ORO-52056

open file 154

APPENDIX A

FIELD REPORT ON CORING ACTIVITIES AT R-146 WELL SITE

APPENDIX A

FIELD REPORT ON CORING ACTIVITIES AT R-146 WELL SITE

12/17/77

Departed residence, Columbus, Ohio, at 10:30 a.m., Saturday, 12/17/77. Arrived at Point Pleasant, West Virginia at 3:00 p.m., Lowe's Motor Inn. Checked in and unloaded gear. Departed Motor Inn for well site as per instructions of C. Byrer/MERC at 4:10 p.m. and arrived at well site at approximately 4:50 p.m. Checked geolograph - 1889 feet. Core point approximately 2660 feet. Returned to Motor Inn. Drilling permit not posted, but I was informed it would be available Sunday morning. S. Rhoades, WVGS, arrived at Motor Inn at 6:10 p.m. Received copy of Task Order. Discussed core sampling with Rhoades. Keith Halloran and George Clarkson,WVGS, arrived at approximately 9:00 p.m.

12/18/77

Departed Motor Inn at 8:10 a.m. for well site. Arrived at well site at 8:30 a.m. Drilling stopped at 2045 feet at approximately 6:20 a.m. Blew casing and lost one pump. Necessary to re-cement hole. Will lose about 24 hours. Met J. Myung, Reel Energy Corporation. Following information from drilling permit:

Permit No.:	MAS-146
	47-053
Issued:	12/8/77
To:	Reel Drilling Program
	Box 51
	Spencer, WV
Surface Owner:	Dean Kingley
	Pt. Pleasant, WV
Known as:	D/K Farm

Location (Waters) Potter

Well No. 3

Elevation: 665 feet

District: Robinson

County: Mason

Quadrangle: Point Pleasant

38 55' 30"
82 03' 45"

State of West Virginia

Drilling Co.: FWA Drilling Co., Inc.
Wichita Falls, Texas 76307.

Returned to Motor Inn 10:30 a.m. Checked out of Lowe's Motor Inn and moved to Point Pleasant Inn on Route 62 north of entry. This puts us about 3 minutes from well site. 11 people working this program now located at this motel. Returned to well site at 3:40 p.m. Met Dick Mann, Reel Energy Corp. New booster pump will be on site early tomorrow morning. Bottom of hole still 2045 feet. Returned to motel at 5:10 p.m.

12/19/77

To well site at 8:10 a.m. No progress at time of arrival. Booster pump arrived at 9:20 a.m. Procedure from now:

1. Set booster pump in line,
2. Blow hole clean,
3. Run contact log to determine where water is coming in,
4. Set expansion plug in casing below leak and apply pressure to expand casing,
5. With pressure applied inside casing, perforate old cement on outside to open passageways to re-cement,
6. Pump in cement,
7. Let set at least 6 hours,
8. Drill to plug in casing to remove any cement inside casing,
9. Pull drill,
10. Pressurize casing to plug to check for leaks, and
11. Release pressure - check for water in casing.

Cement did not seal leak, will try again. Returned to motel 3:20 p.m. Called M. J. Snyder to report progress. Had call from Harry Templeton requesting I take several rolls of pictures, both color and black and white for BMI publication. Had meeting with S. Rhoades and J. Myung at 7:30 p.m. to determine core point depth. Core point was established at 2660 feet.

12/20/77

Departed motel for well site at 8:40 a.m. Still have water in hole. Will try to seal with more cement. Returned to motel 11:30 a.m. Returned to well site at 8:40 p.m. 14 strands of pipe still in rack. Hit cement at 1640 feet. Started cleaning operation. Returned to motel at 10:30 p.m.

12/21/77

Had call from S. Rhoades at 1:50 a.m. He had a call from well site, still have a water problem. Will try to recement again. If this problem continues, will not get any core this week. Started to snow at approximately 7:45 a.m., approximately 29 F. Went to well site at 8:30 a.m. Well cement had just arrived. Getting ready to reseal casing in hole. Cementing completed at 10:20 a.m. Will let cement set until approximately 4:00 p.m. Will break open hole and start flushing with air. Returned to motel at 11:20 a.m. Went to well site at 2:10 p.m. Getting set up to break open hole and start flushing. Flushing started at 4:20 p.m. Unset cement on surface at 4:45 p.m. Returned to motel. To well site at 10:10 p.m. Hole making water at rate of approximately 2 bdl/hr., which is too much for coring. This above the plug. No one here to make decision. Drilling crew will continue to blow hole to try to dry it up. Returned to motel at 11:20 p.m. Saw tool pusher from rig at motel and he said he did not know what to do. Would have to talk with his boss in Spencer, West Virginia, but this would be some time in the morning.

12/22/77

No work from rig at 7:20 a.m. To well site at 8:30 a.m. Still making water in hole. Tool pusher said there would be a meeting at the motel at approximately 10:30 a.m. J. Myung, D. Mann, and others. Returned to motel at approximately 10:00 a.m. Meeting at 10:30 a.m. It was decided to re-cement well, let stand until Monday morning, and then resume operations. Coring operations should start some time Tuesday, December 27, 1977. Returned to Columbus in evening. Arrived at residence at 3:20 p.m. Called J. Snyder to advise. Will return to well site Tuesday morning.

12/27/77

Departed BCL at approximately 9:10 a.m. Arrived motel at 12:30 p.m. R. Anslement and B. Brockett, Christensen Diamond, arrived at 1:00 p.m. To well site at 1:30 p.m. Hole dry to plug approximately 1764 feet. Cutting out plug at this time. If things go well, should start drilling (2080 feet) approximately 7:00 p.m. Returned to motel at 4:10 p.m. Had call from S. Rhoades, WVGS. Wanted to know what we're going on and that his crew was on their way to Point Pleasant, should arrive about 9:00 p.m. Talked to J. Myung at 7:10 p.m. Have started to drill, approximately 585 feet to go to core point. 9:30 p.m. had call from B. Easterday, WVGS. They have arrived at motel.

12/28/77

Reached core point of 2660 feet at 3:23 a.m. Drill bit on surface at 6:10 a.m. Bit had lost bearings from two segments and a portion of one drill segment gone. This means tapered hole, will have to ream and run junk basket to puck up heavy metal in hole. Did not have reamer at well site. Must have one brought in from Charleston, WV. Called J. Snyder at 4:15 p.m. to bring him up to date on information. Talked to J. Myung at 5:10 p.m. Reamer should be here within hours. Reamer arrived at 7:20 p.m. Started reamer in hole at 11:30 p.m.

12/29/77

Reamer set at 2352 feet at 1:10 a.m. Have 308 feet of hole to ream. Reamer out of hole at 10:45 a.m. Rig up junk basket and magnet. In hole at 2:20 p.m., out of hole at 7:40 p.m. Started to rig up for coring operation. Ready to set core barrel at 10:00 p.m.

12/30/77

Coring started at 2660 feet at 5:10 a.m. Brockett to motel at 9:40 a.m. Started out of hole at 9:30 a.m. with 38 feet of core. Lost circulation and had to surface. Departed motel at 10:30 a.m. for well site. Arrived site at 10:40 a.m. Core barrel on surface at 11:30 a.m. Core in plastic sleeve very hard to pull from core barrel. This required approximately 1 hour. Geolograph reading 2660 feet - 2698 feet = 38 feet recovered. It took

1 hour to cut plastic sleeve so core could be observed. The bottom section (approximately 30 feet) was very badly broken. Largest pieces were about 2 inches long and contained vertical cracks. Measured length of core recovered was 29 feet. WVGS/EGSP geologist declared recovered core a total loss. No description was made and no samples taken. Recovered length cut for storage. Returned to motel at 2:40 p.m. Core #2 should be on surface at approximately 3:00 a.m. on 12/31/77.

12/31/77

Had call from R. Anslement at 2:20 a.m., core #2 on way out of hole. Should be on surface between 3:00-3:30 a.m. Departed motel at 2:45 a.m. for well site. Geolograph interval 2698 feet - 2756 feet = 58 feet. Core in plastic sleeve very hard to remove from core barrel. Had to use winch on core trailor to pull core and sleeve out of bottom section. Both sections of core and sleeve were out of barrel at 5:53 a.m. It took over 1 hour to cut plastic sleeve for one section. Measured length of core recovered 53.1 feet. Had about 5 feet of mud on top of core in sleeve. Hole not clean when coring started. Coring began at 6:33 p.m. on 12/30/77 and ended at 12:41 a.m. on 12/31/77. This recovered length of core in much better condition than first. Core measured length was described and samples taken. This system (core in plastic sleeve) requires too much time in the field. Total time on this section was approximately 7 hours. Returned to motel at 9:10 a.m. Call from R. Anslement at 4:45 p.m. Core #3 should be on surface at 6:30 p.m. Departed motel at 6:00 p.m. for well site. Core on surface at 7:36 p.m. Geolograph has been reset to 2751 feet because of the mud on top of core #2. Geolograph interval 2751 feet - 2809 feet = 58 feet. Measured interval 58.6 feet. This core worked better than any to date. Core sampler hard to clean. Circulation soap inside plastic sleeve on core surface. Very hard to detect color changes in core. Lights poor. Need better lighting system. Temperature 34 F at 8:00 p.m. Returned to motel at 10:00 p.m.

1/1/78

Call from R. Anslement at 7:00 a.m. Core #4 should surface at 8:15 a.m. Departed motel at 7:35 a.m. Geolograph interval 2809 feet -

2867 feet. Core clamp broke on first 30-foot section. Dropped 8 feet of core on drill platform. No sampler taken from 2829 to 2837 feet. Measured 57.8 feet of core recovered. Core color: dark gray (N3) thru brownish or olive black (54R 2/1 - 5Y 2/1). Departed well site at 12:15 p.m. Core #5 should be on surface at midnight. Call from R. Anslement regarding Core #5, departed motel at 10:45 p.m.

1/2/78

Core #5 on surface at 12:20 a.m. About 9:00 p.m. on 1/1, a very high wind blew down our shelters over the core trailer and canner. We now have no overhead protection. Core #5 on surface 12:20 a.m. Geolograph interval 2867 - 2925 feet = 58 feet. Measured interval 55.55 feet. This core section much easier to work than any of previous. Departed well site at 3:00 a.m. Core #6 should be on surface at 2:30 p.m. 2:00 p.m. call from R. Anslement. There will be about 1 hour delay on core #6. Departed motel at 2:45 p.m. for well site. Geolograph interval 2925-2983 feet = 58 feet. Measured interval 59.1 feet. Picked up 1.1 feet or more on bottom from core #5. Bottom measured depth of core #6 is 2983.3 feet. Core #7 should be on surface at 3:30 p.m., 1/3/78. Departed well site at 5:45 p.m.

1/3/78

Call from R. Anslement at 7:15 a.m. Core #7 will be on surface at 8:30 a.m. Departed motel at 7:50 a.m. Geolograph interval 2983-3041 feet. Measured interval 58.65 feet. Geolograph corrected to read 3042 feet. Core on surface at 9:02 a.m. Temperature at 10:30 a.m. was 14 F, dry and clear. Departed well site at 11:30 a.m. Core #8 should be on surface about 9:30 p.m.

7:30 p.m. getting cans ready for run #8 when a can lid popped. Investigation of canned samples to date. Sample taken at 2821.5 feet has a bulged (soft) lid. Sample is from core #4. Checked the B-Special cans to date and all showed a slight amount of pressure on gauge, less than 1 psig.

9:10 p.m. got call from R. Anslement. Core #8 should be on surface at 10:30 p.m. Departed motel at 9:35 p.m. Guide line from "Kelley" to geolograph broke during trip up and tangled in main "string line". One hour

delay. Geolograph interval 3042-3100 feet = 58 feet. Measured interval 58.2 feet. Very cold, 0-2 F. Core very dirty. Surface froze. Felt tip and ball point pens would not work. Had to keep them close to heater in vehicle. This core very hard to work. Departed well site at 2:50 a.m.

1/4/78

Call from R. Anslement at 2:30 p.m. Core #9 should be on surface at 4:00 p.m. Departed motel at 3:20 p.m. Geolograph interval 3100-3158 feet. Measured interval 59.1 feet. This gives a measured depth of 3159.15 feet. Geolograph corrected to read 3159 feet. Slight surface bleeding of gas from 3128 feet to bottom of core. Core hard to work. Temperature about 22 F. Surface frozen. Departed well site at 7:20 p.m.

9:30 p.m., checked canned samples for gas content. More samples show slight bulge in can lids. B-Spec. sample 2869.5 shows gauge pressure of about 1 1/4 psig.

1/5/78

Call from R. Anslement at 3:30 a.m. Core #10 should be on surface at 4:30 a.m. Departed motel at 3:55 a.m. Geolograph interval 3159-3218 feet = 59 feet. Measured interval 59.1 feet. Bottom of core #10 measured 3218.05 feet. Core color: dark gray (N4 and N3) with scattered black (N2 and N1) bands approximately 1/8 inch wide. Evidence of gas bleeding on surface of core from 3210 to 3215 feet. Temperature at site 24 F, cloudy with mild wind. Departed well site 7:40 a.m. Core #11 should be on surface at 5:00 p.m.

Call from R. Anslement at 1:20 p.m. Core #11 should be on surface at approximately 2:30 p.m. Only 32 feet. Lost circulation in hole and had to pull bit. Departed motel at 1:55 p.m. Having trouble pulling pipe. Delay of about 1 hour. Geolograph interval: 3218 - 3250 feet = 32 feet. Measured interval was 30.2 feet. Core jammed in barrel. Had to use winch to pull out. Core very dirty and hard to work. Temperature 27 F with rain, sleet and snow, very muddy. Core color: dark gray (N3 and N2). Bottom of core #11 measured 3248.2 feet. Departed well site at 5:50 p.m. Core #12 should be on surface at 5:00 a.m.

1/6/78

Call from R. Anslement at 3:50 a.m. Core #12 should be on surface at 5:00 a.m. Departed motel at 4:20 a.m. Very heavy fog. Geolograph interval 3250 - 3309 feet = 59 feet. Measured interval 59.1 feet. Measured bottom of core #12, 3309.1 feet. Core color: dark gray (N3 and N2) interbedded with black bands. Evidence of slight surface bleeding of gas from 3290 feet to bottom of core. Temperature at site 34 F, very muddy with heavy fog. Departed well site 8:55 a.m. Core #13 should be on surface at 5:00 p.m.

4:45 p.m. got call from R. Anslement, core #13 on trip out. Should surface at 5:30 p.m. Departed motel 5:10 p.m. Main generator out on rig. Had to set up auxiliary power supply. Enough power for rig lights only. Delay of about 1 1/2 hours. Geolograph interval 3309 - 3367 feet = 58 feet. Measured interval 58.0 feet. Had to work core with flashlights and headlights from vehicles. Necessary to cut pipe (plastic sleeve) in 8-inch lenths and dump core on trailer. Did not have power for electric saw to split sleeve. Core very dirty and hard to work. Evidence of slight surface bleeding of gas entire length of core. Temperature 38 F with heavy fog and very fine mist. Very hard to stand and walk because of deep mud. Departed site at 9:20 p.m. Core #14 should be on surface about 9:30 a.m.

1/7/78

Call from Anslement at 7:20 a.m. Core #14 should be on surface at 9:15 a.m. but rig having problems. 8:30 a.m. delay of about 2 hours. 9:45 a.m. delay of about 2 hours. 11:00 a.m. should be on surface at 1:00 p.m. Departed motel at 12:40 p.m. Arrived well site with 30 stands of pipe yet to pull. Very hard rain. Main generator still out. Not enough power to run electric saw. Had to cut plastic pipe into 8-foot lengths and dump core on trailer. Core very hard to work. Color hard to determine. Geolograph interval 3367 - 3407 feet. Shale stopped at 3393 feet. Balance of core white limestone (14 feet). Measured interval 39.5 feet (total length). Slight evidence of surface bleeding of gas in shale portion of core. Core color: brownish black (5YR 2/1) with some grayish blakc (N2) from 3383 - 3387 feet. No samples taken from limestone portion of core. Temperature at site 48 F with hard rain.

After sampling operation completed, loaded all equipment at well site into vehicle. Returned to motel at 5:50 p.m.

1/8/78

Moved all exammed samples from motel room to vehicle at 7:45 a.m. Everything out of motel at 11:00 a.m. Departed motel at 11:30 a.m. Rain and heavy fog. Arrived residence 2:50 p.m. Unloaded all personal gear. Drove vehicle to BCL and secured vehicle in east drive at Building 3. Departed BCL at 4:45 p.m.

The following section provides a detailed description of the mechanics of sampling and data on the individual core samples obtained. Samples are marked as B, M, and J for Battelle, Mound Laboratory, and Juniata College, respectively.

LOGISTICS PLAN FOR CORE-TESTING PROGRAM
GENERALIZED FORMAT FOR USE BY REGIONS/STATES

1. General Information

BASIN: APPALACHIA
STATE: W. VA.
WELL # WV#5-EGSP
LOCATION: MASON Co. W. VA.
CORE DEPTH: 2660'
CORE LENGTH: 747' 3407'
Coring Start 12-30-77
Coring Stop 1-7-78

2. Specific Program Responsibilities

DRILLING CONTRACTOR(S) FWA DRILLING Co., INC.
CORING CONTRACTOR(S) CHRISTENSEN DIAMOND PROD.
WELL LOGGING CONTR(S).
MERC/ERDA REP. S. RHOADES - WVGS
B. EASTERDAY - M. VICKERS

OUTGASSING TESTS
FISCHER ASSAY TESTS
GEOCHEMICAL TESTS
GEOL. & PHYSICAL TESTS

FINAL STORAGE/ ARCHIVES LOCATION:

3. Logistics Plan Elements

CORING OPERATIONS (1) → SITE & FIELD OPERATIONS (2) → CORE BOXING & TRANSPORT MODE (3) → CORE LABORATORY OPERATIONS (4), (6), (6A) → CORE STORAGE & ARCHIVING (5) → DATA PROCESSING & PUBLICATION (7)

STATE REP.
MERC REP.

STATE REP.
MERC REP.
BATELLE REP.
MOUND REP.
GEOCHEM. LAB REP.

PHY. & GEOL.
CHEM.
OTHER

STATE
OTHER

STATE
LAB.
UNIV.
OTHER

ERMIT No. MAS-146
47-053.
ISSUED 12-8-77
: REEL DRILLING PROGRAM
BOX 51
SPENCER, W. VA.
LOCATION: (WATERS) POTTER
ELEVATION: 665 FT.

4. SPECIAL REMARKS/COMMENTS

COUNTY: MASON
QUADRANGLE: POINT PLEASANT
38° 55' 30"
82° 03' 45"

A. J. Walker B.C.G.

STATE OF WEST VIRGINIA

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COMPOSITE CORE SAMPLE LOG

Well No. WV#5 EGSP Location MASON Co., W. VA.

Core No.	Geolograph Depth, ft From	Geolograph Depth, ft To	Measured Length, ft	Percent Recovered	Number of Samples For BCL	Juniata	Mound	Other
1	2660	2698 38	29.00	76.30	—	NONE	—	USGS
2	2698	2756 58	53.10	91.55	6	1	5	1
3	2751 (1)	2809 58	58.60	101.03	6	—	6	1
4	2809	2867 58	57.80	99.65	5	1	5	1
5	2867	2925 58	55.55	95.78	6	—	5	1
6	2925	2983 58	59.10	101.90	6	1	6	2
7	2983	3041 (2) 58	58.65	101.12	6	1	6	1
8	3042	3100 58	58.20	100.34	6	—	6	1
9	3100	3158 (3) 58	59.10	101.90	6	1	7	1
10	3159	3218 59	59.10	100.17	6	—	6	1
11	3218	3250 32	30.20	94.38	3	1	3	—
12	3250	3309 59	59.10	100.10	6	—	7	2
13	3309	3367 58	58.00	100.00	6	1	6	1
14	3367	3407 (4) 40	39.50	98.75	3	—	2	—
15								
16								
17								
18								
19								
20								
Total					71	7	70	13
Average				97.36				
Total			735.00					

Grand Total Samples Canned 161

(1) GEOLOGRAPH RESET TO 2751'. HAD 5' OF MUD ON TOP OF CORE #2.
(2) GEOLOGRAPH RESET TO 3042'. RECOVERED CORE.
(3) GEOLOGRAPH RESET TO 3159'. RECOVERED CORE.
(4) 26' OF SHALE + 14' OF LIMESTONE.

Engineer R. J. Walker
B.C.L.

Well Name WV#5 EGSP

Run No. 1 Date Cored 12-30-77

Depths GEOLOGRAPH 2660-2698 feet. No. of Feet Cored 38

Recovered 29 feet. No. of Feet Recovered 29 - MEASURED

Percent Recovered

Coring depth reached 0400 hrs. (time) 12-30-77 (date)

Coring stopped 0920 hrs. (time) 12-30-77 (date)

Samples brought to surface — (time) (date)

Coring time 5 hr 20 min.

Core to surface time — hr — min.

Average Coring rate 8.42 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND

Well Location MASON County

W. VA. State

Temperature: 28°F @ 1100 hrs.

Weather: (D) R S

Maximum sampling time: * hr min.

Remarks * NO SAMPLES TAKEN. CORE SECTION BADLY BROKEN. NO SAMPLES TAKEN. WVGS/EGSP GEOLOGIST DECLARED RECOVERED LENGTH - TOTAL LOSS. NO DESCRIPTION MADE.

Engineer R. J. Walker

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Well Name WV #5 EGSP

Run No. 2 Date Cored 12-30/12-31-77

Depths GEOLOGRAPH 2698-2756 feet. No. of Feet Cored 58

Recovered 53.10 feet. No. of Feet Recovered MEASURED 53.10

Percent Recovered 91.55

Coring depth reached 1833 hrs. (time) 12-30-77 (date)

Coring stopped 0041 hrs (time) 12-31-77 (date)

Samples brought to surface 0553 (time) 12-31-77 (date)

Coring time 6 hr 08 min.

Core to surface time 5 hr 08 min.

Average Coring rate 6.34 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND

Well Location MASON County

W. VA. State

Temperature: 30°F @ 0600 hrs. 12-31-77

Weather: (D) R S

Maximum sampling time: 2 hr 56 min.

Remarks Core in plastic sleeve is to time consuming for a field operation. This sleeve, from site ~7 hrs., over 3 hrs. getting core out of core barrel. Plastic sleeve very hard to cut. Samples difficult to get out of retaining half of sleeve.

Engineer A. J. Walker

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TIME ON SURFACE 0553 12-31-77

WELL ID WV#5 EGSP
RUN NO. 2
DATE 12-30 / 12-31-77
REP R. J. Walker

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2700.5	.50	.90	1	NONE		N5	0816	2:23	B				.40'	Interbanded w/ 5YR 2/2
2705.5	.18	.60	3	DITTO		N5	0817	2:24			M		.42'	Ditto
2710.5	.09	.50	2	"	"	N5	0818	2:25	B				.41'	"
2713.0	.60	.90	2	"	"	N5	0819	2:26				USGS	.30'	"
2715.5	.20	.60	4	"	"	N5	0820	2:27			M		.40'	"
2720.5	.18	.62	2	"	"	5YR 2/2	0821	2:28	B				.44'	
2723.0	.33	.64	3	"	"	5YR 2/2	0843	2:50		J			.31'	
2725.5	.20	.60	1	"	"	5YR 2/2	0844	2:51			M		.40'	
2730.5	.35	.77	1	"	"	5YR 2/2	0845	2:52	B				.42'	
2735.5	.60	.95	1	"	"	5YR 2/2	0846	2:53			M		.35'	
2740.5	.22	.57	2	"	"	5YR 2/2	0847	2:54	B				.35'	
2745.5	.01	.30	2	"	"	5YR 2/2	0848	2:55			M		.29'	
2750.5	.23	.60	1	"	"	5YR 2/2	0849	2:56	B				.37'	

TOTAL SAMPLES - 13
B - 6
M - 5
J - 1
USGS - 1

Core color: From 2698' to 2718', medium gray (N5) interbanded with brown (5YR 2/2). From 2718' to bottom, brown (5YR 2/2).

Well Name WV#5 EGSP

Run No. 3 Date Cored 12-31-77

Depths GEOLOGRAPH 2751'-2809' feet. No. of Feet Cored 58'

Recovered 58.6 feet. No. of Feet Recovered 58.6 MEASURED

Percent Recovered 100

Coring depth reached 1008 hrs. (time) 12-31-77 (date)

Coring stopped 1643 hrs. (time) 12-31-77 (date)

Samples brought to surface 1936 hrs. (time) 12-31-77 (date)

Coring time 6 hr 35 min.

Core to surface time 2 hr 53 min.

Average Coring rate 6.81 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND

Well Location MASON County

W. VA. State

Temperature: 34°F @ 2000 hrs.

Weather: (D) R S

Maximum sampling time: 2 hr 05 min.

Remarks Geolograph reset to 2751' because of 5' of mud on top of core, run #2.

Engineer G. J. Walker

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TIME ON SURFACE 1936 hrs.

WELL ID WV#5 EGSP
RUN NO. 3
DATE 12-31-77
REP R. J. Walker

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2753.5	.52	.86	2	NONE		N5-5YR2/2	2046	1:10	B				.34'	Banded
2758.5	.13	.42	5	DITTO		5YR2/2	2049	1:13			M		.29'	
2763.0	.02	.40	1	"	"	5YR2/2	2100	1:24				USGS	.38'	
2763.5	.40	.90	1	"	"	5YR2/2	2102	1:26	B*				.50'	
2768.5	.33	.70	1	"	"	5YR2/2	2107	1:31			M		.37'	
2773.5	.42	.81	1	"	"	N5-5YR2/2	2111	1:35	B				.39'	Banded
2778.5	.25	.58	2	"	"	5YR2/2-N5	2115	1:39			M		.33'	DITTO
2783.5	.51	.82	4	"	"	5Y4/1-N5	2120	1:44	B				.31'	"
2788.5	.45	.83	3	"	"	N5	2125	1:49			M		.38'	
2793.5	.47	.77	1	"	"	N5-5YR2/2	2130	1:54	B				.30'	Banded
2798.5	.40	.80	1	"	"	5YR2/2	2134	1:58			M		.40'	
2803.5	.33	.61	1	"	"	5YR2/2-N5	2138	2:02	B				.28'	Banded
2808.5	.13	.45	1	"	"	N5-5YR2/2	2141	2:05			M		.32'	DITTO

TOTAL SAMPLES - 13
B - 6
M - 6
USGS - 1

COLOR: Entire length of core varied from medium gray (N5) and brown (5YR2/2)

* Sample in special canister. Equipped to monitor gas pressure

Well Name WV#5 - EGSP

Run No. 4 Date Cored 12-31-77 / 1-1-78

GEOLOGRAPH

Depths 2809 - 2867 feet. No. of Feet Cored 58

Recovered 57.8 feet. No. of Feet Recovered MEASURED 57.8

Percent Recovered 99.65

Coring depth reached 2250 hrs. (time) 12-31-77 (date)

Coring stopped 0556 hrs. (time) 1-1-78 (date)

Samples brought to surface 0855 hrs. (time) 1-1-78 (date)

Coring time 7 hr 06 min.

Core to surface time 2 hr 59 min.

Average Coring rate 7.35 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PRODUCTS

Well Location MASON County

W. VA. State

Temperature: 35°F @ 0845 hrs.

Weather: D (R) S

Maximum sampling time: 2 hr 50 min.

Remarks DROPPED ~ 8' OF CORE ON DRILL PLATFORM FROM TOP HALF. NO SAMPLES TAKEN FROM 2829' TO 2837'.

Engineer G. J. Walker

A20

TIME ON SURFACE 0855 hrs. 1-1-78

WELL ID WV #5 EGSP

RUN NO. 4

DATE 12-31-77 / 1-1-78

REP G.W. Walker

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2811.5	.40	.85	2	NONE		5YR 2/1	1040	1:45	B				.45'	
2813.0	.05	.39	1	DITTO		5GY 2/1	1047	1:52				USGS	.34'	
2816.5	.23	.52	2	"	"	5Y 2/1	1052	1:57			M		.29'	
2821.5	.08	.52	1	"	"	5YR 2/1	1100	2:05	B				.44'	
2823.0	.25	.63	3	"	"	N3	1111	2:16		J			.38'	
2826.5	.20	.63	3	"	"	N3	1115	2:20			M		.43'	
2841.5	.25	.65	1	"	"	5Y 2/1	1121	2:26	B				.40'	
2846.5	.23	.58	1	"	"	N3	1127	2:32			M		.35'	
2851.5	.18	.53	1	"	"	5G 2/1	1130	2:35	B				.35'	
2856.5	.24	.65	4	"	"	5Y 2/1	1136	2:41			M		.41'	
2861.5	.36	.75	1	"	"	5G 2/1	1141	2:46	B				.39'	
2866.5	.03	.38	2	"	"	5YR 2/1	1145	2:50			M		.35'	

TOTAL SAMPLES - 12

B - 5
M - 5
J - 1
USGS - 1

DROPPED ~ 8' OF CORE FROM TOP HALF, ON DRILL PLATFORM.
NO SAMPLES TAKEN FROM 2829' TO 2837'. CORE COLOR: DARK GRAY (N3) THRU BORWNISH OR OLIVE BLACK (5YR 2/1 / 5Y

A-21

Well Name WY#5 EGSP

Run No. 5 Date Cored 1-1-78

GEOLOGRAPH

Depths 2867- 2925 feet. No. of Feet Cored 58

Recovered 55.55 feet. No. of Feet Recovered MEASURED 55.55

Percent Recovered 95.78

Coring depth reached 1311 hrs. (time) 1-1-78 (date)

Coring stopped 2126 hrs. (time) 1-1-78 (date)

Samples brought to surface 0020 hrs. (time) 1-2-78 (date)

Coring time 8 hr 15 min.

Core to surface time 2 hr 54 min.

Average Coring rate 8.53 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 20°F @ 0045 hrs. 1-2-77

Weather: D R (S)

Maximum sampling time: 2 hr 15 min.

Remarks CORE SHORT ~2.5'. WEATHER BAD - SNOW WITH HIGH WIND. WIND BLEW DOWN TEMPORARY SHELTER ~ 1½ hr. BEFORE CORE ON SURFACE.

Engineer A. J. Walker B.C.L.

TIME ON SURFACE 0020 hrs. 1-2-78

WELL ID WV #5 EGSP
RUN NO. 5
DATE 1-1 / 1-2-78
REP R. J. Walker B.C.L.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2869.5	.28	.67	1	YES*	No	N3	0130	1:10	B				.39'	SPECIAL CANISTER
2873.0	.20	.57	1	DITTO	DITTO	N3/5YR2/1	0138	1:18				USGS	.37'	BANDED
2874.5	.10	.38	1	"	"	5YR2/1/N3	0143	1:23			M		.28'	BANDED
2879.5	.40	.73	1	"	"	N3	0148	1:28	B				.33'	
2884.5	.20	.50	1	"	"	5YR2/1	0153	1:33			M		.30'	
2889.5	.20	.62	1	No	"	N3	0158	1:38	B				.42'	
2894.5	.22	.64	1	DITTO	"	N3	0206	1:46			M		.42'	
2899.5	.15	.60	3	"	"	N3/5YR2/1	0212	1:52	B				.45'	BANDED
2904.5	.20	.60	4	"	"	N3	0220	2:00			M		.46'	
2909.5	.10	.56	2	"	"	5YR2/1	0225	2:05	B				.46'	
2914.5	.22	.60	1	"	"	5YR2/1	0230	2:10			M		.38'	
2919.5	.15	.55	1	"	"	N3/5YR2/1	0235	2:15	B				.40'	

TOTAL SAMPLES - 12
B - 6
M - 5
USGS - 1

* Evidence of slight surface bleeding of gas in top 1/3 of core

CORE COLOR: Top half dark gray (N3) banded with brownish black (5YR2/1). Bottom half, more brownish black (5YR2/1) than dark gray (N3).

A23

Well Name WV#5 EGSP

Run No. 6 Date Cored 1-2-78

Depths GEOLOGRAPH 2925-2983 feet. No. of Feet Cored 58

Recovered 59.1 feet. No. of Feet Recovered 59.1 MEASURER

Percent Recovered 101.90

Coring depth reached 0558 hrs. (time) 1-2-78 (date)

Coring stopped 1235 hrs. (time) 1-2-78 (date)

Samples brought to surface 1526 hrs. (time) 1-2-78 (date)

Coring time 6 hr 37 min.

Core to surface time 2 hr 51 min.

Average Coring rate 6.84 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 21°F @ 1640 hrs.

Weather: (D) R S

Maximum sampling time: 1 hr 51 min.

Remarks PICKED UP 1.1 FT. OF CORE ON BOTTOM, LOST FROM CORE #5. GOOD CORE. ONE PIECE ~ 6' LONG, SOLID. SEVERAL PIECES OVER 2' BUT LESS THAN 3' LONG. ALL LONG PIECES IN BOTTOM HALF OF CORE.

Engineer R. J. Walker

B.C.L.

TIME ON SURFACE 1526 hrs. 1-2-78

WELL ID WV #5 EGSP
RUN NO. 6
DATE 1-2-78
REP C. J. Walker
B.C.W.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2927.5	.40	.83	3	No	No	N3	1627	1:01	B				.43'	
2930.0	.07	.44	1	Ditto	Ditto	N3	1631	1:05				USGS	.37'	
2932.5	.09	.43	1	"	"	5YR 2/1	1634	1:08			M		.34'	
2935.0	.35	.59	1	Yes*	"	5YR 2/1	1638	1:12		J			.24'	
2937.5	.11	.66	1	"	"	N3/5YR 2/1	1643	1:17	B				.55'	INTERBANDED
2942.5	.28	.61	1	"	"	5YR 2/1	1647	1:21			M		.33'	
2947.5	.37	.85	2	"	"	5YR 2/1	1651	1:25	B				.48'	
2952.5	.36	.73	1	"	"	5YR 2/1	1654	1:28			M		.37'	
2957.5	.39	.85	1	"	"	5YR 2/1	1658	1:32	B				.46'	
2962.5	.17	.55	1	"	"	5YR 2/1	1701	1:36			M		.38'	
2967.5	.33	.71	1	"	"	5YR 2/1	1704	1:39	B				.38'	SPEC. CANISTER
2972.5	.09	.44	1	"	"	5YR 2/1	1708	1:43			M		.35'	
2977.5	.09	.52	1	"	"	5YR 2/1	1711	1:46	B				.43'	
2980.0	.19	.55	1	"	"	5YR 2/1	1713	1:48				USGS	.36'	
2982.5	.30	.75	1	"	"	N3	1716	1:51			M		.45'	

TOTAL SAMPLES - 15
B - 6
M - 6
J - 1
USGS - 2

* Evidence of slight surface bleeding of gas from ~ 2934' to bottom of core.
CORE COLOR: Predominantly brownish black (5YR 2/1) with small sections dark gray (N3).

A25

Well Name WV #5 EGSP

Run No. 7 Date Cored 1-2 & 1-3-78

GEOLOGRAPH

Depths 2983 - 3041 * feet. No. of Feet Cored 58

Recovered 58.65 feet. No. of Feet Recovered 58.65 MEASURED

Percent Recovered 101.12

Coring depth reached 2130 hrs. (time) 1-2-78 (date)

Coring stopped 0645 hrs. (time) 1-3-78 (date)

Samples brought to surface 0902 hrs. (time) 1-3-78 (date)

Coring time 9 hr 15 min.

Core to surface time 2 hr 17 min.

Average Coring rate 9.57 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 14°F @ 1830 hrs. 1-3-78

Weather: (D) R S

Maximum sampling time: 2 hr 03 min.

Remarks CORING RATE SLOW BECAUSE OF TROUBLE WITH SOAP PUMP.
* GEOLOGRAPH CORRECTED TO READ 3042', ADDITIONAL CORE PICKED UP RUN #6 & #7.

Engineer R. J. Walker

B.E.L.

A26

TIME ON SURFACE 0902 hrs. 1-3-78

WELL ID WV#5 EGSP

RUN NO. 7

DATE 1-2 / 1-3-78

REP C.J. Wolfson

B.C.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
2985.5	.30	.70	1	YES*	No	N3/5YR 2/1	1004	1:02	B				.40'	INTERBANDED
2990.5	.27	.65	1	Ditto	Ditto	N2	1011	1:09			M		.38'	
2995.5	.10	.57	2	"	"	N1	1017	1:15	B				.47'	
3000.5	.39	.83	1	"	"	N1	1022	1:20			M		.44'	
3005.5	.30	.80	1	"	"	N1/N3	1027	1:25	B				.50'	INTERBANDED
3010.5	.35	.75	1	"	"	N3	1030	1:28			M		.40'	
3015.5	.39	.85	2	"	"	N2	1034	1:32	B				.46'	
3020.5	.30	.60	1	"	"	N2	1038	1:36			M		.30'	
3025.5	.35	.80	2	"	"	N2	1045	1:43	B				.45'	
3030.0	.06	.51	1	"	"	N2	1052	1:50				USGS	.45'	
3030.5	.51	.82	1	"	"	N2	1056	1:54			M		.31'	
3035.0	.10	.36	2	"	"	N3	1058	1:56		J			.26'	
3035.5	.36	.87	1	"	"	N3	1100	1:58	B				.51'	
3040.5	.25	.15	1	"	"	N4	1105	2:03			M		.50'	

TOTAL SAMPLES 14

B - 6

M - 6

J - 1

USGS 1

* Evidence of surface bleeding of gas in the darker color areas [illegible] core, grayish black and black (N2 - N1)

CORE COLOR: most of core medium dark gray (N4) to grayish bl[illegible] (N2). more of the darker color than light

A27

Well Name WV#5 EGSP

Run No. 8 Date Cored 1-3-78

Depths GEOLOGRAPH 3042-3100 feet. No. of Feet Cored 58

Recovered 58.2 feet. No. of Feet Recovered 58.2 MEASURED

Percent Recovered 100.34

Coring depth reached 1226 hrs. (time) 1-3-78 (date)

Coring stopped 1938 hrs. (time) 1-3-78 (date)

Samples brought to surface 2355 hrs. (time) 1-3-78 (date)

Coring time 7 hr 12 min.

Core to surface time 4 hr 17 min.

Average Coring rate 7.45 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: -2 TO 0 °F WITH HIGH WIND.

Weather: (D) R S

Maximum sampling time: 2 hr 33 min.

Remarks CORE SURFACE FROZE AS SOON AS PLASTIC SLEEVE REMOVED. CORE VERY HARD TO WORK. CORE COLOR VERY HARD TO DETERMINE. COULD NOT DETECT SURFACE BLEEDING OF GAS.

Engineer R. J. Walker

B.C.L.

A28

TIME ON SURFACE 2355 hrs. 1-3-78

WELL ID WV#5 EGSP

RUN NO. 8

DATE 1-3-78

REP (illegible) BCR.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3044.5	.36	.83	2	NONE *		N4	0139	1:44	B				.47'	
3049.5	.30	.57	1	DITTO		N4	0143	1:48			M		.27'	
3054.5	.32	.71	1	"	"	N4	0148	1:53	B				.39'	
3059.5	.22	.56	1	"	"	N4	0152	1:57			M		.34'	
3064.5	.09	.53	1	"	"	N4	0155	2:00	B				.44'	
3069.5	.35	.70	1	"	"	N4	0159	2:04			M		.35'	
3074.5	.10	.50	1	"	"	N2	0204	2:09	B				.40'	SPEC. CANISTER
3079.5	.28	.70	1	"	"	N2/N4	0210	2:15			M		.42'	INTERBANDED
3080.0	.25	.63	1	"	"	N2	0213	2:18				USGS	.38'	
3084.5	.29	.68	1	"	"	N2	0217	2:22	B				.39'	
3089.5	.10	.45	1	"	"	N2	0221	2:26			M		.35'	
3094.5	.35	.70	1	"	"	N2	0225	2:30	B				.35'	
3099.5	.11	.41	1	"	"	N2	0228	2:33			M		.30'	

TOTAL SAMPLES - 13

B - 6

M - 6

USGS - 1

* Because of very bad weather, -2° to 0°F with high winds, the core surface froze as soon as or before the plastic sleeve was removed. No surface bleeding of gas could be detected. Core very hard to mark and describe. Canned samples from this section indicated gas in core after 48 hrs.

Core Color: Medium dark gray (N4) from top to about half depth, bottom half grayish black (N2).

1127

Well Name WV#5 EGSP

Run No. 9 Date Cored 1-4-78

GEOLOGRAPH

Depths 3100 - 3158* feet. No. of Feet Cored 58

Recovered 59.1 feet. No. of Feet Recovered 59.1 MEASURED

Percent Recovered 101.90

Coring depth reached 0709 hrs. (time) 1-4-78 (date)

Coring stopped 1404 hrs. (time) 1-4-78 (date)

Samples brought to surface 1627 hrs. (time) 1-4-78 (date)

Coring time 6 hr 55 min.

Core to surface time 2 hr 23 min.

Average Coring rate 7.16 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 22°F

Weather: D R (S)

Maximum sampling time: 2 hr 18 min.

Remarks * GEOLOGRAPH CORRECTED TO READ 3159' BECAUSE OF EXCESS CORE RECOVERED, RUN #8 & #9

Engineer E. J. Walker

B.C.H.

A30

TIME ON SURFACE 1627 hrs. 1-4-78

WELL ID WV#5 EGSP
RUN NO. 9
DATE 1-4-78
REP [illegible] B.C.H.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3102.5	.32	.72	2	NONE		N3	1730	1:03	B				.40'	
3107.5	.27	.61	2	DITTO		N3	1733	1:06			M		.34'	
3112.5	.30	.82	2	"	"	N3	1740	1:13	B				.52'	
3117.5	.30	.70	3	"	"	N3	1745	1:18			M		.40'	
3122.5	.25	.75	2	"	"	N3	1751	1:24	B				.50'	
3127.5	.15	.48	1	"	"	N3	1755	1:28			M		.33'	
3130.0	.13	.42	2	YES*	"	N3	1802	1:35				USGS	.29'	
3132.5	.20	.53	1	"	"	N3	1806	1:39	B				.33'	
3135.0	.12	.40	1	"	"	N3	1811	1:44		J			.28'	
3137.5	.47	.78	1	"	"	N3	1815	1:48			M		.31'	
3144.0	.09	.50	1	"	"	N3	1821	1:54	B				.41'	SPEC. CANISTER
3145.0	.20	.48	SEVERAL	"	"	N3	1830	2:03			M		.28'	SPLIT - SPEC. CANISTE
3145.0	.48	.75	1	"	"	N3	1833	2:06			M		.27'	REG. CAN
3152.5	.19	.53	1	"	"	N3	1842	2:15	B				.34'	
3157.5	.55	.85	1	"	"	N3	1845	2:18			M		.30'	

TOTAL SAMPLES - 15
B - 6
M - 7
J - 1
USGS - 1

* Evidence of surface bleeding of gas in core from 3128' to bottom of core (slight). Moderate surface bleeding from 3143 to 3147'. Special sampler for "B" & "M" taken in this area.

CORE COLOR: Dark gray (N3) from top to bottom of core section.

A31

Well Name WV#5 EGSP

Run No. 10 Date Cored 1-4 / 1-5-78

Depths GEOLOGRAPH 3159 - 3218 feet. No. of Feet Cored 59

Recovered 59.1 feet. No. of Feet Recovered 59.1 MEASURED

Percent Recovered 100.17

Coring depth reached 1952 hrs. (time) 1-4-78 (date)

Coring stopped 0225 hrs. (time) 1-5-78 (date)

Samples brought to surface 0457 hrs. (time) 1-5-78 (date)

Coring time 6 hr 33 min.

Core to surface time 2 hr 32 min.

Average Coring rate 6.66 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 24°F

Weather: D R S cloudy & damp.

Maximum sampling time: 2 hr 05 min.

Remarks GOOD CORE. NO PROBLEMS WITH RIG OR CORING.

Engineer A. J. Welker

B.C.L.

A32

TIME ON SURFACE 0457 hrs. 1-5-78

WELL ID WV#5 EGSP

RUN NO. 10

DATE 1-4 / 1-5-78

REP C. J. Walker B.C.R.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3161.5	.42	.80	1	NONE		N3	0613	1:16	B				.38'	
3166.5	.14	.55	1	Ditto		N3	0616	1:19			M		.41'	
3171.5	.44	.83	1	"	"	N3	0621	1:24	B				.39'	SPEC. CANISTER
3176.5	.12	.56	2	"	"	N3	0626	1:29			M		.44'	
3180.0	.30	.72	1	"	"	N3	0629	1:32				USGS	.42'	
3181.5	.28	.70	2	"	"	N3	0633	1:36	B				.42'	
3186.5	.30	.80	2	"	"	N3	0636	1:39			M		.50'	
3191.5	.20	.60	2	"	"	N3	0642	1:45	B				.46'	
3196.5	.30	.73	1	"	"	N3	0645	1:48			M		.43'	
3201.5	.20	.65	2	"	"	N3	0649	1:52	B				.45'	
3206.5	.42	.81	1	"	"	N3	0654	1:57			M		.39'	
3211.5	.14	.59	1	YES*	"	N3	0658	2:01	B				.45'	
3216.5	.10	.58	1	No	"	N3	0702	2:05			M		.48'	

TOTAL SAMPLES - 13

B - 6

M - 6

USGS - 1

* Evidence of slight surface bleeding of gas from 3210 to 3215'.

CORE COLOR: Predominantly dark gray (N3) from top to bottom of core length. Black bands no 1/8" wide - 2"-3" apart from 3189 to 3206'.

A23

Well Name WV #5 EGSP

Run No. 11 Date Cored 1-5-78

GEOLOGRAPH

Depths 3218-3250 feet. No. of Feet Cored 32

Recovered 30.2 feet. No. of Feet Recovered 30.2 MEASURED

Percent Recovered 94.38

Coring depth reached 0841 hrs. (time) 1-5-78 (date)

Coring stopped 1225 hrs. (time) 1-5-78 (date)

Samples brought to surface 1520 hrs. (time) 1-5-78 (date)

Coring time 3 hr 44 min.

Core to surface time 2 hr 55 min.

Average Coring rate 7.00 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 27°F

Weather: D (R) (S) sleet w/ wind

Maximum sampling time: _____ hr _____ min.

Remarks LOST CIRCULATION, TROUBLE WITH SOAP PUMP. HAD TO PULL FROM HOLE. CORE JAMMED IN BARREL. HAD TO USE POWER WINCH TO PULL OUT. CORE BADLY BROKEN. MANY SMALL PIECES. VERY DIRTY.

Engineer R. J. Walker

B.C.L.

434

TIME ON SURFACE 1520 hrs. 1-5-78

WELL ID WV #5 EGSP

RUN NO. 11

DATE 1-5-78

REP R. J. Walker
B.C.R.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3220.5	.31	.80	2	NONE		N4	1615	0:55	B				.49'	
3225.5	.13	.50	1	DITTO		N4	1619	0:59			M		.37'	
3230.5	.33	.70	SEVERAL	"	"	N3	1622	1:02	B				.37'	
3235.0	.13	.46	2	"	"	N3/N2	1627	1:07		J			.33'	TOP N3/BOTTOM N
3235.5	.46	.84	3	"	"	N2	1631	1:11			M		.38'	
3240.5	.15	.58	1	"	"	N3	1633	1:13	B				.43'	
3245.5	.18	.49	2	"	"	N3	1636	1:16			M		.31'	

TOTAL SAMPLES - 7
B - 3
M - 3
J - 1

Lost circulation, trouble with soap pump. Had to pull from hole. Core jammed in barrel. Had to use power winch to pull out. Core badly broken. Many small pieces. Core very dirty. Weather condition such that surface bleeding of gas, if any, could not be detected.
CORE COLOR: Medium dark gray (N4) to grayish black (N2)

Well Name WV #5 EGSP

Run No. 12 Date Cored 1-5 / 1-6-78

Depths GEOLOGRAPH 3250 - 3309 feet. No. of Feet Cored 59

Recovered 59.1 feet. No. of Feet Recovered 59.1 MEASURED

Percent Recovered 100.17

Coring depth reached 1912 hrs. (time) 1-5-78 (date)

Coring stopped 0231 hrs. (time) 1-6-78 (date)

Samples brought to surface 0526 hrs. (time) 1-6-78 (date)

Coring time 7 hr 19 min.

Core to surface time 2 hr 55 min.

