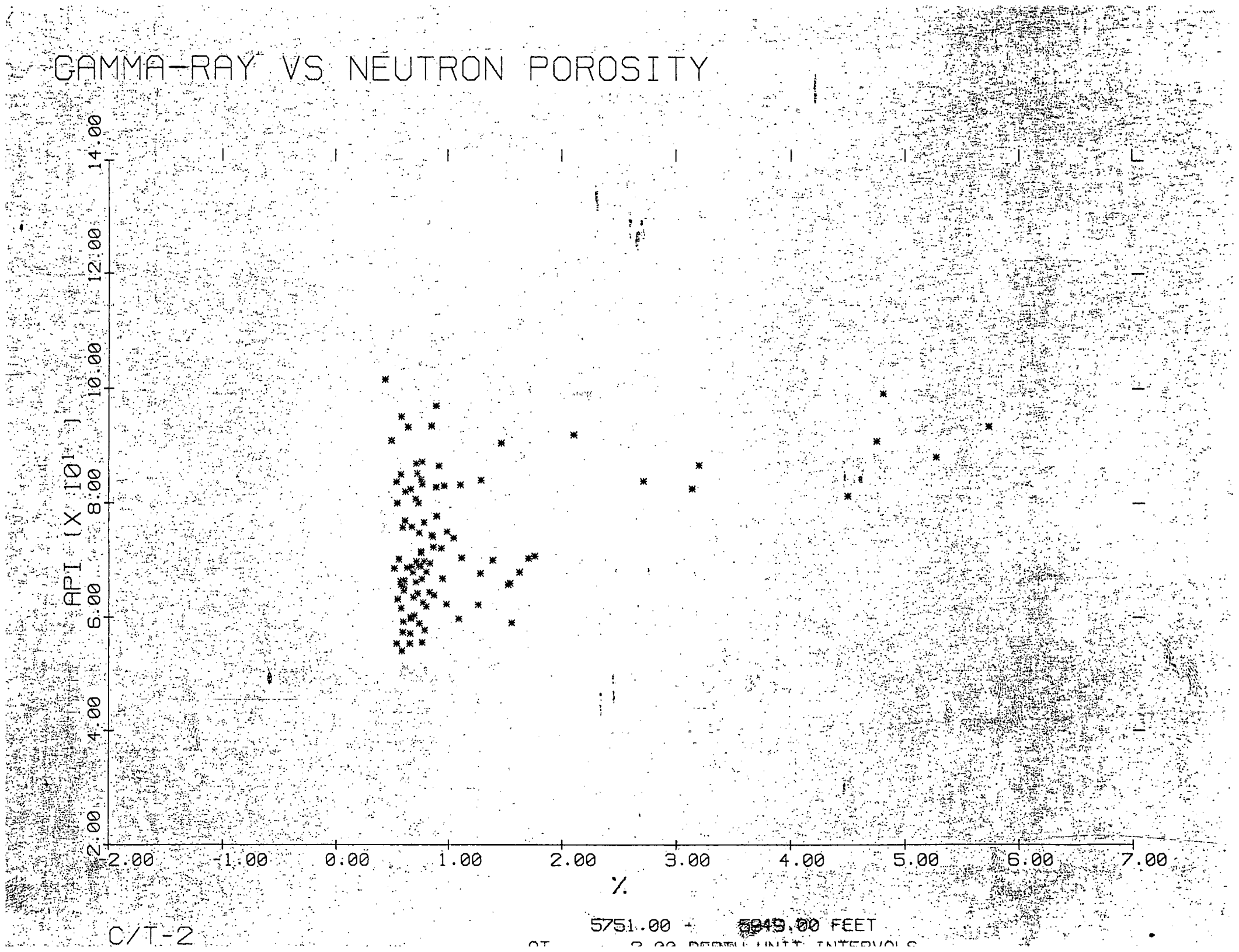
FE2 03 + MG 0 VS BULK DENSITY



C/T 2

3500.00 - 3600.00 FEET
AT 0.00 DEPTH UNIT INTERVALS

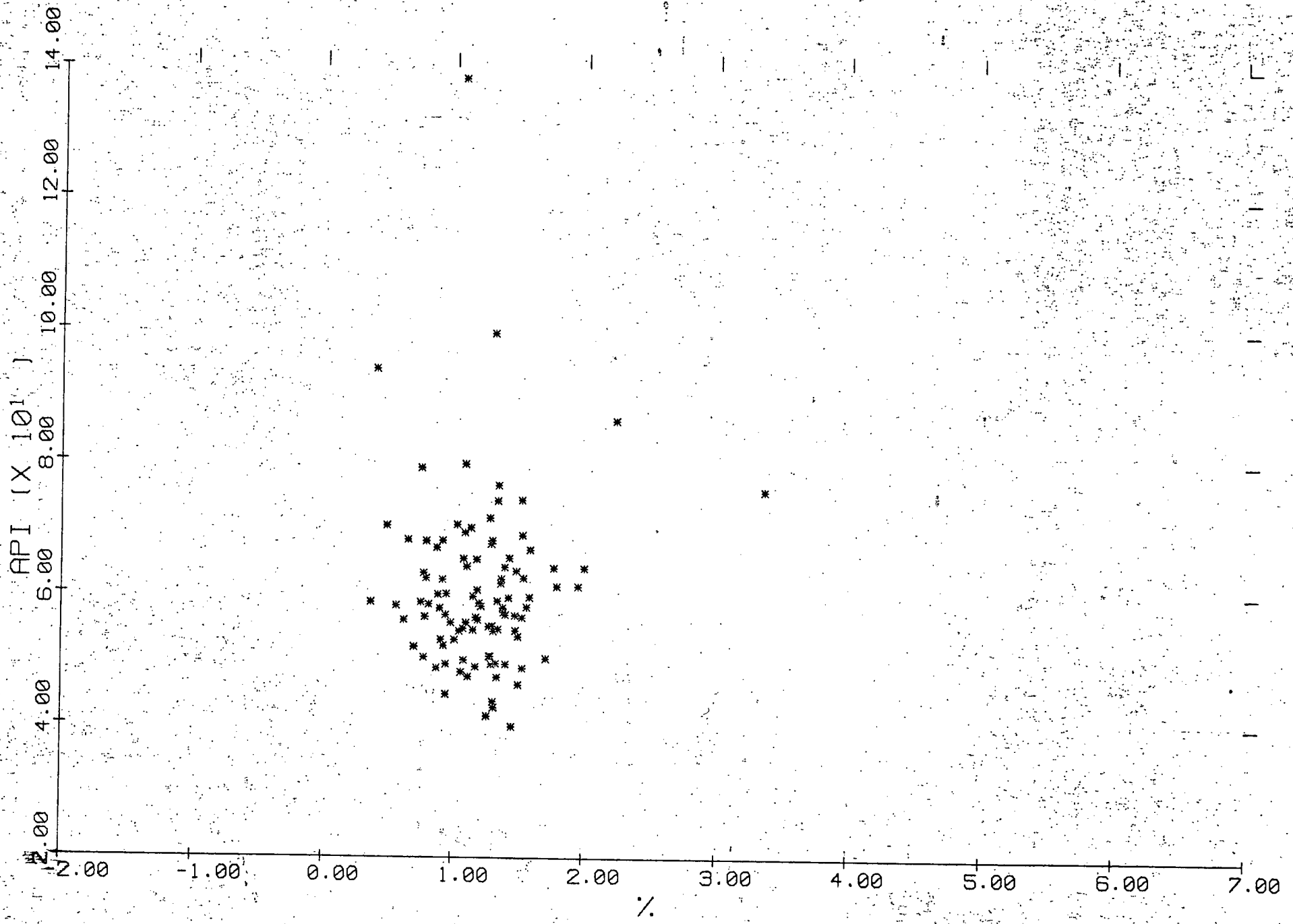
GAMMA-RAY VS NEUTRON POROSITY



C/T-2

5751.00 - 5849.00 FEET

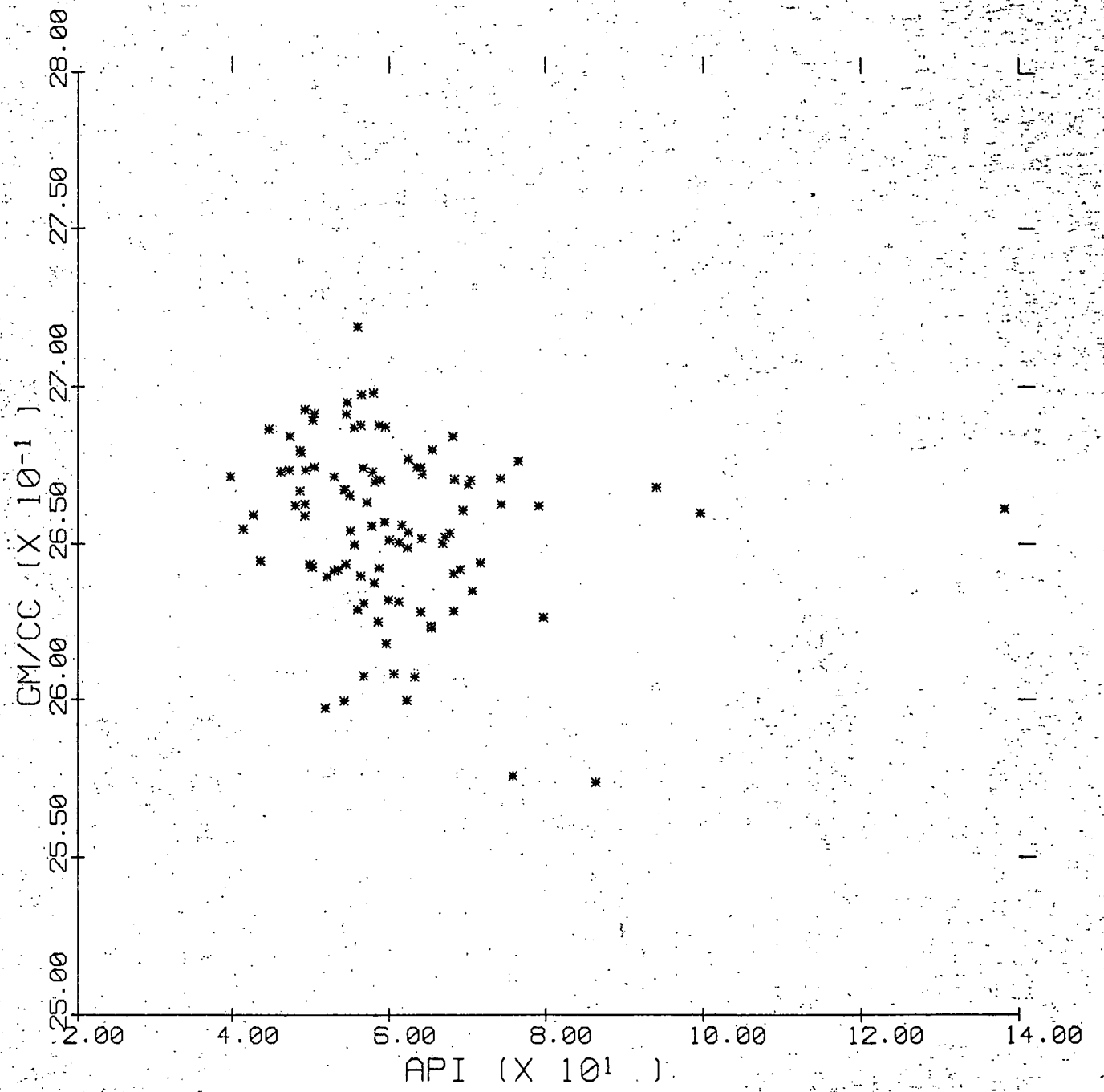
GAMMA RAY VS NEUTRON POROSITY



C/T-2

6601.00 - 6799.00 FEET
AT 2.00 DEPTH UNIT INTERVALS

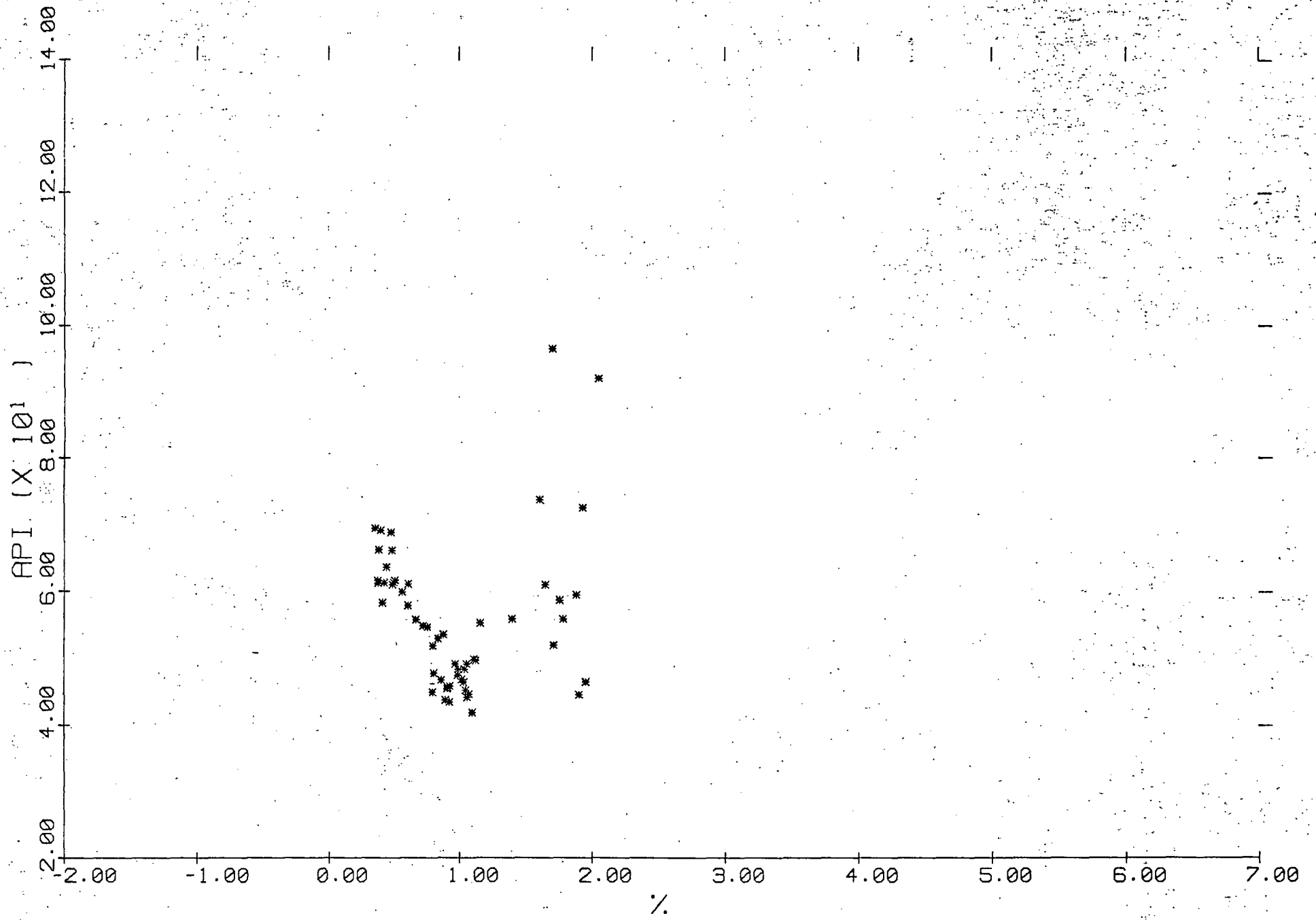
BULK DENSITY VS GAMMA RAY



C/T-2

6601.00 - 6799.00 FEET
AT 2.00 DEPTH UNIT INTERVALS

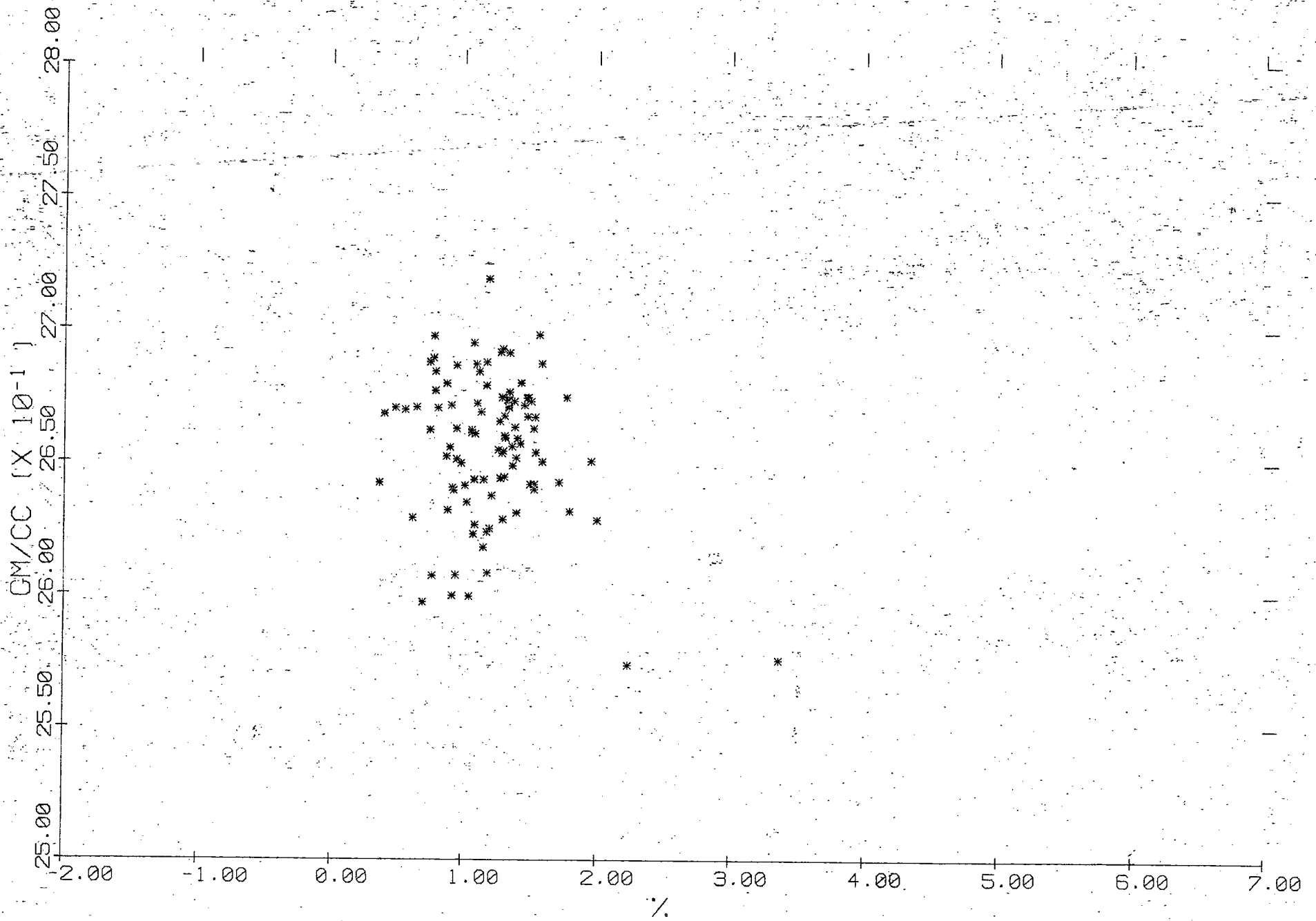
GAMMA-RAY VS NEUTRON POROSITY



C/T-2

: 6313.00 - 6423.00 FEET
AT 2.00 DEPTH UNIT INTERVALS

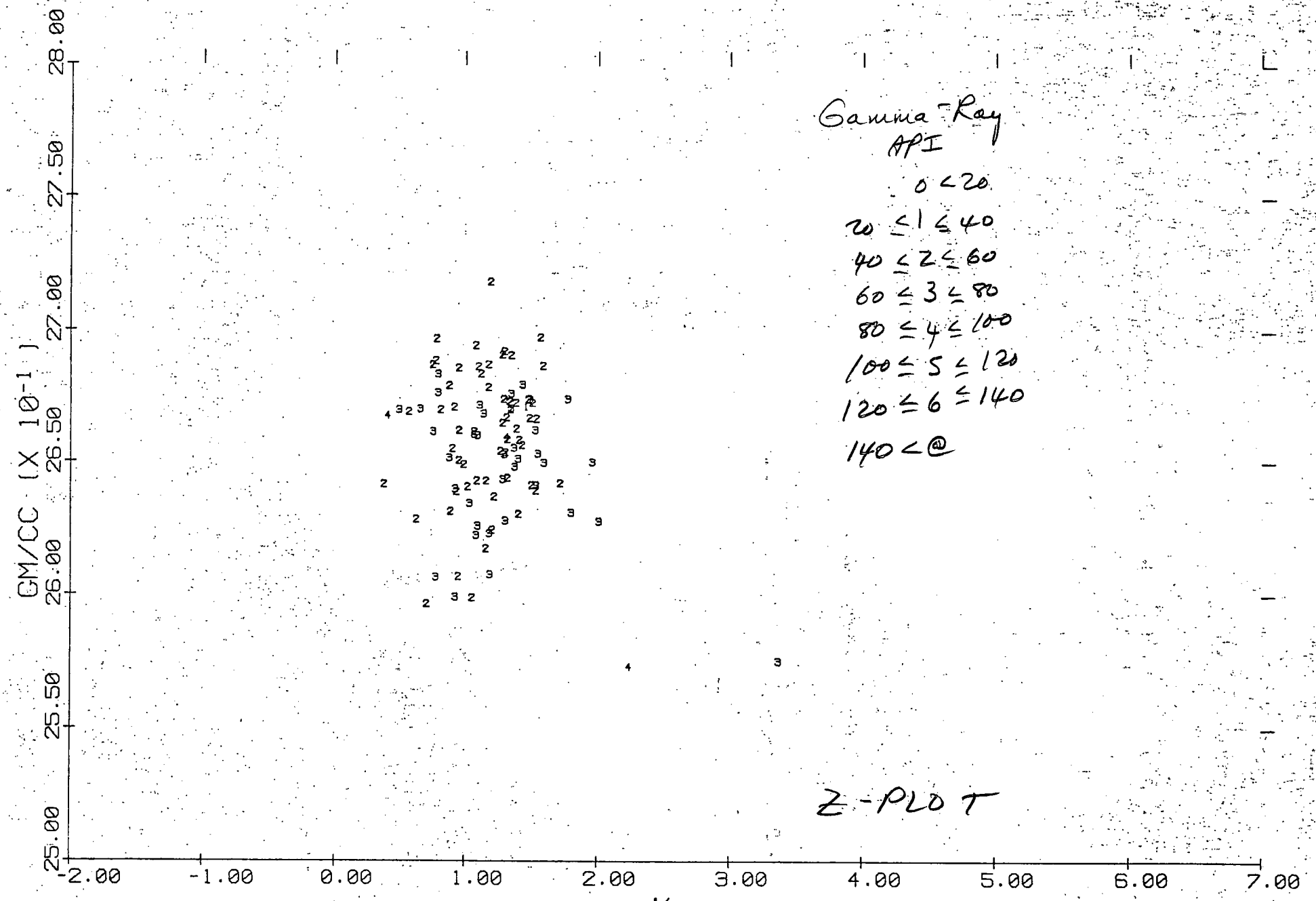
BULK DENSITY VS NEUTRON POROSITY



C/T-2

6601.00 - 6799.00 FEET
AT 2.00 DEPTH UNIT INTERVALS

BULK DENSITY VS NEUTRON POROSITY



Gamma-Ray
API

0 < 20
20 ≤ 1 ≤ 40
40 ≤ 2 ≤ 60
60 ≤ 3 ≤ 80
80 ≤ 4 ≤ 100
100 ≤ 5 ≤ 120
120 ≤ 6 ≤ 140
140 < @

Z-PLOT

6601.0 - 6799 FEET
2.0 Depth Unit Intervals

ROOSEVELT WELL #9-1 REPORT

10-17-75

AMTECH

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories, Inc.
8909 Complex Drive — Suite
San Diego, California 9212
(714) 560-77

Phillips Petroleum Company
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO.	0636-75
DATE OF REPORT	November 18, 1975
DATE RECEIVED	October 29, 1975
IDENTIFICATION	See below
REQUEST	30 samples for Boron and Lithium analysis 13-10

SAMPLE #	Moles/L B	ppm B	eq/L Li	ppm Li