Average Coring rate 7.44 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W.VA. State

Temperature: 34°F

Weather: D (R) S & FOG

Maximum sampling time: _____ hr _____ min.

Remarks SHALE GETTING HARD & TOUGH. CORING RATE INCREASING, ALSO LONGEST SECTION CORED TO DATE. CORE BADLY BROKEN FROM TOP TO 3264'.

Engineer D. J. Walker

B.C.L.

A36

TIME ON SURFACE 0526 hrs. 1-6-78

WELL ID WV#5 EGSP

RUN NO. 12

DATE 1-5 / 1-6-78

REP C. J. Wocker B.C.L.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3253.5	.25	.69	2	NONE		N3	0710	1:44	B				.44'	INTERBEDDED WIT
3255.0	.30	.61	4	DITTO		N3	0715	1:49				USGS	.31'	BLACK BANDS
3257.5	.50	.80	3	"	"	N3	0722	1:56			M		.30'	DITTO
3262.5	.12	.64	3	"	"	N3	0729	2:01	B				.52'	"
3267.5	.38	.69	1	"	"	N3	0730	2:04			M		.31'	"
3272.5	.42	.76	1	"	"	N3	0735	2:09	B				.34'	"
3277.5	.33	.75	2	"	"	N3	0738	2:12			M		.42'	"
3282.5	.05	.44	1	"	"	N3	0743	2:17	B				.39'	"
3287.5	.35	.68	1	"	"	5YR 2/1	0748	2:22			M		.33'	
3292.5	.20	.60	1	YES*	"	N3	0752	2:26	B				.40'	
3297.5	.50	.78	1	"	"	N3	0757	2:31			M		.28'	
3302.5	.25	.75	1	"	"	N3	0803	2:37	B				.50'	SPEC. CANISTER
3305.0	.23	.61	1	"	"	5YR 2/1	0818	2:52				USGS	.38'	
3308.0	.12	.36	SEVERAL	"	"	5YR 2/1	0822	2:56			M		.24'	SPLIT - SPEC. CANIS
3308.0	.36	.78	1	"	"	5YR 2/1	0824	2:58			M		.42'	REG. CAN

TOTAL SAMPLES - 15
B - 6
M - 7
USGS - 2

* Evidence of moderate surface bleeding of gas from 3290' to bottom of core. Core badly broken from top to 3264'. "M" special sampler difficult to split lengthwise. Many small pieces result.

CORE COLOR: Predominantly dark gray (N3) with interbedded black bands from top to 3283'. Two short lengths of brownish black (5YR 2/1) from 3283' to bottom.

A37

Well Name WV #5 EGSP

Run No. 13 Date Cored 1-6-78

GEOLOGRAPH
Depths 3309 - 3367 feet. No. of Feet Cored 58

Recovered 58.0 feet. No. of Feet Recovered 58.0 MEASURED

Percent Recovered 100.0

Coring depth reached 0941 hrs. (time) 1-6-78 (date)

Coring stopped 1632 hrs. (time) 1-6-78 (date)

Samples brought to surface 1900 hrs. (time) 1-6-78 (date)

Coring time 6 hr 51 min.

Core to surface time 2 hr 28 min.

Average Coring rate 7.09 min/ft

Drilling Co. FWA DRILLING Co., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 38°F

Weather: D (R) S w/ HEAVY FOG

Maximum sampling time: _____ hr _____ min.

Remarks RIG GENERATOR OUT. NO LIGHTS IN CORE SAMPLING AREA. USED FLASHLIGHTS & VEHICLE LIGHTS. FOG SO HEAVY NOT MUCH HELP. NECESSARY TO CUT PLASTIC SLEEVE WITH HAND SAW EVERY 8' AND DUMP CORE ON CORE TRAILOR.

Engineer C. J. Walker
B.E.N.

A38

TIME ON SURFACE 1900 hrs. 1-6-78

WELL ID WV#5 EGSP

RUN NO. 13

DATE 1-6-78

REP C. J. Walkin B.C.N.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3311.5	.52	.89	1	YES*	No	N3	2003	2:03	B				.37'	INTERBEDDED WITH
3316.5	.25	.56	1	DITTO	DITTO	N3	2008	2:08			M		.31'	BLACK BANDS
3321.5	.25	.63	2	"	"	5YR 2/1	2013	2:13	B				.38'	
3325.5	.35	.75	2	"	"	N3	2017	2:17			M		.40'	DITTO
3331.5	.26	.70	2	"	"	N3	2020	2:20	B				.44'	"
3335.0	.30	.63	1	"	"	5YR 2/1	2023	2:23		J			.33'	
3336.5	.22	.68	1	"	"	N3	2027	2:27			M		.46'	"
3341.5	.20	.62	2	"	"	5YR 2/1	2040	2:40	B				.42'	SPEC. CANISTER
3346.5	.18	.50	1	"	"	5YR 2/1	2047	2:47			M		.32'	
3351.5	.18	.55	1	"	"	5YR 2/1	2052	2:52	B				.37'	
3355.0	.22	.68	1	"	"	5YR 2/1	2055	2:55				USGS	.46'	
3356.5	.42	.68	1	"	"	5YR 2/1	2058	2:58			M		.26'	
3361.5	.30	.68	1	"	"	5YR 2/1	2102	3:02	B				.38'	
3366.5	.35	.59	1	"	"	5YR 2/1	2108	3:08			M		.24'	

TOTAL SAMPLES - 14
B - 6
M - 6
J - 1
USGS - 1

* Evidence of slight surface bleeding of gas entire length of core.

CORE COLOR: Dark gray (N3) interbedded with black bands to 3333'. Balance of core predominantly brownish black (5YR 2/1)

A37

Well Name WV#5 EGSP

Run No. 14 Date Cored 1-6/1-7-78

Depths GEOLOGRAPH 3367-3407 feet. No. of Feet Cored 40

Recovered 39.50 feet. No. of Feet Recovered 39.50 MEASURED

Percent Recovered 98.75

Coring depth reached 2147 hrs. (time) 1-6-78 (date)

Coring stopped 0841 hrs. (time) 1-7-78 (date)

Samples brought to surface 1440 hrs. (time) 1-7-78 (date)

Coring time 10 hr 54 min.

Core to surface time 5 hr 59 min.

Average Coring rate 16.35 min/ft

Drilling Co. FWA DRILLING CO., INC.

Coring Co. CHRISTENSEN DIAMOND PROD.

Well Location MASON County

W. VA. State

Temperature: 48°F

Weather: D (R) S VERY MUDDY.

Maximum sampling time: hr min.

Remarks SHALE STOPPED AT 3393'. BALANCE OF CORE (14') WHITE LIMESTONE. NO SAMPLES TAKEN IN LIMESTONE. NO ELECTRIC. HAD TO CUT PLASTIC SLEEVE EVERY 8' AND DUMP CORE ON TRAILOR.

Engineer C. J. Walker

B.C.L.

440

TIME ON SURFACE 1440 hrs. 1-7-78

WELL ID WV #5 EGSP

RUN NO. 14

DATE 1-6 / 1-7-78

REP G. J. Wilson B.G.L.

Depth	From	To	No. of Pieces	Detected Gas	Detected Oil	Color	Time Exposed Canned	Time Exposed Δ	Samples For Battelle	Samples For Juniata	Samples For Mound	Samples For Other	Length Total	Comments
3369.5	.35	.77	2	YES*	No	5YR 2/1	1522	0:42	B				.42'	
3374.5	.35	.70	1	DITTO	DITTO	5YR 2/1	1525	0:45			M		.35'	
3380.5	.38	.72	1	"	"	5YR 2/1	1529	0:49	B				.34'	
3384.5	.40	.76	1	"	"	N2	1534	0:54			M		.36'	
3389.5	.33	.75	1	"	"	5YR 2/1	1540	1:00	B.					SPEC. CANISTER

TOTAL SAMPLES - 5

B - 3

M - 2

* Evidence of surface bleeding of gas from top of core to 3393'. Balance of core (14') white limestone. No samples taken in limestone.

CORE COLOR: Top to 3393', brownish black (5YR 2/1) with a short length, 3382.5 to 3385.5', grayish black (N2). Limestone from 3393', white limestone.

TABLE 1. IDENTIFICATION OF CORED WELLS AND SAMPLES SELECTED

API Well Code No.	Battelle Well Code No.	Location of Well	Well Operator	Date Sampled	Core Depth Interval, feet	Number of Samples
21637	C-1	Lincoln County, WV	Columbia Gas	Jan., 1976	2746-4045	82
21636	C-2	Lincoln County, WV	Columbia Gas	Jan., 1976	2655-3971	17
28982	R-109	Washington County, OH	River Gas	July 30, 1976	3494-3705	25
-	P-1	Sullivan County, IN	Energy Resources of Indiana, Inc.	Sept. 1, 1976	2495-2595	11[a]
31175	O-1	Christian County, KY	Orbit Gas	Sept. 18, 1976	2183-2319	13[b]
31020	C-336	Martin County, KY	Columbia Gas	Nov. 6, 1976	2434-3405	117[c]
-	T-1	Effingham County, IL	Tri-Star	Feb. 13-18, 1977	3006-3106	15[d]
20253	C-338	Wise County, VA	Columbia Gas	Apr. 22-30, 1977	4871-5469	40[e]
-	N-1	Henderson County, IL	No. Illinois Gas	July 13-17, 1977	319- 620	31[f]
-	N-2	Tazewell County, IL	No. Illinois Gas	Aug. 16-20, 1977	898-1158	23[g]
-	R-146	Mason County, WV	Reel Energy Corp.	Dec. 30, 1977 - Jan. 7, 1978	2660-3407	71[h]

(a) Additional 6 samples were selected and encapsulated for other DOE contractors.
(b) Additional 4 samples were selected and encapsulated for other DOE contractors.
(c) Additional 90 samples were selected and encapsulated for other DOE contractors.
(d) Additional 16 samples were selected and encapsulated for other DOE contractors.
(e) Additional 41 samples were selected and encapsulated for other DOE contractors.
(f) Additional 26 samples were selected and encapsulated for other DOE contractors.
(g) Additional 29 samples were selected and encapsulated for other DOE contractors.
(h) Additional 90 samples were selected and encapsulated for other DOE contractors.

TABLE 2. WELL DATA FOR C-336

LOCATION: MARTIN COUNTY, KY

ALTITUDE: 933 FEET

COORDINATES: 37.46 (DEGREES.MINUTES) LATITUDE
82.29 (DEGREES.MINUTES) LONGITUDE

CORING BEGAN AT 2429 FEET AND STOPPED AT 3371 FEET. IT TOOK 18 BARRELS TO COMPLETE.

SAMPLES WERE RETURNED TO BATTELLE ON 11/ 6/76.

THERE WERE 119 SAMPLES COLLECTED FOR BATTELLE AND 90 SAMPLES COLLECTED FOR OTHERS.

RUN INFORMATION FROM WELL C-336

RUN NO. 1 CORING BEGAN AT 2429 FEET AND CORING STOPPED AT 2487 FEET. THE AVERAGE CORING RATE IS 7.12 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 3.42 HOURS.

RUN NO. 2 CORING BEGAN AT 2487 FEET AND CORING STOPPED AT 2545 FEET. THE AVERAGE CORING RATE IS 8.28 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.00 HOURS.

RUN NO. 3 CORING BEGAN AT 2545 FEET AND CORING STOPPED AT 2583 FEET. THE AVERAGE CORING RATE IS 8.16 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 4.42 HOURS.

RUN NO. 4 CORING BEGAN AT 2583 FEET AND CORING STOPPED AT 2641 FEET. THE AVERAGE CORING RATE IS 7.76 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.25 HOURS.

RUN NO. 5 CORING BEGAN AT 2641 FEET AND CORING STOPPED AT 2700 FEET. THE AVERAGE CORING RATE IS 7.76 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.57 HOURS.

RUN NO. 6 CORING BEGAN AT 2700 FEET AND CORING STOPPED AT 2757 FEET. THE AVERAGE CORING RATE IS 5.82 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 3.42 HOURS.

TABLE 2. (Continued)

RUN INFORMATION FROM WELL CONTINUED C-336

RUN NO. 7	CORING BEGAN AT 2757 FEET AND CORING STOPPED AT 2815 FEET. THE AVERAGE CORING RATE IS 8.29 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.83 HOURS.
RUN NO. 8	CORING BEGAN AT 2815 FEET AND CORING STOPPED AT 2873 FEET. THE AVERAGE CORING RATE IS 6.92 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.13 HOURS.
RUN NO. 9	CORING BEGAN AT 2873 FEET AND CORING STOPPED AT 2931 FEET. THE AVERAGE CORING RATE IS 7.70 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.33 HOURS.
RUN NO. 10	CORING BEGAN AT 2931 FEET AND CORING STOPPED AT 2989 FEET. THE AVERAGE CORING RATE IS 6.67 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.33 HOURS.
RUN NO. 11	CORING BEGAN AT 2989 FEET AND CORING STOPPED AT 3039 FEET. THE AVERAGE CORING RATE IS 4.90 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 3.17 HOURS.
RUN NO. 12	CORING BEGAN AT 3039 FEET AND CORING STOPPED AT 3097 FEET. THE AVERAGE CORING RATE IS 6.38 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 3.50 HOURS.
RUN NO. 13	CORING BEGAN AT 3097 FEET AND CORING STOPPED AT 3155 FEET. THE AVERAGE CORING RATE IS 7.43 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.88 HOURS.
RUN NO. 14	CORING BEGAN AT 3155 FEET AND CORING STOPPED AT 3213 FEET. THE AVERAGE CORING RATE IS 7.98 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.67 HOURS.
RUN NO. 15	CORING BEGAN AT 3213 FEET AND CORING STOPPED AT 3272 FEET. THE AVERAGE CORING RATE IS 4.52 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.68 HOURS.
RUN NO. 16	CORING BEGAN AT 3272 FEET AND CORING STOPPED AT 3312 FEET. THE AVERAGE CORING RATE IS 9.64 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.75 HOURS.
RUN NO. 17	CORING BEGAN AT 3312 FEET AND CORING STOPPED AT 3370 FEET. THE AVERAGE CORING RATE IS 6.52 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.28 HOURS.
RUN NO. 18	CORING BEGAN AT 3370 FEET AND CORING STOPPED AT 3411 FEET. THE AVERAGE CORING RATE IS 9.28 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.17 HOURS.

FEB 2 1978

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TABLE 3. WELL DATA FOR N-1

LOCATION: HENDERSON COUNTY, IL

ALTITUDE: 720 FEET

COORDINATES: 0.00 (DEGREES.MINUTES) LATITUDE
0.00 (DEGREES.MINUTES) LONGITUDE

CORING BEGAN AT 319 FEET AND STOPPED AT 620 FEET. IT TOOK 11 BARRELS TO COMPLETE.

SAMPLES WERE RETURNED TO BATTELLE ON 7/20/77.

THERE WERE 31 SAMPLES COLLECTED FOR BATTELLE AND 26 SAMPLES COLLECTED FOR OTHERS.

RUN INFORMATION FROM WELL N-1

RUN NO. 1 CORING BEGAN AT 319 FEET AND CORING STOPPED AT 348 FEET. THE AVERAGE CORING RATE IS 13.59 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.15 HOURS.

RUN NO. 2 CORING BEGAN AT 348 FEET AND CORING STOPPED AT 372 FEET. THE AVERAGE CORING RATE IS 12.96 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.03 HOURS.

RUN NO. 3 CORING BEGAN AT 372 FEET AND CORING STOPPED AT 399 FEET. THE AVERAGE CORING RATE IS 11.82 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.02 HOURS.

RUN NO. 4 CORING BEGAN AT 399 FEET AND CORING STOPPED AT 428 FEET. THE AVERAGE CORING RATE IS 12.07 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.02 HOURS.

RUN NO. 5 CORING BEGAN AT 429 FEET AND CORING STOPPED AT 459 FEET. THE AVERAGE CORING RATE IS 15.83 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .76 HOURS.

RUN NO. 6 CORING BEGAN AT 459 FEET AND CORING STOPPED AT 487 FEET. THE AVERAGE CORING RATE IS 14.18 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .95 HOURS.

JAN 19 1978

DR

TABLE 3. (Continued)

RUN INFORMATION FROM WELL CONTINUED N 1

RUN NO. 7	CORING BEGAN AT 487 FEET AND CORING STOPPED AT 514 FEET. THE AVERAGE CORING RATE IS 12.74 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .95 HOURS.
RUN NO. 8	CORING BEGAN AT 514 FEET AND CORING STOPPED AT 543 FEET. THE AVERAGE CORING RATE IS 13.59 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .88 HOURS.
RUN NO. 9	CORING BEGAN AT 543 FEET AND CORING STOPPED AT 565 FEET. THE AVERAGE CORING RATE IS 14.00 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .65 HOURS.
RUN NO. 10	CORING BEGAN AT 565 FEET AND CORING STOPPED AT 591 FEET. THE AVERAGE CORING RATE IS 14.39 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .57 HOURS.
RUN NO. 11	CORING BEGAN AT 591 FEET AND CORING STOPPED AT 620 FEET. THE AVERAGE CORING RATE IS 13.69 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .73 HOURS.

JAN 19 1978

DR

TABLE 4. WELL DATA FOR N- 2

LOCATION: TAZEWELL COUNTY, IL

ALTITUDE: 641 FEET

COORDINATES: 0.00 (DEGREES.MINUTES) LATITUDE
0.00 (DEGREES.MINUTES) LONGITUDE

CORING BEGAN AT 898 FEET AND STOPPED AT 1150 FEET. IT TOOK 3 BARRELS TO COMPLETE.

SAMPLES WERE RETURNED TO BATTELLE ON 8/22/77.

THERE WERE 23 SAMPLES COLLECTED FOR BATTELLE AND 33 SAMPLES COLLECTED FOR OTHERS.

RUN INFORMATION FROM WELL N- 2

RUN NO. 1 CORING BEGAN AT 898 FEET AND CORING STOPPED AT 920 FEET. THE AVERAGE CORING RATE IS 12.31 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.20 HOURS.

RUN NO. 2 CORING BEGAN AT 920 FEET AND CORING STOPPED AT 949 FEET. THE AVERAGE CORING RATE IS 13.03 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .98 HOURS.

RUN NO. 3 CORING BEGAN AT 949 FEET AND CORING STOPPED AT 978 FEET. THE AVERAGE CORING RATE IS 12.55 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .88 HOURS.

RUN NO. 4 CORING BEGAN AT 978 FEET AND CORING STOPPED AT 1008 FEET. THE AVERAGE CORING RATE IS 14.00 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .92 HOURS.

RUN NO. 5 CORING BEGAN AT 1008 FEET AND CORING STOPPED AT 1037 FEET. THE AVERAGE CORING RATE IS 16.83 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 1.03 HOURS.

RUN NO. 6 CORING BEGAN AT 1038 FEET AND CORING STOPPED AT 1068 FEET. THE AVERAGE CORING RATE IS 17.67 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .85 HOURS.

JAN 30 1978

TABLE 4. (Continued)

RUN INFORMATION FROM WELL CONTINUED N- 2

RUN NO. 7	CORING BEGAN AT 1068 FEET AND CORING STOPPED AT 1098 FEET. THE AVERAGE CORING RATE IS 14.23 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .98 HOURS.
RUN NO. 8	CORING BEGAN AT 1098 FEET AND CORING STOPPED AT 1128 FEET. THE AVERAGE CORING RATE IS 14.40 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .90 HOURS.
RUN NO. 9	CORING BEGAN AT 1128 FEET AND CORING STOPPED AT 1158 FEET. THE AVERAGE CORING RATE IS 13.27 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN .63 HOURS.

JAN 30 1975

TABLE 5. WELL DATA FOR R-146

LOCATION: MASON COUNTY, WV

ALTITUDE: 665 FEET

COORDINATES: 38.55 (DEGREES.MINUTES) LATITUDE
82.04 (DEGREES.MINUTES) LONGITUDE

CORING BEGAN AT 2660 FEET AND STOPPED AT 3407 FEET. IT TOOK 14 BARRELS TO COMPLETE.

SAMPLES WERE RETURNED TO BATTELLE ON 1/ 9/78.

THERE WERE 71 SAMPLES COLLECTED FOR BATTELLE AND 90 SAMPLES COLLECTED FOR OTHERS.

RUN INFORMATION FROM WELL R-146

RUN NO. 1 CORING BEGAN AT 2660 FEET AND CORING STOPPED AT 2698 FEET. THE AVERAGE CORING RATE IS 8.42 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 0.00 HOURS.

RUN NO. 2 CORING BEGAN AT 2698 FEET AND CORING STOPPED AT 2751 FEET. THE AVERAGE CORING RATE IS 6.34 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 5.13 HOURS.

RUN NO. 3 CORING BEGAN AT 2751 FEET AND CORING STOPPED AT 2809 FEET. THE AVERAGE CORING RATE IS 6.81 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.88 HOURS.

RUN NO. 4 CORING BEGAN AT 2809 FEET AND CORING STOPPED AT 2867 FEET. THE AVERAGE CORING RATE IS 7.35 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.98 HOURS.

RUN NO. 5 CORING BEGAN AT 2867 FEET AND CORING STOPPED AT 2925 FEET. THE AVERAGE CORING RATE IS 8.53 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.90 HOURS.

RUN NO. 6 CORING BEGAN AT 2925 FEET AND CORING STOPPED AT 2983 FEET. THE AVERAGE CORING RATE IS 6.84 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.85 HOURS.

JAN 30 1978

TABLE 5. (Continued)

RUN INFORMATION FROM WELL CONTINUED R-146

RUN NO. 7	CORING BEGAN AT 2983 FEET AND CORING STOPPED AT 3042 FEET. THE AVERAGE CORING RATE IS 9.57 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.28 HOURS.
RUN NO. 8	CORING BEGAN AT 3042 FEET AND CORING STOPPED AT 3100 FEET. THE AVERAGE CORING RATE IS 7.45 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 4.28 HOURS.
RUN NO. 9	CORING BEGAN AT 3100 FEET AND CORING STOPPED AT 3159 FEET. THE AVERAGE CORING RATE IS 7.16 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.38 HOURS.
RUN NO. 10	CORING BEGAN AT 3159 FEET AND CORING STOPPED AT 3218 FEET. THE AVERAGE CORING RATE IS 6.66 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.53 HOURS.
RUN NO. 11	CORING BEGAN AT 3218 FEET AND CORING STOPPED AT 3250 FEET. THE AVERAGE CORING RATE IS 7.00 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.92 HOURS.
RUN NO. 12	CORING BEGAN AT 3250 FEET AND CORING STOPPED AT 3309 FEET. THE AVERAGE CORING RATE IS 7.44 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.92 HOURS.
RUN NO. 13	CORING BEGAN AT 3309 FEET AND CORING STOPPED AT 3367 FEET. THE AVERAGE CORING RATE IS 7.09 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 2.47 HOURS.
RUN NO. 14	CORING BEGAN AT 3367 FEET AND CORING STOPPED AT 3407 FEET. THE AVERAGE CORING RATE IS 16.35 FEET PER MINUTE. THE SAMPLES WERE ON SURFACE IN 5.98 HOURS.

JAN 30 1978

TABLE 6. FIELD SAMPLING DATA FOR WELL C336

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
C336-2434.	N3	1.33	1	1
C336-2444.	N3	1.52	1	2
C336-2454.	N3	1.68	1	3
C336-~~2453~~. 2454Z	N3	1.70	1	4
C336-2464.	N3	1.76	1	5
C336-2474.	N3	1.86	1	6
C336-2494.	N3	1.68	2	7
C336-2504.	N4	1.75	2	8
C336-2514.	N3N4	1.92	2	9
C336-2514.Z	N4	2.00	2	10
C336-2524.	N5	2.06	2	11
C336-2534.	4GY4/1	2.16	2	12
C336-2545.	5GY4/1	.94	3	13
C336-2555.	5G4/1	1.12	3	14
C336-2565.	N3	1.25	3	15
C336-2565.Z	N3	1.32	3	16
C336-2575.	5GY4/1	1.42	3	17
C336-2586.		1.48	3	18
C336-2588.	N4N5	2.67	4	19
C336-2595.	N4N5	2.70	4	20
C336-2607.	N4	3.00	4	21
C336-2617.	N4	3.16	4	22
C336-2617.Z	N4	3.07	4	23
C336-2637.	N4	3.56	4	24
C336-2646.	N5	1.60	5	25
C336-2656.	5GY2/2	1.67	5	26
C336-2666.	N4	1.92	5	27
C336-2666.Z	N4	2.00	5	28
C336-2676.	N3	2.03	5	29
C336-2686.A	N3	2.12	5	30
C336-2686.B	N3	2.15	5	31
C336-2696.	N4	2.33	5	32
C336-2705.	N2	2.25	6	33
C336-2715.	N2	2.37	6	34
C336-2725.	N2	2.58	6	35
C336-2725.Z	N2	2.67	6	36
C336-2735.	N2	2.78	6	37
C336-2745.	N2	2.85	6	38
C336-2755.	N2	2.95	6	39
C336-2763.	N2	2.10	7	40
C336-2773.	N1	2.25	7	41
C336-2784.	N1	2.53	7	42
C336-2784.Z	N1	2.59	7	43
C336-2793.	N3	2.62	7	44

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TABLE 6. (Continued)

FIELD SAMPLING DATA FOR WELL C336

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
C336-2802.	N3	2.67	7	45
C336-2814.	N2N4	2.85	7	46
C336-2822.	N2	2.03	8	47
C336-2830.	N3N2	2.10	8	48
C336-2842.	N1N2	2.37	8	49
C336-2842.Z	N3	2.37	8	50
C336-2852.	N2	2.40	8	51
C336-2862.	N4	2.45	8	52
C336-2872.	N4N5	2.62	8	53
C336-2881.	N3	1.75	9	54
C336-2891.	N4	1.90	9	55
C336-2901.	N4	2.05	9	56
C336-2901.Z	N4	2.12	9	57
C336-2911.	5YR2/1	2.17	9	58
C336-2921.	N2N1	2.28	9	59
C336-2931.	N1N6N4	2.67	9	60
C336-2940.	N2	2.47	10	61
C336-2950.	N4	2.50	10	62
C336-2960.	N3	2.75	10	63
C336-2960.Z	N3	2.67	10	64
C336-2970.	N3	2.80	10	65
C336-2980.	N4	2.85	10	66
C336-2990.	N3	3.05	10	67
C336-2999.	N4	3.25	11	68
C336-3009.	N3	3.33	11	69
C336-3019.	N3N4	3.67	11	70
C336-3019.Z	N4	3.60	11	71
C336-3029.	N3	3.78	11	72
C336-3038.	N2	3.92	11	73
C336-3049.	N4	0.00	12	74
C336-3054.	N4	.97	12	75
C336-3069.	N2	1.28	12	76
C336-3069.Z	N2	1.23	12	77
C336-3079.	N3N2	1.62	12	78
C336-3089.	N2	1.28	12	79
C336-3099.	N2	1.55	12	80
C336-3107.	N2N3	1.67	13	81
C336-3117.	5GY4/1	1.75	13	82
C336-3127.	5GY4/1	1.87	13	83
C336-3137.	5GY4/1	2.02	13	84
C336-3137.Z	5GY4/1	1.98	13	85
C336-3146.	5GY4/1	2.08	13	86
C336-3157.	5GY4/1	2.16	13	87
C336-3166.	5B5/1	1.16	14	88
C336-3176.	5B5/1	1.22	14	89

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TABLE 6. (Continued)

FIELD SAMPLING DATA FOR WELL C336

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
C336-3186.	5GY4/1	1.36	14	90
C336-3186.Z	5GY4/1	1.42	14	91
C336-3196.A	5GY4/1	1.50	14	92
C336-3196.B		1.53	14	93
C336-3206.	5GY4/1	1.56	14	94
C336-3216.	5GY4/1	1.52	14	95
C336-3224.	5GY4/1	1.42	15	96
C336-3234.	5GY4/1	1.47	15	97
C336-3244.	5GY4/1	1.72	15	98
C336-3244.Z	5GY4/1	1.70	15	99
C336-3254.	5GY4/1	1.73	15	100
C336-3264.	5GY4/1	1.76	15	101
C336-3274.	N3	1.92	15	102
C336-3284.	5GY2/1	2.20	16	103
C336-3294.	5GY2/1	2.26	16	104
C336-3304.	5B3/1	2.42	16	105
C336-3304.Z	5B3/1	2.38	16	106
C336-3310.	5GY3/1	2.48	16	107
C336-3315.		2.48	16	108
C336-3325.	N3	1.70	17	109
C336-3335.	N2	1.67	17	110
C336-3345.	N4	1.88	17	111
C336-3345.Z	N4	1.87	17	112
C336-3355.	N3	1.92	17	113
C336-3365.	N2	1.97	17	114
C336-3375.	N2	2.08	17	115
C336-3384.	N2	1.33	18	116
C336-3394.	N2N1	1.66	18	117
C336-3404.	N2N1	1.87	18	118
C336-3404.Z	N2N1	1.87	18	119

MEAN EXPOSURE TIME 2.10

STANDARD DEVIATION OF EXPOSURE TIME .65

FEB 2 1978

TABLE 7. FIELD SAMPLING DATA FOR WELL N 1

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
N 1- 321.	5G4/1	.80	1	1
N 1- 331.	5G4/1	.88	1	2
N 1- 341.	5G4/1	1.13	1	3
N 1- 344.	5G4/1	.68	2	4
N 1- 354.	5G4/1	.77	2	5
N 1- 365.	5G4/1	.95	2	6
N 1- 372.	5G4/1	.72	3	7
N 1- 382.	5G4/1	.80	3	8
N 1- 392.	5G24/1	.92	3	9
N 1- 401.	5YG424	.72	4	10
N 1- 411.	5YG424	.78	4	11
N 1- 421.	5YG424	.92	4	12
N 1- 431.	5YG244	.53	5	13
N 1- 441.	5YG244	.62	5	14
N 1- 451.	5GYR42	.68	5	15
N 1- 458.	5Y2/1	.60	6	16
N 1- 468.	5Y2/1	.78	6	17
N 1- 478.	5Y2/1	.87	6	18
N 1- 485.	5GY4/1	.65	7	19
N 1- 495.	5GY4/1	.75	7	20
N 1- 505.	5GY2/1	.85	7	21
N 1- 515.	5YRG24	.82	8	22
N 1- 525.	5YRG24	.88	8	23
N 1- 537.	5Y2/1	.40	9	24
N 1- 547.	5Y2/1	.57	9	25
N 1- 557.	5Y2/1	.65	9	26
N 1- 564.	5YR4/1	1.45	10	27
N 1- 574.	5YR4/1	1.62	10	28
N 1- 584.	5G4/1	1.70	10	29
N 1- 592.	5G4/1	.52	11	30
N 1- 602.	5B5/1	.73	11	31

MEAN EXPOSURE TIME .83

STANDARD DEVIATION OF EXPOSURE TIME .29

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TABLE 8. FIELD SAMPLING DATA FOR WELL N 2

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
N 2- 927.	5G5/2	.83	2	1
N 2- 937.	5G4/1	1.33	2	2
N 2- 947.	5G4/1	1.58	2	3
N 2- 951.	5G4/1	.72	3	4
N 2- 961.	5G4/1	1.02	3	5
N 2- 971.	5G4/1	1.42	3	6
N 2- 980.	5G4/1	.78	4	7
N 2- 990.	5G4/1	.87	4	8
N 2-1000.	5GY4/1	1.10	4	9
N 2-1010.	BANDS	.67	5	10
N 2-1020.	BANDS	1.03	5	11
N 2-1030.	BANDS	1.23	5	12
N 2-1040.	BANDS	.78	6	13
N 2-1050.	BANDS	1.18	6	14
N 2-1060.	BANDS	1.27	6	15
N 2-1070.	5G45Y2	.63	7	16
N 2-1080.	5YR2/1	1.02	7	17
N 2-1090.	5YR2/1	1.13	7	18
N 2-1100.	5Y2/1	.60	8	19
N 2-1110.	5Y2/1	1.00	8	20
N 2-1120.	5GY4Y2	1.07	8	21
N 2-1130.	5Y4/1	.65	9	22
N 2-1140.	5Y2/1	.90	9	23

MEAN EXPOSURE TIME .99
STANDARD DEVIATION OF EXPOSURE TIME .27

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TABLE 9. FIELD SAMPLING DATA FOR WELL R146

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
R146-2700.	N5	2.38	2	1
R146-2710.	N5	2.42	2	2
R146-2720.	5YR2/2	2.47	2	3
R146-2730.	5YR2/2	2.87	2	4
R146-2740.	5YR2/2	2.90	2	5
R146-2750.	5YR2/2	2.93	2	6
R146-2753.	N5YR22	1.17	3	7
R146-2763.	5YR2/2	1.43	3	8
R146-2773.	N5YR22	1.58	3	9
R146-2783.	N5YR41	1.73	3	10
R146-2793.	N5YR22	1.90	3	11
R146-2803.	N5YR22	2.03	3	12
R146-2811.	5YR2/1	1.75	4	13
R146-2821.	5YR2/1	2.08	4	14
R146-2841.	5Y2/1	2.43	4	15
R146-2851.	5G2/1	2.58	4	16
R146-2861.	5G2/1	2.77	4	17
R146-2869.	N3	1.17	5	1[illegible]
R146-2879.	N3	1.47	5	19
R146-2889.	N3	1.63	5	20
R146-2899.	N35YR2	1.87	5	21
R146-2909.	5YR2/1	2.08	5	22
R146-2919.	N35YR2	2.25	5	23
R146-2927.	N3	1.02	6	24
R146-2937.	N35YR2	1.28	6	25
R146-2947.	5YR2/1	1.42	6	26
R146-2957.	5YR2/1	1.54	6	27
R146-2967.	5YR2/1	1.65	6	28
R146-2977.	5YR2/1	1.77	6	29
R146-2985.	N35YR2	1.05	7	30
R146-2995.	N1	1.25	7	31
R146-3005.	N1N3	1.42	7	32
R146-3015.	N2	1.53	7	33
R146-3025.	N2	1.72	7	34
R146-3035.	N2	1.97	7	35
R146-3044.	N4	1.73	8	36
R146-3054.	N4	1.88	8	37
R146-3064.	N4	2.00	8	38
R146-3074.	N2	2.15	8	39
R146-3084.	N2	2.37	8	40
R146-3094.	N2	2.50	8	41
R146-3102.	N3	1.05	9	42
R146-3112.	N3	1.22	9	43
R146-3122.	N3	1.40	9	44

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TABLE 9. (Continued)

FIELD SAMPLING DATA FOR WELL R146

SAMPLE ID.	COLOR	ON SURFACE TIME	BARREL NO	SEQ NO.
R146-3132.	N3	1.65	9	45
R146-3144.	N3	1.90	9	46
R146-3152.	N3	2.25	9	47
R146-3161.	N3	1.28	10	48
R146-3171.	N3	1.40	10	49
R146-3181.	N3	1.60	10	50
R146-3191.	N3	1.75	10	51
R146-3201.	N3	1.87	10	52
R146-3211.	N3	2.02	10	53
R146-3220.	N4	.92	11	54
R146-3230.	N3	1.04	11	55
R146-3240.	N3	1.22	11	56
R146-3253.	N3	1.73	12	57
R146-3262.	N3	2.02	12	58
R146-3272.	N3	2.15	12	59
R146-3282.	N3	2.28	12	60
R146-3292.	N3	2.43	12	61
R146-3302.	N3	2.62	12	62
R146-3311.	N3	2.05	13	63
R146-3321.	5YR2/1	2.22	13	64
R146-3331.	N3	2.33	13	65
R146-3341.	5YR2/1	2.67	13	66
R146-3351.	5YR2/1	2.87	13	67
R146-3361.	5YR2/1	3.04	13	68
R146-3369.	5YR2/1	.70	14	69
R146-3380.	5YR2/1	.82	14	70
R146-3389.	5YR2/1	1.00	15	71

MEAN EXPOSURE TIME 1.85

STANDARD DEVIATION OF EXPOSURE TIME .57

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TABLE 10. INITIAL GAS RELEASE DATA: WELL 1

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
C336-2434.	740.	1086.	364.	.51	33.78	8.08	3.99	1.79	0.00	47.64	47.26	3.68	1.38	1.38	1
C336-2444.	1110.	959.	491.	.60	28.61	6.88	3.30	1.71	0.00	40.50	53.42	4.70	1.39	1.16	2
C336-2454.	940.	1018.	432.	.85	17.03	10.60	1.78	.40	0.00	29.81	60.21	7.24	2.74	.87	3
C336-2454.Z	725.	782.	668.	.55	.23	1.56	.22	.05	0.00	2.06	77.06	20.66	.21	.02	4
C336-2464.	1125.	816.	634.	.28	27.67	7.99	2.51	.62	0.00	38.79	55.29	3.47	2.46	.74	5
C336-2473.	770.	843.	607.	.29	28.67	9.66	4.16	.46	.16	43.11	52.49	.74	3.64	.61	6
C336-2494.	750.	853.	597.	1.18	19.12	5.70	2.50	.96	0.00	28.28	61.23	7.33	3.13	.40	7
C336-2504.	725.	875.	575.	.69	18.22	9.73	2.90	1.39	0.00	32.24	57.84	6.41	3.51	.47	8
C336-2514.	760.	918.	532.	1.12	8.91	2.46	.71	0.00	0.00	12.08	71.72	12.51	3.68	.21	9
C336-2514.Z	740.	991.	459.	.71	0.00	0.00	0.00	0.00	0.00	0.00	77.97	21.94	.05	0.00	10
C336-2524.	775.	761.	689.	2.30	6.70	1.60	.05	.01	0.00	8.36	79.60	9.50	1.90	.09	11
C336-2534.	700.	1122.	328.	1.92	2.10	.53	.42	.01	0.00	3.06	79.30	16.57	.94	.10	12
C336-2545.	725.	984.	466.	2.80	1.09	1.24	.33	0.00	0.00	2.66	80.02	15.53	1.85	.05	13
C336-2555.	725.	1066.	384.	1.86	.38	0.00	.42	0.00	0.00	.80	77.66	21.13	.41	.02	14
C336-2565.	810.	993.	457.	.60	13.69	5.02	1.96	.70	0.00	21.37	70.07	2.64	5.30	.50	15
C336-2565.Z	725.	1033.	417.	1.62	1.48	1.96	.59	.21	0.00	4.24	78.18	17.23	.42	.10	16
C336-2575.	710.	1065.	385.	2.22	2.06	1.97	1.81	.28	0.00	6.12	77.06	16.32	.50	.16	17
C336-2586.	800.	989.	461.	1.69	1.38	.28	.30	.02	0.00	1.98	79.21	18.67	14.26	.04	18
C336-2588.	740.	843.	607.	2.27	0.00	0.00	.48	0.00	0.00	.48	77.87	21.49	.17	.01	19
C336-2595.	760.	678.	772.	1.74	.18	0.00	.14	.02	0.00	.34	79.00	19.29	1.38	.00	20
C336-2607.	740.	1034.	416.	2.21	4.77	1.61	.72	.98	0.00	8.08	77.20	13.20	2.40	.20	21
C336-2617.		899.	551.	1.77											
C336-2617.Z	750.	1198.	252.	2.17	0.00	0.00	.30	0.00	0.00	.30	77.24	22.36	.12	.01	23
C336-2637.	750.	947.	503.	1.97	.21	.19	0.00	0.00	0.00	.40	78.39	21.21	.97	.01	24
C336-2646.	750.	981.	469.	2.17	.13	0.00	.26	0.00	0.00	.39	77.41	21.76	.34	.01	25
C336-2656.	750.	922.	528.	.54	10.41	7.27	1.28	.97	0.00	19.93	67.56	7.29	5.22	.34	26
C336-2666.	760.	843.	607.	.91	11.28	9.34	2.67	1.40	.03	24.72	63.07	7.66	4.56	.34	27
C336-2666.Z	710.	986.	464.	.47	9.70	4.06	3.62	.58	.18	18.14	79.78	1.32	.76	.36	28
C336-2676.	750.	927.	523.	.42	5.62	5.06	1.58	.37	0.00	12.63	70.19	13.32	3.57	.22	29
C336-2686.A	725.	DATA ARE INCOMPLETE			8.79	3.69	2.45	.63	.15	15.71	68.93	11.40	3.91	INCOMPLETE	30
C336-2686.B	740.	DATA ARE INCOMPLETE			3.84	3.05	.94	.24	0.00	8.07	71.47	16.90	3.56	INCOMPLETE	31
C336-2696.	740.	1016.	434.	.35	3.47	3.95	1.57	.51	0.00	9.50	71.50	16.93	2.07	.22	32
C336-2705.	725.	816.	634.	.43	4.67	2.47	2.12	.52	.17	9.95	71.67	15.42	3.00	.12	33
C336-2715.	725.	1001.	449.	.66	.71	.50	.57	.12	0.00	1.90	77.52	18.96	2.06	.04	34
C336-2725.	725.	813.	637.	.62	1.26	.95	1.05	.28	.13	3.67	75.09	18.65	2.59	.04	35
C336-2725.Z	725.	DATA ARE INCOMPLETE			.45	.50	.98	.08	0.00	2.01	78.45	18.76	1.52	INCOMPLETE	36
C336-2735.	725.	DATA ARE INCOMPLETE			1.36	.84	1.73	.19	.08	4.20	74.39	18.68	2.73	INCOMPLETE	37
C336-2745.	740.	0.	0.	.66	10.12	2.89	2.73	.50	.18	16.42	72.33	4.49	6.85		38
C336-2745.	725.	1157.	293.	.51	.86	.32	.36	.05	0.00	1.59	77.18	20.33	.99	.06	39
C336-2763.	725.	1142.	308.	.77	.95	.52	.49	.16	0.00	2.12	79.12	16.33	2.43	.08	40
C336-2773.	750.	1120.	330.	.84	1.76	.91	1.08	.66	.25	4.66	76.08	17.36	1.88	.16	41
C336-2784.	725.	DATA ARE INCOMPLETE			3.21	1.25	.87	.29	.17	5.79	75.09	16.12	2.99	INCOMPLETE	42
C336-2784.Z	725.	1018.	432.	.73	3.04	1.41	1.38	.28	1.25	7.36	73.32	15.51	3.80	.17	43
C336-2793.	720.	DATA ARE INCOMPLETE			.60	.32	.39	.04	0.00	1.35	78.39	19.55	.85	INCOMPLETE	44
C336-2802.	760.	DATA ARE INCOMPLETE			1.30	.59	.64	.08	0.00	2.61	77.63	17.54	2.19	INCOMPLETE	45

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SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
C336-2814.	750.	976.	474.	.85	.74	.53	.52	.09	0.00	1.88	78.22	18.21	1.70	.04	46
C336-2822.	760.	DATA ARE INCOMPLETE			.78	.78	.42	.02	0.00	2.00	79.61	15.76	2.62	INCOMPLETE	47
C336-2830.	760.	1005.	445.	1.51	.54	.24	.37	.02	0.00	1.17	75.99	21.86	.98	.03	48
C336-2842.	760.	1237.	213.	1.05	.44	.31	.47	.03	0.00	1.25	77.16	21.07	.49	.07	49
C336-2842.Z	760.	1244.	206.	2.06	.52	.35	.49	.05	0.00	1.41	77.48	19.60	1.49	.09	50
C336-2852.	750.	978.	472.	.95	3.30	1.50	1.10	.03	.09	6.02	78.10	13.80	1.80	.12	51
C336-2862.	725.	DATA ARE INCOMPLETE			13.56	4.79	3.11	.72	.62	22.80	65.59	5.09	6.55	INCOMPLETE	52
C336-2872.	735.	DATA ARE INCOMPLETE			5.93	1.63	1.12	.28	0.00	8.96	74.76	11.55	4.62	INCOMPLETE	53
C336-2881.	875.	1055.	395.	1.14	14.80	2.87	2.48	.91	0.00	21.06	68.50	3.84	6.53	.65	54
C336-2891.	775.	1192.	258.	1.69	2.94	.88	.66	.18	0.00	4.66	77.71	15.92	1.71	.22	55
C336-2901.	750.	1042.	408.	.76	9.89	2.52	1.97	.44	.19	15.01	72.34	8.42	4.24	.38	56
C336-2901.A	775.	1178.	272.	1.59	3.69	.87	.73	.24	0.00	5.53	78.50	15.09	.87	.24	57
C336-2911.	820.	1278.	172.	.51	8.77	4.05	1.51	1.00	.02	15.35	69.87	10.83	4.17	1.23	58
C336-2921.	730.	0.	0.	.24	4.62	1.51	1.80	.50	0.00	8.43	73.63	16.93	1.04		59
C336-2931.	810.	971.	479.	1.47	8.44	1.80	1.50	.34	.36	12.44	73.59	10.90	3.06	.27	60
C336-2940.	760.	994.	456.	.72	25.24	9.20	6.06	1.86	.97	43.33	49.79	.78	6.13	.95	61
C336-2950.	725.	DATA ARE INCOMPLETE			4.79	1.85	1.49	.33	.33	8.79	75.75	11.62	3.81	INCOMPLETE	62
C336-2960.	950.	997.	453.	.67	28.27	8.53	6.29	1.64	.44	45.17	48.41	3.21	3.21	1.24	63
C336-2960.Z	840.	1121.	329.	.82	25.23	7.85	5.47	1.39	.31	40.25	52.92	5.26	1.52	1.52	64
C336-2970.	825.	1133.	317.	.36	21.39	7.85	5.54	1.79	1.09	37.66	54.45	4.43	3.46	1.46	65
C336-2980.	725.	937.	513.	2.24	9.49	2.19	1.34	.27	.20	13.49	74.37	9.49	2.36	.23	66
C336-2990.	760.	1143.	307.	.45	15.65	7.57	5.49	2.08	1.28	32.07	57.38	6.19	4.39	1.19	67
C336-2999.	750.	894.	556.	2.12	4.00	.90	1.10	.70	.23	6.93	76.58	15.91	.67	.11	68
C336-3009.	725.	DATA ARE INCOMPLETE			20.58	8.11	5.01	1.42	1.03	36.15	57.07	3.37	3.42	INCOMPLETE	69
C336-3019.	725.	1170.	280.	.37	3.87	1.62	1.11	.31	.47	7.38	72.97	17.96	1.17	.29	70
C336-3019.Z	725.	1190.	260.	1.36	3.62	1.53	1.17	.30	.45	7.07	77.01	14.84	.72	.31	71
C336-3029.	725.	1135.	315.	1.81	1.82	.55	.42	.06	0.00	2.85	76.78	18.48	1.57	.10	72
C336-3038.	750.	877.	573.	.99	12.31	4.91	3.20	4.19	3.13	27.74	59.12	10.65	2.48	.42	73
C336-3049.	740.	703.	747.	.42	42.22	14.65	9.43	2.59	.81	69.70	28.00	.47	1.76	.64	74
C336-3054.	745.	846.	604.	.56	37.50	11.20	9.30	0.00	0.00	58.00	39.60	.53	1.84	.80	75
C336-3069.	1470.	743.	707.	.63	36.62	9.10	6.02	1.73	.49	53.96	41.97	2.20	1.87	1.10	76
C336-3069.Z	900.	890.	560.	.99	27.93	6.52	3.31	1.04	.26	39.06	54.61	4.98	1.34	.74	77
C336-3079.	750.	DATA ARE INCOMPLETE			46.81	12.65	8.51	2.11	.63	70.71	27.20	.40	1.64	INCOMPLETE	78
C336-3089.	1225.	983.	467.	.48	27.14	7.99	4.97	1.40	1.46	42.96	51.85	.85	4.35	1.46	79
C336-3099.	850.	970.	480.	.59	33.73	15.90	11.10	3.53	0.00	64.26	33.24	.43	3.09	1.45	80
C336-3107.	975.	1071.	379.	.66	19.13	5.03	3.26	1.02	0.00	28.44	60.48	7.79	3.28	1.03	81
C336-3117.	740.	1149.	301.	2.65	1.10	.41	0.00	0.00	0.00	1.51	77.81	20.30	.33	.06	82
C336-3127.	700.	1065.	385.	3.09	5.59	1.73	.66	.10	0.00	8.08	78.48	7.36	6.08	.21	83
C336-3137.	730.	1063.	387.	4.03	6.43	.72	2.75	.14	0.00	10.04	74.90	11.78	3.29	.26	84
C336-3137.Z	715.	1203.	247.	4.44	1.68	.53	.25	.04	0.00	2.50	78.82	15.61	3.07	.11	85
C336-3146.	775.	938.	512.	3.94	4.59	.91	1.11	.24	.07	6.92	79.43	1.17	12.51	.13	86
C336-3157.	725.	845.	605.	3.52	7.24	2.95	2.06	.49	.14	12.88	73.29	7.80	6.07	.17	87
C336-3166.	760.	1116.	334.	3.89	1.28	.24	.24	.02	0.00	1.78	78.44	19.15	.63	.06	88
C336-3176.	725.	788.	662.	3.17	2.39	.56	.68	.07	0.00	3.70	81.24	11.37	3.67	.04	89
C336-3186.	750.	971.	479.	4.10	11.04	2.43	1.94	.29	.06	15.76	71.98	9.89	2.36	.32	90