9-1 44416	26-4	28.2	15-4	10.3

10-17-75

October 28, 1975

INTER-OFFICE CORRESPONDENCE / SUBJECT: Ammonia and Silica Analysis

Stu Johnson:
Dick Lenzer: ✓

The following are the results from the ammonia and silica analysis of KGRA 9-1 well discharge, sample #44416, analyzed on 10/27/75.

Sample	MV	Ammonia Content		Silica (ppm)
		ppb	Micromoles/liter	
44416 (KGRA 9-1)	61	370	26.4	190

10

KGRA 9-1

10-17-75

Sampled by Lenzer from well head flow. Sample put in cubitaner and shipped, without special efforts being made to preserve ions in solution. Flow rate of 1 liter every 4 minutes, 14 seconds. Isot→ Bartlesville, 1-28-76, Cub→ Bartlesville, 2-27-76, Uran. Albuquerque, 4-1-76.

AMTECH

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories.
8909 Complex Drive — Sui
San Diego, California 92
(714) 560-7

5-4-75

Phillips Petroleum Company
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO.	0278-75
DATE OF REPORT	May 21, 1975
DATE RECEIVED	May 9, 1975
IDENTIFICATION	KGRA 9-1 6870' 5-4-75

SPECIES		VALUE FOUND		VALUE FOUND	
BORON	B	18-4	moles/L	19.2	ppm
CALCIUM	Ca	18-4	eq/L	35.0	ppm
MAGNESIUM	Mg	74-6	eq/L	0.90	ppm
POTASSIUM	K	19-3	eq/L	730.	ppm
SODIUM	Na	19-2	eq/L	4,300	ppm
AMMONIUM	NH_4		eq/L	1.90	ppm
CHLORIDE	Cl	20-2	eq/L	7,000	ppm
NITRATE NITRITE	NO_3 NO_2	10-4	eq/L	66.0	ppm
SILICA	SiO_2	71-4	moles/L	200.	ppm
SULFATE	SO_4	55-4	eq/L	265.	ppm
CARBONATE BICARBONATE	CO_3 HCO_3	16-3	eq/L	994.	ppm
pH		N&D		8.00	
CONDUCTIVITY @ 25° C		26-3 mhos/cm		25,600	µmhos/cm
BASIN NUMBER		0022			
TEMPERATURE		0			
DATE COLLECTED		0575			

From Drilling Report: 5-5-75
Sample water @ 6871.

Respectfully,

David H. Elgas

David H. Elgas
Laboratory Director

8

5-4-75

AMITECH

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories, Inc
8909 Complex Drive — Suite
San Diego, California 9212
(714) 560-771

Phillips Petroleum
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO.	0295-75
DATE OF REPORT	May 23, 1975
DATE RECEIVED	May 16, 1975
IDENTIFICATION	48 water samples as described below
REQUEST	Determine Boron, Total Carbonate, pH and Ammonia

Sample #	pH	Total Carbonate mg/L	Boron mg/L	Ammonia mg/L
	-	-	-	
	-	-	-	
	-	-	-	
KGRA 9-1 1691' 5-4-75	-	-	-	0.50
KGRA 9-1 6870' 5-4-75	-	-	-	1.90
O.H. 2 condensate.	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	

KGRA 7

AMTECH

5-4-75

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories, In
8909 Complex Drive — Suite
San Diego. California 9212
(714) 560-77

Phillips Petroleum Company
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO.	0278-75
DATE OF REPORT	May 21, 1975
DATE RECEIVED	May 9, 1975
IDENTIFICATION	KGRA 9-1 1691' 5-4-75

SPECIES		VALUE FOUND		VALUE FOUND	
BORON	B	12-4	moles/L	13.2	ppm
CALCIUM	Ca	20-4	eq/L	40.0	ppm
MAGNESIUM	Mg	21-5	eq/L	2.50	ppm
POTASSIUM	K	16-3	eq/L	640.	ppm
SODIUM	Na	15-2	eq/L	3,500	ppm
AMMONIUM	NH_4		eq/L	0.50	ppm
CHLORIDE	Cl	15-2	eq/L	5,400	ppm