TABLE 10. (Continued)

INITIAL GAS RELEASE DATA

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT: METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
C336-3186.Z	800.	DATA ARE INCOMPLETE			7.12	1.57	.73	.18	.06	9.66	78.30	9.16	2.88	INCOMPLETE	91
C336-3196.A	725.	916.	534.	3.68	.34	.20	.37	.02	0.00	.93	79.35	18.98	.47	.02	92
C336-3196.B	730.	1023.	427.	4.29	4.53	.43	1.98	.06	0.00	7.00	74.68	17.09	1.23	.16	93
C336-3206.	725.	842.	608.	5.01	2.47	.52	.64	.07	.01	3.71	82.54	13.52	.18	.05	94
C336-3216.	810.	931.	519.	3.89	7.31	1.45	.42	.16	.23	9.57	76.05	14.02	.36	.18	95
C336-3224.	1200.	865.	585.	2.87	27.07	7.92	4.57	1.18	.31	41.05	53.66	.75	4.54	.96	96
C336-3234.	750.	874.	576.	4.59	1.73	.39	.46	.02	0.00	2.60	80.09	15.69	1.61	.04	97
C336-3244.	720.	963.	487.	3.63	1.51	.39	.38	.02	0.00	2.30	79.20	14.54	3.93	.04	98
C336-3244.Z	740.	1066.	384.	4.63	.37	.17	.22	.01	0.00	.77	78.74	19.66	.84	.02	99
C336-3254.	840.	998.	452.	4.53	10.58	1.74	.82	.10	.02	13.26	74.21	10.64	1.87	.32	100
C336-3264.	930.	970.	480.	2.86	18.60	5.72	2.98	.70	.17	28.17	64.62	.91	6.27	.70	101
C336-3274.	760.	810.	640.	3.18	4.47	1.86	1.63	.32	.08	8.36	78.27	7.33	6.04	.11	102
C336-3284.	730.	578.	872.	4.04	3.01	1.72	1.19	.39	.13	6.44	80.91	5.86	6.75	.04	103
C336-3294.	730.	862.	588.	5.61	0.00	0.00	0.00	0.00	0.00	0.00	80.70	18.73	.57	0.00	104
C336-3304.	660.	857.	593.	4.44	1.81	.53	.42	.03	0.00	2.79	86.05	6.02	5.14	.03	105
C336-3304.Z	730.	1053.	397.	3.23	1.05	.21	.17	.02	0.00	1.45	89.26	6.56	2.73	.04	106
C336-3310.															
C336-3315.	725.	903.	547.	3.08	9.18	2.73	1.55	.41	.12	13.99	74.19	6.75	5.10	.22	108
C336-3325.	840.	977.	473.	2.55	20.13	5.36	3.68	1.08	.37	30.62	60.39	7.55	1.45	.70	109
C336-3355.	810.	886.	564.	3.91	10.94	3.33	2.45	.61	.16	17.49	74.03	1.14	7.37	.29	110
C336-3345.	750.	1018.	432.	4.27	4.98	1.72	1.28	.29	.08	8.35	79.70	9.72	2.27	.19	111
C336-3345.Z	760.	DATA ARE INCOMPLETE			7.38	2.94	1.97	.42	.11	12.82	76.95	8.25	2.00	INCOMPLETE	112
C336-3355.	950.	882.	568.	3.92	20.58	6.58	3.99	1.14	.35	32.64	61.87	1.15	4.33	.63	113
C336-3365.	800.	878.	572.	1.51	24.61	8.75	6.28	1.65	.44	41.73	52.49	.82	4.93	.67	114
C336-3375.	840.	821.	629.	.62	36.03	11.85	7.67	1.86	.46	57.87	39.03	.50	2.56	.83	115
C336-3384.	1025.	893.	557.	.73	18.85	4.64	2.10	.78	.22	26.59	61.81	11.09	.51	.57	116
C336-3394.	850.	831.	619.	1.22	30.81	10.02	6.53	1.41	.31	49.08	39.52	.63	2.63	.74	117
C336-3404.	850.	667.	783.	.83	21.50	6.08	2.89	.71	.21	31.39	62.51	1.63	4.45	.50	118
C336-3404.Z	740.	894.	556.	.65	.16	.06	.18	0.00	0.00	.40	79.32	20.04	.24	.01	119

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TABLE 11. INITIAL GAS RELEASE DATA: WELL N- 1

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
N 1- 321.	625.	336.	1114.	7.01	0.00	.50	.02	0.00	0.00	.52	93.37	5.97	.12	.00	1
N 1- 331.	525.	389.	1061.	9.00	.15	0.00	.24	0.00	0.00	.39	97.33	1.96	.28	.00	2
N 1- 341.	575.	505.	945.	12.44	.17	0.00	.49	0.00	0.00	.66	96.18	2.18	.91	.00	3
N 1- 344.	620.	433.	1017.	5.75	.24	.06	0.00	.06	.02	.38	97.66	1.80	.15	.00	4
N 1- 354.	530.	305.	1145.	7.96	.39	.13	.24	.08	.03	.86	97.62	1.40	.12	.00	5
N 1- 365.	600.	474.	976.	13.58	.28	.05	.39	.05	.04	.81	96.84	1.76	.58	.00	6
N 1- 372.	560.	421.	1029.	13.69	.21	.04	.31	.11	.08	.75	96.91	2.24	.11	.00	7
N 1- 382.	575.	685.	765.	13.72	.13	0.00	0.00	.09	.06	.28	95.48	3.62	.58	.00	8
N 1- 392.	640.	413.	1037.	11.93	.27	.04	.33	.14	.10	.88	97.40	1.53	.21	.00	9
N 1- 401.	660.	382.	1068.	13.83	.53	.08	.37	.16	.09	1.23	96.39	1.57	.81	.00	10
N 1- 411.	610.	385.	1065.	14.73	.44	.05	.35	.13	.08	1.05	93.02	5.09	.85	.00	11
N 1- 421.	600.	615.	835.	11.18	.27	.04	.46	.06	.56	1.39	92.85	4.38	1.38	.01	12
N 1- 431.	0.	381.	1069.	13.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N 1- 441.	600.	502.	948.	13.91	.58	.09	.52	.21	.10	1.50	95.70	1.42	.14	.01	14
N 1- 451.	610.	283.	1167.	13.30	2.30	.28	.51	.42	.20	3.71	93.14	2.50	.66	.01	15
N 1- 458.	610.	623.	827.	12.61	1.59	.24	.38	.36	.15	2.72	93.71	1.63	1.69	.02	16
N 1- 468.	660.	497.	953.	13.35	.65	.08	.26	.11	.06	1.16	87.16	10.56	1.16	.01	17
N 1- 478.	0.	445.	1005.	12.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
N 1- 495.	600.	339.	1111.	13.60	.84	.12	.31	.24	.12	1.63	95.23	1.87	.61	.00	19
N 1- 495.	640.	320.	1130.	13.23	.55	.04	.41	.09	.04	1.13	91.37	6.90	.59	.00	20
N 1- 505.	620.	DATA ARE INCOMPLETE			2.03	.22	.40	.35	.16	3.16	92.09	2.35	2.07	INCOMPLETE	21
N 1- 515.	600.	DATA ARE INCOMPLETE			.57	.06	.28	.13	.08	1.12	96.42	2.37	.10	INCOMPLETE	22
N 1- 525.	600.	DATA ARE INCOMPLETE			1.65	.18	.54	.39	.22	2.98	94.47	1.54	1.02	INCOMPLETE	23
N 1- 537.	700.	DATA ARE INCOMPLETE			1.76	.10	.39	.36	.10	2.71	94.64	1.73	1.04	INCOMPLETE	24
N 1- 547.	550.	DATA ARE INCOMPLETE			.75	0.00	.55	.22	.14	1.66	92.16	3.96	2.23	INCOMPLETE	25
N 1- 557.	590.	DATA ARE INCOMPLETE			1.52	.12	.34	.39	.22	2.59	94.24	1.34	1.52	INCOMPLETE	26
N 1- 564.	600.	DATA ARE INCOMPLETE			.93	.41	.79	.01	.04	2.18	92.73	3.32	1.98	INCOMPLETE	27
N 1- 574.	600.	DATA ARE INCOMPLETE			.81	0.00	.47	.12	.08	1.48	90.78	4.73	2.93	INCOMPLETE	28
N 1- 584.	650.	DATA ARE INCOMPLETE			.43	0.00	0.00	0.00	0.00	.43	87.91	8.83	2.81	INCOMPLETE	29
N 1- 592.	600.	DATA ARE INCOMPLETE			.30	.21	.18	.01	.02	.72	92.16	2.39	3.77	INCOMPLETE	30
N 1- 602.	590.	DATA ARE INCOMPLETE			.39	0.00	.22	.02	0.00	.63	94.62	2.66	2.04	INCOMPLETE	31

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TABLE 12. INITIAL GAS RELEASE DATA: WELL N 2

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
N 2- 927.	550.	515.	935.	11.87	.50	0.00	.43	0.00	0.00	.93	96.90	1.35	.86	.00	1
N 2- 937.	550.	812.	638.	12.12	.18	0.00	.37	0.00	0.00	.55	96.30	1.35	1.79	.01	2
N 2- 947.	700.	706.	744.	11.30	.20	0.00	.26	0.00	0.00	.46	94.90	2.31	2.26	.00	3
N 2- 951.	590.	460.	990.	11.21	.58	0.00	0.00	0.00	0.00	.58	95.79	1.35	2.23	.00	4
N 2- 961.	580.	944.	506.	11.56	.43	0.00	0.00	0.00	0.00	.43	95.50	1.34	2.79	.01	5
N 2- 971.	580.	416.	1034.	11.90	.64	0.00	.65	.48	0.00	1.77	96.00	1.36	1.88	.01	6
N 2- 980.	625.	602.	848.	10.74	.28	0.00	0.00	0.00	0.00	.28	92.50	4.37	2.93	.00	7
N 2- 990.	600.	619.	831.	11.79	.31	0.00	.71	0.00	0.00	1.02	93.70	1.29	4.05	.01	8
N 2-1000.	625.	515.	935.	12.46	.64	0.00	0.00	.71	0.00	1.35	91.00	5.86	22.48	.01	9
N 2-1010.	600.	796.	654.	11.78	.28	0.00	.29	.61	0.00	1.18	94.60	1.47	3.30	.01	10
N 2-1020.	580.	539.	911.	11.76	.78	0.00	.60	.26	.08	1.72	95.70	1.38	1.23	.01	11
N 2-1030.	550.	612.	838.	11.41	.87	.48	.63	.26	.11	2.35	95.30	1.31	1.09	.01	12
N 2-1040.	600.	526.	924.	11.79	.62	.30	.41	.11	0.00	1.44	94.60	1.32	2.56	.01	13
N 2-1050.	600.	498.	952.	11.02	.55	.10	.26	.10	.10	1.11	94.90	1.33	2.66	.00	14
N 2-1060.	650.	806.	644.	10.09	.49	.35	.57	.10	0.00	1.51	89.60	6.55	2.39	.02	15
N 2-1070.	600.	495.	955.	10.14	1.35	1.08	1.10	.40	.08	4.01	93.30	1.28	1.43	.02	16
N 2-1080.	600.	593.	857.	7.58	2.18	.65	1.43	.51	.14	4.91	92.60	1.32	1.12	.03	17
N 2-1090.	650.	692.	758.	6.39	1.58	1.50	.74	.26	.05	4.13	89.20	4.84	1.82	.03	18
N 2-1100.	650.	639.	811.	3.24	.53	.61	.12	0.00	0.00	1.26	85.40	10.80	1.99	.01	19
N 2-1110.	625.	629.	821.	6.36	1.40	.70	.24	.13	0.00	2.47	86.30	7.95	3.32	.02	20
N 2-1120.	600.	487.	963.	9.06	.22	0.00	.53	.09	0.00	.84	93.50	2.21	3.43	.00	21
N 2-1130.	625.	694.	756.	8.38	.11	0.00	.34	.06	0.00	.51	90.30	5.50	3.74	.00	22
N 2-1140.	675.	DATA ARE INCOMPLETE			0.00	0.00	.23	0.00	0.00	.23	86.50	9.44	3.85	INCOMPLETE	23

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TABLE 13. INITIAL GAS RELEASE DATA: WELL R146

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT: METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SEQ NO.
R146-2700.	820.	DATA ARE	INCOMPLETE		8.06	1.48	.48	.17	.06	10.25	71.54	18.19	.03	INCOMPLETE	1
R146-2710.	800.	DATA ARE	INCOMPLETE		4.58	.73	.43	.07	.01	5.82	73.98	20.24	.02	INCOMPLETE	2
R146-2720.	850.	DATA ARE	INCOMPLETE		10.63	1.49	.75	.18	.05	13.10	69.27	17.23	.40	INCOMPLETE	3
R146-2730.	790.	DATA ARE	INCOMPLETE		3.82	.39	.19	.06	.03	4.49	75.00	20.48	.03	INCOMPLETE	4
R146-2740.	730.	DATA ARE	INCOMPLETE		10.78	.95	.95	.21	.06	12.95	70.21	16.28	.56	INCOMPLETE	5
R146-2750.	820.	DATA ARE	INCOMPLETE		7.34	.96	.39	.14	.05	8.88	72.74	18.22	.16	INCOMPLETE	6
R146-2753.	780.	DATA ARE	INCOMPLETE		5.92	.62	.30	.09	.03	6.96	73.51	19.52	.01	INCOMPLETE	7
R146-2773.	800.	DATA ARE	INCOMPLETE		5.91	.72	.42	.17	.07	7.29	73.29	19.41	.02	INCOMPLETE	9
R146-2783.	780.	DATA ARE	INCOMPLETE		3.63	.49	.24	.09	.03	4.48	76.18	19.32	.02	INCOMPLETE	10
R146-2793.	800.	DATA ARE	INCOMPLETE		4.61	.52	.35	.11	.05	5.64	74.16	20.20	.01	INCOMPLETE	11
R146-2803.	850.	DATA ARE	INCOMPLETE		8.49	.80	.81	.26	.04	10.40	70.90	18.40	.30	INCOMPLETE	12
R146-2811.	975.	DATA ARE	INCOMPLETE		22.26	2.13	1.19	.32	0.00	25.90	61.56	12.08	.46	INCOMPLETE	13
R146-2821.	1060.	DATA ARE	INCOMPLETE		19.42	5.07	3.87	1.63	.82	30.81	57.64	11.16	.39	INCOMPLETE	14
R146-2841.	920.	DATA ARE	INCOMPLETE		16.84	2.24	.93	.31	0.00	20.32	64.70	14.76	.23	INCOMPLETE	15
R146-2851.	800.	DATA ARE	INCOMPLETE		5.49	.34	.71	.10	0.00	6.64	73.90	19.46	.01	INCOMPLETE	16
R146-2861.	750.	DATA ARE	INCOMPLETE		8.34	.66	.88	.28	.04	10.20	71.69	18.09	.02	INCOMPLETE	17
R146-2879.	750.	DATA ARE	INCOMPLETE		2.45	.12	.39	.05	0.00	3.01	75.83	21.14	.02	INCOMPLETE	19
R146-2889.	900.	DATA ARE	INCOMPLETE		11.48	1.04	.98	.29	.04	13.83	69.42	16.70	.05	INCOMPLETE	20
R146-2899.	900.	DATA ARE	INCOMPLETE		12.29	1.18	1.08	.33	0.00	14.88	67.92	17.16	.04	INCOMPLETE	21
R146-2909.	950.	DATA ARE	INCOMPLETE		14.87	1.48	.81	.21	0.00	17.37	65.98	16.56	.10	INCOMPLETE	22
R146-2919.	950.	681.	769.	9.69	15.70	1.77	1.07	.33	.04	18.91	66.20	14.70	.17	.21	23
R146-2927.	725.	581.	869.	.89	25.00	3.20	2.00	.58	.16	30.94	58.60	10.30	.19	.20	24
R146-2937.	1000.	442.	1006.	2.90	22.60	2.36	1.56	.47	.10	27.09	61.70	11.20	.13	.16	25
R146-2947.	1100.	568.	882.	5.78	29.10	5.30	1.80	.44	.09	36.73	54.20	8.54	.58	.34	26
R146-2957.	1150.	516.	934.	0.00	30.60	3.93	2.39	.70	.15	37.77	53.80	7.20	1.17	.32	27
R146-2977.	1050.	662.	786.	8.85	27.60	3.69	2.25	.61	.13	34.28	55.70	9.30	.74	.40	29
R146-2985.	900.	628.	822.	3.97	13.10	1.47	.95	.29	.09	15.90	68.60	15.60	.04	.14	30
R146-2995.	1025.	649.	801.	0.00	25.80	3.02	1.39	.31	.55	31.07	57.70	10.90	.42	.34	31
R146-3005.	1100.	491.	959.	4.22	28.30	3.31	2.18	.65	.15	34.59	56.00	8.74	.65	.26	32
R146-3015.	950.	607.	843.	0.00	14.60	1.61	1.10	.27	0.00	17.58	67.40	14.70	.39	.16	33
R146-3025.	1010.	658.	812.	.76	22.80	2.47	1.19	.28	.07	26.81	59.10	13.90	.29	.28	34
R146-3035.	925.	494.	956.	0.00	20.80	2.22	1.24	.33	.08	24.67	62.90	12.40	.03	.16	35
R146-3044.	800.	555.	895.	1.67	2.58	.27	.16	.05	0.00	3.06	78.20	18.50	.24	.02	36
R146-3054.	800.	701.	749.	.28	4.13	.52	.24	.08	0.00	4.97	77.40	16.90	.74	.05	37
R146-3064.	725.	609.	841.	12.45	.15	0.00	0.00	0.00	0.00	.15	78.50	21.40	.13	.00	38
R146-3084.	725.	690.	760.	11.27	11.10	1.17	.82	.19	.04	13.32	70.10	16.00	.59	.12	40
R146-3094.	775.	778.	672.	4.43	3.57	.33	.18	.04	0.00	4.12	77.80	17.40	.72	.05	41
R146-3102.	760.	773.	677.	4.29	1.79	.26	0.00	0.00	0.00	2.05	79.30	18.50	.06	.02	42
R146-3112.	725.	408.	962.	4.78	4.61	.94	.88	.14	0.00	6.57	77.10	13.00	1.94	.03	43
R146-3122.	1050.	515.	935.	6.44	31.00	3.73	2.17	.49	.11	37.50	58.30	2.63	1.61	.29	44
R146-3132.	750.	832.	618.	6.68	2.03	.39	.26	.04	0.00	3.52	78.20	18.30	0.00	.05	45
R146-3152.	1690.	781.	669.	11.13	42.11	8.81	4.56	1.35	.36	57.19	40.30	.49	2.04	1.49	47
R146-3161.	790.	650.	800.	11.56	2.32	.23	.21	.03	0.00	2.79	78.10	19.00	.12	.02	48
R146-3181.	760.	650.	800.	5.73	4.78	.67	.42	.13	.02	6.02	84.80	3.19	5.98	.05	50
R146-3191.	920.	703.	747.	5.16	19.50	2.11	1.02	.22	.03	22.88	69.30	3.22	4.60	.26	51

TABLE 13. (Continued)

INITIAL GAS RELEASE DATA: WELL R146

SAMPLE ID	PRESSURE TORR	FREE VOLUME CC	CORE VOLUME CC	OPEN POROSITY PCT.	GAS COMPOSITION, VOLUME PERCENT: METHANE	ETHANE	PROPANE	BUTANE	PENTANE	TOTAL HYDROC.	NITROGEN	OXYGEN	CARBON DIOXIDE	GAS RELEASED/ UNIT VOLUME OF SHALE	SED NO.
R146-3201.	760.	593.	857.	.83	2.68	.25	.12	.02	0.00	3.07	78.80	18.04	.08	.02	52
R146-3211.	750.	626.	824.	3.94	1.92	.18	.29	.01	0.00	2.40	77.70	19.90	.04	.02	53
R146-3220.	750.	590.	860.	.89	6.52	1.07	1.06	.41	.12	9.18	85.75	3.83	1.27	.06	54
R146-3230.	750.	702.	668.	1.56	2.77	.51	.25	.09	0.00	3.62	84.10	12.10	.16	.04	55
R146-3240.	750.	645.	805.	.74	9.80	1.98	1.06	.46	.14	13.44	78.10	6.68	1.81	.11	56
R146-3253.	820.	618.	832.	2.23	12.32	2.32	2.44	.82	.27	18.17	76.83	3.37	1.62	.15	57
R146-3262.	880.	530.	920.	.38	15.90	1.86	1.89	.55	.14	20.34	70.20	9.39	.06	.14	58
R146-3272.	980.	812.	638.	.49	18.90	3.50	2.12	.56	.14	25.22	63.70	10.60	.58	.41	59
R146-3282.	1010.	749.	701.	0.00	22.30	4.81	3.34	.95	.34	31.74	62.20	5.18	.92	.45	60
R146-3292.	900.	723.	727.	0.00	14.50	2.78	1.98	.59	.24	20.09	68.10	11.60	.23	.24	61
R146-3311.	1460.	765.	685.	3.33	42.70	7.70	4.55	1.23	.30	56.48	40.90	2.17	.48	1.21	63
R146-3321.	1600.	810.	640.	0.00	42.34	6.98	3.76	.95	.30	54.33	42.04	2.41	1.23	1.45	64
R146-3331.	2025.	664.	786.	8.40	51.20	9.17	4.60	1.21	.42	66.60	31.80	1.00	.59	1.50	65
R146-3351.	1330.	768.	682.	3.37	35.40	5.60	2.94	.86	.07	44.87	46.60	8.24	.36	.88	67
R146-3361.	1125.	750.	700.	2.85	26.70	3.56	2.07	.62	.31	33.26	55.50	10.50	.73	.53	68
R146-3369.	1325.	726.	724.	.84	38.00	5.76	2.95	.77	.20	47.68	46.40	4.85	1.10	.83	69
R146-3380.	1400.	616.	834.	0.00	59.70	7.44	5.48	1.22	.32	54.16	44.20	.57	1.06	.74	70

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TABLE 14. STATISTICAL ANALYSES OF OFF GAS DATA

WELL C336

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
METHANE, PERCENT	9.954	11.11	123.51	1.12	7.915	11.992	117
ETHANE, PERCENT	3.390	3.64	13.28	1.07	2.722	4.059	117
PROPANE, PERCENT	2.081	2.23	4.98	1.07	1.671	2.490	117
BUTANE, PERCENT	.574	.74	.54	1.28	.439	.710	117
PENTANE, PERCENT	.186	.40	.16	2.15	.112	.259	117
TOTAL HYDROCARBONS, PCT	16.184	17.37	301.57	1.07	12.999	19.370	117
NITROGEN, PERCENT	69.785	12.60	158.87	.18	67.473	72.097	117
OXYGEN, PERCENT	11.282	6.88	47.38	.61	10.019	12.544	117
CARBON DIOXIDE, PERCENT	2.803	2.28	5.20	.81	2.384	3.221	117
GAS VOLUME/SHALE VOLUME	.381	.45	.20	1.18	0.000	.471	97

*I IS INSIGNIFICANT

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TABLE 15. STATISTICAL ANALYSES OF OFF GAS DATA

WELL N I

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
METHANE, PERCENT	.699	.62	.38	.88	.473	.926	31
ETHANE, PERCENT	.105	.12	.01	1.16	.061	.150	31
PROPANE, PERCENT	.334	.19	.04	.58	.263	.404	31
BUTANE, PERCENT	.148	.14	.02	.92	.098	.198	31
PENTANE, PERCENT	.095	.11	.01	1.15	.055	.134	31
TOTAL HYDROCARBONS, PCT	1.381	.95	.91	.69	1.031	1.731	31
NITROGEN, PERCENT	91.126	17.12	292.94	.19	84.849	97.404	31
OXYGEN, PERCENT	3.083	2.32	5.38	.75	2.232	3.934	31
CARBON DIOXIDE, PERCENT	1.067	.96	.93	.90	.713	1.421	31
GAS VOLUME/SHALE VOLUME	.003	.01	.00	1.79	0.000	.005	30

*I IS INSIGNIFICANT

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TABLE 16. STATISTICAL ANALYSES OF OFF GAS DATA

WELL N 2

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
METHANE, PERCENT	.640	.53	.28	.83	.411	.869	23
ETHANE, PERCENT	.251	.41	.17	1.64	.073	.428	23
PROPANE, PERCENT	.431	.35	.13	.82	.277	.584	23
BUTANE, PERCENT	.177	.22	.05	1.24	.082	.273	23
PENTANE, PERCENT	.024	.04	.00	1.82	.005	.044	23
TOTAL HYDROCARBONS, PCT	1.523	1.28	1.64	.84	.970	2.077	23
NITROGEN, PERCENT	92.800	3.41	11.66	.04	91.323	94.276	23
OXYGEN, PERCENT	3.360	2.96	8.77	.88	2.079	4.641	23
CARBON DIOXIDE, PERCENT	3.270	4.29	18.41	1.31	1.414	5.125	23
GAS VOLUME/SHALE VOLUME	.010	.01	.00	.95	0.000	.014	22

*I IS INSIGNIFICANT

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TABLE 17. STATISTICAL ANALYSES OF OFF GAS DATA

WELL R146

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
METHANE, PERCENT	15.763	12.70	161.24	.81	12.546	18.981	62
ETHANE, PERCENT	2.301	2.27	5.16	.99	1.726	2.876	62
PROPANE, PERCENT	1.405	1.30	1.69	.93	1.075	1.734	62
BUTANE, PERCENT	.394	.38	.14	.96	.298	.489	62
PENTANE, PERCENT	.111	.15	.02	1.39	.072	.149	62
TOTAL HYDROCARBONS, PCT	19.973	16.49	271.81	.83	15.796	24.151	62
NITROGEN, PERCENT	66.639	12.04	144.95	.18	63.589	69.690	62
OXYGEN, PERCENT	12.759	6.25	39.04	.49	11.176	14.342	62
CARBON DIOXIDE, PERCENT	.626	1.01	1.03	1.62	.369	.883	62
GAS VOLUME/SHALE VOLUME	.346	.49	.24	1.40	0.000	.498	41

XT IS INSIGNIFICANT

TABLE 18. CHEMICAL CHARACTERIZATION DATA, 3/78

SAMPLE ID	TOTAL, PERCENT CARBON	HYDROGEN	NITROGEN	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
C336-2444.	7.6	1.0	.1			5	2
C336-2454.	7.2	.9	.2			5	3
C336-2454.7	7.0	1.0	.2			5	4
C336-2464.	6.1	.8	.2			5	5
C336-2474.	6.1	.9	.2			5	6
C336-2494.	4.1	.6	.1			5	7
C336-2504.	4.9	.6	.1			5	8
C336-2514.	1.8	.6	.1			5	9
C336-2514.7	5.1	.7	.3			5	10
C336-2524.	1.5	.6	.2			5	11
C336-2534.	.8	.5	.1			5	12
C336-2545.	.7	.4	.1			5	13
C336-2555.	1.9	.4	.1			5	14
C336-2565.	3.9	.6	.1			5	15
C336-2565.7	1.6	.5	.1			5	16
C336-2575.	.5	.5	.1			5	17
C336-2586.	.5	.6	.1			5	18
C336-2588.	.4	.4	.1			5	19
C336-2595.	.7	.5	.1			5	20
C336-2607.	.8	.6	.1			5	21
C336-2617.	1.4	.5	.1			5	22
C336-2617.7	.5	.6	.1			5	23
C336-2637.	.5	.5	.1			5	24
C336-2648.	.5	.5	.1			5	25
C336-2656.	2.8	.6	.1			5	26
C336-2666.	2.8	.6	.2			5	27
C336-2668.7	4.0	.6	.1			5	28
C336-2676.	3.8	.7	.2			5	29
C336-2686.A	4.3	.7	.2			5	30
C336-2688.B	4.7	.7	.1			5	31
C336-2696.	4.4	.7	.1			5	32
C336-2705.	3.8	.7	.1			5	33
C336-2715.	2.5	.6	.1			5	34
C336-2725.	3.2	.7	.2			5	35
C336-2725.7	2.1	.6	.1			5	36
C336-2735.	3.4	.6	.1				37
C336-2745.	2.0	.6	.1			5	38
C336-2755.	2.0	.6	.1			5	39
C336-2763.	2.1	.6	.1			5	40
C336-2773.	3.2	.6	.1			5	41
C336-2784.	4.0	.7	.2			5	42
C336-2784.7	3.1	.7	.2			5	43
C336-2793.	.5	.6	.1			5	44
C336-2802.	1.0	.5	.1			5	45
C336-2814.	1.6	.6	.1			5	46
C336-2822.	.9	.6	.2			5	47

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TABLE 18. (Continued)

CHEMICAL CHARACTERIZATION DATA, 3/78

SAMPLE ID	CARBON	TOTAL, PERCENT HYDROGEN	NITROGEN	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
C336-2830.	.6	.6	.1			5	48
C336-2842.	2.0	.7	.2			5	49
C336-2842.Z	.8	.6	.1			5	50
C336-2852.	3.7	.7	.1			5	51
C336-2862.	2.4	.6	.1			5	52
C336-2872.	2.5	.7	.2			5	53
C336-2881.	1.9	.6	.1			5	54
C336-2891.	.5	.5	.1			5	55
C336-2901.	1.9	.6	.2			5	56
C336-2901.Z	.5	.5	.1			5	57
C336-2911.	3.3	.7	.2			5	58
C336-2921.	8.4	1.1	.3			5	59
C336-2931.	.6	.5	.2			5	60
C336-2940.	3.9	.7	.2			5	61
C336-2950.	1.1	.5	.1			5	62
C336-2960.	7.3	.9	.2			5	63
C336-2960.Z	6.8	.9	.2			5	64
C336-2970.	5.0	.7	.2			5	65
C336-2980.	.6	.5	.1			5	66
C336-2990.	5.9	.8	.2			5	67
C336-2999.	1.3	.4	.1			5	68
C336-3009.	4.3	.5	.2			5	69
C336-3019.	3.8	.7	.1			5	70
C336-3019.Z	2.6	.6	.1			5	71
C336-3029.	.6	.4	.1			5	72
C336-3038.	5.9	.9	.1			5	73
C336-3049.	5.8	.9	.2			5	74
C336-3054.	3.8	.7	.2			5	75
C336-3069.	5.3	.8	.2			5	76
C336-3069.Z	2.8	.5	.1			5	77
C336-3079.	4.6	.7	.1			5	78
C336-3089.	5.3	1.6	.2			5	79
C336-3099.	7.1	.9	.2			5	80
C336-3107.	5.0	.7	.2			5	81
C336-3117.	.9	.5	.1			5	82

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TABLE 18. (Continued)

CHEMICAL CHARACTERIZATION DATA, 3/78

SAMPLE ID	CARBON	TOTAL, PERCENT HYDROGEN	NITROGEN	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
C336-3157.	.8	.5	.1			5	87
C336-3176.	.5	.5	.1			5	89
C336-3186.	2.3	.7	.2			5	90
C336-3186.7	2.0	.6	.1			5	91
C336-3196.A	.3	.5	.1			5	92
C336-3196.B	.6	.5	.1			5	93
C336-3216.	.9	.5	.1			5	95
C336-3224.	2.4	.6	.2			5	96
C336-3234.	2.8	.7	.2			5	97
C336-3244.	1.5	.4	.1			5	98
C336-3254.	1.1	.5	.1			5	100
C336-3294.	.5	.4	.1			5	104
C336-3125.	2.5	.6	.1			5	109
C336-3345.7	.7	.5	.1			5	112
C336-3355.	2.0	.6	.1			5	113
C336-3365.	1.9	.5	.1			5	114
C336-3375.	5.8	.9	.2			5	115
C336-3384.	4.3	.7	.2			5	116
C336-3394.	2.7	.6	.2			5	117
C336-3404.	8.4	.2	.1			5	118
C336-3404.7	1.3	.1	.1			5	119

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TABLE 19. CHEMICAL CHARACTERIZATION DATA, 3/78

SAMPLE ID	CARBON	TOTAL, PERCENT HYDROGEN	NITROGEN	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
N 1- 321.	2.0	.3	.1			5	1
N 1- 331.	2.1	.3	.1			5	2
N 1- 341.	2.4	.4	.1			5	3
N 1- 344.	2.6	.3	.1			5	4
N 1- 354.	2.2	.4	.1			5	5
N 1- 365.	2.9	.3	.1			5	6
N 1- 372.	2.8	.4	.1			5	7
N 1- 382.	2.4	.3	.1			5	8
N 1- 392.	3.6	.3	.1			5	9
N 1- 401.	2.4	.4	.1			5	10
N 1- 411.	2.4	.5	.1			5	11
N 1- 421.	2.4	.4	.1			5	12
N 1- 431.	2.4	.5	.1			5	13
N 1- 441.	2.4	.4	.1			5	14
N 1- 451.	3.6	.5	.2			5	15
N 1- 458.	5.7	.9	.1			5	16
N 1- 468.	2.7	.7	.1			5	17
N 1- 478.	2.9	.6	.1			5	18
N 1- 485.	.9	.4	.1			5	19
N 1- 495.	.8	.4	.1			5	20
N 1- 505.	4.0	.7	.1			5	21
N 1- 515.	1.9	.4	.1			5	22
N 1- 525.	1.9	.5	.1			5	23
N 1- 537.	1.8	.5	.1			5	24
N 1- 547.	3.1	.6	.1			5	25
N 1- 557.	2.3	.5	.1			5	26
N 1- 564.	3.0	.5	.1			5	27
N 1- 574.	2.4	.6	.1			5	28
N 1- 584.	6.9	.2	.1			5	29
N 1- 592.	6.0	.3	.1			5	30
N 1- 602.	5.9	.3	.1			5	31

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TABLE 20. CHEMICAL CHARACTERIZATION DATA, 3/78

SAMPLE ID	CARBON	TOTAL, PERCENT HYDROGEN	NITROGEN	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
N 2- 927.	2.3	.3	.1			5	1
N 2- 937.	1.4	.4	.1			5	2
N 2- 947.	1.5	.4	.1			5	3
N 2- 951.	1.9	.3	.1			5	4
N 2- 961.	2.2	.4	.1			5	5
N 2- 971.	2.1	.4	.1			5	6
N 2- 980.	2.3	.3	.1			5	7
N 2- 990.	1.4	.4	.1			5	8
N 2-1000.	1.3	.5	.1			5	9
N 2-1010.	1.6	.4	.1			5	10
N 2-1020.	1.4	.5	.1			5	11
N 2-1030.	2.0	.5	.1			5	12
N 2-1040.	1.8	.4	.1			5	13
N 2-1050.	1.8	.4	.1			5	14
N 2-1060.	2.8	.6	.1			5	15
N 2-1070.	2.9	.6	.1			5	16
N 2-1080.	5.2	.8	.1			5	17
N 2-1090.	9.2	1.1	.2			5	18
N 2-1100.	8.3	1.1	.2			5	19
N 2-1110.	4.4	.8	.1			5	20
N 2-1120.	2.4	.7	.1			5	21
N 2-1130.	2.0	.6	.1			5	22
N 2-1140.	2.3	.5	.1			5	23

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TABLE 21. CHEMICAL CHARACTERIZATION DATA, 4/78

SAMPLE ID	TOTAL, PERCENT CARBON	HYDROGEN	NITROGEN	SULFUR	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
R146-2700.	.4	.6	.1	1.8			5	1
R146-2710.	1.5	.5	.1	1.4			5	2
R146-2720.	5.0	.9	.2	3.9			5	3
R146-2730.	1.5	.5	.1	1.8			5	4
R146-2740.	5.2	.8	.1	3.1			5	5
R146-2750.	4.6	.8	.1	2.8			5	6
R146-2755.	.3	.6	.1	.3			5	7
R146-2773.	1.8	.6	.4	7.3			5	9
R146-2783.	.8	.6	.1	.4			5	10
R146-2793.	1.7	.5	.1	.6			5	11
R146-2803.	3.8	.8	.1	2.9			5	12
R146-2811.	4.3	.8	.1	2.6			5	13
R146-2821.	.8	.4	.1	.9			5	14
R146-2841.	4.8	.8	.1	1.5			5	15
R146-2851.	.5	.4	.2	1.0			5	16
R146-2861.	2.3	.5	0.0	.2			5	17
R146-2879.	1.1	.4	.1	0.0			5	19
R146-2889.	.3	.5	.1	2.1			5	20
R146-2899.	.5	.5	.1	.7			5	21
R146-2909.	3.9	.7	.1	1.6			5	22
R146-2919.	.8	.5	.1	3.2			5	23
R146-2927.	4.9	.8	.1	3.7			5	24
R146-2937.	2.2	.6	.1	2.2			5	25
R146-2947.	5.2	.9	.2	2.1			5	26
R146-2957.	6.2	.9	.2	3.1			5	27
R146-2977.	5.9	.9	.1	3.1			5	29
R146-2985.	.4	.5	.1	1.1			5	30
R146-2995.	3.9	.8	.1	2.6			5	31
R146-3005.	1.1	.5	.1	1.3			5	32
R146-3015.	2.6	.6	.1	1.7			5	33
R146-3025.	6.0	.9	.2	1.9			5	34
R146-3035.	1.3	.4	.1	.6			5	35
R146-3044.	.8	.4	.1	.1			5	36
R146-3054.	.3	.4	0.0	.9			5	37
R146-3064.	.3	.5	0.0	.5			5	38
R146-3084.	.8	.5	0.0	.1			5	40
R146-3094.	.4	.5	0.0	.4			5	41
R146-3102.	.6	.5	0.0	0.0			5	42
R146-3112.	.6	.5	0.0	.1			5	43
R146-3122.	.3	.5	0.0	.1			5	44
R146-3132.	.2	.4	0.0	.7			5	45
R146-3152.	2.4	.7	0.0	2.2			5	47
R146-3161.	.5	.4	0.0	0.0			5	48
R146-3181.	.2	.5	0.0	0.0			5	50
R146-3191.	.7	.5	0.0	1.7			5	51
R146-3201.	.2	.4	0.0	.1			5	52

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TABLE 21. (Continued)

CHEMICAL CHARACTERIZATION DATA, 4/78

SAMPLE ID	TOTAL, PERCENT CARBON	HYDROGEN	NITROGEN	SULFUR	LOW TEMPERATURE ASH, % 200 C	100 C	CARD CODE	SEQ NO.
R146-3211.	.5	.4	0.0	0.0			5	53
R146-3220.	.3	.4	0.0	.2			5	54
R146-3230.	.6	.5	0.0	.1			5	55
R146-3240.	.5	.4	0.0	1.3			5	56

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TABLE 22. SUMMARY OF PHYSICAL CHARACTERIZATION DATA

	BULK DENSTY G/CC	OPEN PORSTY PCT	CLOSED PORSTY PCT	TOTAL PORSTY PCT	WATER OF SATURATION PCT	SURFACE AREA M2/G	SEQ
C336-2434.	2.505	.505	0.000	.505	100.000	.990	1
C336-2444.	2.482	.596	.515	1.111	87.624	1.010	2
C336-2454.	2.463	.847	1.731	2.578	41.645	3.490	3
C336-2454.Z	2.494	.545	2.122	2.667	36.115	6.100	4
C336-2464.	2.496	.284	0.000	.284	100.000	.560	5
C336-2474.	2.575	.290	0.000	.290	100.000	.890	6
C336-2494.	2.575	1.181	.569	1.750	59.080	3.820	7
C336-2504.	2.554	.690	0.000	.690	91.710	2.830	8
C336-2514.	2.715	1.121	0.000	1.121	87.047	4.690	9
C336-2514.Z	2.583	.707	6.002	6.709	8.213	4.700	10
C336-2524.	2.690	2.304	2.232	4.537	31.770	3.500	11
C336-2534.	2.777	1.919	0.000	1.919	65.857	2.680	12
C336-2545.	2.734	2.795	0.000	2.795	37.864	4.290	13
C336-2555.	2.891	1.855	0.000	1.855	58.404	4.070	14
C336-2565.	2.669	.604	2.077	2.681	31.764	.970	15
C336-2565.Z	2.727	1.624	3.561	5.185	20.336	1.910	16
C336-2575.	2.709	2.217	0.000	2.217	44.497	.880	17
C336-2586.	2.728	1.688	0.000	1.688	75.249	4.820	18
C336-2588.	2.766	2.271	0.000	2.271	41.290	3.820	19
C336-2595.	2.730	1.736	0.000	1.736	52.154	.590	20
C336-2607.	2.720	2.209	1.417	3.626	40.808	1.080	21
C336-2617.	2.889	1.774	0.000	1.774	58.455	4.310	22
C336-2617.Z	2.717	2.168	2.567	4.736	30.198	1.240	23
C336-2637.	2.718	1.966	0.000	1.966	49.812	3.910	24
C336-2646.	2.699	2.171	0.000	2.171		2.680	25
C336-2656.	2.650	.543	6.488	7.031	11.530	1.260	26
C336-2666.	2.695	.910	2.263	3.173	37.857	1.090	27
C336-2666.Z	2.603	.471	0.000	.471	100.000	.660	28
C336-2676.	2.630	.419	3.779	4.198	21.572	3.430	29
C336-2696.	2.571	.350	.956	1.306	69.257	1.450	32
C336-2705.	2.597	.431	5.420	5.851	21.007	2.940	33
C336-2715.	2.666	.655	0.000	.655	100.000	4.220	34
C336-2725.	2.641	.616	0.000	.616	100.000	1.150	35
C336-2745.	2.675	.661	0.000	.661	100.000	.990	38
C336-2755.	2.664	.505	6.215	6.721	19.272	3.880	39
C336-2763.	2.674	.769	0.000	.769	100.000	3.200	40
C336-2773.	2.620	.841	0.000	.841	99.417	5.690	41
C336-2784.Z	2.642	.732	0.000	.732	100.000	4.040	43
C336-2814.	2.714	.854	0.000	.854	100.000	1.010	46
C336-2830.	2.717	1.512	0.000	1.512	97.758	1.000	48
C336-2842.	2.680	1.049	0.000	1.049	99.447	4.130	49
C336-2842.Z	2.763	2.063	0.000	2.063	67.324	.810	50
C336-2852.	2.606	.947	1.278	2.225	52.049	4.150	51
C336-2881.	2.679	1.144	0.000	1.144	94.572	4.540	54

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TABLE 22. (Continued)

SUMMARY OF PHYSICAL CHARACTERIZATION DATA

	BULK DENSITY G/CC	OPEN PORSTY PCT	CLOSED PORSTY PCT	TOTAL PORSTY PCT	WATER OF SATURATION PCT	SURFACE AREA M2/G	SEQ
C336-2891.	2.742	1.685	0.000	1.685	80.605	1.010	55
C336-2901.	2.707	.762	0.000	.762	100.000	3.360	56
C336-2901.Z	2.729	1.590	2.586	4.176	32.045	4.020	57
C336-2911.	2.628	.514	0.000	.514	100.000	1.060	58
C336-2921.	2.455	.240	0.000	.240	100.000	.530	59
C336-2931.	2.731	1.474	0.000	1.474	89.986	1.520	60
C336-2940.	2.613	.718	2.274	2.993	30.448	1.060	61
C336-2960.	2.480	.674	.005	.679	100.000	3.390	63
C336-2960.Z	3.429	.820	0.000	.820	95.610	3.060	64
C336-2970.	2.556	.356	0.000	.356	100.000	1.030	65
C336-2980.	2.710	2.242	0.000	2.242	56.677	3.730	66
C336-2990.	2.584	.453	0.000	.453	100.000	3.750	67
C336-2999.	2.741	2.118	1.317	3.435	27.447	4.250	68
C336-3019.	2.520	.370	0.000	.370	100.000		70
C336-3019.Z	2.680	1.364	0.000	1.364	85.367	.950	71
C336-3029.	2.739	1.812	0.000	1.812	50.977	2.020	72
C336-3038.	2.510	.987	5.524	6.511	9.513	4.100	73
C336-3049.	2.533	.417	0.000	.417	100.000	1.520	74
C336-3054.	2.545	.561	0.000	.561	100.000	1.330	75
C336-3069.	2.519	.628	9.020	9.648	8.295	3.610	76
C336-3069.Z	2.608	.987	3.110	4.097	23.424	4.770	77
C336-3089.	2.567	.484	2.047	2.530	36.123	.790	79
C336-3099.	2.568	.585	0.000	.585	100.000	1.020	80
C336-3107.	2.580	.655	0.000	.655	100.000	2.240	81
C336-3117.	2.684	2.645	0.000	2.645	38.756	1.650	82
C336-3127.	2.695	3.091	0.000	3.091	25.286	2.680	83
C336-3137.	2.677	4.027	.341	4.368	21.103	2.500	84
C336-3137.Z	2.680	4.437	0.000	4.437	18.999	3.020	85
C336-3146.	2.694	3.938	0.000	3.938	19.225	2.040	86
C336-3157.	2.666	3.521	5.718	9.240	20.448	3.080	87
C336-3166.	2.674	3.891	0.000	3.891	22.280	1.430	88
C336-3176.	2.724	3.171	1.549	4.720	15.678	3.360	89
C336-3186.	2.613	4.099	.970	5.069	35.607	4.070	90
C336-3196.A	2.672	3.678	0.000	3.678	24.910	2.450	92
C336-3196.B	2.685	4.291	0.000	4.291		2.080	93
C336-3206.	2.650	5.006	0.000	5.006	16.618	1.070	94
C336-3216.	2.660	3.892	5.812	9.704	13.667	4.420	95
C336-3224.	2.627	2.865	0.000	2.865	34.946	3.440	96
C336-3234.	2.684	4.591	0.000	4.591	16.099	3.210	97
C336-3244.	2.709	3.630	0.000	3.630	17.444	2.720	98
C336-3244.Z	2.690	4.631	0.000	4.631	16.277	2.020	99
C336-3254.	2.647	4.525	3.099	7.624	20.776	3.590	100
C336-3264.	2.654	2.860	0.000	2.860	33.164	2.660	101
C336-3274.	2.618	3.175	.067	3.243	22.828	2.680	102
C336-3284.	2.728	4.037	1.392	5.429	14.012	1.460	103

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TABLE 22. (Continued)

SUMMARY OF PHYSICAL CHARACTERIZATION DATA

	BULK DENSITY G/CC	OPEN POROSITY PCT	CLOSED POROSITY PCT	TOTAL POROSITY PCT	WATER OF SATURATION PCT	SURFACE AREA M2/G	SEQ
C336-3294.	2.653	5.612	0.000	5.612	13.653	4.630	104
C336-3304.	2.700	4.439	0.000	4.439	35.659	1.030	105
C336-3304.Z	2.711	3.229	0.000	3.229	20.883	2.470	106
C336-3315.	2.713	3.076	3.793	6.869	21.166	1.670	108
C336-3325.	2.552	2.546	2.680	5.226	27.931	6.860	109
C336-3335.	2.674	3.908	0.000	3.908	18.365	2.300	110
C336-3345.	2.671	4.270	0.000	4.270	19.440	3.420	111
C336-3355.	2.654	3.917	.522	4.439	32.838	.770	113
C336-3365.	2.673	1.510	.801	2.310	51.117	1.700	114
C336-3375.	2.496	.617	0.000	.617	100.000	.660	115
C336-3384.	2.522	.732	.954	1.685	57.881	1.160	116
C336-3394.	2.596	1.224	0.000	1.224	100.000	.610	117
C336-3404.	2.683	.830	0.000	.830	90.819	1.010	118
C336-3404.Z	2.763	.650	.933	1.584	12.336	1.450	119