NITRATE NITRITE	NO_3 NO_2	65-5	eq/L	40.3	ppm
SILICA	SiO_2	75-4.	moles/L	210.	ppm
SULFATE	SO_4	40-4	eq/L	191.	ppm
CARBONATE BICARBONATE	CO_3 HCO_3	13-3	eq/L	772.	ppm
pH		076		7.65	
CONDUCTIVITY @ 25° C		22-3 mhos/cm		21,800	µmhos/cm
BASIN NUMBER		0022			
TEMPERATURE		0			
DATE COLLECTED		0575			

From Drilling Report: 5-5-75
Sampled with 47 bbl.
Cubitainers

Respectfully,

David H. Elgas

David H. Elgas
Laboratory Director

6

AMTECH

10-17-75

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories, Inc.
8909 Complex Drive — Suite F
San Diego, California 92123
(714) 560-7717

Phillips Petroleum Company
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO. 0636-75
DATE OF REPORT November 18, 1975
DATE RECEIVED October 29, 1975
IDENTIFICATION 44416 9-1

Lithium 15-4 eq/L 10.30 ppm

SPECIES		VALUE FOUND		VALUE FOUND	
BORON	B	.26-4	moles/L	28.2	ppm
CALCIUM	Ca	34-4	eq/L	69.1	ppm
MAGNESIUM	Mg	82-6	eq/L	1.0	ppm
POTASSIUM	K	11-3	eq/L	440.	ppm
SODIUM	Na	77-3	eq/L	1780.	ppm
AMMONIUM	NH_4	30-6	eq/L	.370	ppm
CHLORIDE	Cl	81-3	eq/L	2860.	ppm
NITRATE NITRITE	NO_3 NO_2	< 32-7	eq/L	< 0.2	ppm
SILICA	SiO_2		moles/L	190.	ppm
SULFATE	SO_4	25-4	eq/L	120.	ppm
CARBONATE BICARBONATE	CO_3 HCO_3	80-4	eq/L	485.	ppm
pH		073		7.30	
CONDUCTIVITY @ 25° C		~~12580~~ 13-3 mmhos/cm	μmhos/cm	12580	
BASIN NUMBER		0022		0022.	
TEMPERATURE		021		21.°C	
DATE COLLECTED		1075		101775	

Dept → Bartlesville 1-28-76
Cust → " 2-27-76
Cust rec'd 10-17-75 by Lenzer.