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TABLE 23. SUMMARY OF PHYSICAL CHARACTERIZATION DATA

	BULK DENSTY G/CC	OPEN PORSTY PCT	CLOSED PORSTY PCT	TOTAL PORSTY PCT	WATER OF SATURATION PCT	SURFACE AREA M2/G	SEQ
N 1- 321.	2.622	7.012	0.000	7.012	33.811	13.620	1
N 1- 331.	2.574	8.998	0.000	8.998	29.294	13.820	2
N 1- 341.	2.465	12.438	0.000	12.438	29.830	11.860	3
N 1- 344.	2.653	5.751	0.000	5.751	35.050	15.000	4
N 1- 354.	2.602	7.957	0.000	7.957	37.572	14.370	5
N 1- 365.	2.460	13.575	0.000	13.575	17.618	11.870	6
N 1- 372.	2.446	13.694	0.000	13.694	20.540	9.390	7
N 1- 382.	2.440	13.721	0.000	13.721	22.379	11.450	8
N 1- 392.	2.501	11.928	0.000	11.928	8.732	9.450	9
N 1- 401.	2.416	13.832	0.000	13.832	24.292	13.970	10
N 1- 411.	2.376	14.734	3.487	18.221	19.980	8.980	11
N 1- 421.	2.498	11.184	0.000	11.184	29.805	11.120	12
N 1- 431.	2.385	13.903	0.000	13.903	28.456	2.120	13
N 1- 441.	2.384	13.908	0.000	13.908	19.850	5.950	14
N 1- 451.	2.433	13.295	0.000	13.295	25.932	5.500	15
N 1- 458.	2.265	12.610	.334	12.944	21.540	10.120	16
N 1- 468.	2.358	13.346	0.000	13.346	21.655	8.600	17
N 1- 478.	2.368	12.810	0.000	12.810	19.550	9.820	18
N 1- 485.	2.411	13.603	0.000	13.603	20.426	8.090	19
N 1- 495.	2.421	13.228	29.808	43.036	6.166	8.510	20
N 1- 505.	2.325	12.418	0.000	12.418	3.100	8.350	21
N 1- 515.	2.407	14.446	1.890	16.336	13.587	8.710	22
N 1- 525.	2.418	13.392	0.000	13.392	6.940	8.350	23
N 1- 537.	2.357	15.269	1.466	16.735	15.998	9.000	24
N 1- 547.	2.431	12.873	0.000	12.873	9.672	8.600	25
N 1- 557.	2.421	13.225	4.251	17.476	13.309	8.870	26
N 1- 564.	2.424	12.523	0.000	12.523	13.457	10.210	27
N 1- 574.	2.355	14.153	0.000	14.153	13.948	2.520	28
N 1- 584.	2.587	9.909	0.000	9.909	2.930	3.600	29
N 1- 592.	2.564	10.300	0.000	10.300	6.156	8.600	30
N 1- 602.	2.567	9.886	0.000	9.886	3.767	8.780	31

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TABLE 24. SUMMARY OF PHYSICAL CHARACTERIZATION DATA

		BULK DENSTY G/CC	OPEN PORSTY PCT	CLOSED PORSTY PCT	TOTAL PORSTY PCT	WATER OF SATURATION PCT	SURFACE AREA M2/G	SEQ
N	2- 927.	2.494	11.870	.577	12.448	14.945		1
N	2- 937.	2.465	12.123	0.000	12.123	12.735	8.060	2
N	2- 947.	2.233	11.303	10.037	21.340	5.701	4.690	3
N	2- 951.	2.510	11.214	0.000	11.214	2.913	7.510	4
N	2- 961.	2.487	11.555	0.000	11.555	8.258	7.860	5
N	2- 971.	2.501	11.902	7.944	19.845	2.911	5.320	6
N	2- 980.	2.534	10.736	10.211	20.947	4.482	9.620	7
N	2- 990.	2.481	11.791	12.347	24.137	5.357	5.510	8
N	2-1000.	2.440	12.462	3.505	15.967	15.318	6.570	9
N	2-1010.	2.482	11.783	12.361	24.144	3.212	7.870	10
N	2-1020.	2.451	11.756	8.882	20.638	8.593	9.600	11
N	2-1030.	2.442	11.410	2.966	14.376	4.035	5.620	12
N	2-1040.	2.498	11.791	6.197	17.988	7.293	7.580	13
N	2-1050.	2.459	11.024	3.237	14.261	10.787	7.550	14
N	2-1060.	2.425	10.085	6.825	16.909	9.523	5.360	15
N	2-1070.	2.456	10.140	4.048	14.188	10.682	2.740	16
N	2-1080.	2.346	7.581	5.219	12.800	10.983	7.980	17
N	2-1090.	2.302	6.390	0.000	6.390	17.152	7.070	18
N	2-1100.	2.323	3.238	9.203	12.441	7.274	10.540	19
N	2-1110.	2.432	6.364	3.100	9.464	9.545	6.090	20
N	2-1120.	2.502	9.055	14.867	23.922	3.911	5.230	21
N	2-1130.	2.589	8.383	2.882	11.264	6.247	4.610	22

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TABLE 25. SUMMARY OF PHYSICAL CHARACTERIZATION DATA

SAMPLE ID.	BULK DENSITY, G/CC	TRUE DENSITY, G/CC	TOTAL POROSITY, PCT	SURFACE AREA, M2/G	SEQ NO.
R146-2919.	2.661	2.946	9.686	1.170	23
R146-2927.	2.669	2.693	.893	1.020	24
R146-2937.	2.732	2.813	2.896	4.880	25
R146-2947.	2.542	2.698	5.782	1.720	26
R146-2957.	2.528	2.384	0.000	1.020	27
R146-2977.	2.358	2.587	8.847	.910	29
R146-2985.	2.753	2.867	3.968	1.130	30
R146-2995.	2.576	2.537	0.000	.680	31
R146-3005.	2.622	2.738	4.224	1.000	32
R146-3015.	2.716	2.630	0.000	.960	33
R146-3025.	2.432	2.451	.763	.620	34
R146-3035.	2.655	2.617	0.000	.360	35
R146-3044.	2.669	2.720	1.674	1.110	36
R146-3054.	2.659	2.666	.280	2.580	37
R146-3064.	2.675	3.055	12.450	2.570	38
R146-3084.	2.638	2.973	11.272		40
R146-3094.	2.683	2.807	4.434	6.180	41
R146-3102.	2.658	2.777	4.292	5.590	42
R146-3112.	2.695	2.830	4.784		43
R146-3122.	2.570	2.748	6.478	3.020	44
R146-3132.	2.684	2.882	6.882	4.600	45
R146-3152.	2.551	2.870	11.125	4.050	47
R146-3161.	2.358	2.666	11.555	1.990	48
R146-3181.	2.634	2.794	5.728	3.580	50
R146-3191.	2.685	2.831	5.159	4.690	51
R146-3201.	2.637	2.659	.826	5.690	52
R146-3211.	2.712	2.823	3.938	6.310	53
R146-3220.	2.684	2.708	.891	4.160	54
R146-3230.	2.652	2.694	1.560	6.460	55
R146-3240.	2.691	2.711	.738	5.230	56
R146-3253.	2.651	2.711	2.225	5.810	57
R146-3262.	2.677	2.687	.383	2.480	58
R146-3272.	2.695	2.708	.486	1.120	59
R146-3282.	2.656	2.586	0.000	3.270	60
R146-3292.	2.645	2.601	0.000	3.370	61
R146-3311.	2.560	2.648	3.327	3.450	63
R146-3321.	2.694	2.686	0.000	6.430	64
R146-3331.	2.668	2.934	8.400	7.470	65
R146-3351.	2.446	2.531	3.366	4.630	67
R146-3361.	2.493	2.566	2.849	1.920	68
R146-3369.	2.518	2.539	.842	4.280	69
R146-3380.	2.652	2.529	0.000	2.120	70

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TABLE 26. STATISTICAL ANALYSES OF PHYSICAL CHARACTERIZATION DATA

WELL C-336

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
BULK DENSITY, G/CC	2.659	.11	.01	.04	2.636	2.681	103
APPARENT DENSITY, G/CC	2.710	.13	.02	.05	2.684	2.736	103
TRUE DENSITY, G/CC	2.584	.34	.12	.13	2.517	2.651	103
OPEN POROSITY, PCT	1.850	1.41	2.00	.76	1.574	2.127	103
CLOSED POROSITY, PCT	1.007	1.85	3.41	1.83	.646	1.368	103
TOTAL POROSITY, PCT	2.857	2.20	4.83	.77	2.428	3.287	103
WEIGHT LOSS INITIAL, G/KG	10.466	3.11	9.69	.30	9.857	11.074	103
WEIGHT LOSS FINAL, G/KG	-.917	6.69	44.73	-7.29	0.000	.390	103
TOTAL WEIGHT LOSS, G/KG	9.549	7.01	49.19	.73	8.177	10.920	103
SURFACE AREA, M2/G	2.539	1.49	2.22	.59	2.246	2.831	102

*I IS INSIGNIFICANT

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TABLE 27. STATISTISTICAL ANALYSES OF PHYSICAL CHARACTERIZATION DATA

WELL N- 1

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
BULK DENSITY, G/CC	2.449	.09	.01	.04	2.415	2.484	31
APPARENT DENSITY, G/CC	2.791	.06	.00	.02	2.770	2.813	31
TRUE DENSITY, G/CC	2.641	.47	.22	.18	2.469	2.814	31
OPEN POROSITY, PCT	12.256	2.32	5.36	.19	11.406	13.105	31
CLOSED POROSITY, PCT	1.330	5.38	28.99	4.05	0.000	3.305	31
TOTAL POROSITY, PCT	13.586	6.14	37.71	.45	11.333	15.838	31
WEIGHT LOSS INITIAL, G/KG	28.343	11.22	125.90	.40	24.228	32.458	31
WEIGHT LOSS FINAL, G/KG	-5.152	3.06	9.34	-.59	0.000	-4.032	31
TOTAL WEIGHT LOSS, G/KG	23.190	10.35	107.22	.45	19.393	26.988	31
SURFACE AREA, M2/G	9.329	3.18	10.13	.34	8.162	10.497	31

*I IS INSIGNIFICANT

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TABLE 28. STATISTISTICAL ANALYSES OF PHYSICAL CHARACTERIZATION DATA

WELL N- 2

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
BULK DENSITY, G/CC	2.448	.08	.01	.03	2.412	2.484	22
APPARENT DENSITY, G/CC	2.728	.13	.02	.05	2.669	2.788	22
TRUE DENSITY, G/CC	2.694	.72	.52	.27	2.373	3.015	22
OPEN POROSITY, PCT	10.180	2.39	5.72	.24	9.119	11.241	22
CLOSED POROSITY, PCT	5.655	4.54	20.61	.80	3.642	7.668	22
TOTAL POROSITY, PCT	15.835	5.11	26.12	.32	13.568	18.101	22
WEIGHT LOSS INITIAL, G/KG	16.913	5.46	29.77	.32	14.493	19.332	22
WEIGHT LOSS FINAL, G/KG	-4.998	1.18	1.38	-.24	0.000	-4.477	22
TOTAL WEIGHT LOSS, G/KG	11.914	4.99	24.88	.42	9.702	14.126	22
SURFACE AREA, M2/G	6.809	2.44	5.96	.36	5.697	7.920	21

*I TS INSIGNIFICANT

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TABLE 29. STATISTISTICAL ANALYSES OF PHYSICAL CHARACTERIZATION DATA

WELL R-146

	MEAN	STANDARD DEVIATION	VARIENCE	COEFFICIENT OF DEVIATION	95 PCT. CONFIDENCE INTERVAL LOWER LIMIT	UPPER LIMIT	NO OF SAMPLES
BULK DENSITY, G/CC	2.624	.10	.01	.04	2.594	2.653	42
APPARENT DENSITY, G/CC							
TRUE DENSITY, G/CC	2.712	.14	.02	.05	2.667	2.756	42
OPEN POROSITY, PCT							
CLOSED POROSITY, PCT							
TOTAL POROSITY, PCT	3.648	3.73	13.90	1.02	2.486	4.810	42
WEIGHT LOSS INITIAL, G/KG							
WEIGHT LOSS FINAL, G/KG							
TOTAL WEIGHT LOSS, G/KG							
SURFACE AREA, M2/G	3.241	2.17	4.73	.67	2.545	3.936	40

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TABLE 30. ENERGY-DISPERSIVE ANALYSIS OF R-146 SHALE SAMPLES

Shale Sample	Element Count Per 100 Counts										Element Ratios			
	Na	K	Ca	Mg	Al	Si	Fe	S	Ti	Cl	Fe/S	K/Al	K/Si	Al/Si
R-146-2700	–	11.0	–	2.1	21.4	50.7	11.3	1.6	1.9	–	7.1	0.51	0.22	0.42
R-146-2753	–	8.9	–	2.2	26.0	57.4	3.8	0.8	0.9	–	5.0	0.34	0.16	0.45
R-146-2821	–	8.4	–	–	16.9	62.7	10.3	0.6	1.1	–	16.0	0.50	0.13	0.27
R-146-2899	–	8.2	–	2.6	22.0	61.6	4.5	Tr	1.1	–	∞	0.37	0.13	0.35
R-146-2977	–	5.2	–	0.6	16.0	67.7	4.6	5.9	–	–	0.79	0.33	0.08	0.24
R-146-3035	–	2.5	44.7	1.6	3.9	13.0	10.9	23.4	–	–	0.47	0.66	0.20	0.30
Spot A[a]	–	3.5	28.1	–	5.6	8.7	22.8	31.3	–	–	0.73	0.64	0.41	0.64
Spot B	–	4.9	33.5	1.9	11.9	18.8	8.9	20.1	–	–	0.44	0.42	0.26	0.63
Spot C	–	2.3	73.9	–	2.0	6.9	5.5	9.4	–	–	0.58	1.16	0.33	0.29
R-146-3102	1.6	8.9	–	2.1	19.9	50.2	7.0	–	1.2	9.1	∞	0.45	0.18	0.40
R-146-3102	0.9	7.7	–	1.1	19.1	62.8	6.9	–	0.9	0.5	∞	0.40	0.12	0.30
R-146-3181	–	9.4	–	1.2	19.3	61.1	6.5	–	0.9	1.6	∞	0.49	0.15	0.32
R-146-3311	–	8.8	–	1.5	19.8	60.7	5.1	3.0	1.1	–	1.7	0.44	0.14	0.33
Illite Grain	–	17.2	–	–	25.5	57.3	–	–	–	–	–	0.67	0.30	0.45
Pyrite Grain	–	–	–	–	–	–	27.5	72.5	–	–	0.38	–	–	–

(a) See Figure 71.

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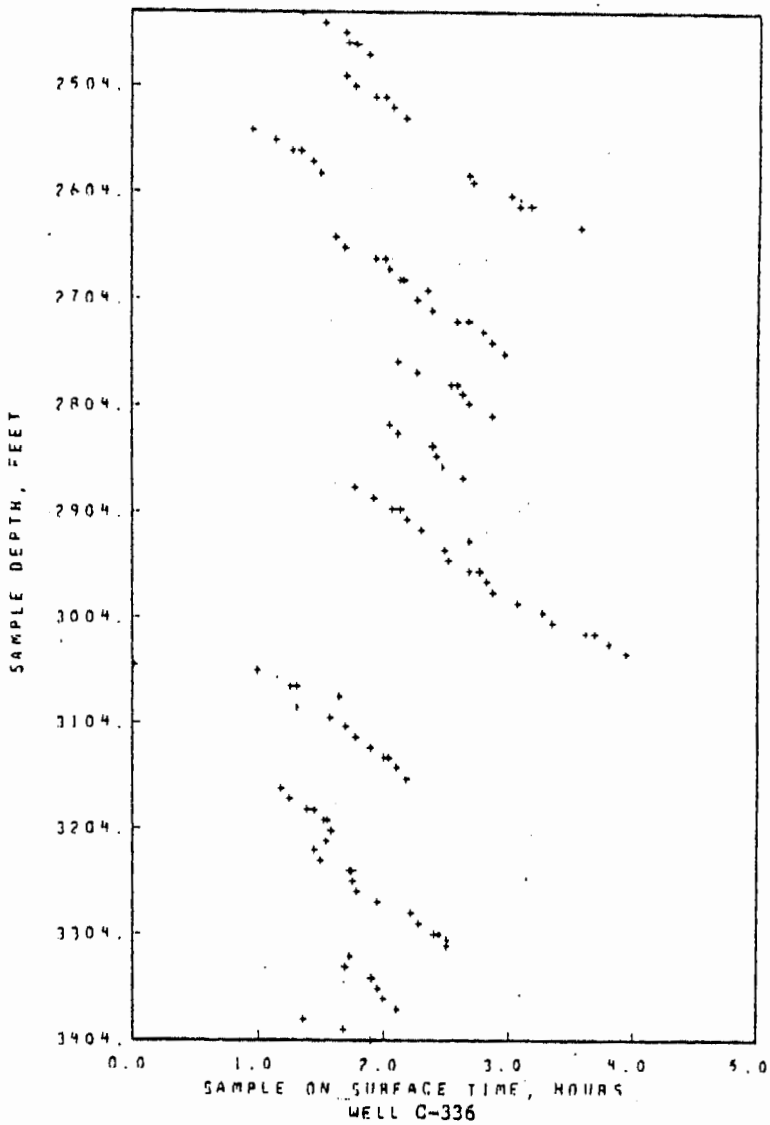

FIGURE 1. ON-SURFACE TIME FOR SAMPLES FROM WELL C-336

A88

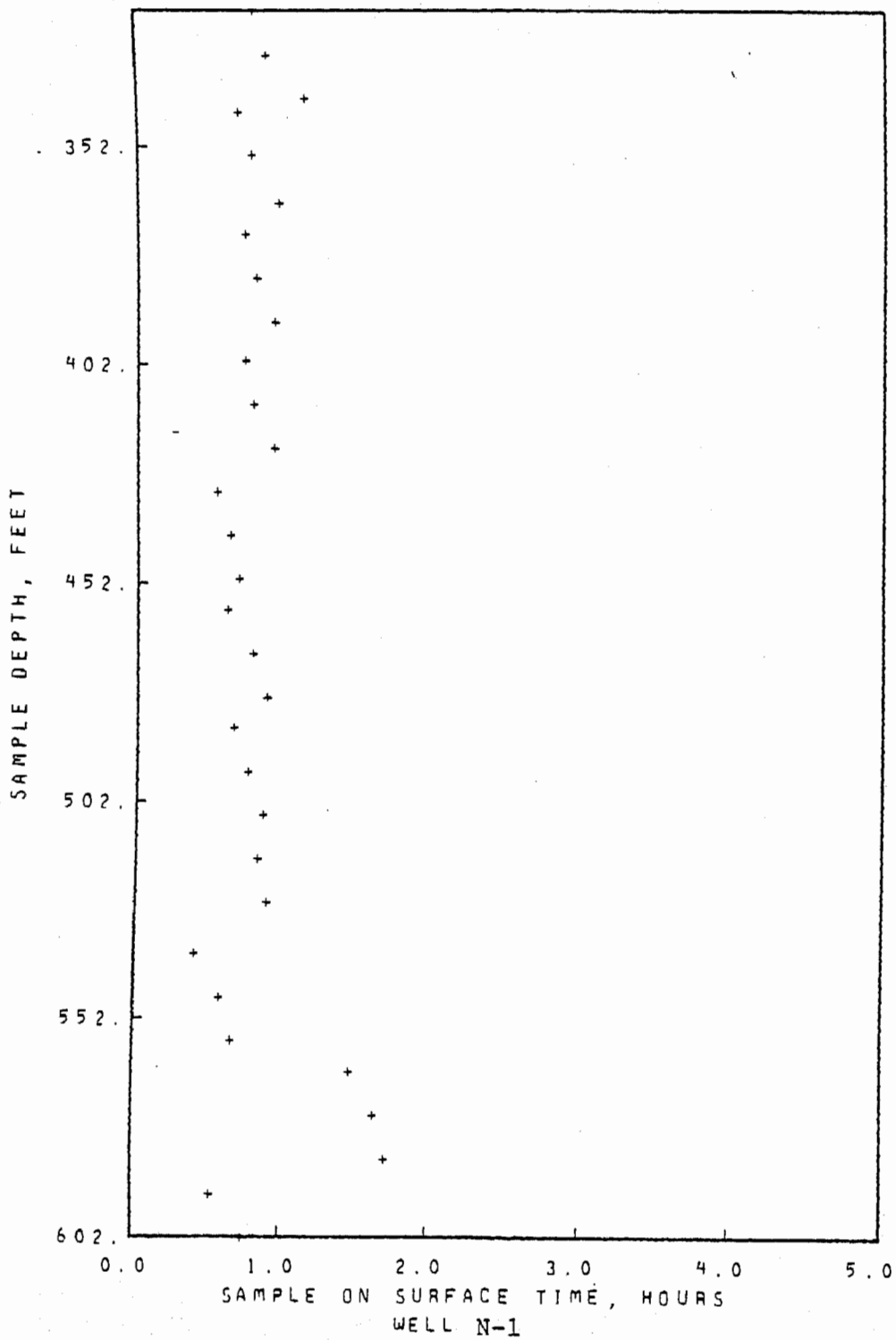

FIGURE 2. ON-SURFACE TIME FOR SAMPLES FROM WELL N-1

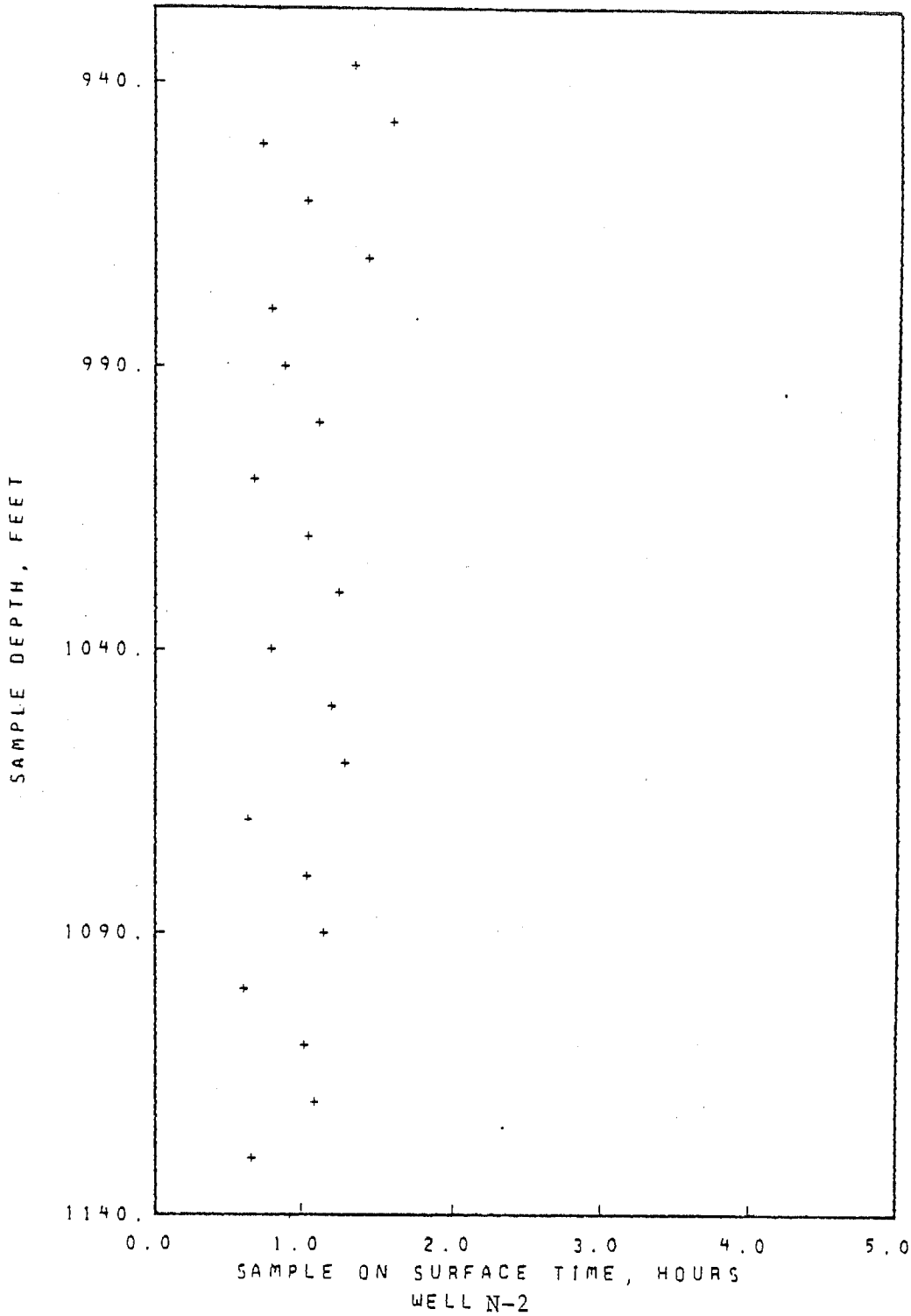

FIGURE 3. ON-SURFACE TIME FOR SAMPLES FROM WELL N-2

A 90

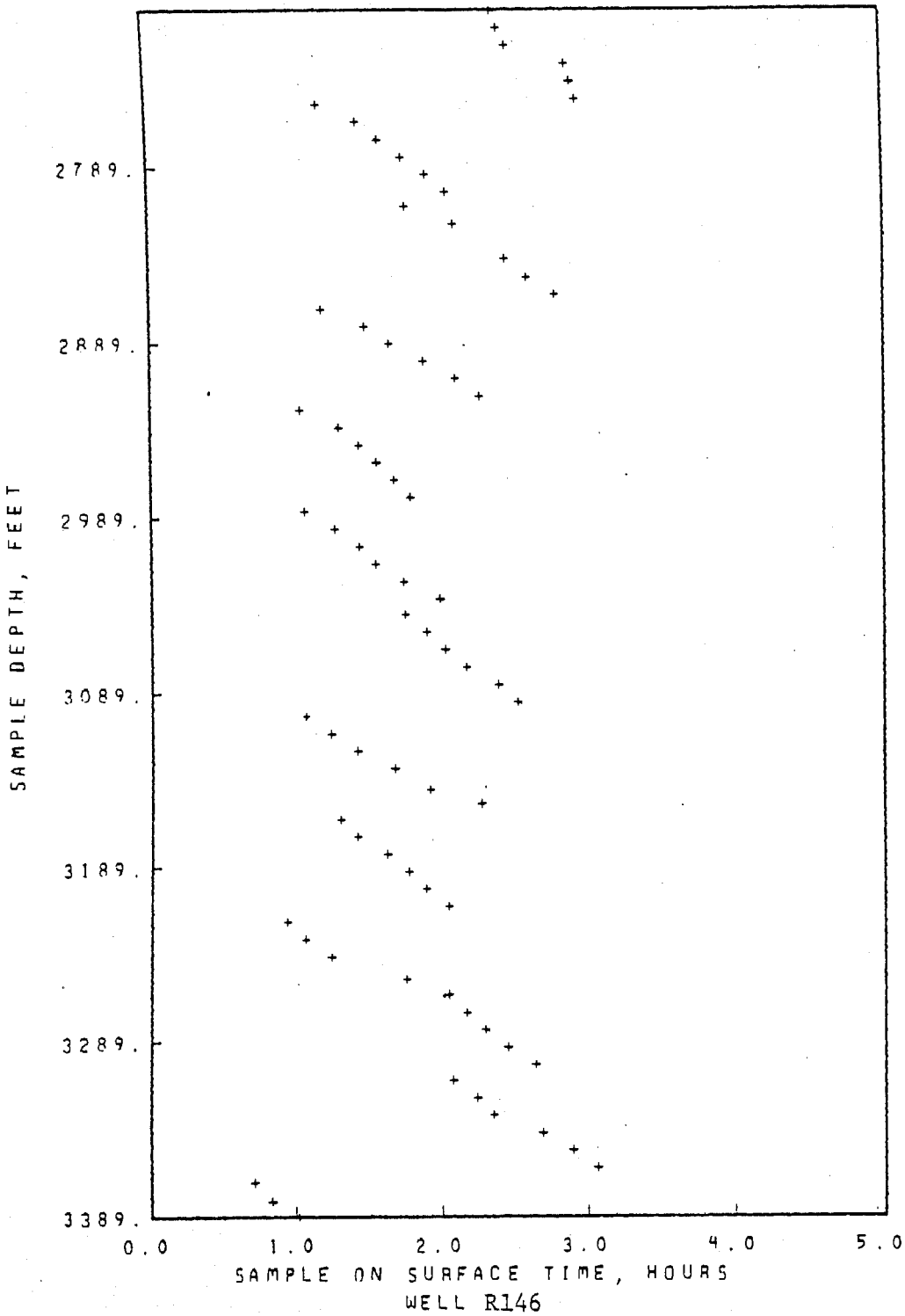

FIGURE 4. ON-SURFACE TIME FOR SAMPLES FROM WELL R-146

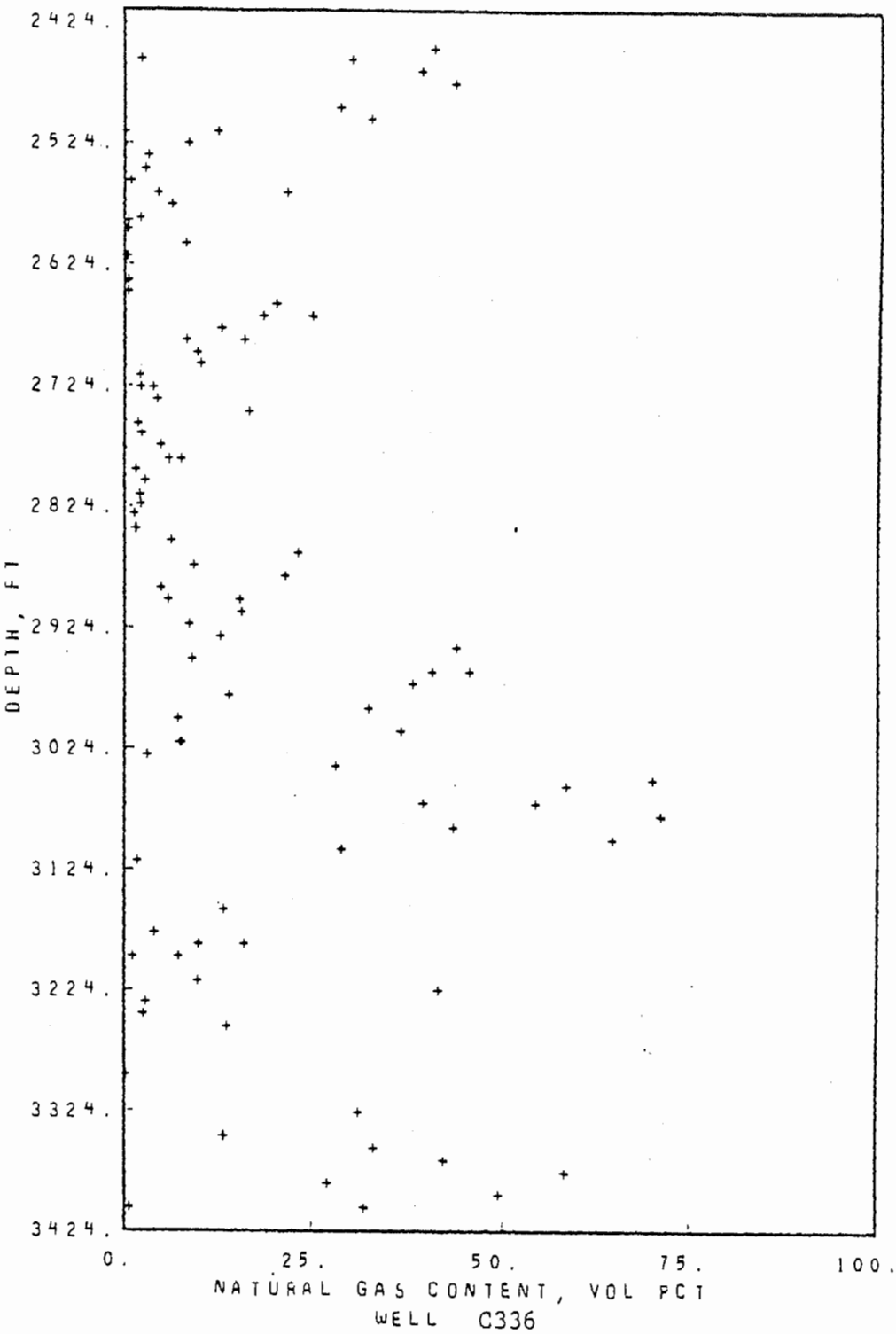

FIGURE 5. HYDROCARBON GAS CONTENTS AS A FUNCTION OF DEPTH FOR WELL C-336

A 92

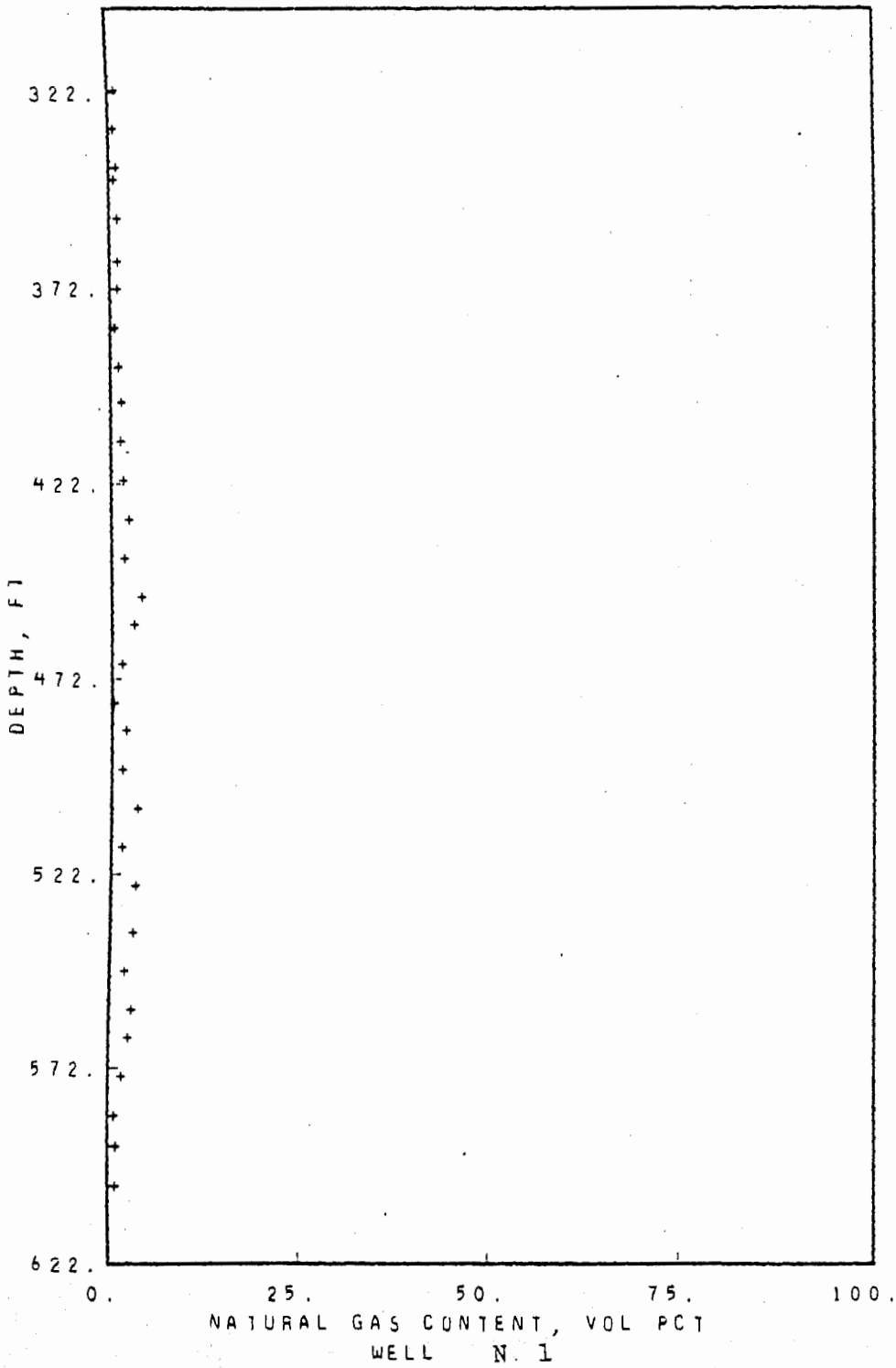

FIGURE 6. HYDROCARBON GAS CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-1

A93

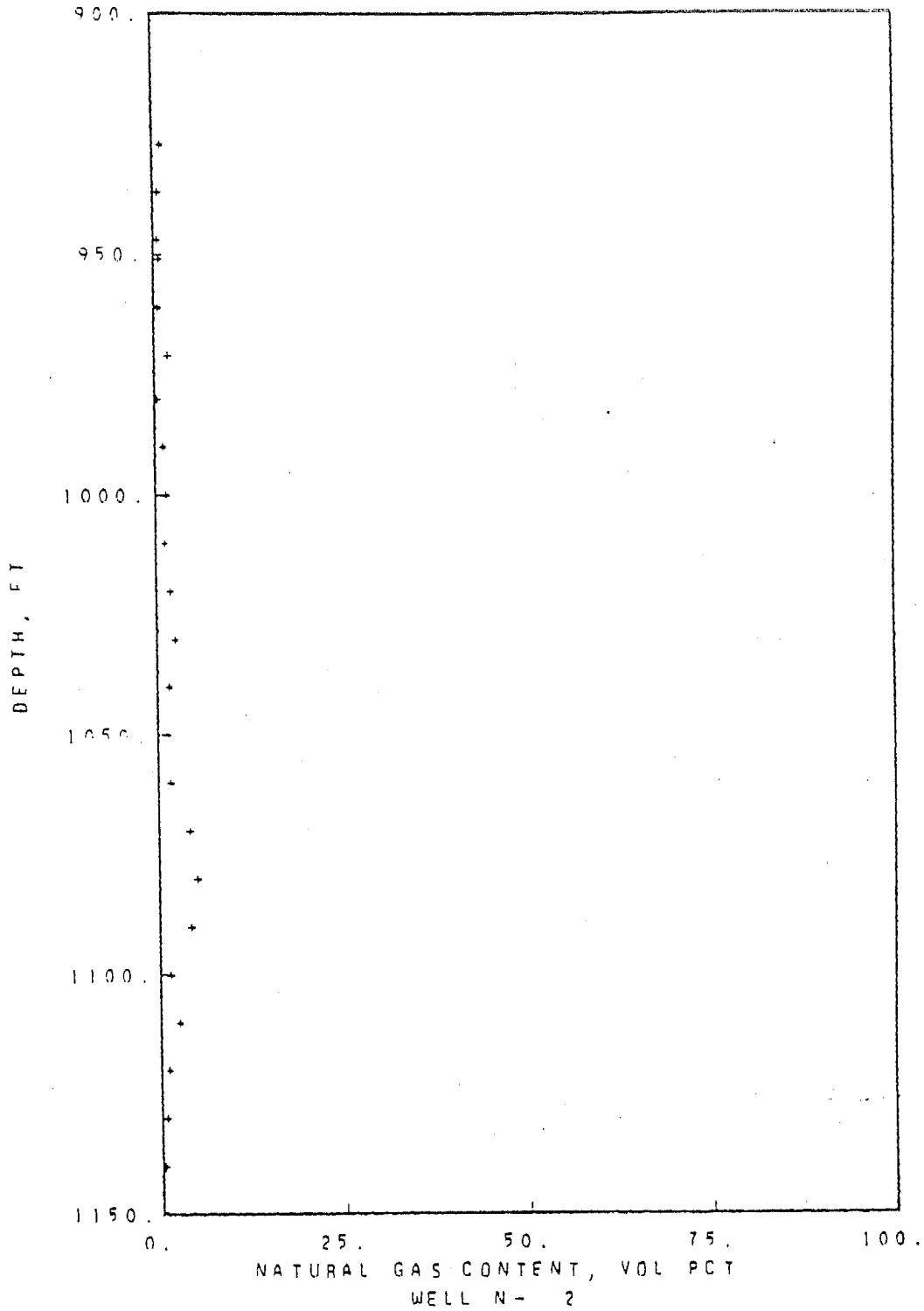

FIGURE 7. HYDROCARBON GAS CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-2