Respectfully,

David H. Elgar

David H. Elgar
Laboratory Director

5

KGRA 9-1

5-4-75

From drilling report entry 5-5-75. Ron Schlumberger wireline sampler. Wire in hole with water sample tool, fluid level 400' from surface. Sampled water at 1691'. Reran tool, sampled water at 6871. BHT 450°F. Put in cubitaner and shipped, with no special efforts to preserve ions in solution.

AMTECH

Chemical Analysis — Consultation
Research— Product Development

American Technical Laboratories, I
8909 Complex Drive — Suite
San Diego, California 921
(714) 560-77

4-23-75

Phillips Petroleum
11526 Sorrento Valley Road
San Diego, California 92121

LABORATORY NO.	0278-75
DATE OF REPORT	May 14, 1975
DATE RECEIVED	May 9, 1975
IDENTIFICATION	Twelve water samples
REQUEST	Determine Boron concentration

The determination of boron concentration was accomplished using the standard Carmine method.

Sample #	mg/L B

KGRA 9-1- 4/22/75
KGRA 9-1- 4/23/75

Uranium Bottle - Boron, Chlorides, & Silica
Sample = 44042

Respectfully,

David H. Elgas
Laboratory Director

BK 201-130

3

KGRA 9-1

4-23-75

Sample #44042. Was put in a uranium bottle and tested for boron, chloride and silica.

No other data available.

GEOCHEMICAL DATA

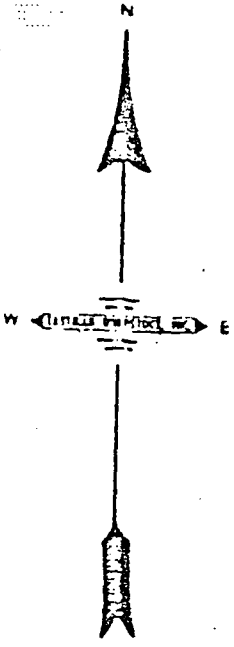
for WELL ROOSEVELT

KGRA 9-1

PLAN

EASTMAN WHIPSTOCK, INC.

DEPTH 6865.00'
NORTH 909.08'
EAST 341.12'



1"=100'

5500'

971.02'

N 20° 34' E

4200'

Roosevelt KCRA 9-1

JOB NO. RM-3975-S17

RECORD OF SURVEY

Roosevelt KGRA 9-1

CHECKED BY_____ JOB NO. RM-3975-S17 DATE April 16, 1975

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
80	6100	25°		42 26	N22E	595 15		214 04	
81	6200	25°30'		43 05	N22E	635 07		230 17	
82	6300	25°30'		43 05	N23E	674 70		246 99	
83	6400	26°		43 84	N22E	715 34		263 41	
84	6500	26°30'	6326 27	44 62	N22E	756 71		280 13	
85	6600	27°		45 40	N21E	799 09		296 40	
86	6700	27°		45 40	N22E	841 18		313 41	
88	6800	26°		43 84	N23E	881 53		330 54	
89/90	6865	27°	6652 31	29 51	N21E	909 08		341 12	

CLOSURE DIRECTION - N20° 34'E
CLOSURE DISTANCE - 971.02 feet

(No Direction available above 4300 ft. - Closure from 4200 ft.)

RECORD OF SURVEY

Roosevelt KGRA 9-1

JOB NO. RM-3975-S17 DATE April 16, 1975

CHECKED BY

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
47	3100	5°		8 72					
48	3200	6°		10 45					
49	3300	6°45'		11 75					
50	3400	7°45'		13 49					
51	3500	8°45'	3494 35	15 21					
52	3600	10°		17 37					
53	3700	11°		19 08					
54	3800	11°45'		20 36					
55	3900	12°		20 79					
56/57	4000	12°30'	3984 33	21 64					
58	4100	13°		22 50					
59	4200	13°		22 50					
60	4300	13°15'		22 92	N16E	22 03		6 32	
61	4400	14°		24 19	N13E	45 60		11 76	
62	4500	14°45'	4470 28	25 46	N17E	69 95		19 20	
63	4600	15°		25 88	N20E	94 27		28 05	
64	4700	16°		27 56	N20E	120 17		37 48	
65	4800	16°		27 56	N21E	145 90		47 36	
66	4900	17°30'		30 07	N22E	173 78		58 62	
67/68	5000	19°	4949 05	32 56	N21E	204 17		70 29	
69	5100	19°		32 56	N18E	235 13		80 35	
70	5200	20°		34 20	N19E	267 47		91 49	
71	5300	21°		35 84	N18E	301 55		102 56	
72	5400	21°		35 84	N19E	335 43		114 23	
73	5500	21°30'	5417 33	36 65	N20E	369 87		126 77	
74	5600	22°		37 46	N21E	404 84		140 19	
75	5700	23°		39 07	N21E	441 32		154 19	
76	5800	23°30'		39 88	N21E	478 55		168 48	
77	5900	24°		40 67	N21E	516 52		183 06	
78/79	6000	25°	5875 79	42 26	N21E	555 97		198 21	

RECORD OF SURVEY

Roosevelt KGRA 9-1

JOB NO. RM-3975-S17 DATE April 16, 1975

CHECKED BY _____

STATION	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
	Deviation	Only from 0 - 4200'							
14	100	0							
15	200	0							
16	300	15'		44					
17	400	30'		87					
18	500	45'	499 99	1 31					
19	600	1°45'		3 05					
20	700	2°15'		3 93					
21	800	1°45'		3 05					
22	900	1°45'		3 05					
23/24	1000	2°	999 70	3 49					
25	1100	2°		3 49					
26	1200	2°		3 49					
27	1300	2°30'		4 36					
28	1400	2°30'		4 36					
29	1500	2°30'	1499 28	4 36					
30	1600	2°15'		3 93					
31	1700	2°		3 49					
32	1800	2°		3 49					
33	1900	1°45'		3 05					
35	2000	1°45'	1998 98	3 05					
36	2100	1°45'		3 05					
37	2200	2°		3 49					
38	3200	2°		3 49					
39	2400	1°45'		3 05					
40	2500	1°30'	2498 73	2 62					
41	2600	1°45'		3 05					
42	2700	2°		3 49					
43	2800	2°45'		4 80					
44	2900	3°30'		6 11					
	2998	4°15'	2998 04	7 41					

Eastman Whipstock

THIS INFORMATION IS CONFIDENTIAL DATA MAY NOT BE RELEASED WITHOUT PRIOR WRITTEN APPROVAL OF PHILLIPS PETROLEUM CO.

REPORT of SUB-SURFACE DIRECTIONAL SURVEY

Phillips Petroleum Company
COMPANY

Roosevelt Unit 9-1
WELL NAME

Milford, Utah
LOCATION

JOB NUMBER	TYPE OF SURVEY	DATE
RU-3973-317	Multi-Shot	April 16, 1975

SURVEY BY
Morris Tilsaver

OFFICE
Rocky Mountain

Phillips Petroleum Company
[illegible]
Delmar, Calif. 92014

[illegible] ——— 9-1

LOCATION: Section 9, T27S, R9W, SLM.