A94

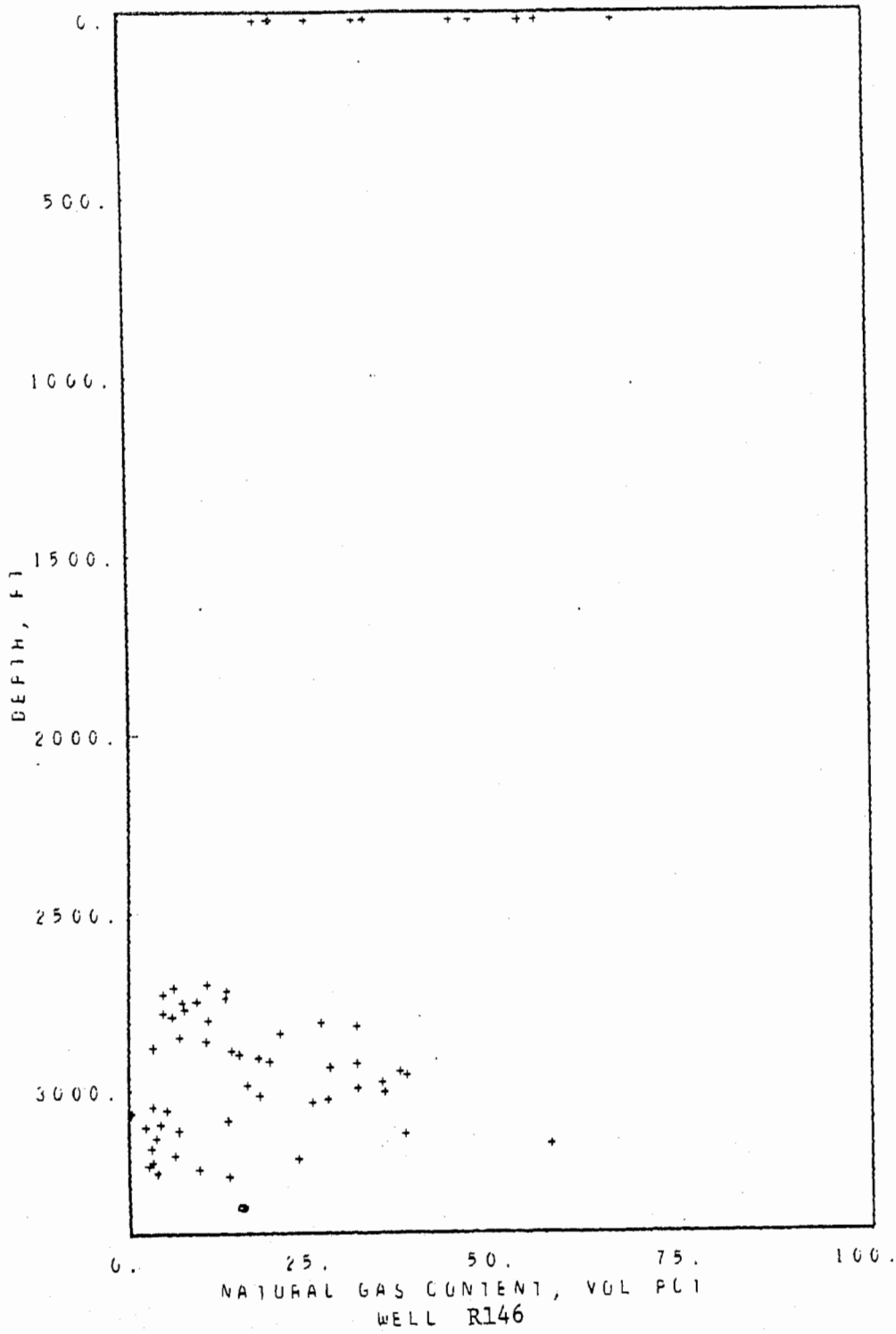

FIGURE 8. HYDROCARBON GAS CONTENTS AS A FUNCTION OF DEPTH FOR WELL R-146

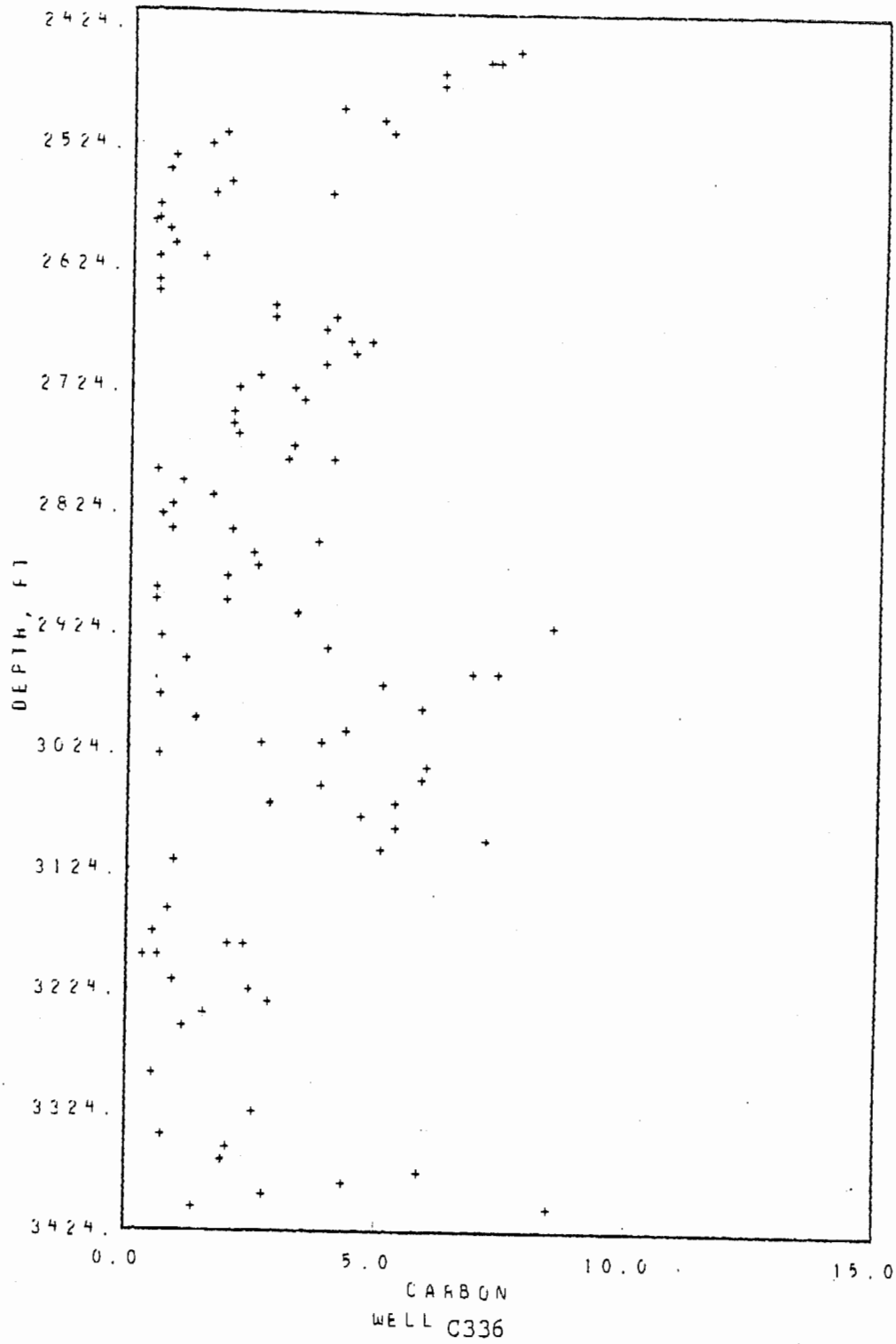

FIGURE 9. CARBON CONTENTS AS A FUNCTION OF DEPTH FOR WELL C-336

A96

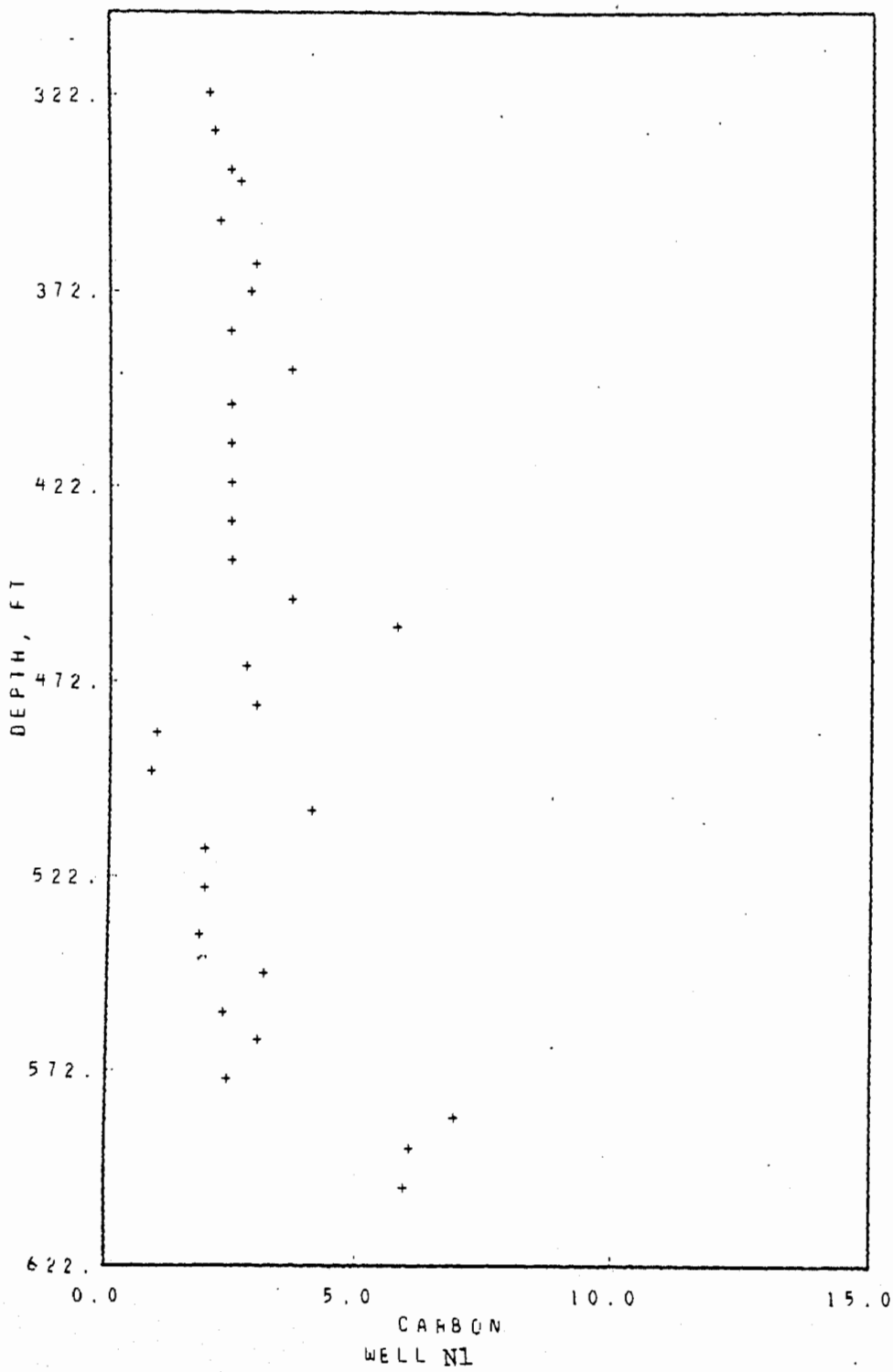

FIGURE 10. CARBON CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-1

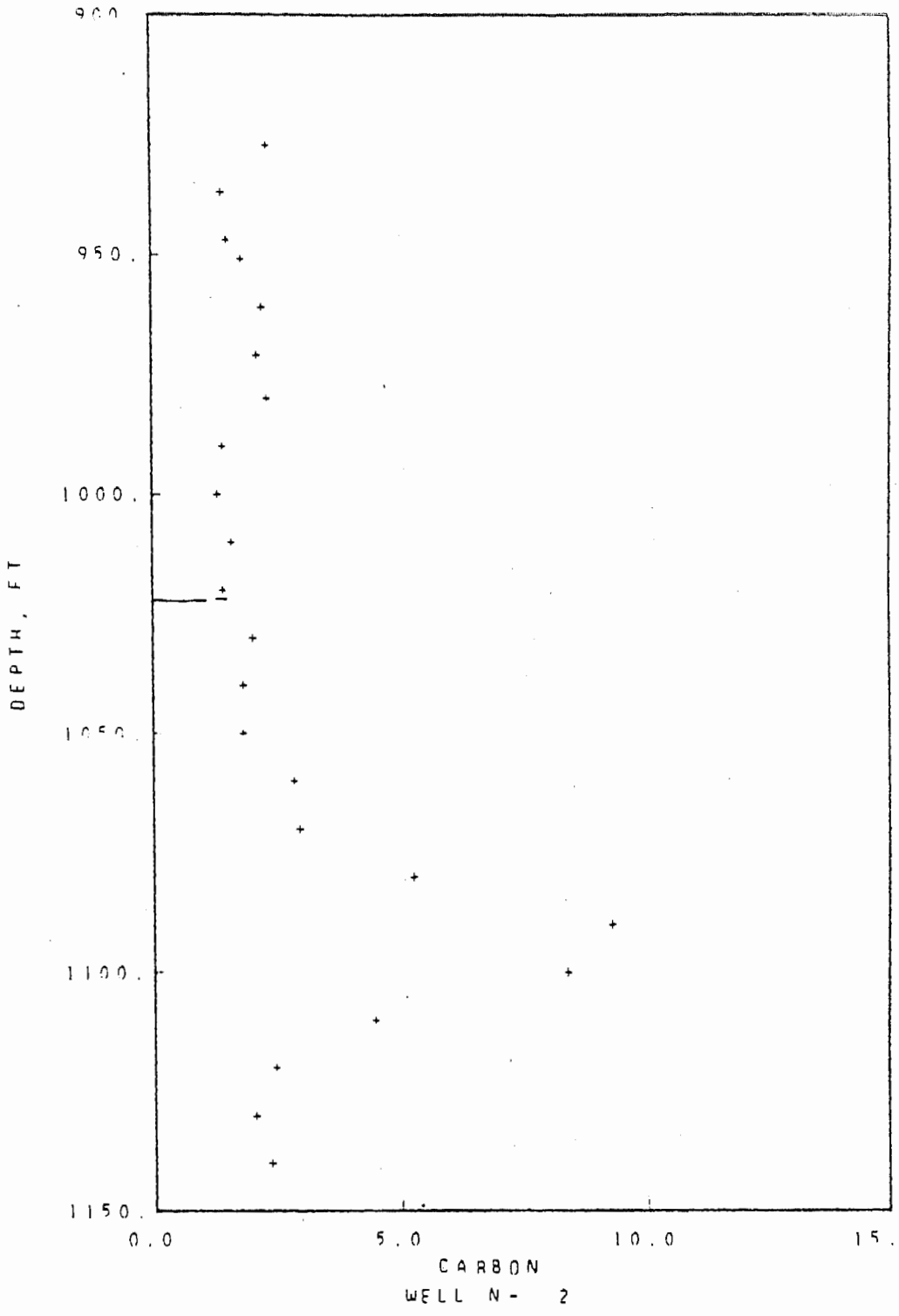

FIGURE 11. CARBON CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-2

A98

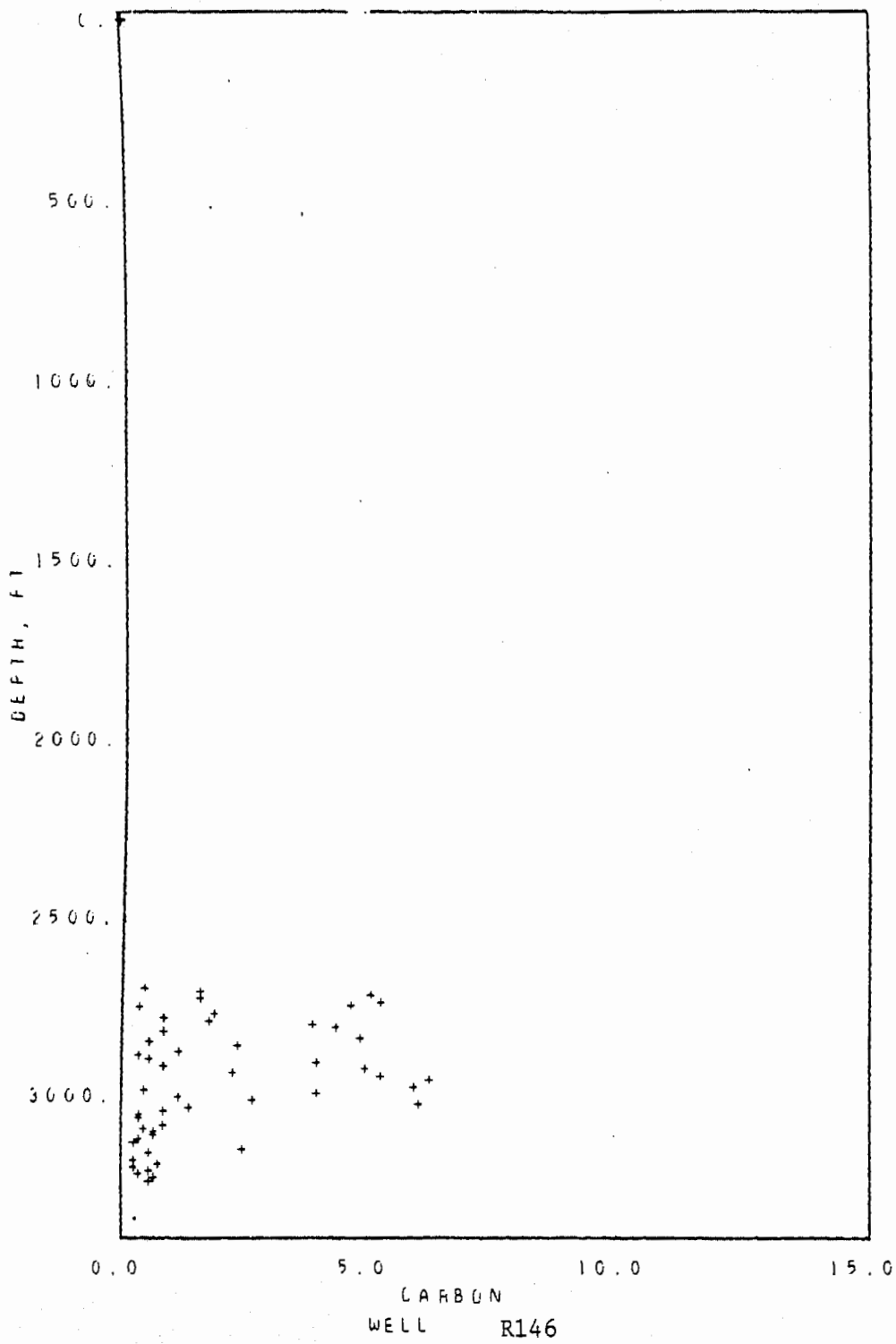

FIGURE 12. CARBON CONTENTS AS A FUNCTION OF DEPTH FOR WELL R-146

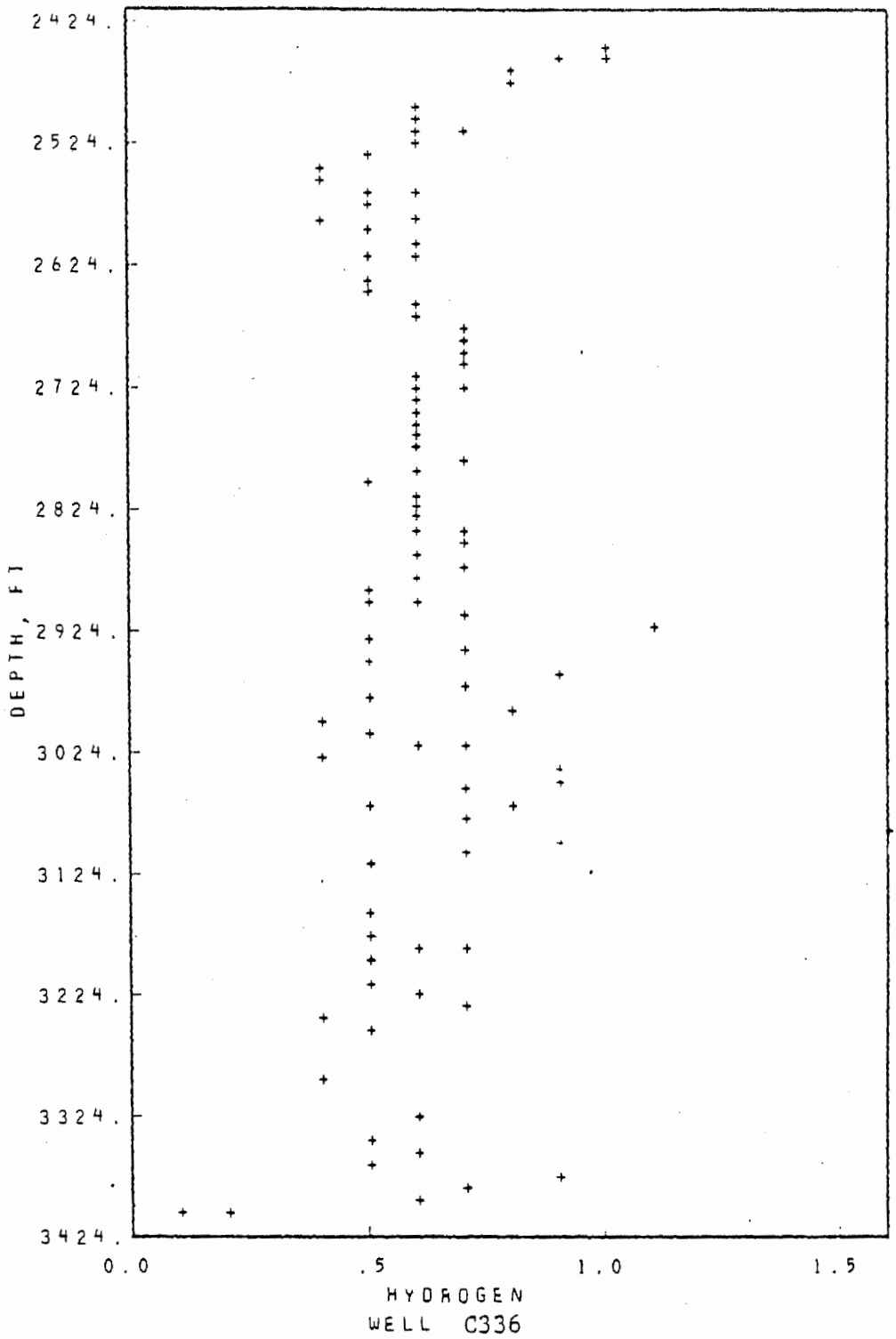

FIGURE 13. HYDROGEN CONTENTS AS A FUNCTION OF DEPTH FOR WELL C-336

A100

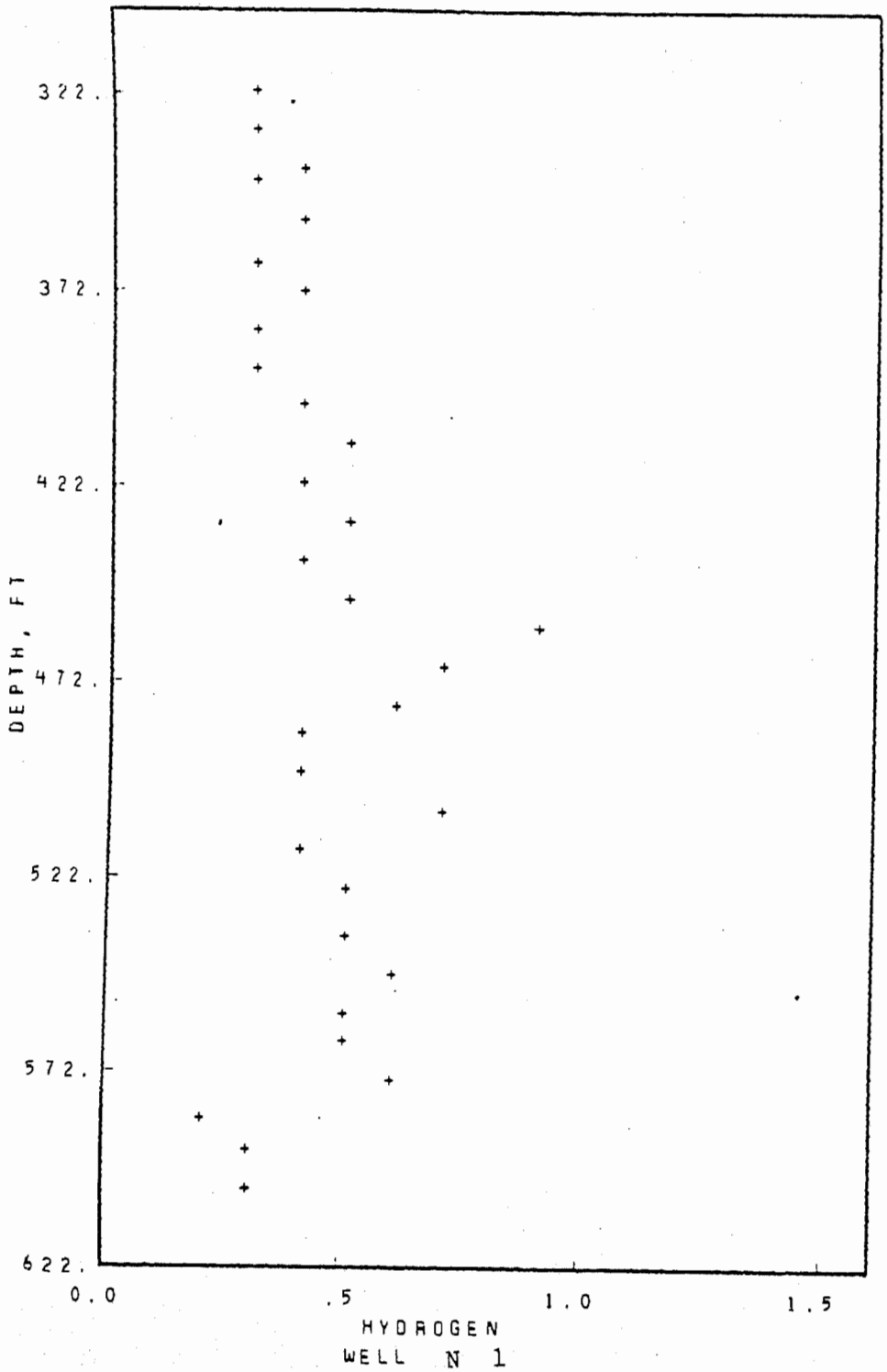

FIGURE 14. HYDROGEN CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-1

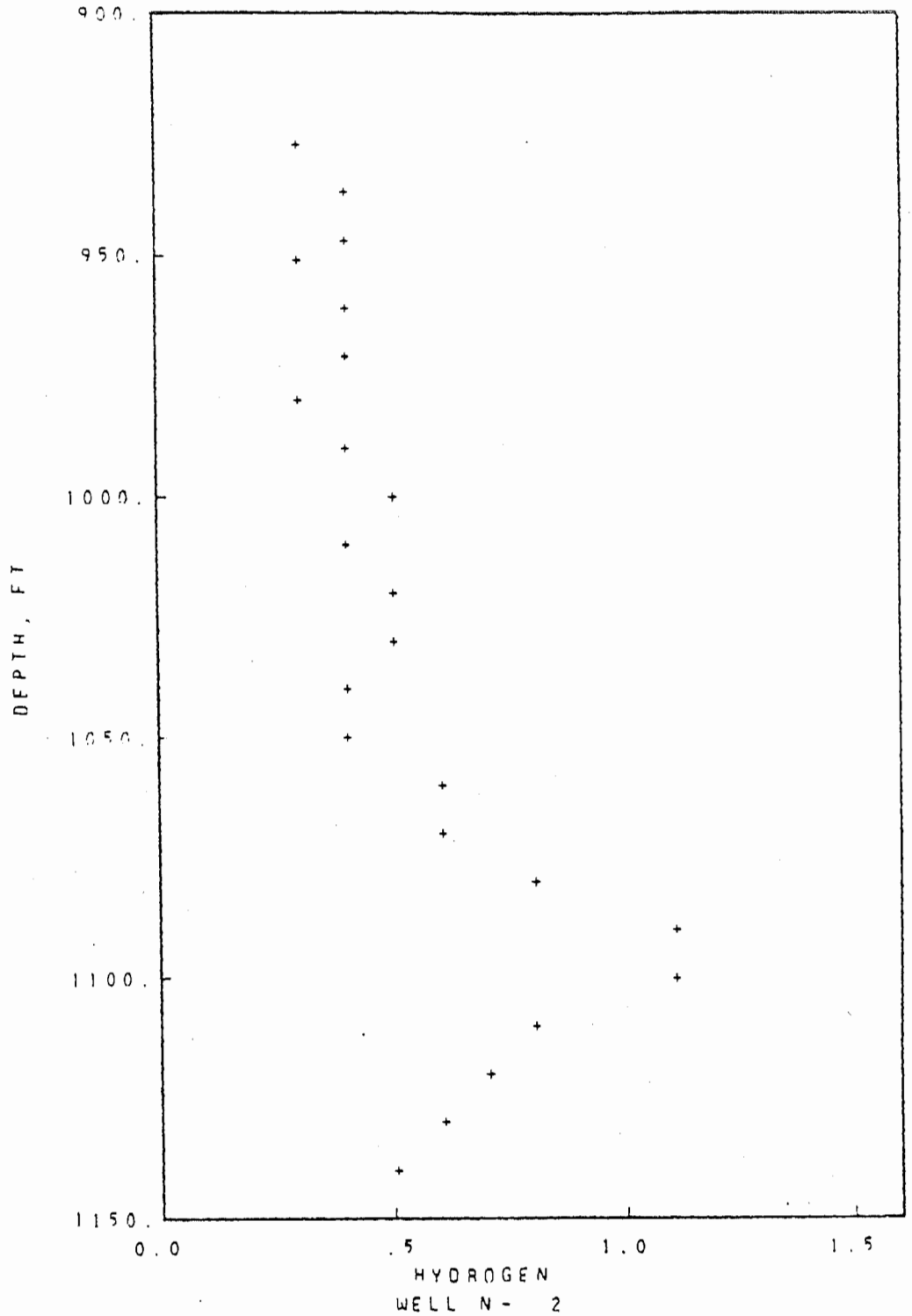

FIGURE 15. HYDROGEN CONTENTS AS A FUNCTION OF DEPTH FOR WELL N-2

A102

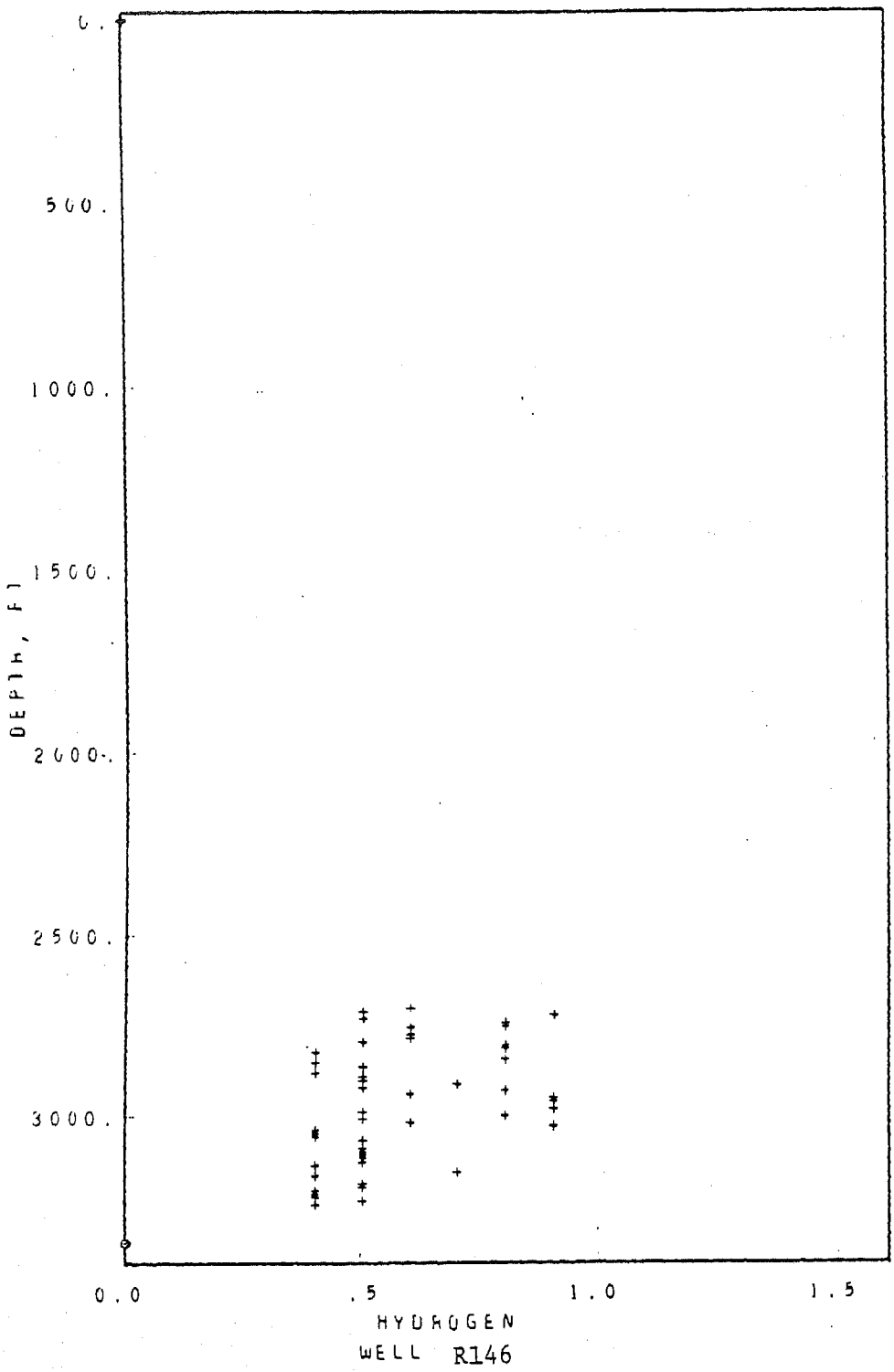

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FIGURE 16. HYDROGEN CONTENTS AS A FUNCTION OF DEPTH FOR WELL R-146

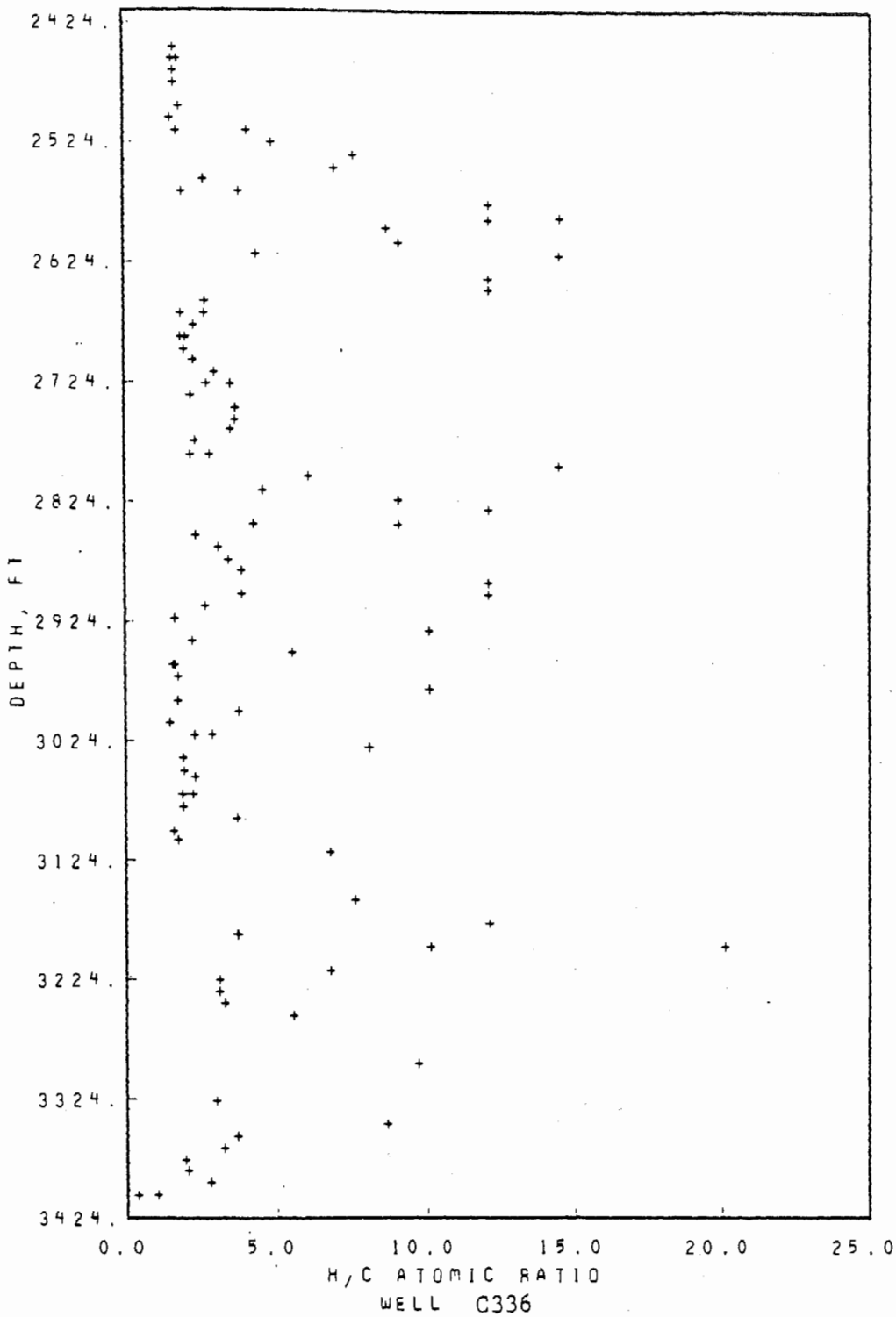


FIGURE 17. H/C ATOMIC RATIOS AS A FUNCTION OF DEPTH FOR WELL C-336

A104

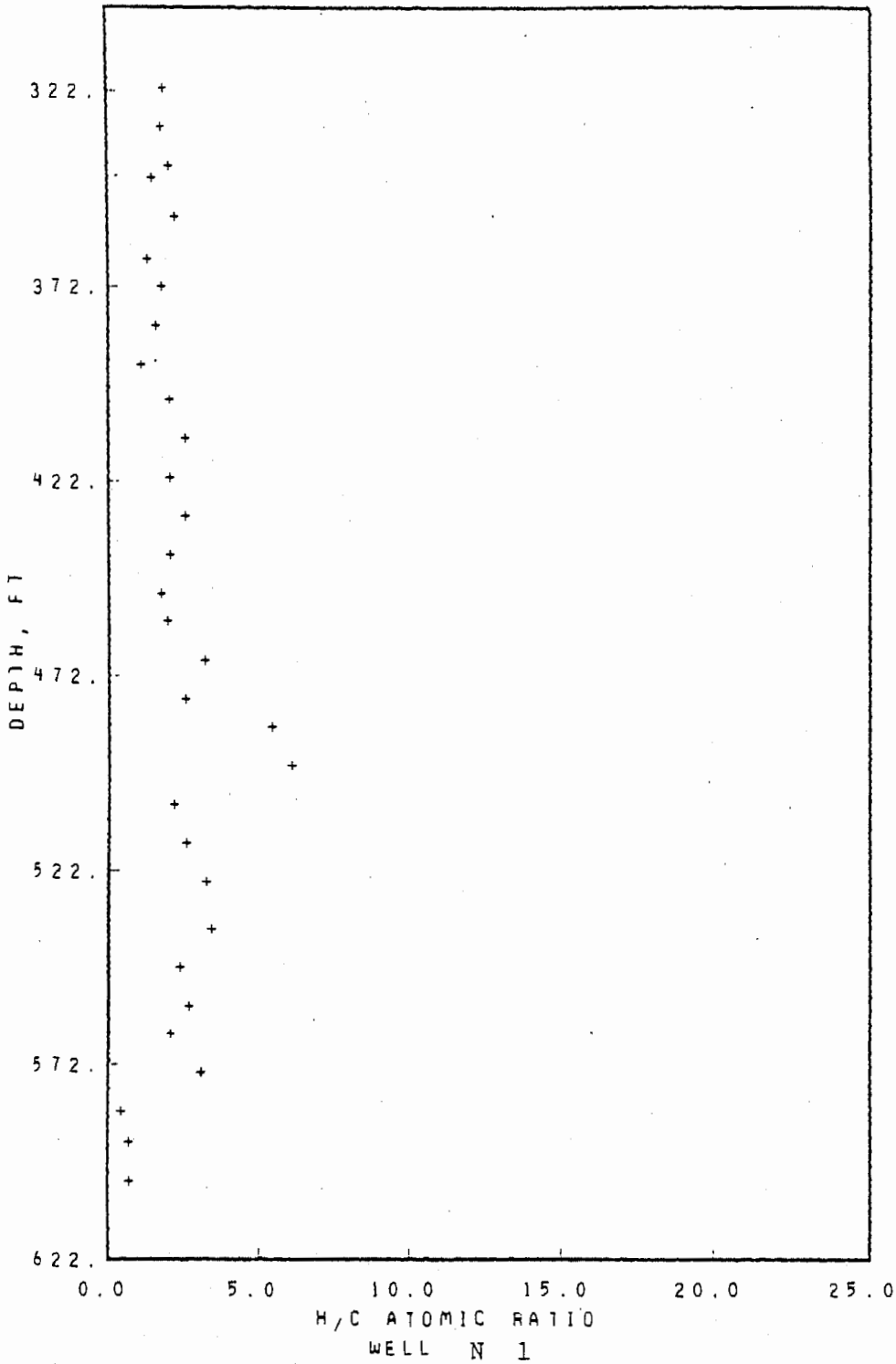


FIGURE 18. H/C ATOMIC RATIOS AS A FUNCTION OF DEPTH FOR WELL N-1

A105

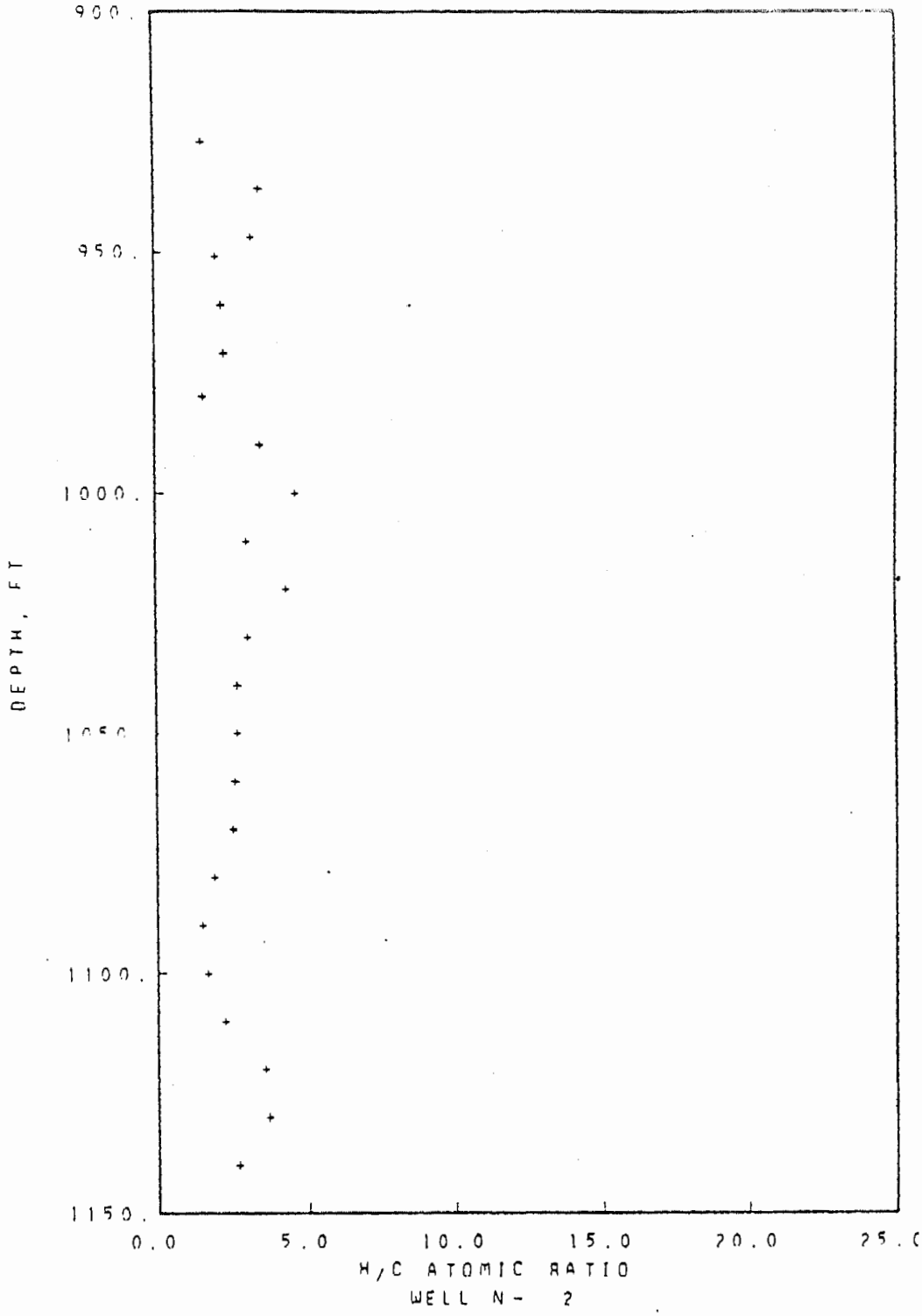


FIGURE 19. H/C ATOMIC RATIOS AS A FUNCTION OF DEPTH FOR WELL N-2

A106

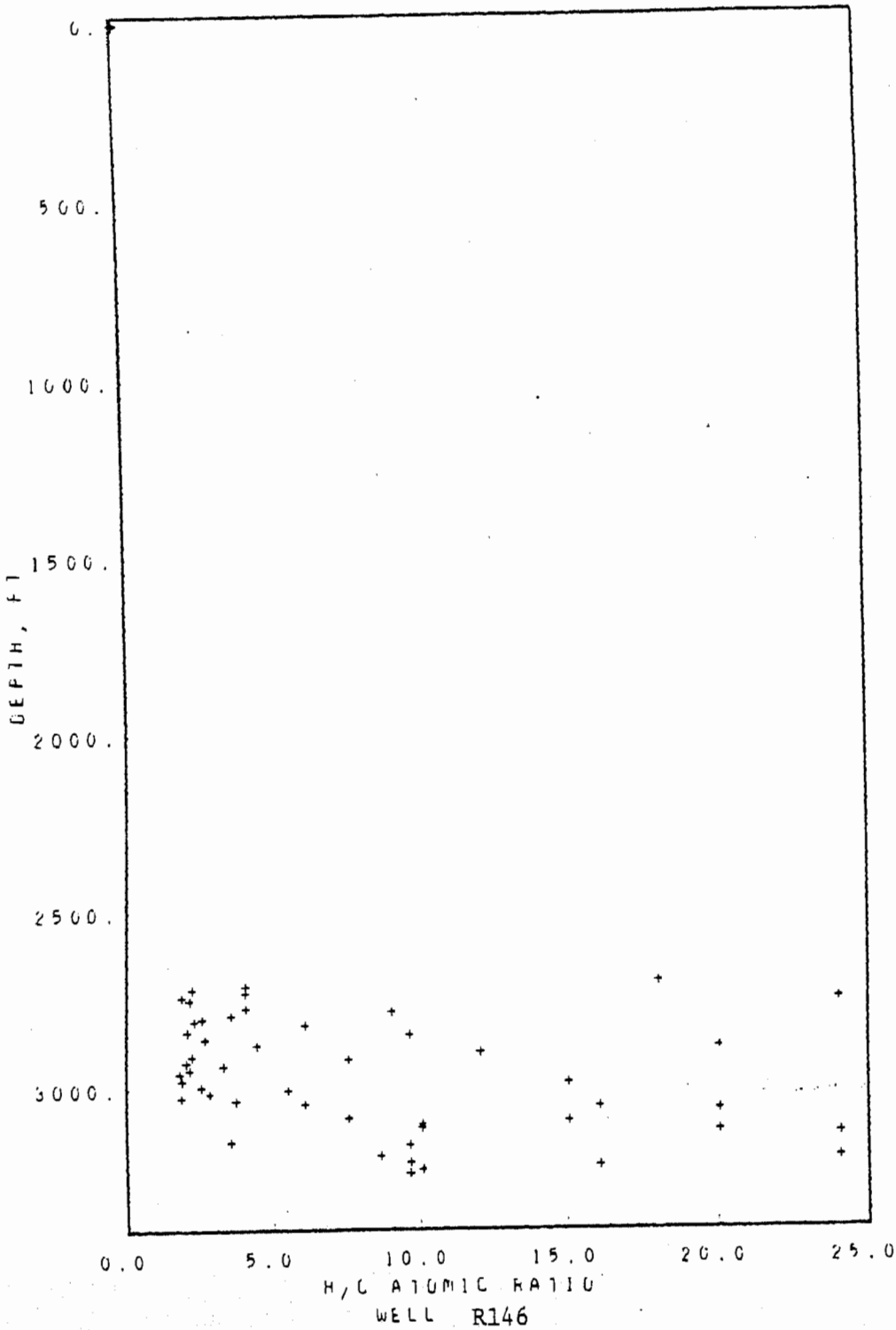


FIGURE 20. H/C ATOMIC RATIOS AS A FUNCTION OF DEPTH FOR WELL R-146

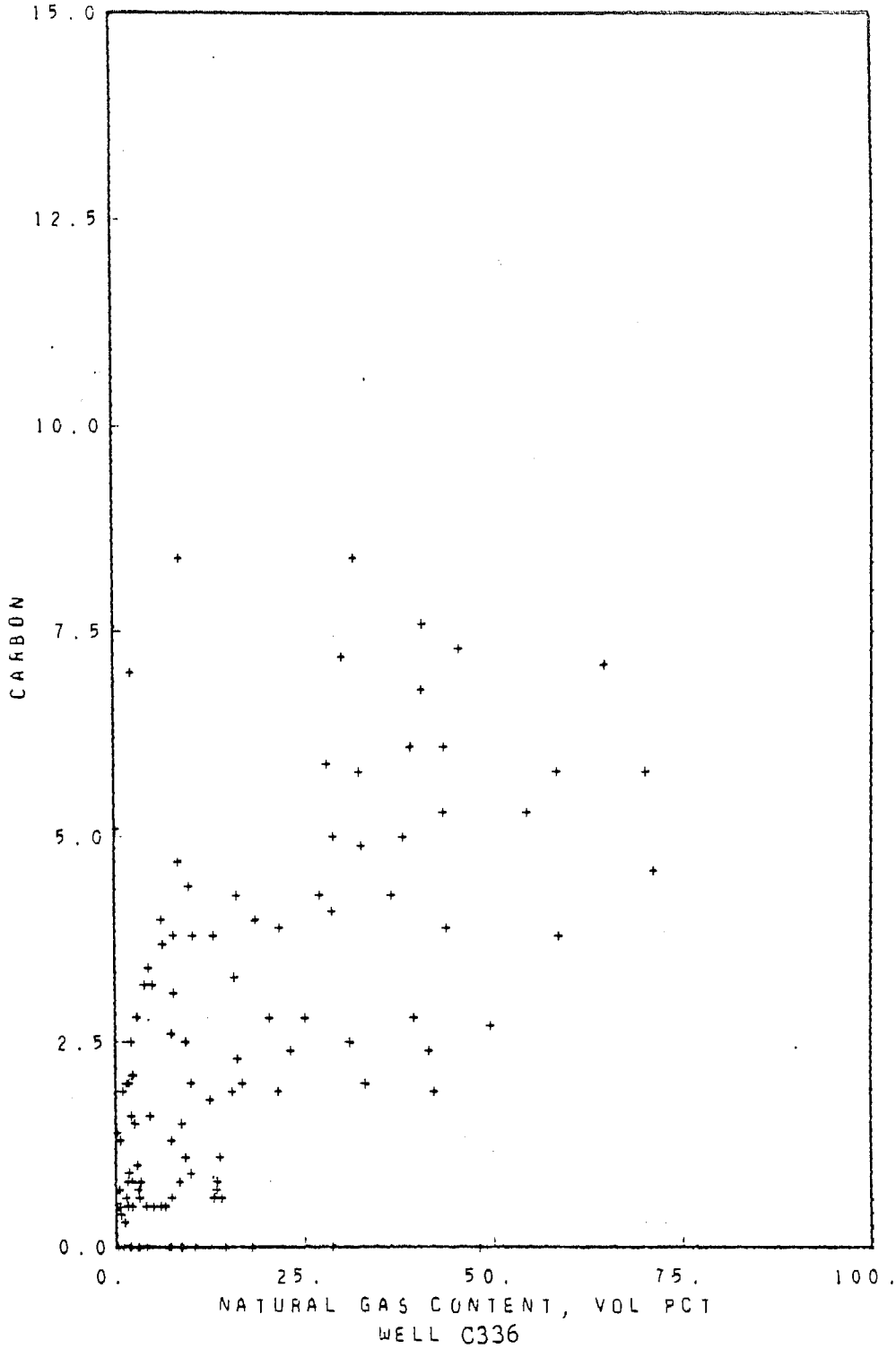


FIGURE 21. HYDROCARBON GAS CONTENTS AS A FUNCTION OF CARBON CONTENT FOR WELL C-336

A108

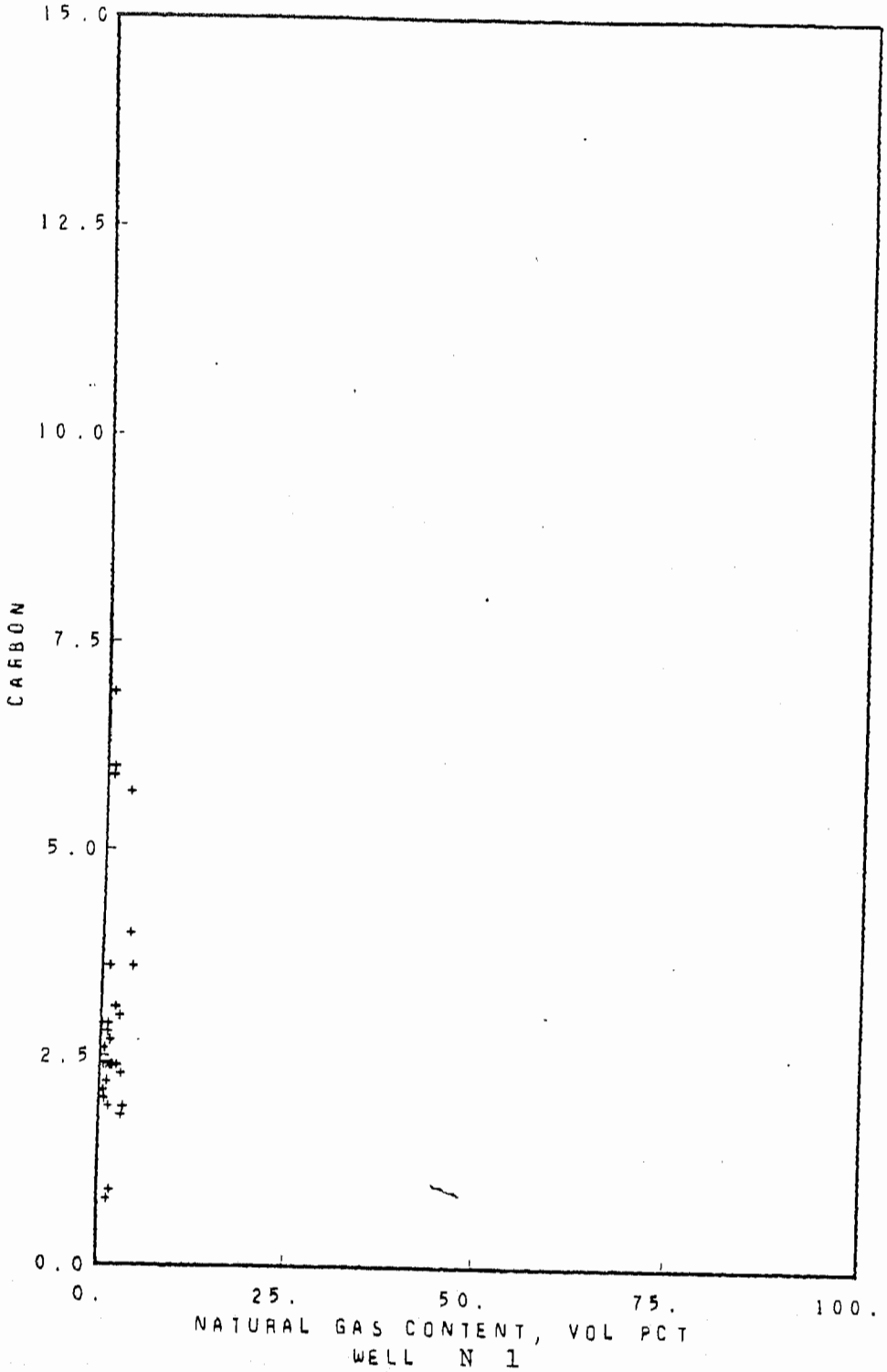


FIGURE 22. HYDROCARBON GAS CONTENTS AS A FUNCTION OF CARBON CONTENT FOR WELL N-1

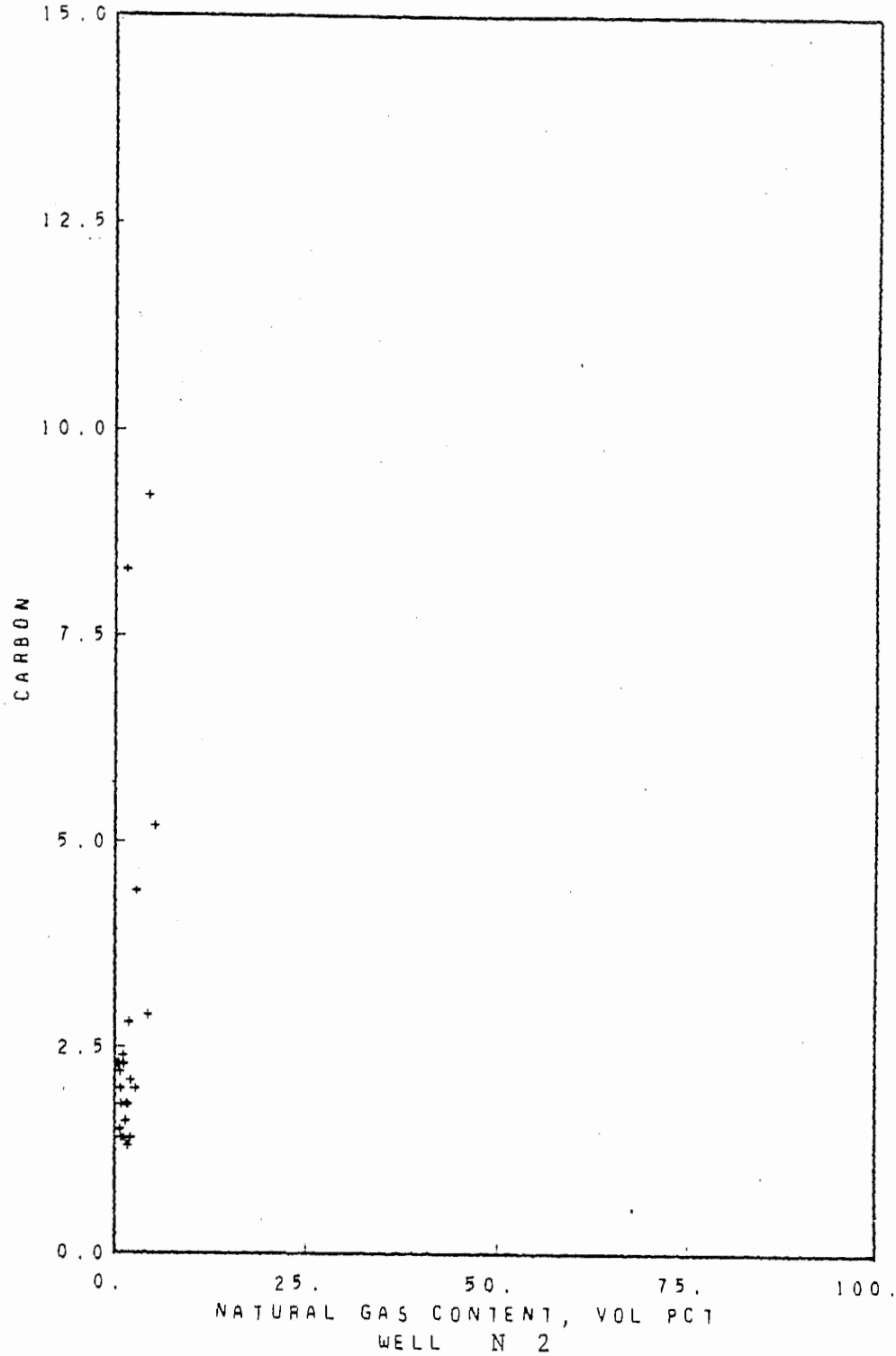


FIGURE 23. HYDROCARBON GAS CONTENTS AS S FUNCTION OF CARBON CONTENT FOR WELL N-2

A110

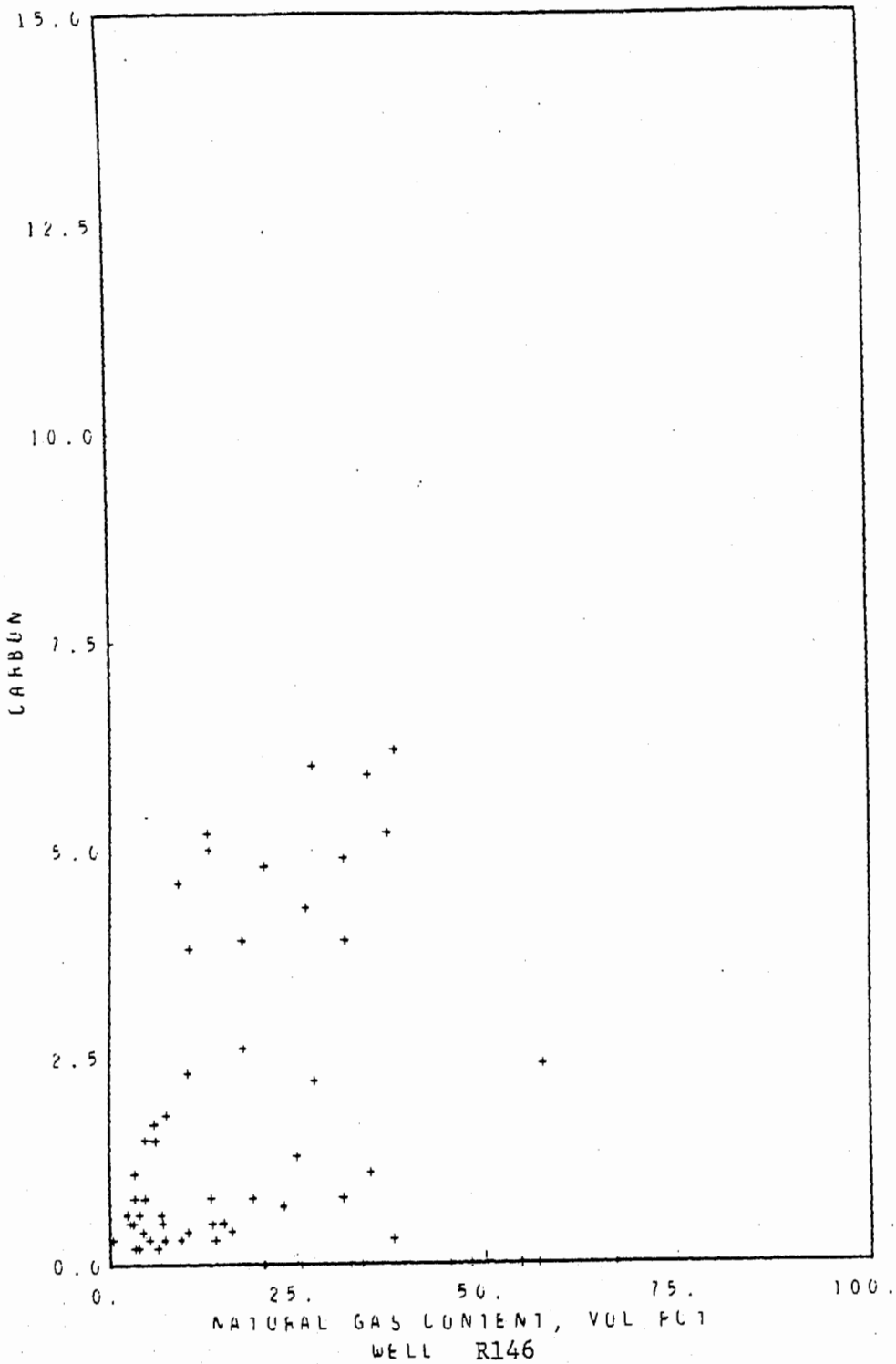


FIGURE 24. HYDROCARBON GAS CONTENTS AS A FUNCTION OF CARBON CONTENT FOR WELL R-146

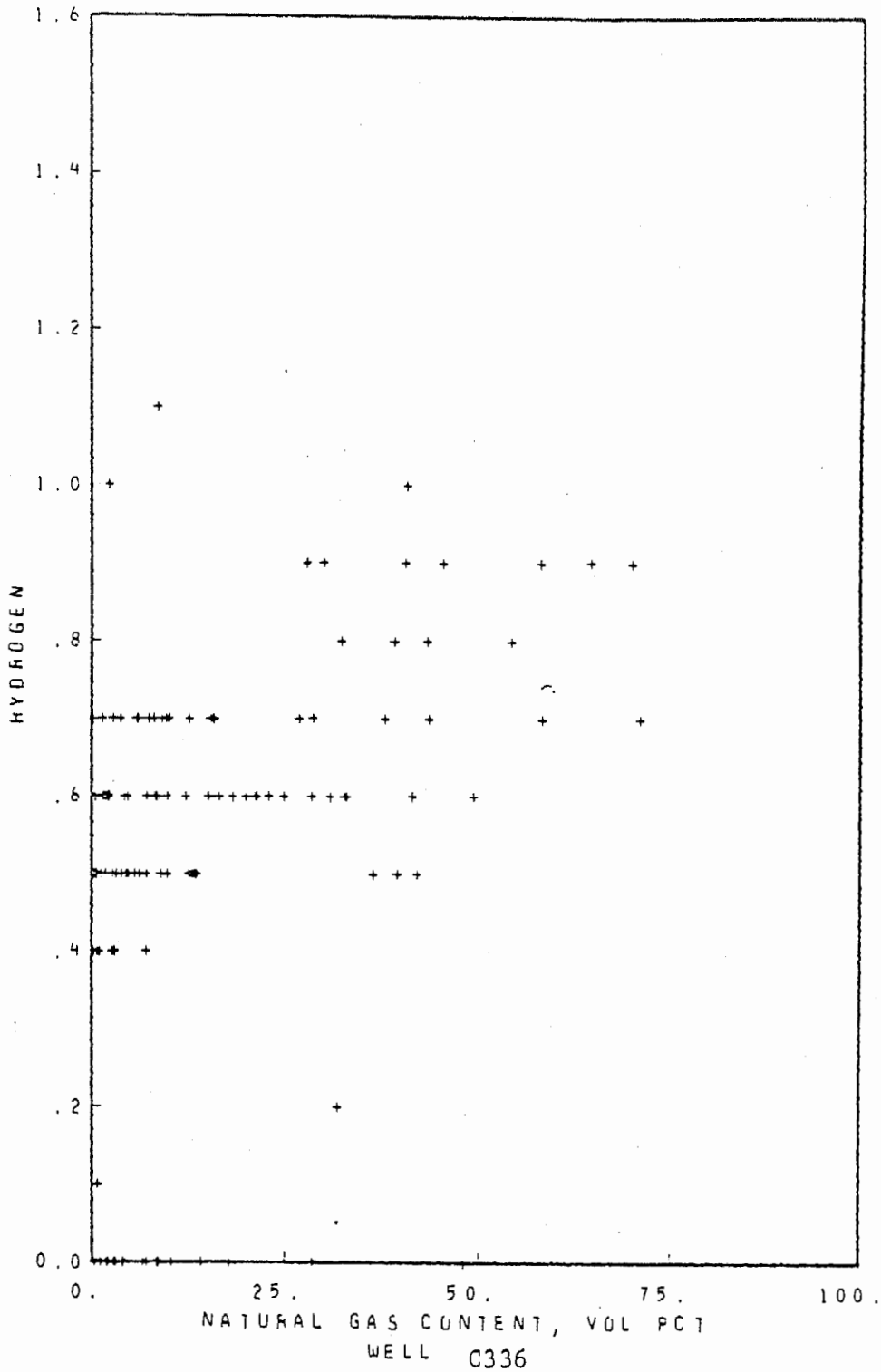


FIGURE 25. HYDROCARBON GAS CONTENT AS A FUNCTION OF HYDROGEN CONTENT FOR WELL C-336

A112

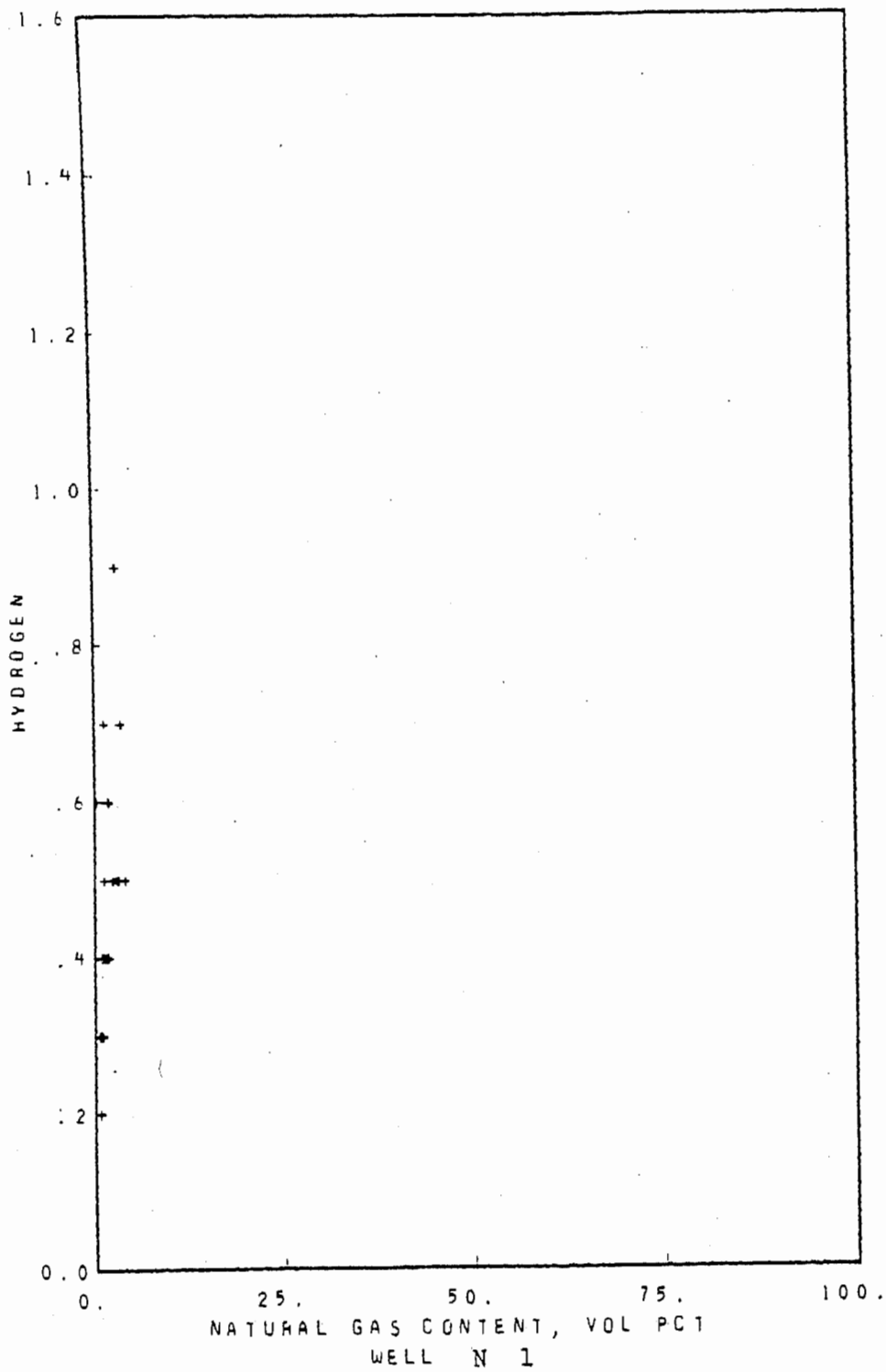


FIGURE 26. HYDROCARBON GAS CONTENT AS A FUNCTION OF HYDROGEN CONTENT FOR WELL N-1

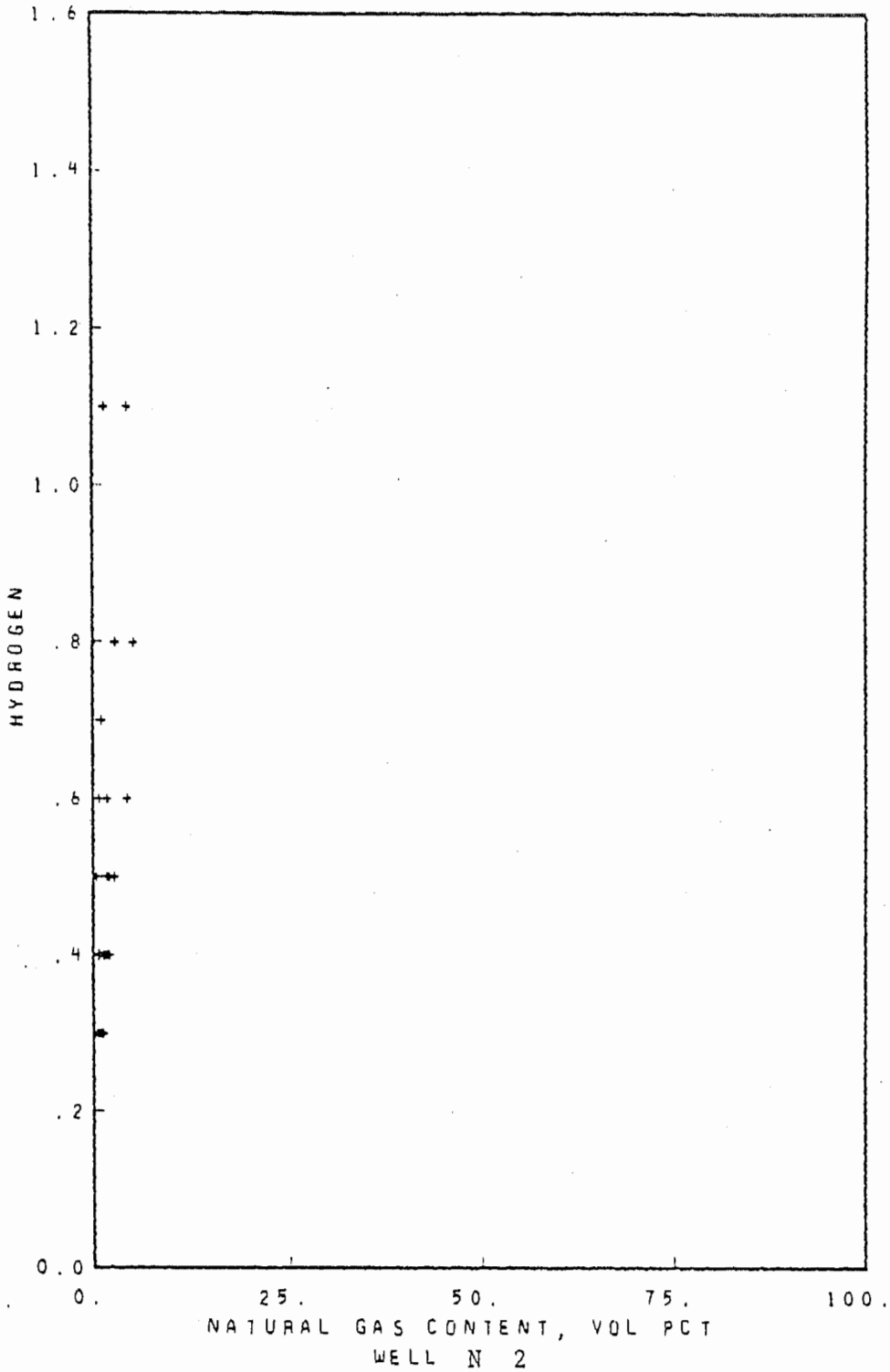


FIGURE 27. HYDROCARBON GAS CONTENTS AS A FUNCTION OF HYDROGEN CONTENT FOR WELL N-2

A114

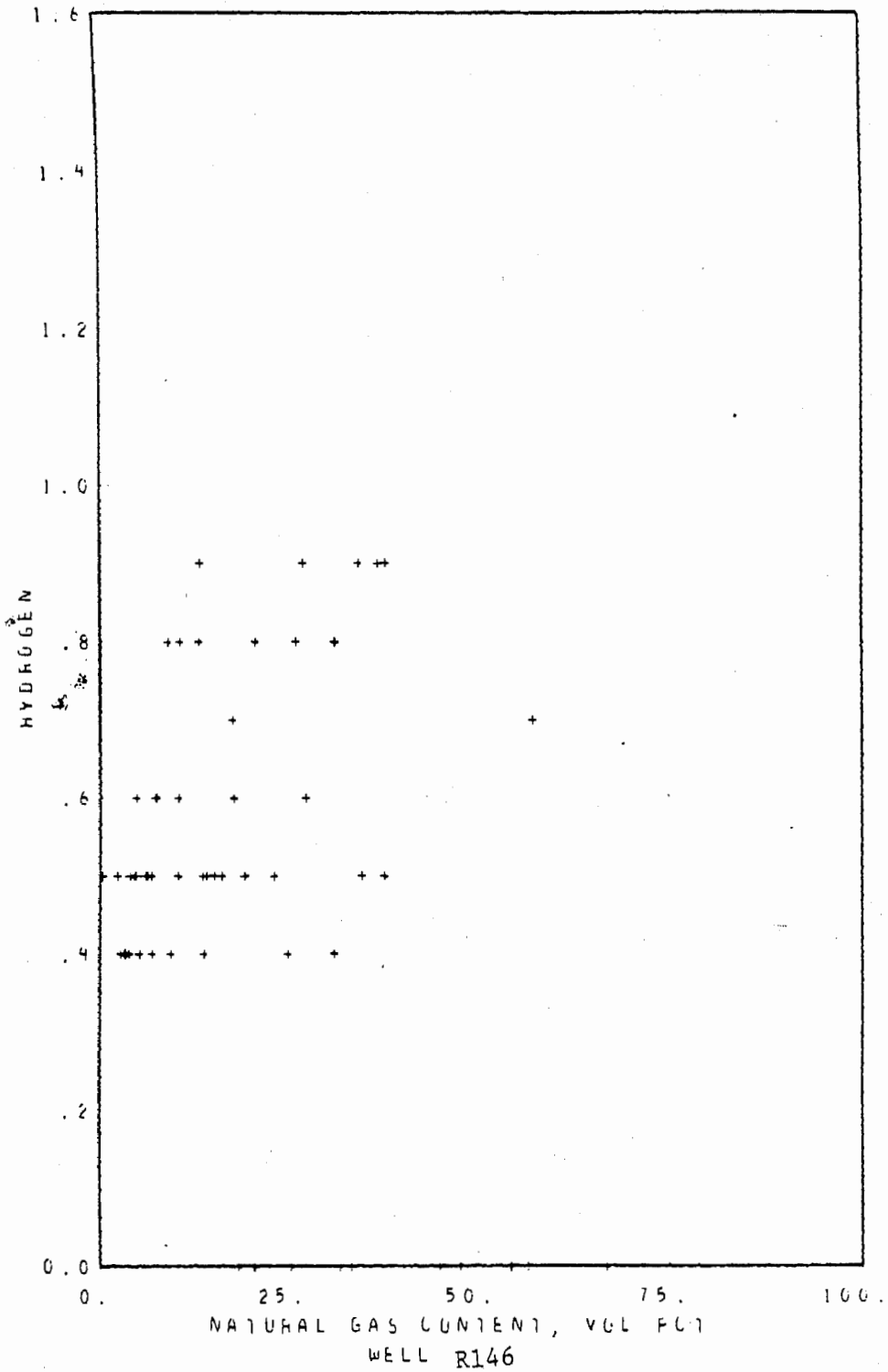


FIGURE 28. HYDROCARBON GAS CONTENTS AS A FUNCTION OF HYDROGEN CONTENT FOR WELL R-146

A115

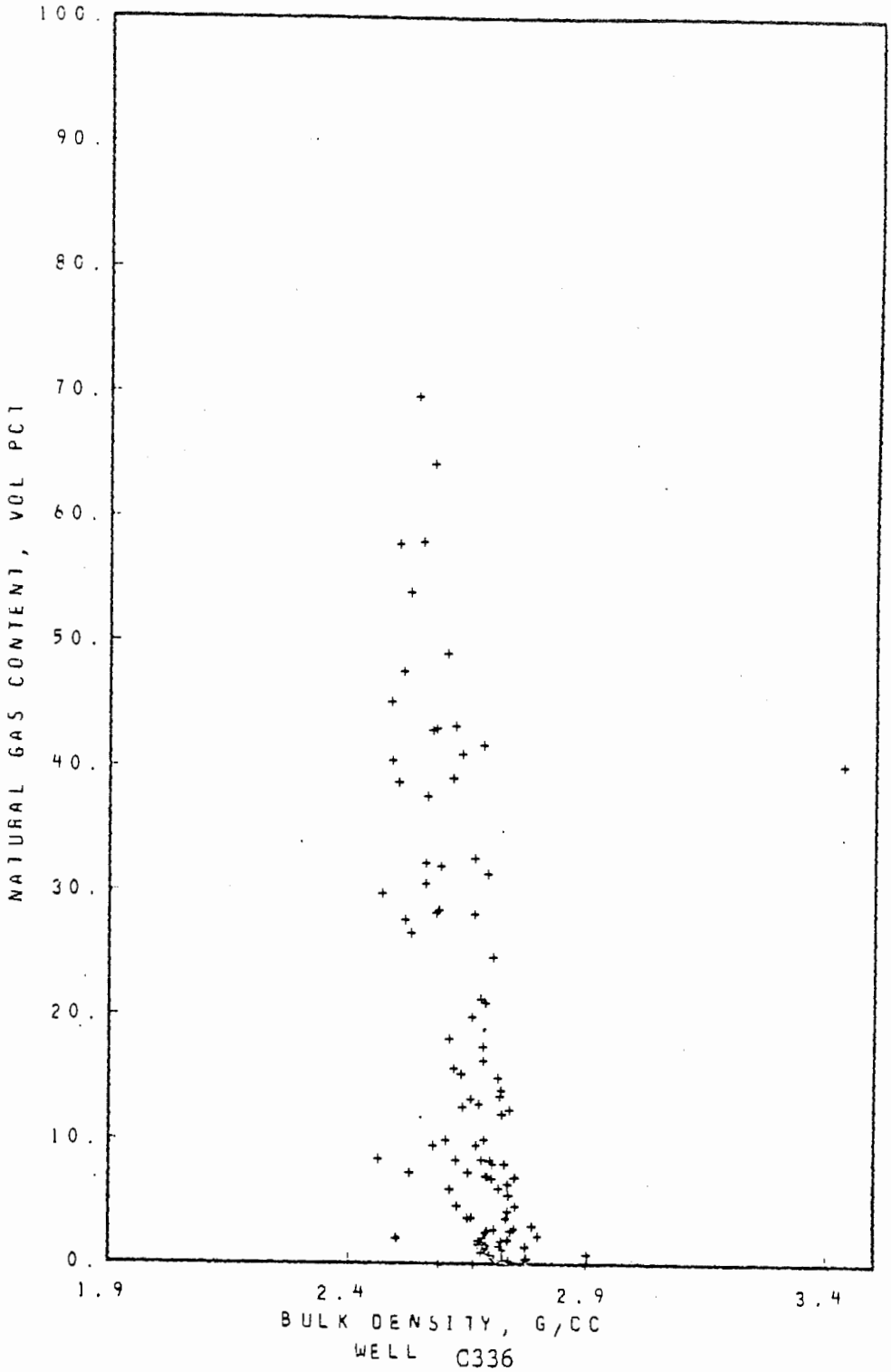


FIGURE 29. HYDROCARBON GAS CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL C-336

A 116

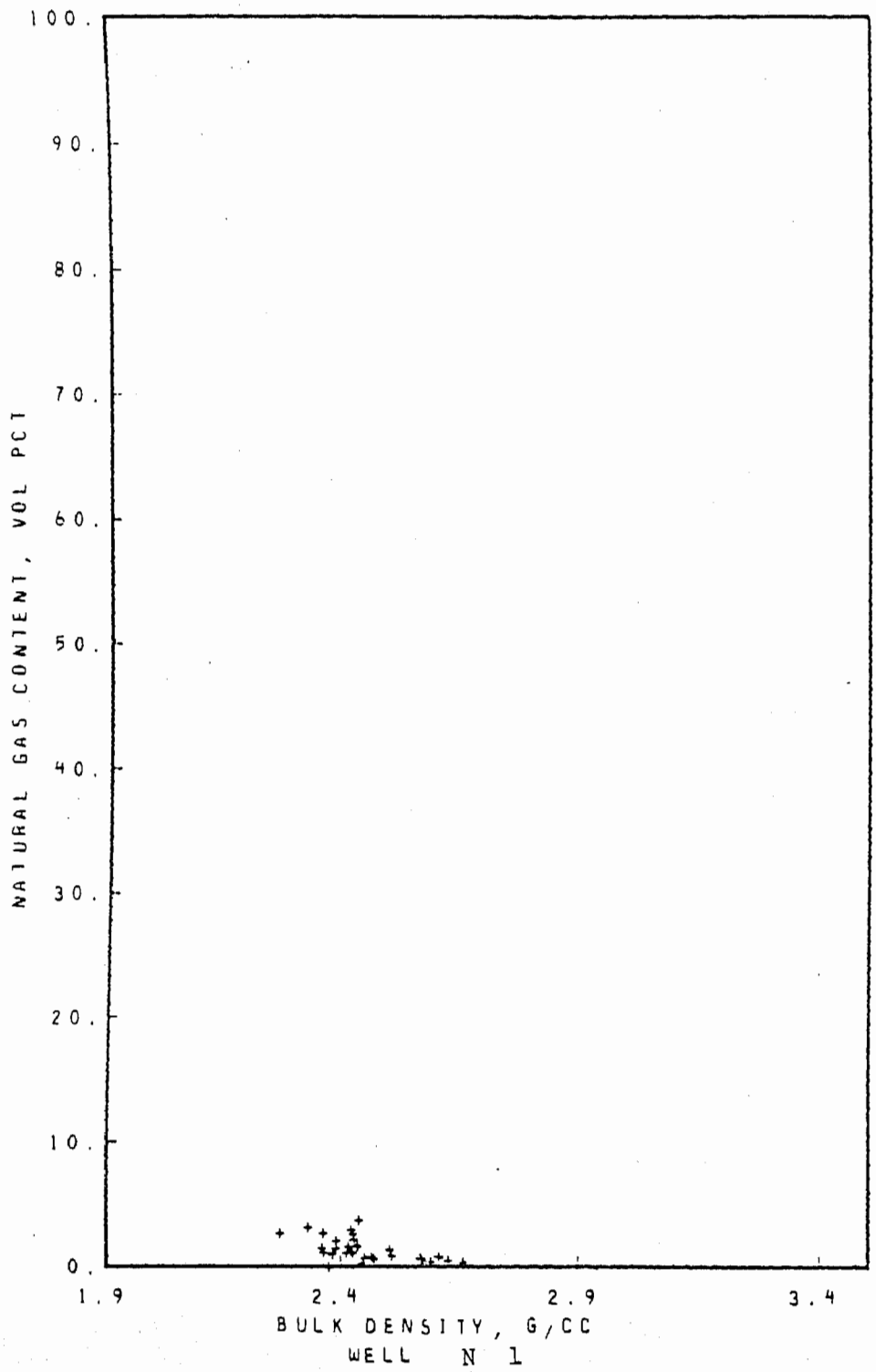


FIGURE 30. HYDROCARBON GAS CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-1

A117

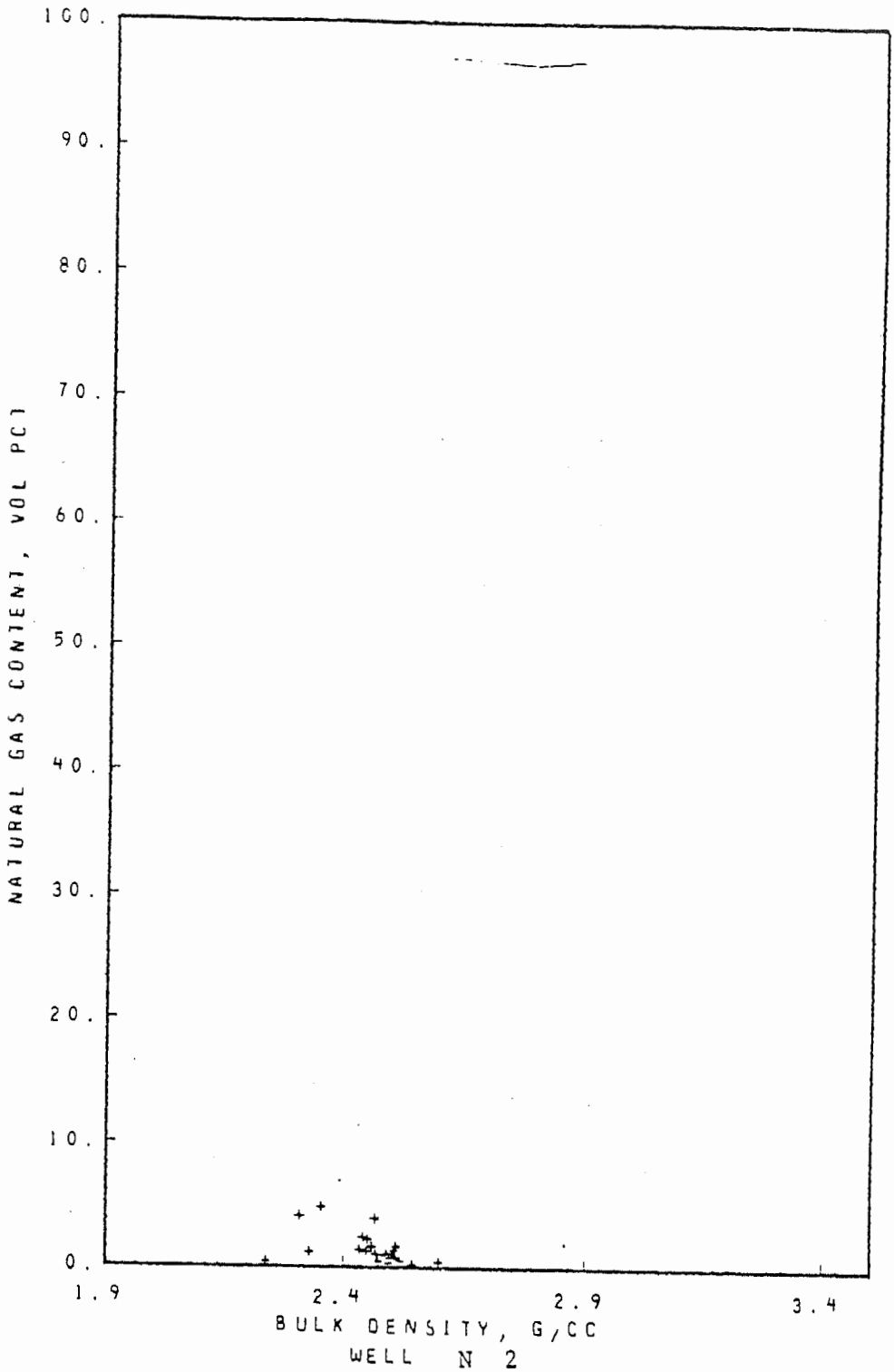


FIGURE 31. HYDROCARBON GAS CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-2

A118

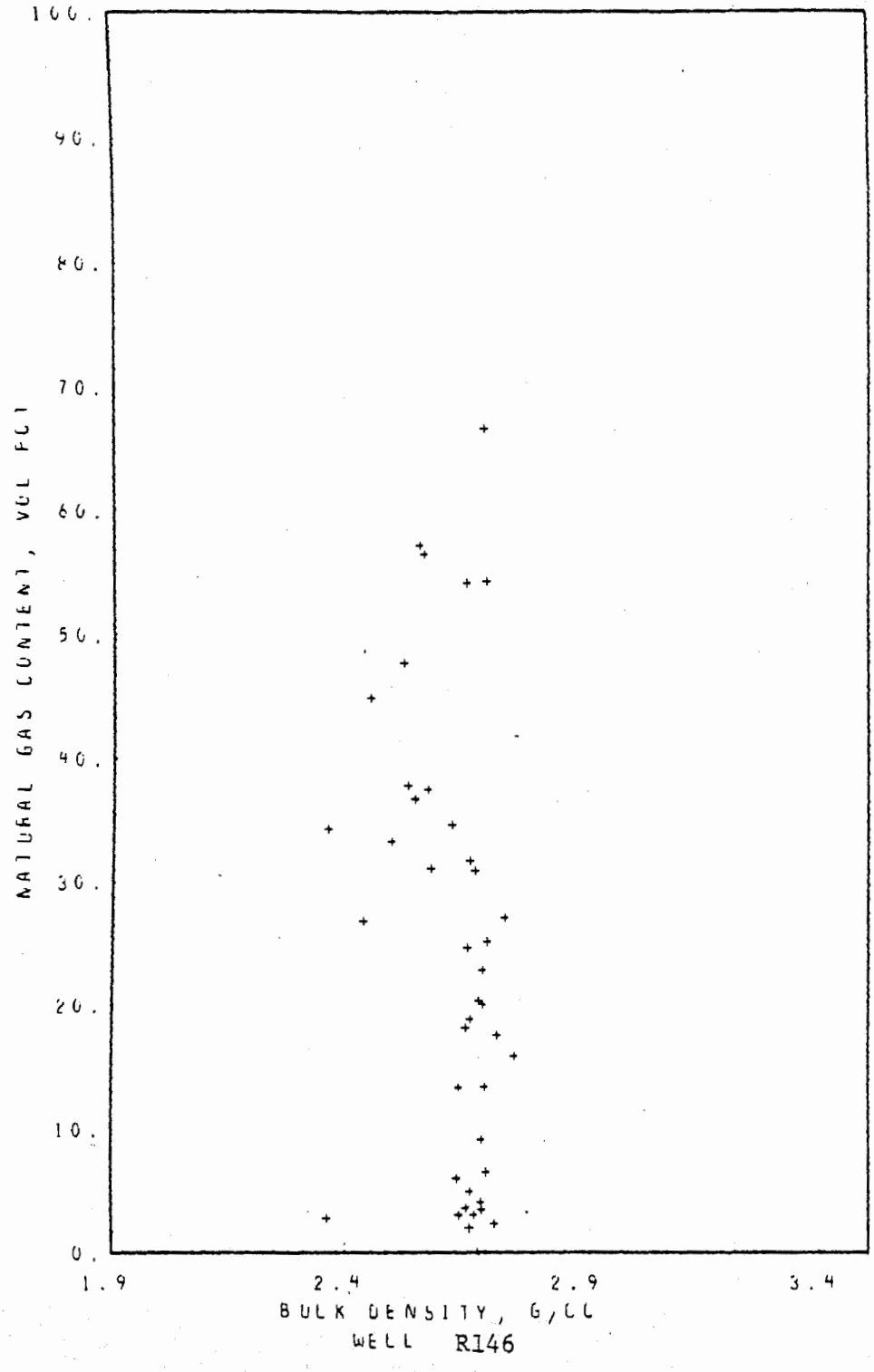


FIGURE 32. HYDROCARBON GAS CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL R-146