[illegible]

[illegible] feet above mean sea level.
[illegible] monument with steel post
alongside [illegible] feet westerly from NGRA-42-9
[illegible]

(G.L.O. BASIS)
N 89° 54' W

WELL # LGEA-42-9
(ELEV 5633.3')

SECTION 9
T. 27S. R 9W SLM.

N

HENRY M. BULLOCH
UTAH L.S. # 3262

BULLOCH BROS.
ENGINEERING INC.
CEDAR CITY, UTAH

WELL LOCATION MAP
FOR
PHILLIPS PETROLEUM CO.
DELMAR, CALIF.

SCALE 1" = 1320'
DRAWN R.L.T.

R & D Files
W. R. Bohon (r) Fred Terry
C. W. Berge
D. C. Smith
A. Morris

Dicks File

December 20, 1977

ER-OFFICE CORRESPONDENCE / SUBJECT:
RTLESVILLE, OKLAHOMA

Thermal Conductivity Measurements

DAM-201-77

Gary W. Crosby
Phillips Petroleum Company
Geothermal Operations
Box 752
Del Mar, California 92014

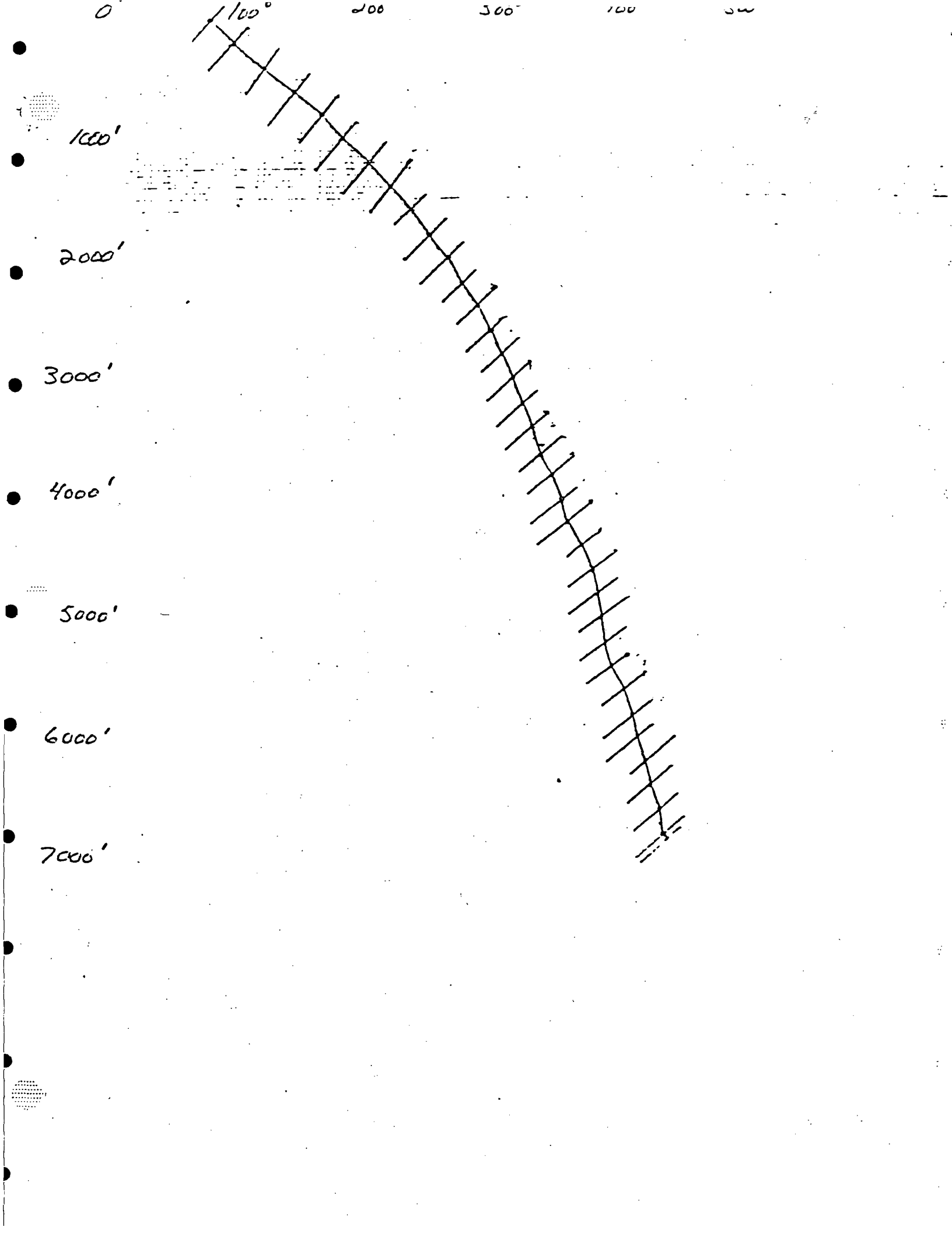
Confirming data reported by telephone to you by H. M. Barton, thermal conductivity measurements have been made on three cores sent by Dick Lenzer on August 29, 1977. These are:

Well	Depth, ft	Thermal Conductivity Watts/m°k	m cal/sec cm°c
9-1	5001	2.00	4.77

These were run at an average temperature of about 80°C.

David A. Morris

DAM:HWB:rsw


0
100
200
300
1000'
2000'
3000'
4000'
5000'
6000'
7000'

BOTTOM HOLE PRESSURE REPORT

OEC-659-B

TEST NUMBER	RUN NUMBER	AREA	DEVIATED HOLE?	DATE (DAY MO. YR.)	PAGE OF
			☐ YES ☐ NO		3 | 3

CUSTOMER	WELL NAME OR NUMBER	INTERVAL TESTED (FT.)	KB ELEV. (FT.)	GRN ELEV. (FT.) / WATER DEPTH	REF. ELEV. (FT.)
Phillips Petroleum Co.	9-1	0-6830'			

UPPER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $B + P_a$	DEPTH SET (FEET)
6681							

LOWER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $B + P_a$	DEPTH SET (FEET)

BOTTOM HOLE ~~PRESSURES~~ Temperatures

TIME		UPPER GAUGE				LOWER GAUGE				SURFACE CONDITIONS		REMARKS
DAY (24 O'CLOCK)	FLOW OR SHUT-IN DURATION (HOURS)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P = KY + B + P_a + C_L$ (PSIG)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P = KY + B + P_a + C_L$ (PSIG)	WELLHEAD PRESSURE ☐ BHT (PSIG)	CHOKE SIZE (64th INCH)	
	6000		.709		413.43							
	6200		.731		418.16							
	6400		.758		423.97							
	6600		.786		429.99							
	6800		.800		433.00							
	6830		.832		439.08							

* TO THE RECALIBRATING ACCURACY OF 0.02% FULL SCALE.

BOTTOM HOLE PRESSURE REPORT

OEC-6559-B

TEST NUMBER	RUN NUMBER	AREA	DEVIATED HOLE?	DATE (DAY MO. YR.)	PAGE OF
			☐ YES ☐ NO		2 3

CUSTOMER	WELL NAME OR NUMBER	INTERVAL TESTED (FT.)	KB ELEV. (FT.)	GRD ELEV. (FT.) / WATER DEPTH	REF. ELEV. (FT.)
Phillips Petroleum Co.	9-1	0-6830'			

UPPER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $\delta + P_a$	DEPTH SET (FEET)
6681							

LOWER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $\delta + P_a$	DEPTH SET (FEET)

BOTTOM HOLE ~~PRESSURES~~ Temperatures

TIME		UPPER GAUGE				LOWER GAUGE				SURFACE CONDITIONS		REMARKS
DAY (24 HR CLOCK)	FLOW OR SHUT-IN DURATION (HOURS)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P=KY+a+P_a+C_L$ (PSIG)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P=KY+a+P_a+C_L$ (PSIG)	WELLHEAD PRESSURE ☐ SWT (PSIG)	CHOKE SIZE (64th INCH)	
	3000		.418		312.28							
	3200		.434		319.64							
	3400		.453		328.38							
	3600		.468		335.28							
	3800		.488		344.48							
	4000		.507		352.38							
	4200		.523		357.82							
	4400		.549		366.66							
	4600		.578		376.52							
	4800		.590		380.60							
	5000		.598		383.32							
	5200		.610		386.75							
	5400		.630		392.24							
	560[illegible]		.660		400.50							
	[illegible]		.186		407.15							

BOTTOM HOLE PRESSURE REPORT

GEC-889-B

TEST NUMBER	RUN NUMBER	AREA	DEVIATED HOLE?	DATE (DAY MO. YR.)	PAGE
			☐ YES ☐ NO		1 / 3

CUSTOMER	WELL NAME OR NUMBER	INTERVAL TESTED (FT.)	KB ELEV. (FT.)	GRN ELEV. (FT.) / WATER DEPTH	REF. ELEV. (FT.)
Phillips Petroleum Co.	9-1	0-6830'			

UPPER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $\delta + P_\delta$	DEPTH SET (FEET)
6681	66-5558°F						

LOWER GAUGE

PRESS. ELEMENT NO.	PRESS. ELEMENT RANGE (PSI)	INNER HOUSING NO.	CHART TIME RANGE (HRS.)	CALIBRATION NO.	CALIBRATION MODULUS - K	CALIBRATION $\delta + P_\delta$	DEPTH SET (FEET)

BOTTOM HOLE ~~PRESSURES~~ TEMPERATURES °F

TIME		UPPER GAUGE				LOWER GAUGE				SURFACE CONDITIONS		REMARKS
DAY (ON CLOCK)	FLOW OR SHUT-IN DURATION (HOURS)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P=KY+\delta+P_\delta+C_L$ (PSIG)	TIME DEFLECTION (INCHES)	PRESSURE DEFLECTION Y (INCHES)	NON-LINEAR CORRECTION C_L * (PSI)	BOTTOM HOLE PRESSURE $P=KY+\delta+P_\delta+C_L$ (PSIG)	WELLHEAD PRESSURE ☐ DWT (PSIG)	CHOKE SIZE (64th INCH)	
	0		.001		65.01							
	200		.029		85.00							
	400		.067		111.56							
	600		.101		134.62							
	800		.136		156.32							
	1000		.166		174.92							
	1200		.199		195.38							
	1400		.227		211.12							
	1600		.259		229.04							
	1800		.286		244.16							
	2000		.312		258.24							
	2200		.335		270.20							
	2400		.360		283.20							
	2600		.381		294.12							
	2800		.398		302.96							

REPORT

on

SUB-SURFACE PRESSURES

BOTTOM HOLE PRESSURE SURVEY
COMPANY: Phillips Petro. Co.
WELL NO.: 9-1
FIELD/STATE: Roosevelt Hot Springs, Utah
DATE OF SURVEY: 10-1-77

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 6

DATE	NATURE OF WORK	TOTAL DEPTH PERFORMED	
4-18-75		6885'	Rigging down rotary. WIH w/2-7/8" DP, COOH, LDDP. Removed drlg head & BOP's. Drained & cleaned all pits. Released rig at 6:00 AM 4-18-75.
5-5-75		6885'	RU Schlumberger WL sampler. WIH w/wtr sample tool, FL 400' from surface. Sampled water at 1691'. Reran tool, sampled water at 6871. BHT 450°F. TD & MO Schlumberger. Dry hole, well being held for temperature observation. FINAL REPORT.

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 5

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
4-13-75	OTD 6885' PTD 0	Nippling up.
4-14-75	OTD 6885' PTD 2152	Drlg medium soft cement in 5½" casing. Finished nippling up. PU 4-3 1/8" DC's. Drilled soft cement to 115' RKB. COOH, LD 3 1/8" DC's, PU 7-3½" DC's & drilled to 195' RKB. Changed out X-over sub to Kelly. WIH w/DC's & 2 7/8" OD DP, drld soft cement to 2091', medium soft cement to 2152'.
4-15-75	OTD 6885' PTD 4155	Trip for bit. Drilled firm cement 2152-4155', top of float collar. Circulated & conditioned hole 1 hr. Tested csg & BOP to 400#, 30 mins. Held OK.
4-16-75	TD 6885'	Circulating & conditioning hole. Finished trip for bit. Drilled float collar at 4155' in 1 hr. Drld firm cement to shoe at 4198'. Drilled shoe in 1¼ hrs. Drilled hard cement at 4244', top of Johnson BP. Drilled on BP 2½ hrs & COOH for new bit. WIH, drilled on BP 2 hrs & plug moved down hole 2'. Drilled 1 hr & moved plug 4'. Drld & pushed plug to 4437' & came free. Pushed plug to 6885' at 5:45 AM 4-16-75. Circulating to chill hole & run Eastman Directional Survey.
4-17-75	6885'	Circulated at 6874', 2 hrs, max temp 106°F in, 114°F out. COOH. RU Schlumberger WL & Eastman Magnetic multi-shot. WIH, recorded drift angle in 5½" csg every 100' to 4200'. Record both drift & hole direction from 4300' to 6865' at 100' intervals (will report details later). Ran Schlumberger WL w/2 max read thermometers to 3200', 264° & 278°, 6° drift; 2500', 236° & 238°, 1¼° drift; 2000', 208° & 208°, 1-3/4° drift. Only at 3200' was drift angle sufficient to record good reading for hole direction, gyro run cancelled as temp at 3200' was too high for instrument. BHT - 395°F 4 hrs after circulation.

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 4

DATE	NATURE OF WORK	TOTAL DEPTH	PERFORMED
4-9-75		6885'	Logging. Drilled 8½" hole to 6885' at 12 noon 4-8-75. Circ Btms up 1 hr. COOH, LD Btm hole reamer & 3 stabilizers WIH w/bit & Monel collar. Circ 1½ hrs to cool hole. Dropped Eastman Survey, COOH, ran survey every 60' ± tool failed, film broken, 15° at 4485, 15° at 4585, 15½° at 4611, 16° at 4674, 17° (N20°E) at 4737. RU Schlumberger, attempt temp survey, 2 mis-runs. Running 3rd temp survey.
4-10-75		6885'	Running Schlumberger Temp. Survey. Ran 3rd temp survey, mis-run. Made 2 runs w/density tool, mis-run, max BH temp 377° & 388°. Ran Schlumberger IES log, BH temp 390°. Ran sonic log, BH temp 390°. LD 4-7" DC's. WIH w/Eastman survey on DP. Pictures no good, tool failed. Totco 27° at 6885'. Circulated 4 hrs to chill hole. COOH. RU & run density log, BH temp 387°. Started in hole w/temp survey.
4-11-75	OTD PTD	6885' 4200'	Running 5½" casing. Finished running temp survey, max temp 399°F. Picked up 9-5/8" Hornet SQZ retainer, ran in hole on 4½" DP. Set retainer at 4200' RKB. Chained out of hole, LDDP. RU & started running 5½" csg.
4-12-75	OTD PTD	6885' 0	Nippling up. Ran 104 jts, 4212', 5½" OD, 17#, K-55 BT & C casing, cond A, w/Halliburton float shoe and collar. Set csg at 4198' RKB. RU Halliburton, cemented w/750 sx class G cement, 1:1 perlite, 40% silica flour & 1½% cacl. Lost partial returns after pumping in 297 bbls slurry. Pumped in 81 bbls w/partial returns & lost complete returns. Pmpd in 41 bbls w/no returns, press incr to 300# and then to 1600# & holding. Rel press & repressured to 1800#, could not pump in. Left csg full of cement. Job complete at 10:15 AM 4-11-75. WOC. Removed BOP's, cut off 5½" csg. PU 1" pipe and went in 9-5/8 x 5½" annulus to 198'. Circ 6 bbl water. Cemented around outside of 5½" csg w/13 bbls slurry, circ 3 bbls good slurry. Job complete at 9:40 PM 4-11-75. Pulled 1" pipe & started nippling