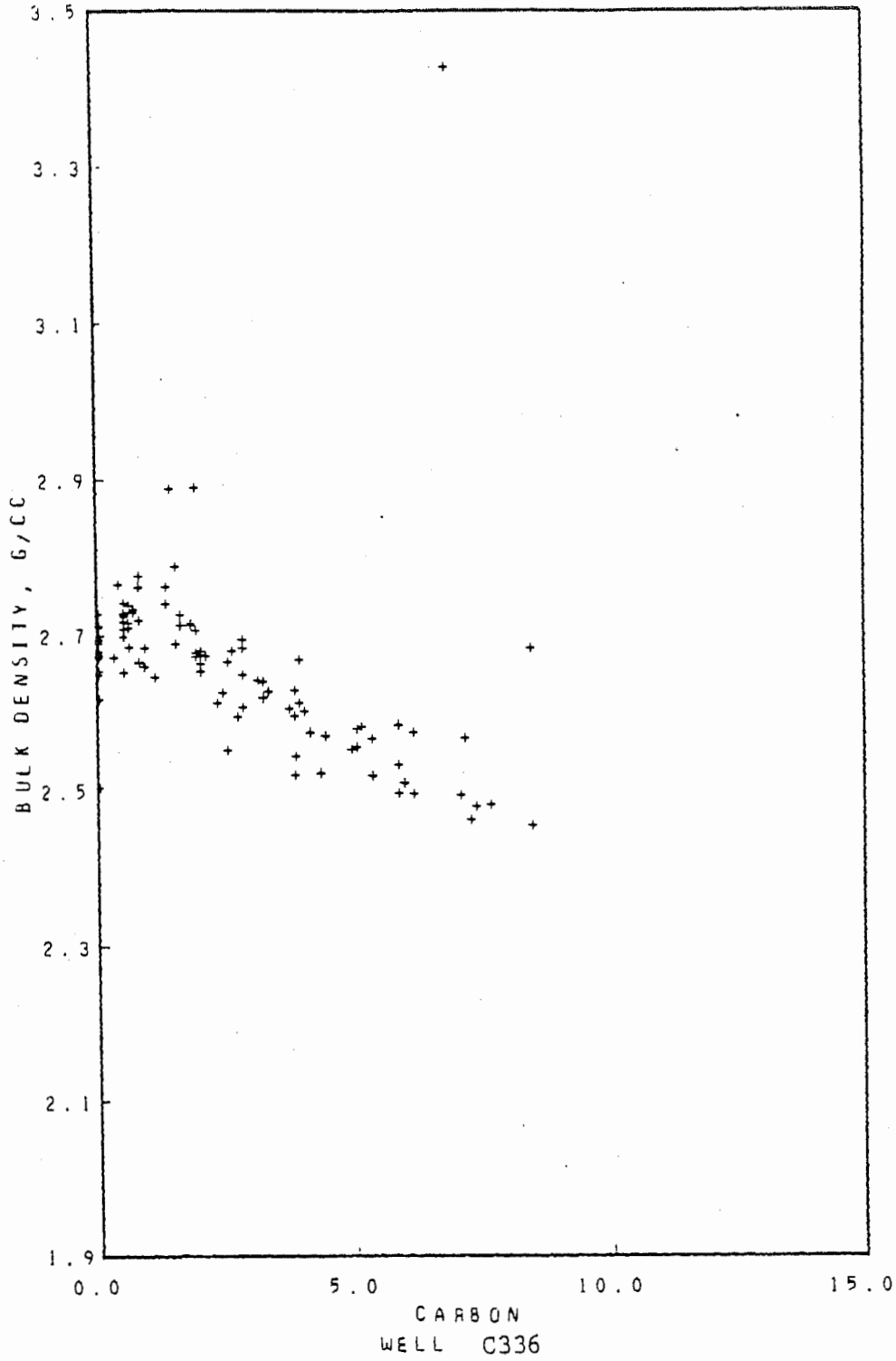


FIGURE 33. CARBON CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL C-336

A120

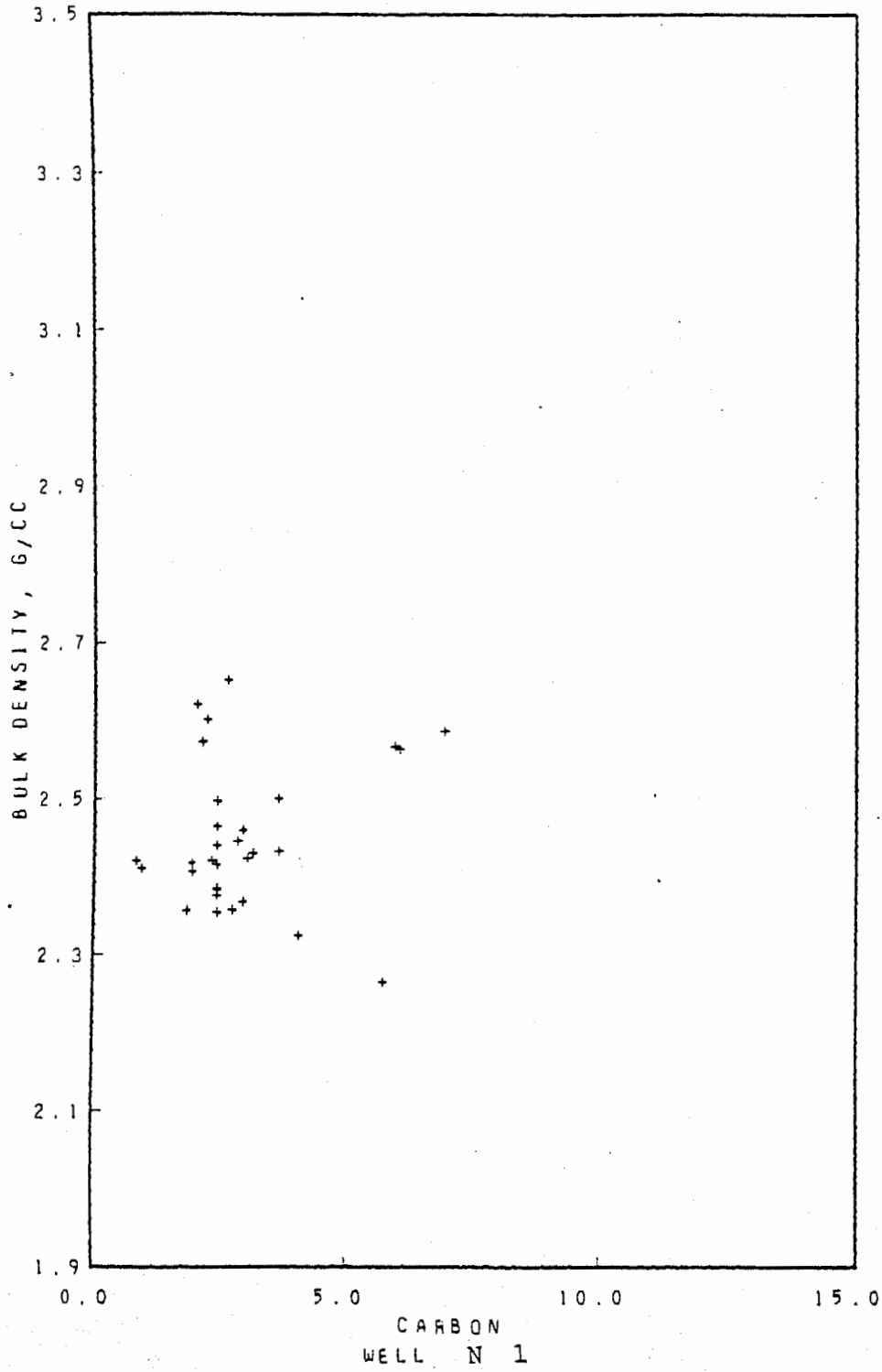


FIGURE 34. CARBON CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-1

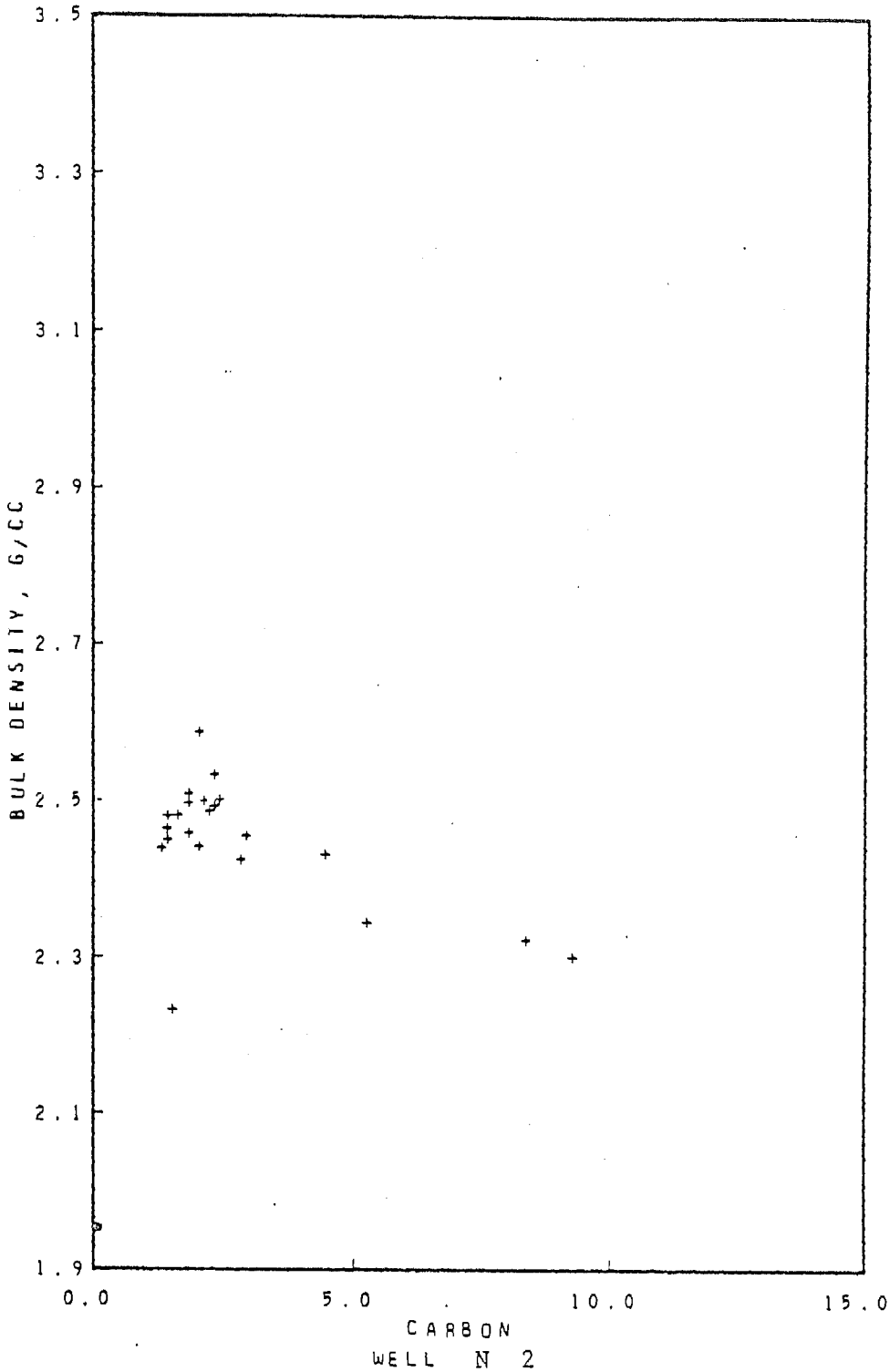


FIGURE 35. CARBON CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-2

A122

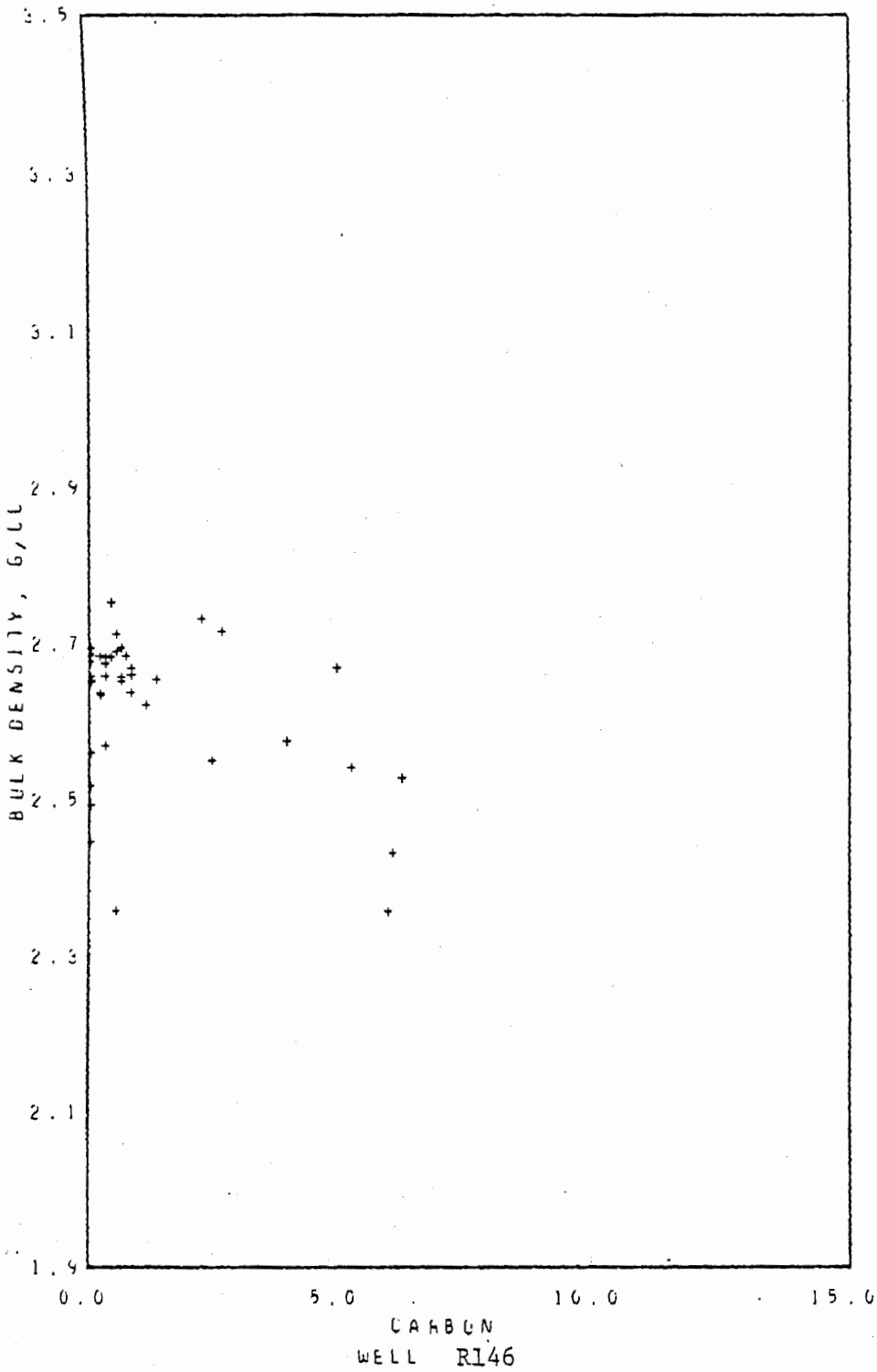


FIGURE 36. CARBON CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL R-146

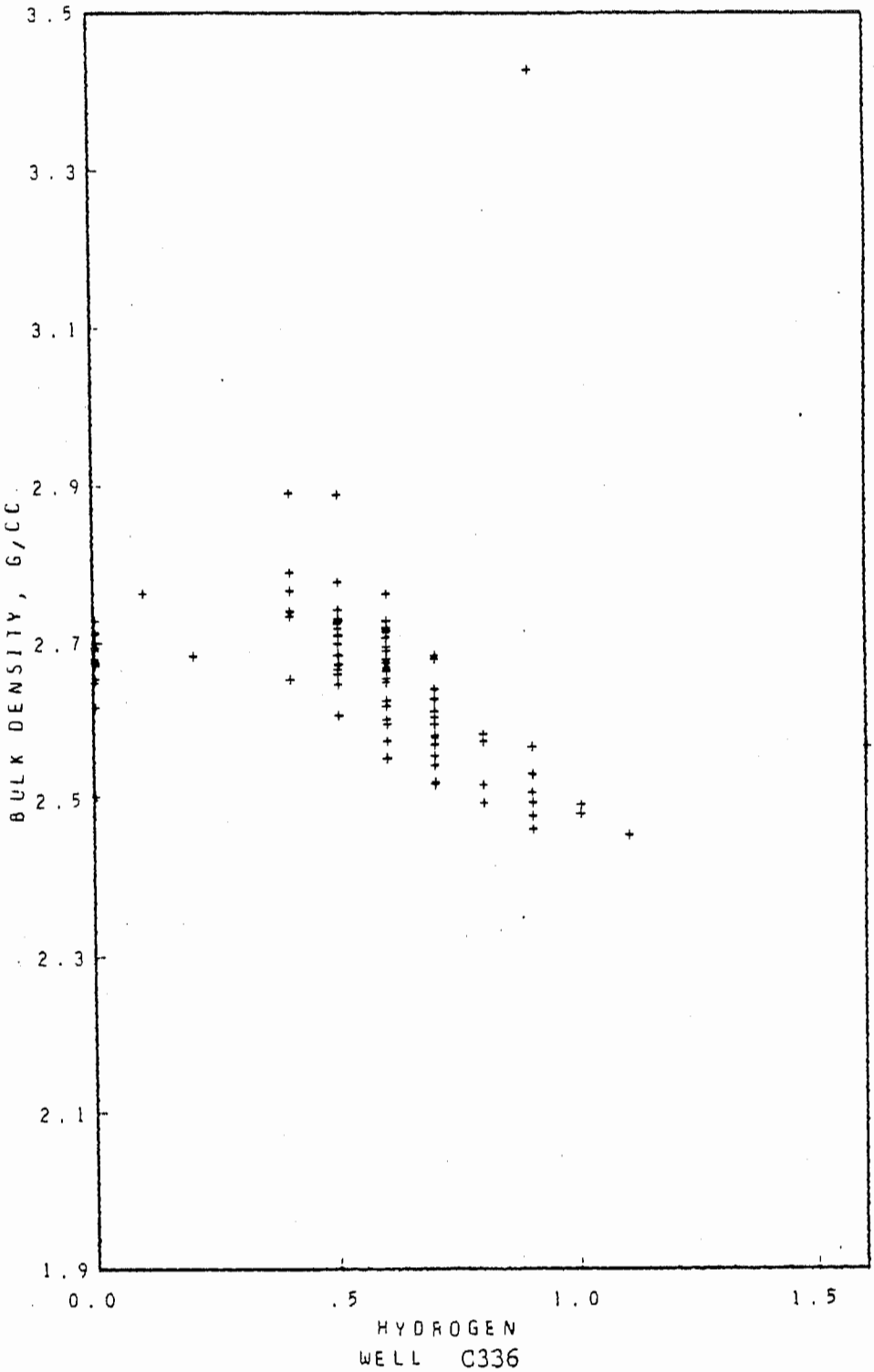


FIGURE 37. HYDROGEN CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL C-336

A124

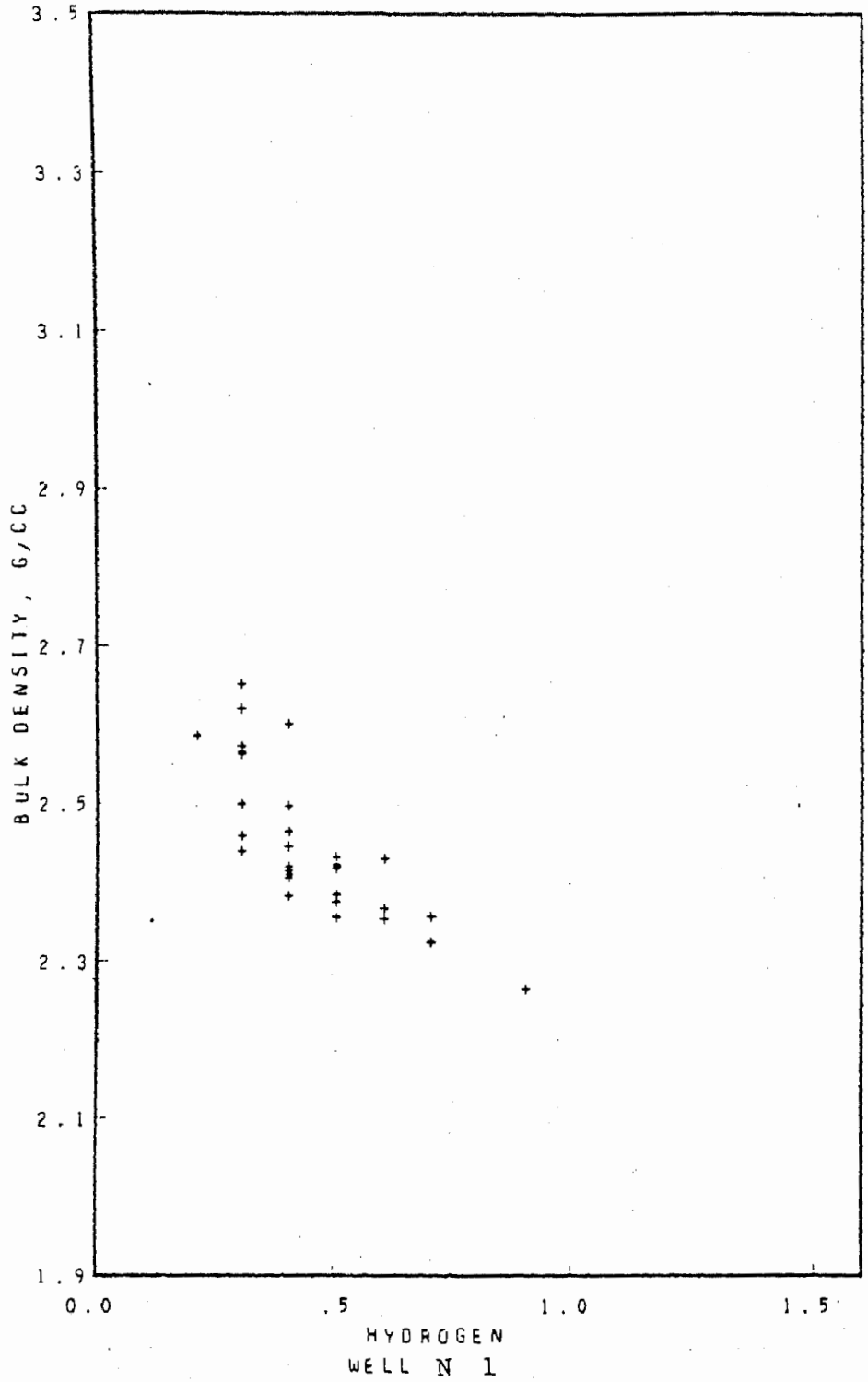


FIGURE 38. HYDROGEN CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-1

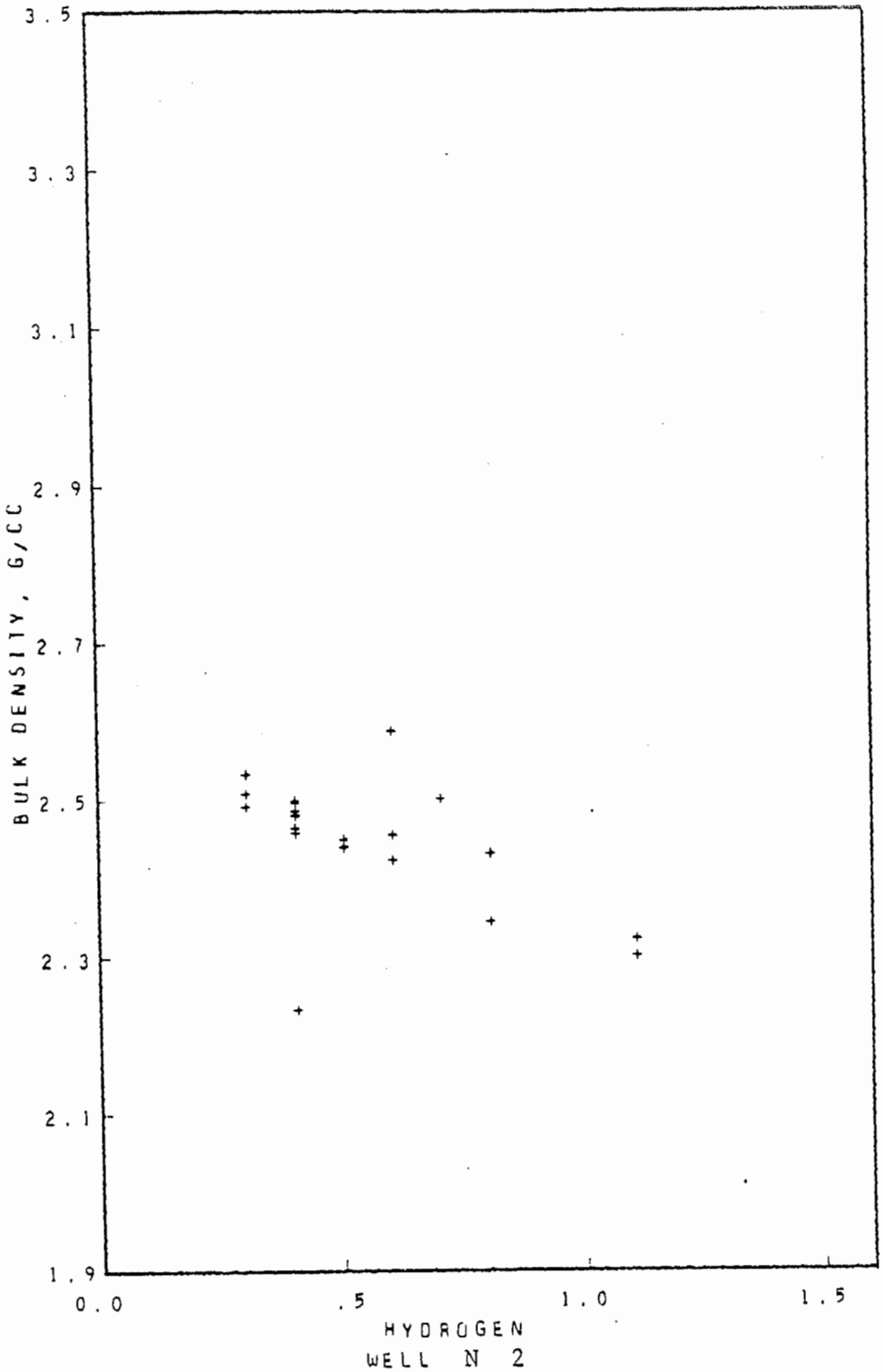


FIGURE 39. HYDROGEN CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL N-2

A126

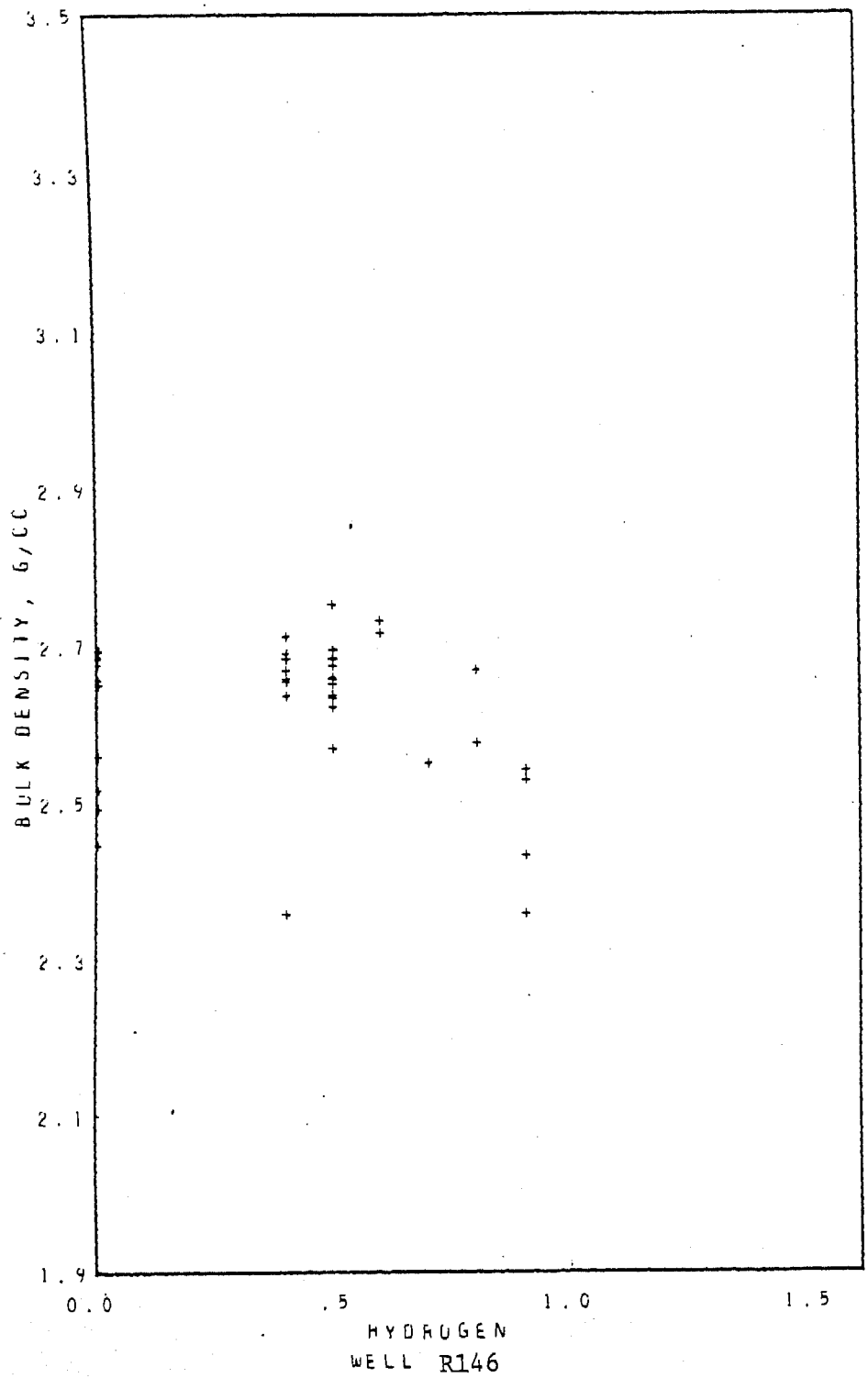
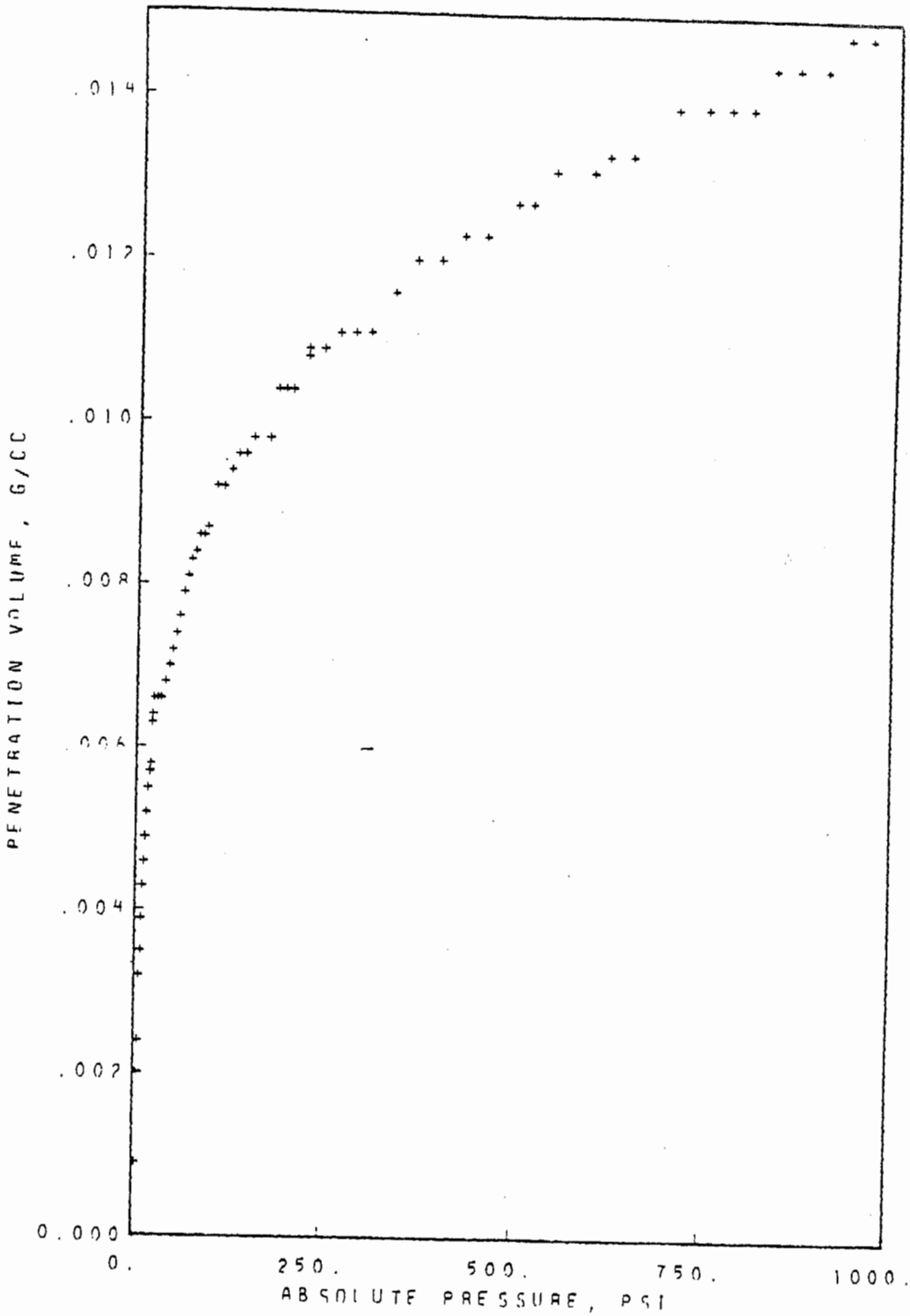


FIGURE 40. HYDROGEN CONTENTS AS A FUNCTION OF BULK DENSITY FOR WELL R-146

A 127



C336-2434

FIGURE 41. PORE VOLUME AS A FUNCTION OF MERCURY PRESSURE FOR WELL C-336

A128

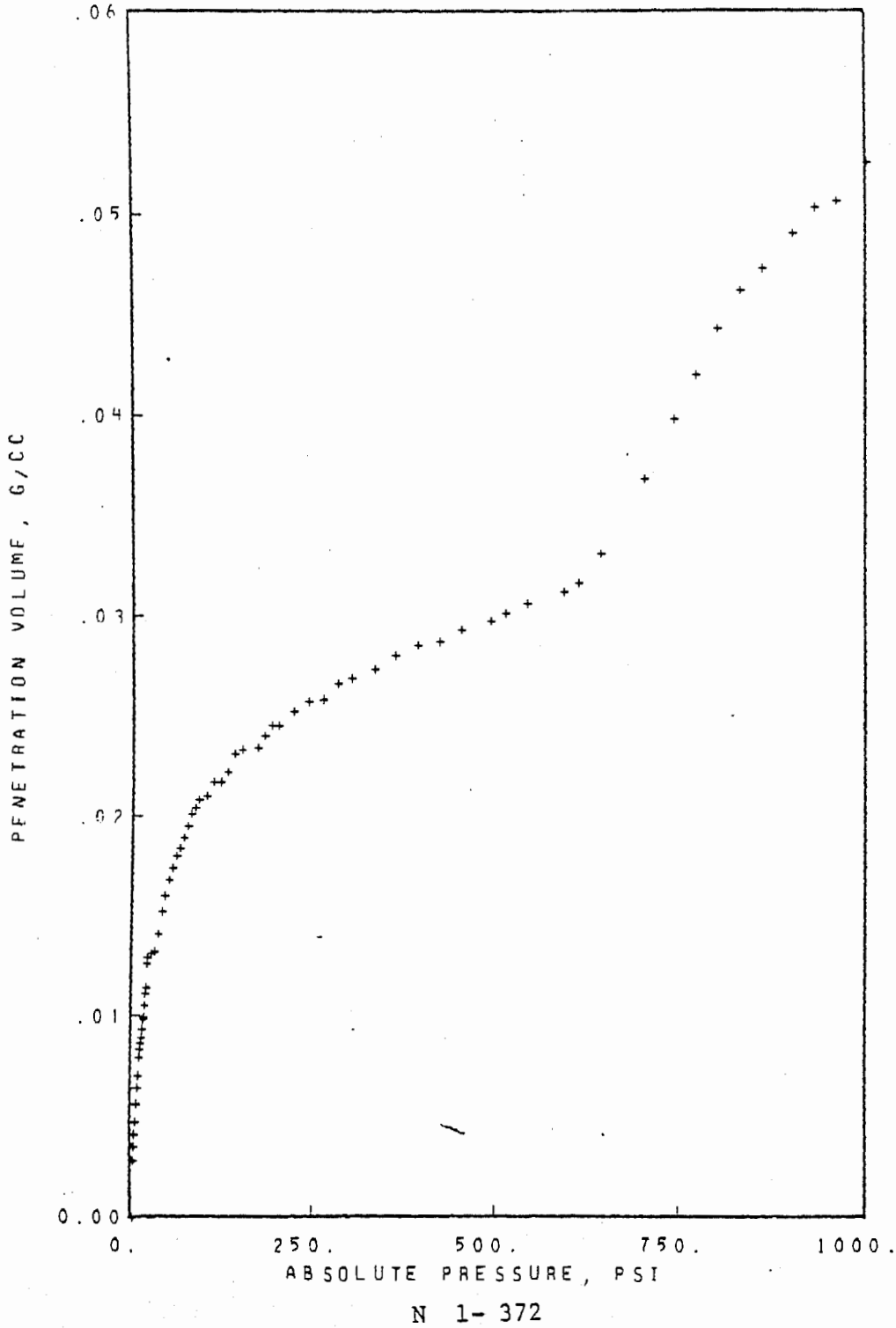


FIGURE 42. PORE VOLUME AS A FUNCTION OF MERCURY PRESSURE FOR WELL N-1

A128

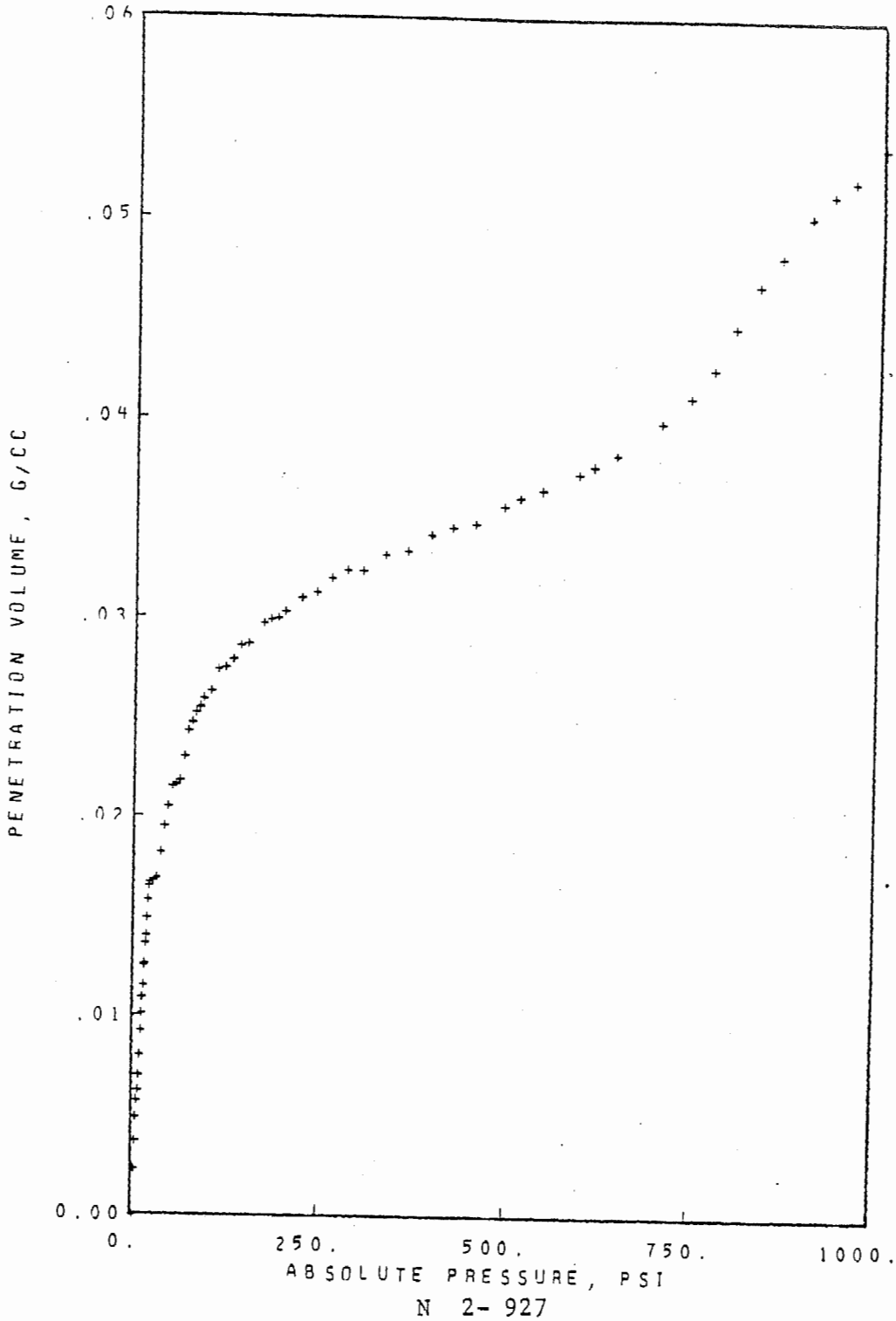


FIGURE 43. PORE VOLUME AS A FUNCTION OF MERCURY PRESSURE FOR WELL N-2

A130

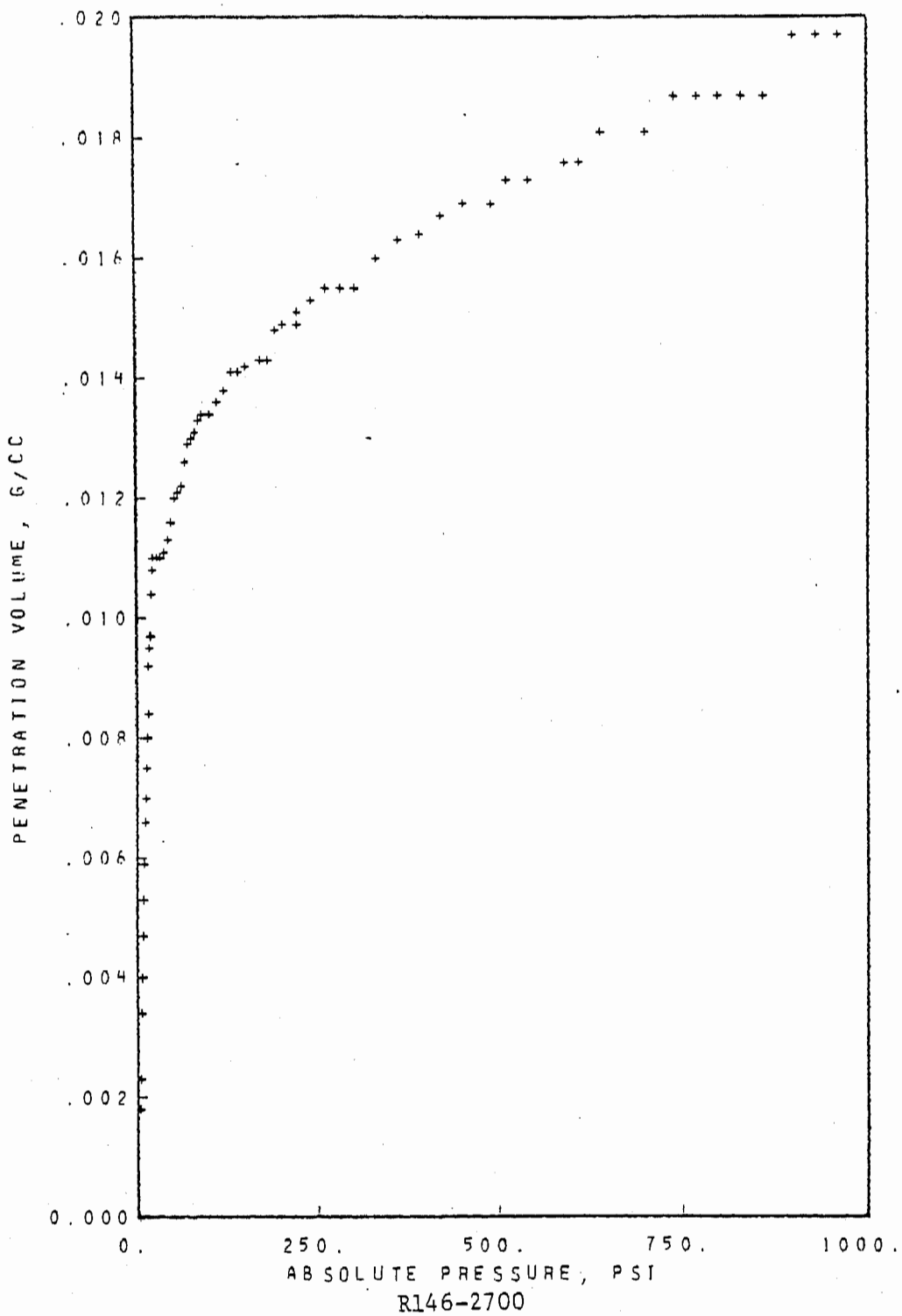


FIGURE 44. PORE VOLUME AS A FUNCTION OF MERCURY PRESSURE FOR WELL R-146

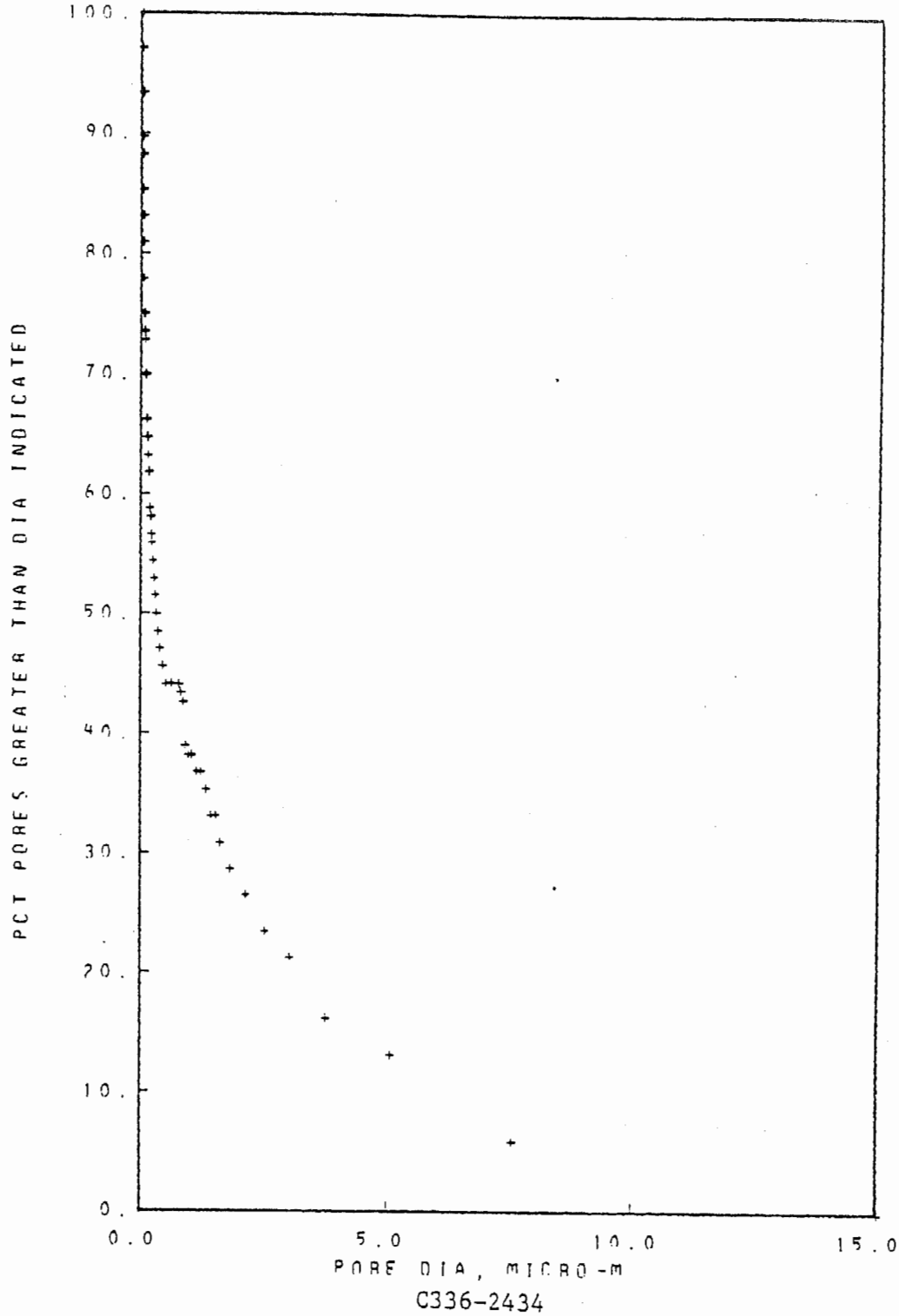


FIGURE 45. PORE SIZE DISTRIBUTION FOR SHALE SAMPLE FROM WELL C-336

A132

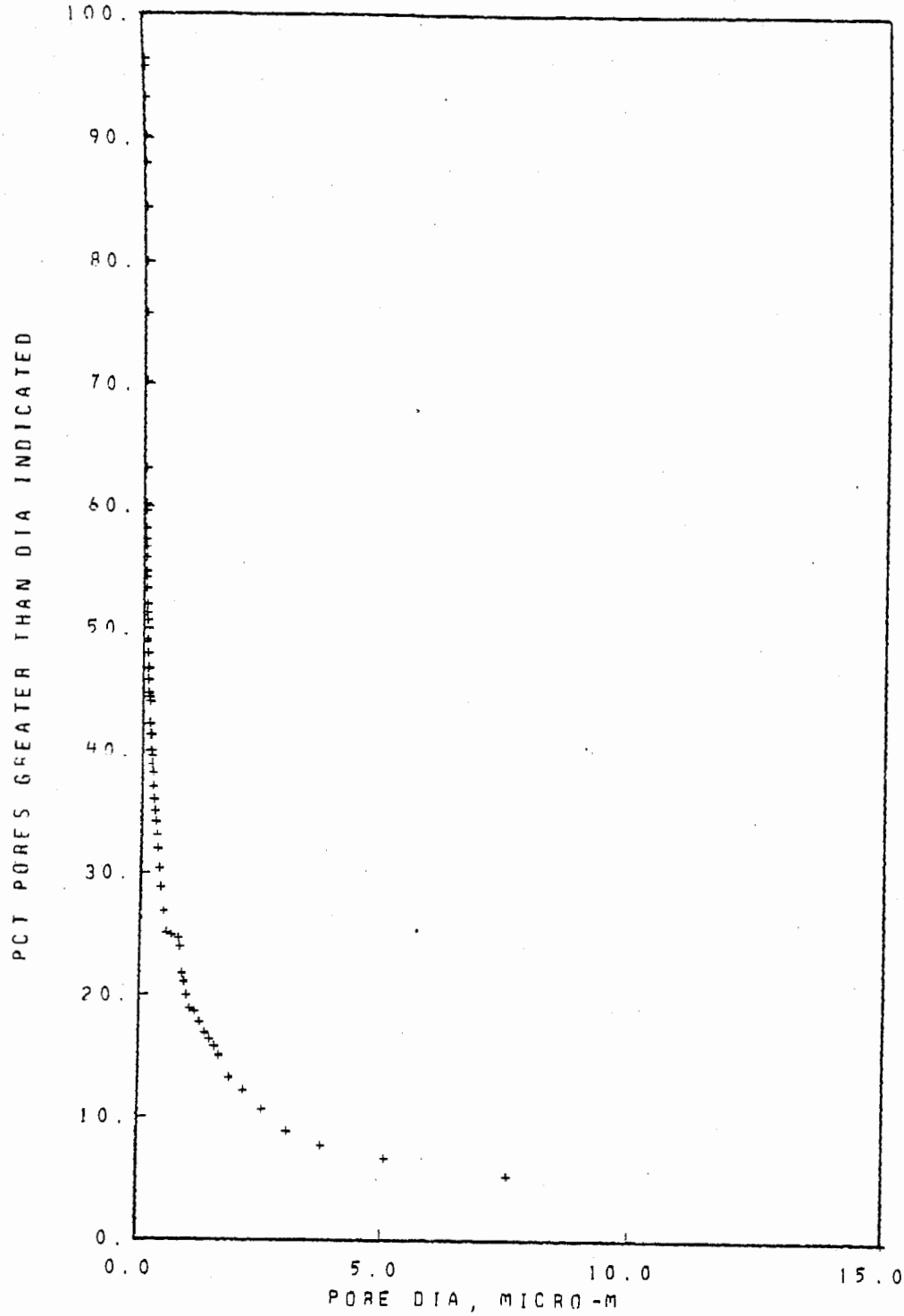


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FIGURE 46. PORE SIZE DISTRIBUTION FOR SHALE SAMPLE FROM WELL N-1

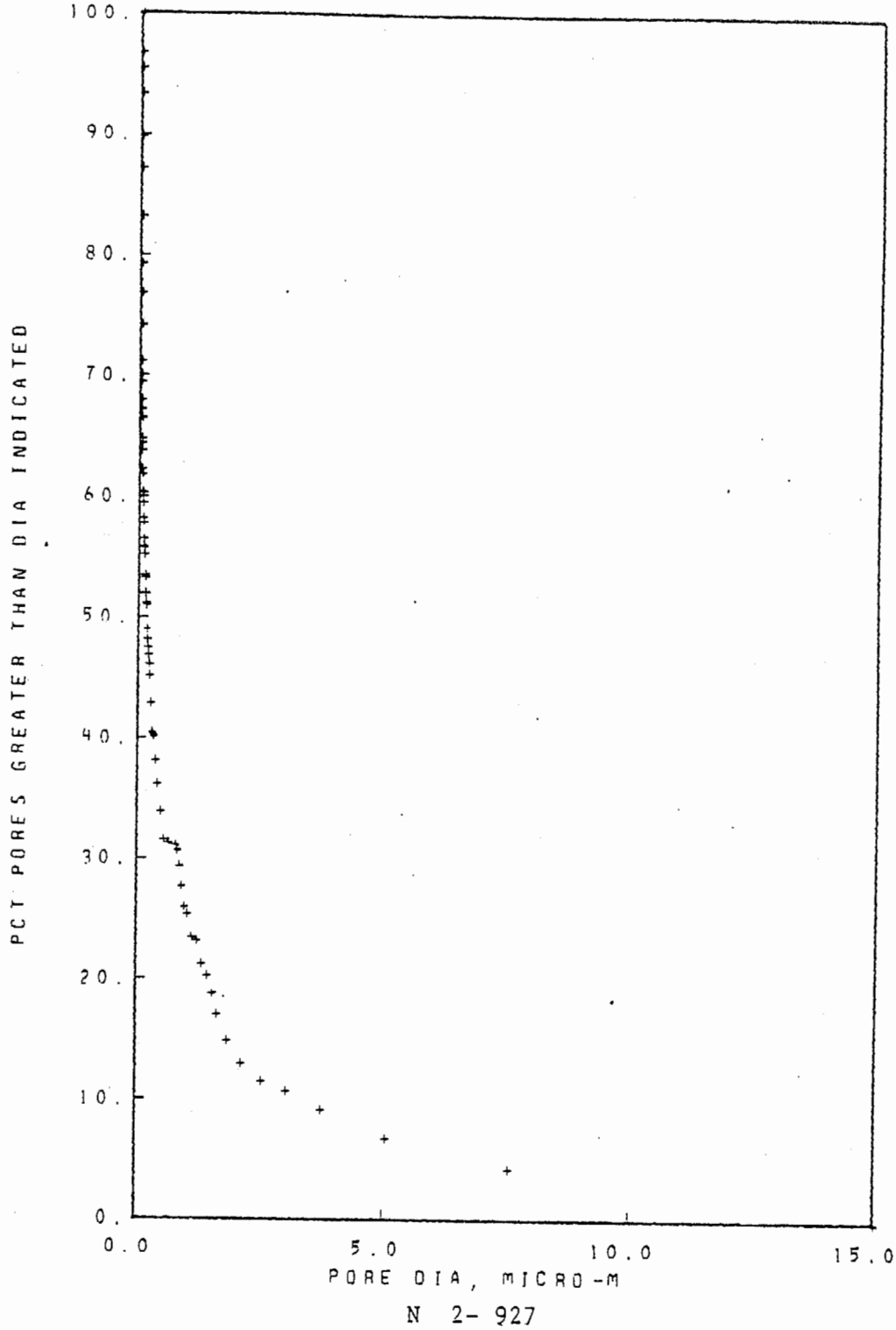
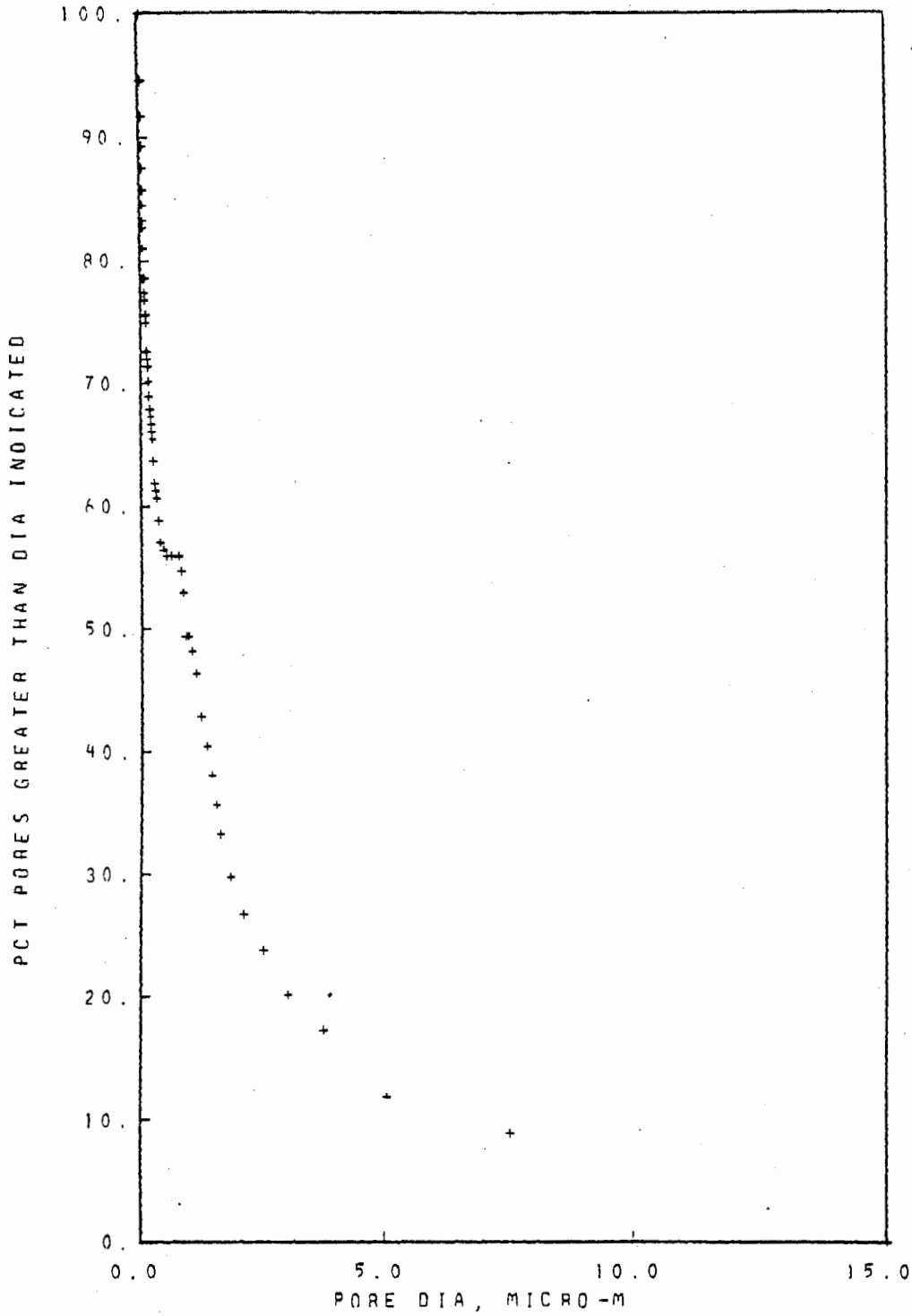