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 3

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
3-31-75	5004'	Prep to run temp survey No. 4. Finish temp survey No. 2. Ran Schl IES log. Ran temp survey No. 3. Ran density, Mis-run. Reran density log. Ran sonic log. Bottom hole temps:

Hrs After Circ	Temp.	Remarks
7	286°F	#1 Temp Surv
11.25	308°F	#2 " "
13.50	312°F	IES Log
19.50	326°F	#3 Temp Surv
23.33	332°F	Density Mis-run
24.60	333°F	Density Log
31.00	338°F	Sonic Log

4-1-75	5004'	Trip for bit. Ran Schlumberger temp survey #4, mis-run. Ran Agnew & Sweet Temp Survey, max temp 360°F. WIH w/bit & BH reamer, reamed hole 4600-5004'. Dropped Totco & started out of hole.
4-2-75	5189'	Drilling granite. Finish trip out of hole, cut drlg line & worked BOP. Went in hole w/bit #12. Totco - 18 deg at 5004'. Flow line temp: 5189' - 126°F in, 138°F out.
4-3-75	5425'	Drilling Granite. Flow line temp: 5425' - 120°F in, 136°F out.
4-4-75	5702'	Drilling Granite. Flow line temp: 5702' - 118°F in, 132°F out.
4-5-75	5952'	Drilling Granite. Trip for bit at 5721'. Totco 21 deg at 5721'. Flow line temp: 132°F in, 150°F out at 5952'.
4-6-75	6264'	Drilling graniorite, grey-dark grey, predominately quartz biotite, common white feldspar. Flow line temp: 132°F in, 152°F out at 6248'.
4-7-75	6491'	Drilling grandiorite, very dark grey, predominately quartz biotite, less than 10% feldspar. Trip for bit at 6271'. Flow line temp: 134°F in, 157°F out at 6470'.
4-8-75	6815'	Drilling grandiorite, dark grey, very abundant. Quartz and biotite, some feldspar. Flow line temp: 130°F in, 156°F out at 6800'.

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 2

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
3-20-75	1970'	Drilling Quartz Diorite. Mud Temp: 1600' - 92°F; 1700' - 101°F; 1800' - 112°F; 1900' - 112°F.
3-21-75	2387'	Drilling Quartz Diorite
3-22-75	2705'	Drilling Quartz Diorite Totco 2-3/4" Deg at 2400'. Trip for bit at 2400'.
3-23-75	3035'	Trip for bit. Mud temp 124°F at 3035'.
3-24-75	3530'	Drilling Quartz Diorite. Trip for bit at 3035'. Totco 4¼ deg at 3035'. Ran Agnew & Sweet temp survey, max temp 222°F at 3035'.
3-25-75	3925'	Trip for bit. Quartz Diorite. Temp: 118°F at 3925'.
3-26-75	4195'	Drilling Quartz Diorite. Finished trip for bit. Max read thermometer, 215°F at 3925. Checked BOP equip on trip. Totco 6½° at 3925. Adding water to system, flow line temp at 4190' - 96°F in - 109°F out.
3-27-75	4540'	COOH to inspect drill collars. Drilled to 4540', quartz diorite
3-28-75	4685'	Drilling Quartz Diorite. Finished coming out of hole, Magnafluxed drill collars. Went in hole, reamed and washed last 20'. Flow line temp: 4685' - 100°F in, 118°F out.
3-29-75	4985'	Drilling Quartz Diorite. Flow line temp: 104°F in, 118°F out. Totco 1450' - 14
3-30-75	5004'	Running temp. survey #2. Drld to 5000'. Strapped out of hole. WIH w/core bbl. Core #1 5000-5004', Rec 18" very hard granite. Laid down core bbl & jars. RU Schl, ran temp survey No. 1 Went in hole to run temp survey #2.

DAILY REPORT DETAILED

LEASE ROOSEVELT KGRA WELL NO. 9-1 SHEET NO. 1

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
3-13-75		RUR Location: 2638' east & 962' south (18'15'W) of NW. corner of Section 9-27S-9W, Beaver Co., Utah. Geothermal Exploratory Well. Loffland Bros., Drilling Contractor. AFE PE-5504, PP Co. 100% Elev: GL 5833.8, RKB 5846.8
3-14-75	107'	Nippling up. Finished RUR. Spudded 17½" hole at 1:30 p.m. 3-13-75. Drilled 17 ½" hole to 107'. Ran 3 jts., 13 3/8" OD 48#, 8R, ST & C csg, set at 107' RKB. Cemented w/5 BBLS water ahead of 140 sx class B cement, 3% CaCl, 15.8#/gal. Circulated EST 25 sx cement. Job complete at 9:30 p.m. 3-13-75. WOC 2½ hrs. Cut off csg., instld flange and nipple up BOP.
3-15-75	508'	Trip for Bit Finished nippling up. Installed choke & kill line. Tstd Csg & blind Rams to 200#. Tstd hydril to 200#. Drilled plug & 25' hard cement. RU mud logging unit. Started drilling 12 ¼" hole at 107'. Totco ¼ deg at 107', 1 deg at 508'. Mud temp: 137' - 59°F, 225'-61°F, 315' - 63°F, 407' - 68°F, 469' - 72°F.
3-16-75	800'	Waiting on Halliburton Drilled 12¼" hole to 800' in Grandiorite. Circ. & Cond hole 2 hrs. Strapped out of hole. 2¼ deg at 800'. Ran 26 jts, 9 5/8" OD 43.5#, N-80, LT&C csg set at 800'. Centralizers on 1st, 2nd, 3rd, 24th jts. Instld cementing head, Circ & Cond hole.
3-17-75	800'	Nippling up Waited on Halliburton 7½ hrs. RU & cemented 9 5/8" csg w/350 sx class B cement w/ geothermal additives, 13.8#/ gal. Circ est 100 sx good cement. Job complete at 2:30 p.m. 3-16-75
3-18-75	970'	Drilling Diorite. Finished nippling up. Tested blind rams to 1250#, 30 held OK. WIH w/bit, DC's & 2 stds DP. Tstd pipe rams to 1250#, 30 mins, held OK. Bled down, closed Hydril, tstd to 1190#, 30 mins, held OK. Checked kill & flow lines. Drld insert collar & 20' cement. Started drilling 8½" hole at 800'. Mud temp: 92 deg at 970'.

Roosevelt Well #9-1 File

INVENTORY PAGE

1. E Logs

    a. INDUCTION LOG. Runs one and two.
    b. Formational Density Log Runs one and two.
    c. Borehole Compensated Sonic Log. Runs one and two.
    d. Temperature Logs
        1. Run One
        2. Run Two
        3. Run Three
        4. Run Four

2. Agnew and Sweet Static Temperature Surveys

    a. March 23, 1975
    b. March 31, 1975
    c. April 22, 1975
    d. July 14, 1975

3. Daily Report detailed/(3-13-75 - 5-5-75)

4. Otis, Report on subsurface pressures

5. Thermal conductivity measurements

6. Bulloch Bros. Engineering Inc. Well location map

7. Eastman Whipstock, Report of subsurface directional survey

8. Chemical Analysis Data

9. Geologic Engineering Service Mud Log