FIGURE 47. PORE SIZE DISTRIBUTION FOR SHALE SAMPLE FROM WELL N-2

A134



R146-2700

FIGURE 48. PORE SIZE DISTRIBUTION FOR SHALE SAMPLE FROM WELL R-146

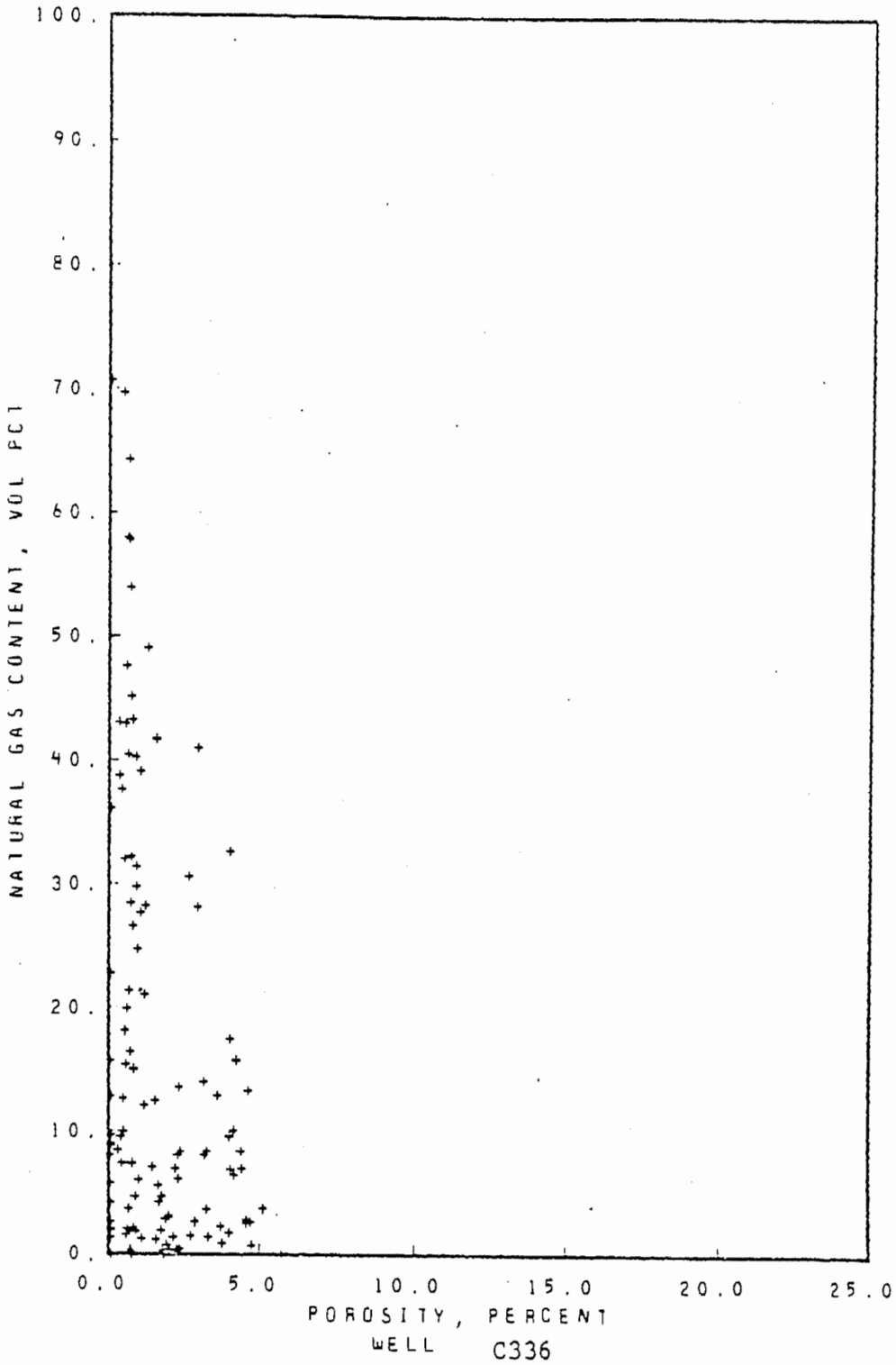


FIGURE 49. NATURAL GAS CONTENTS AS A FUNCTION OF POROSITY FOR WELL C-336

A136

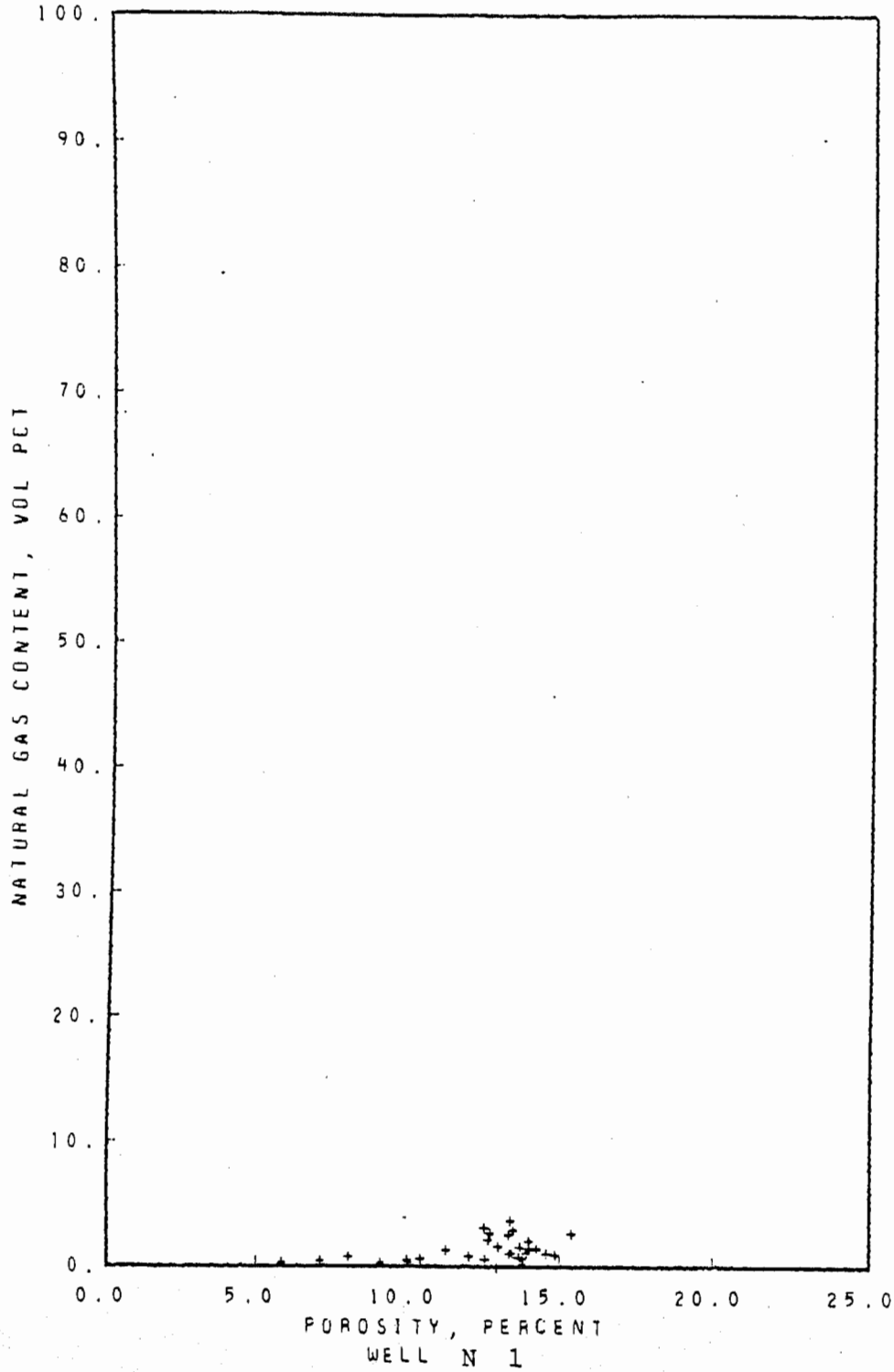


FIGURE 50. NATURAL GAS CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-1

A137

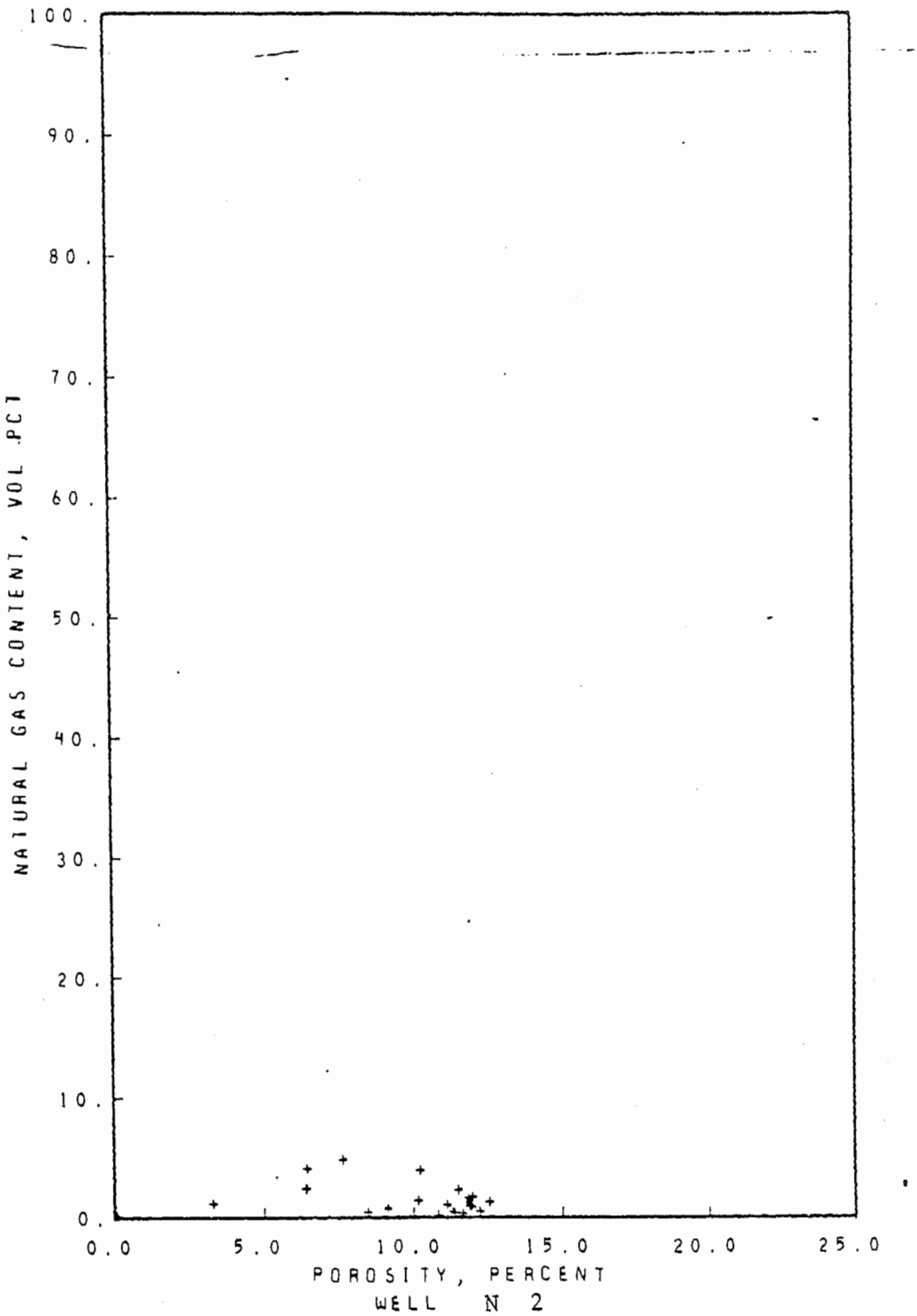


FIGURE 51. NATURAL GAS CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-2

A138

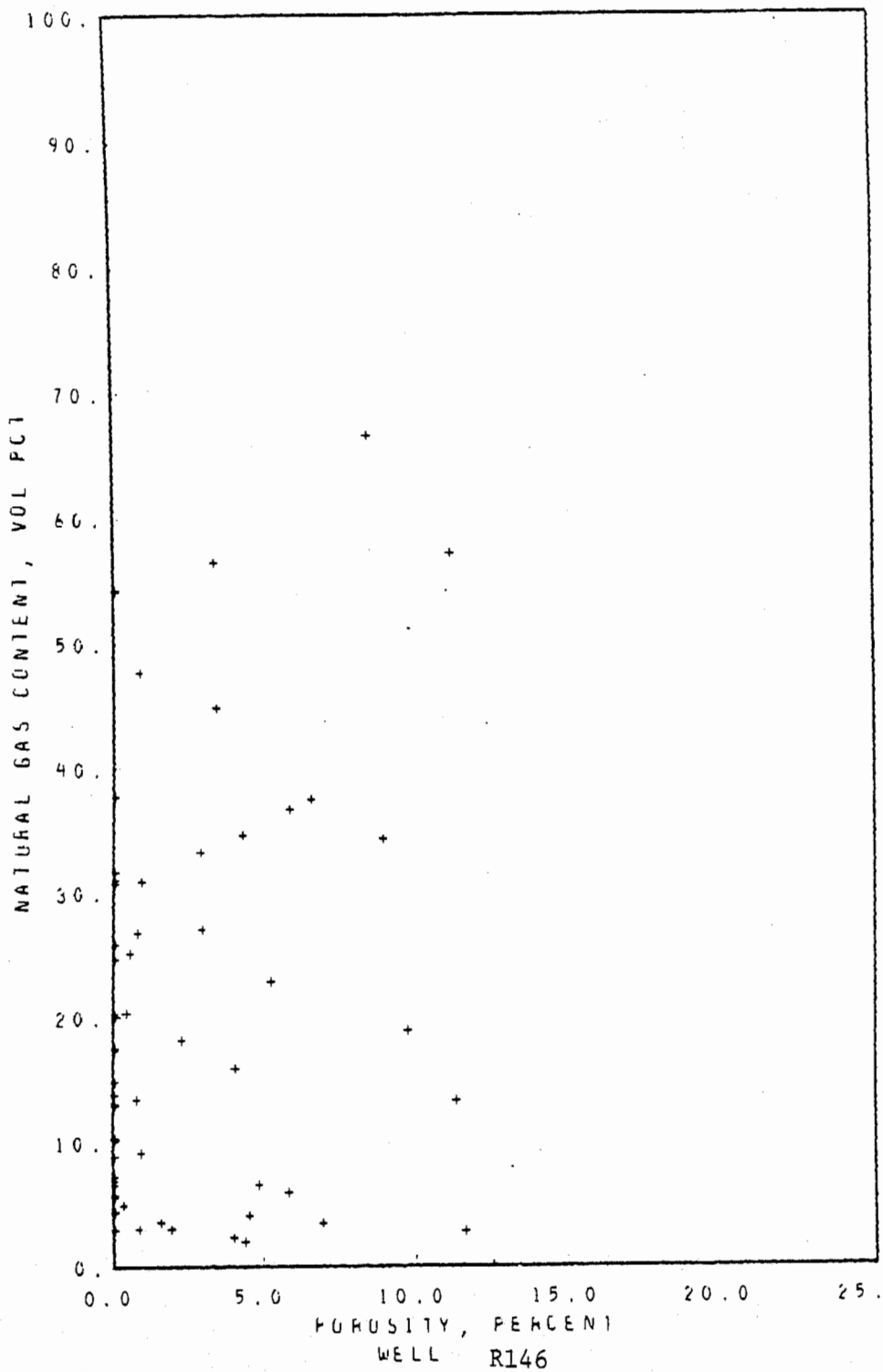


FIGURE 52. NATURAL GAS CONTENTS AS A FUNCTION OF POROSITY FOR WELL R-146

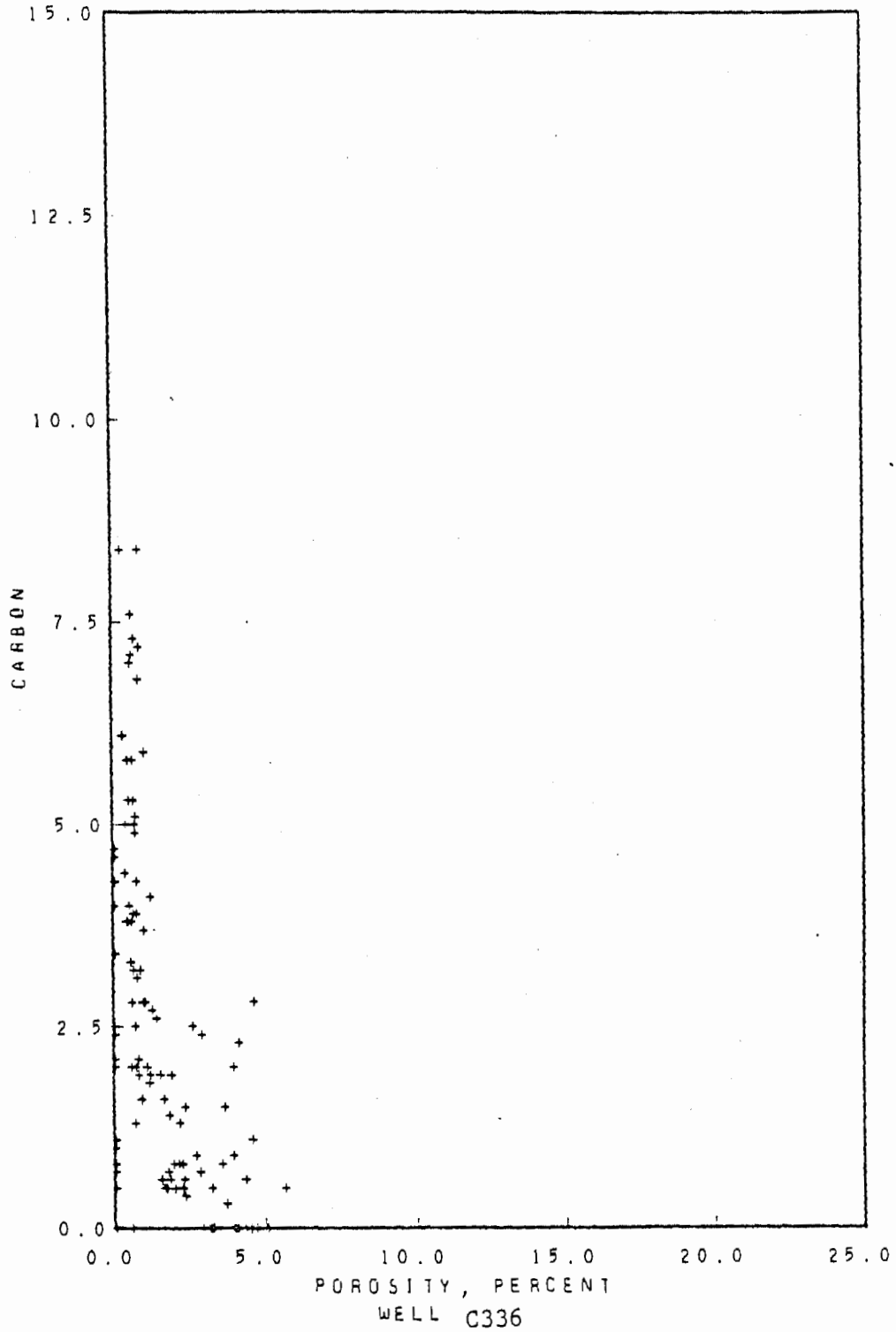


FIGURE 53. CARBON CONTENTS AS A FUNCTION OF POROSITY FOR WELL C-336

A140

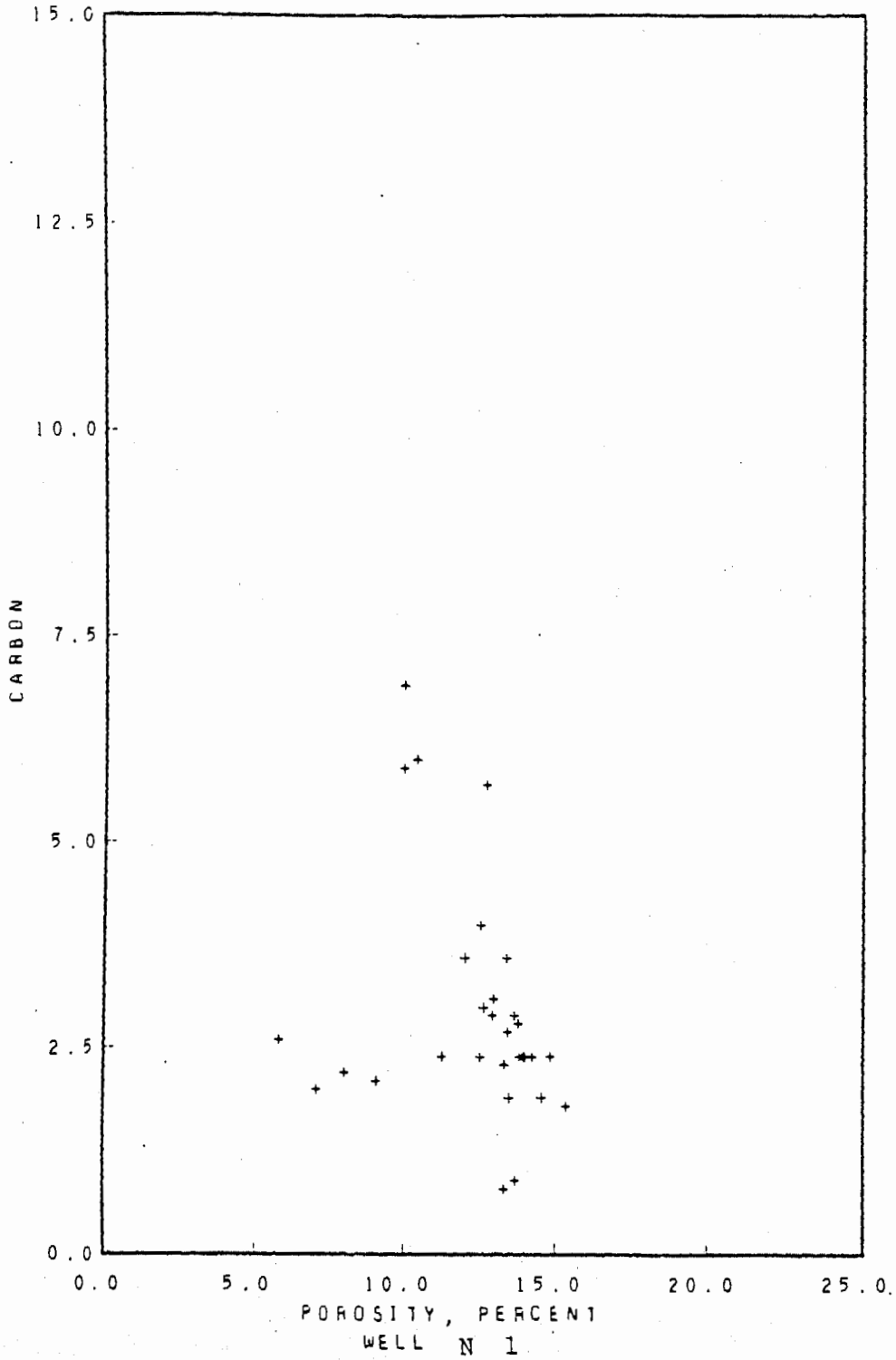


FIGURE 54. CARBON CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-1

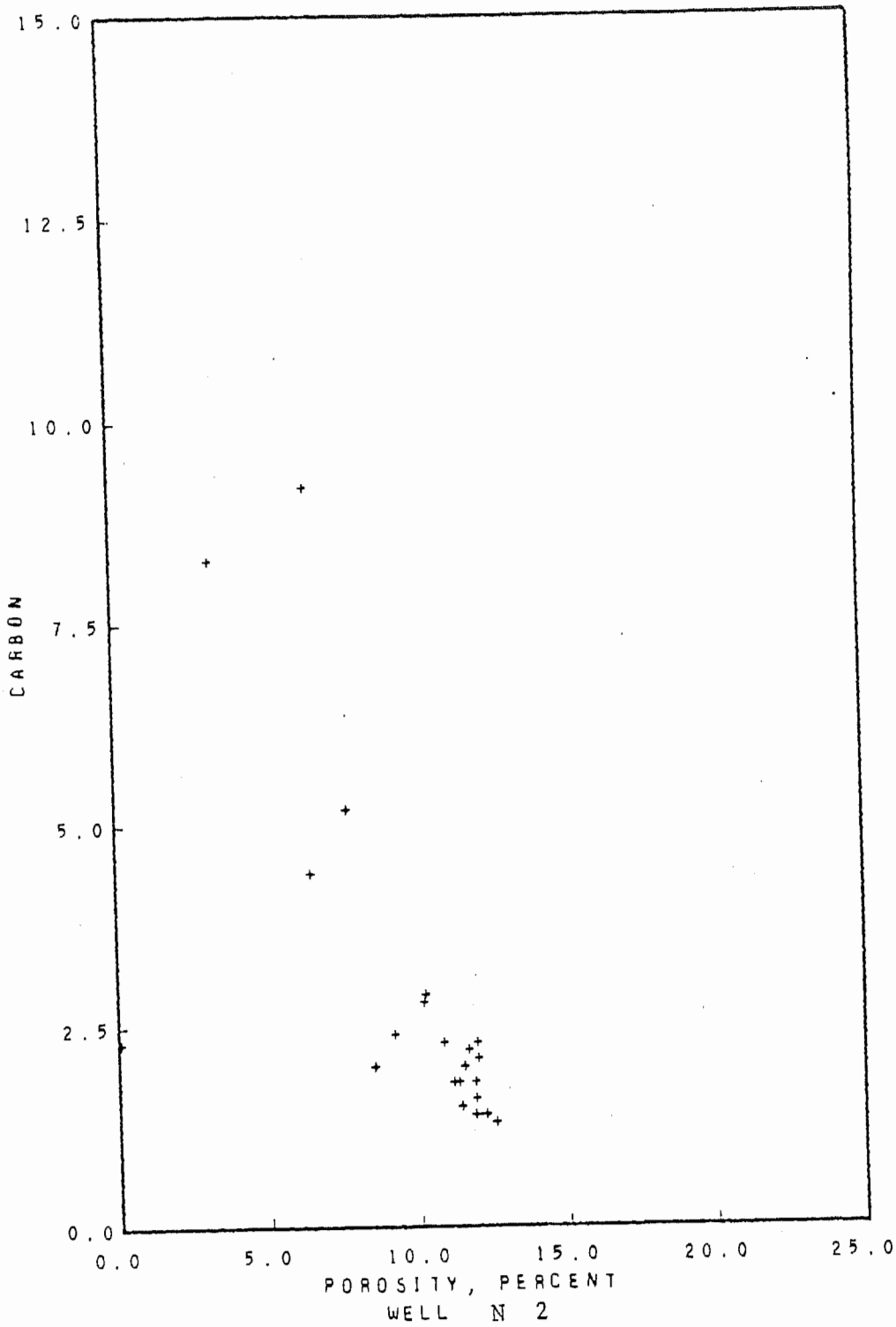


FIGURE 55. CARBON CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-2

A142

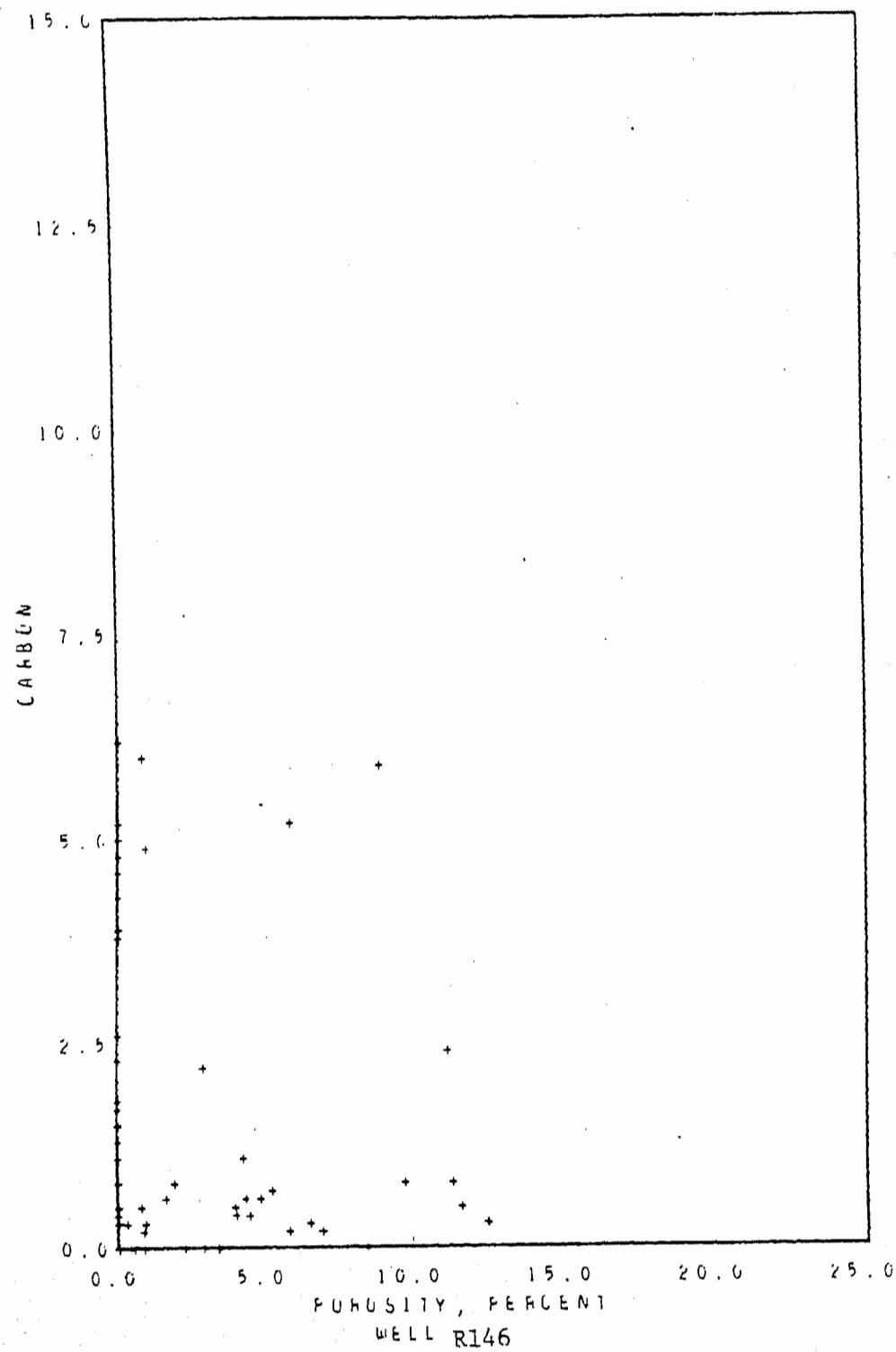


FIGURE 56. CARBON CONTENTS AS A FUNCTION OF POROSITY FOR WELL R-146

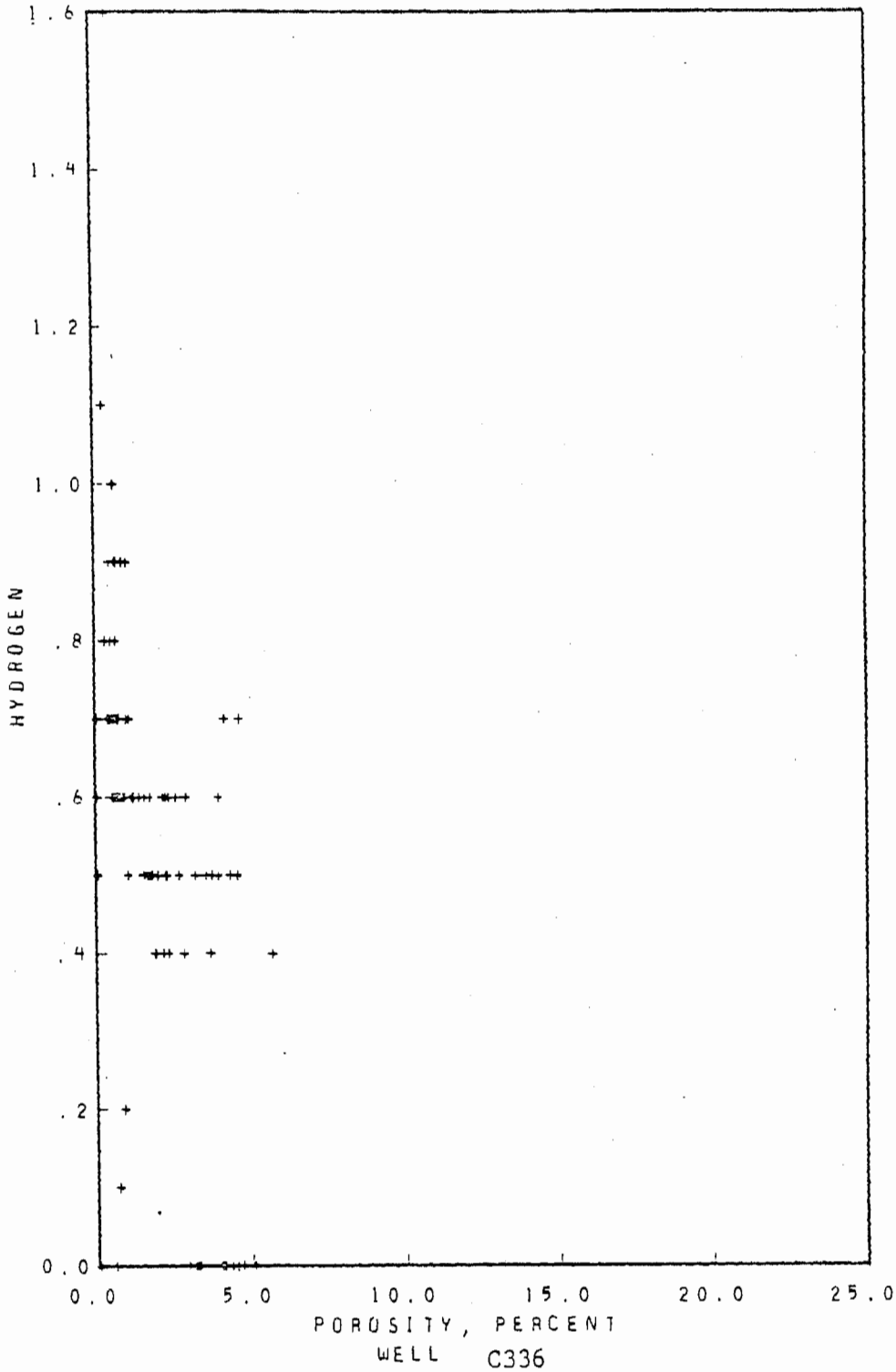


FIGURE 57. HYDROGEN CONTENTS AS A FUNCTION OF POROSITY FOR WELL C-336

A144

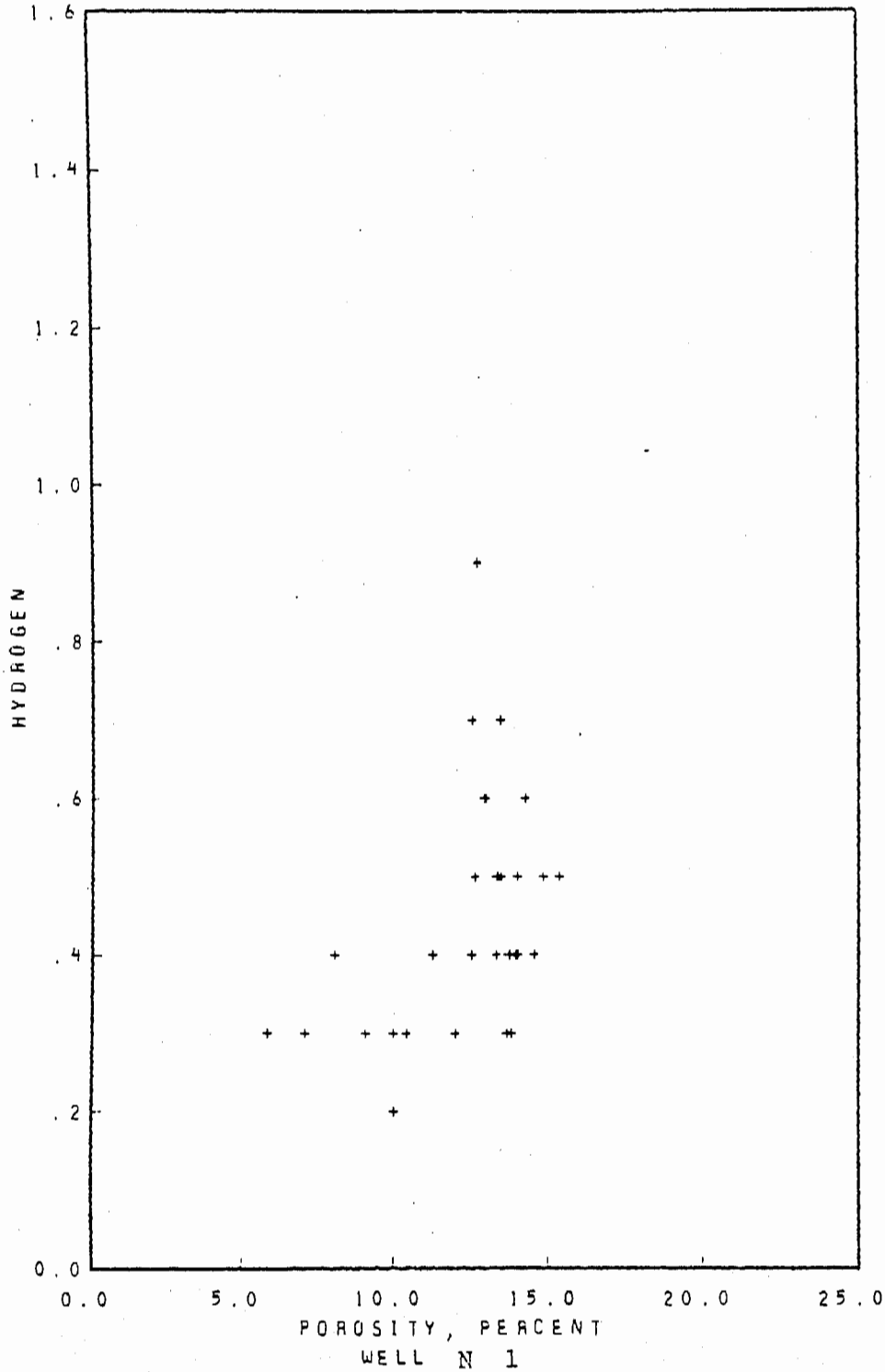


FIGURE 58. HYDROGEN CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-1

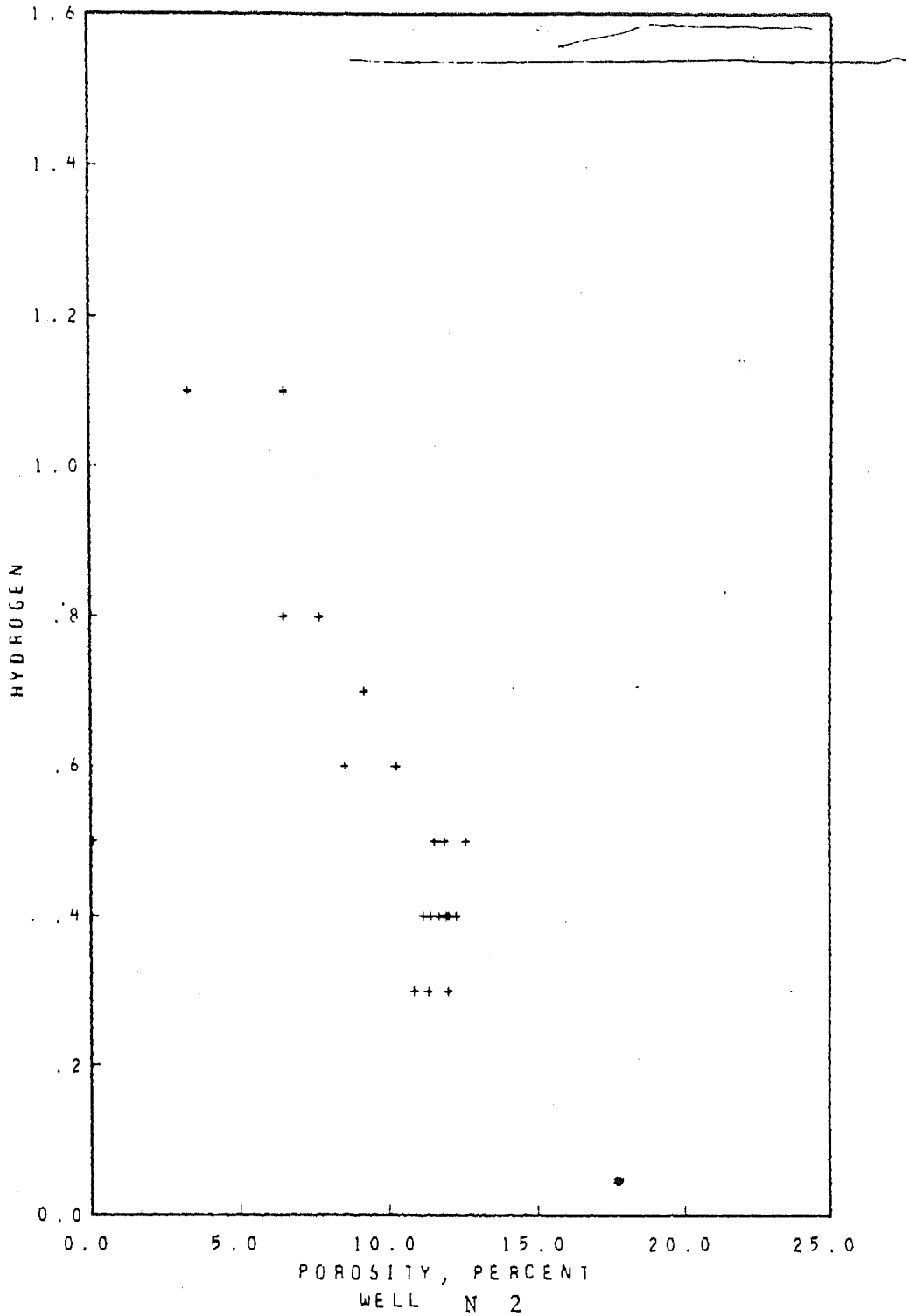


FIGURE 59. HYDROGEN CONTENTS AS A FUNCTION OF POROSITY FOR WELL N-2

A 146

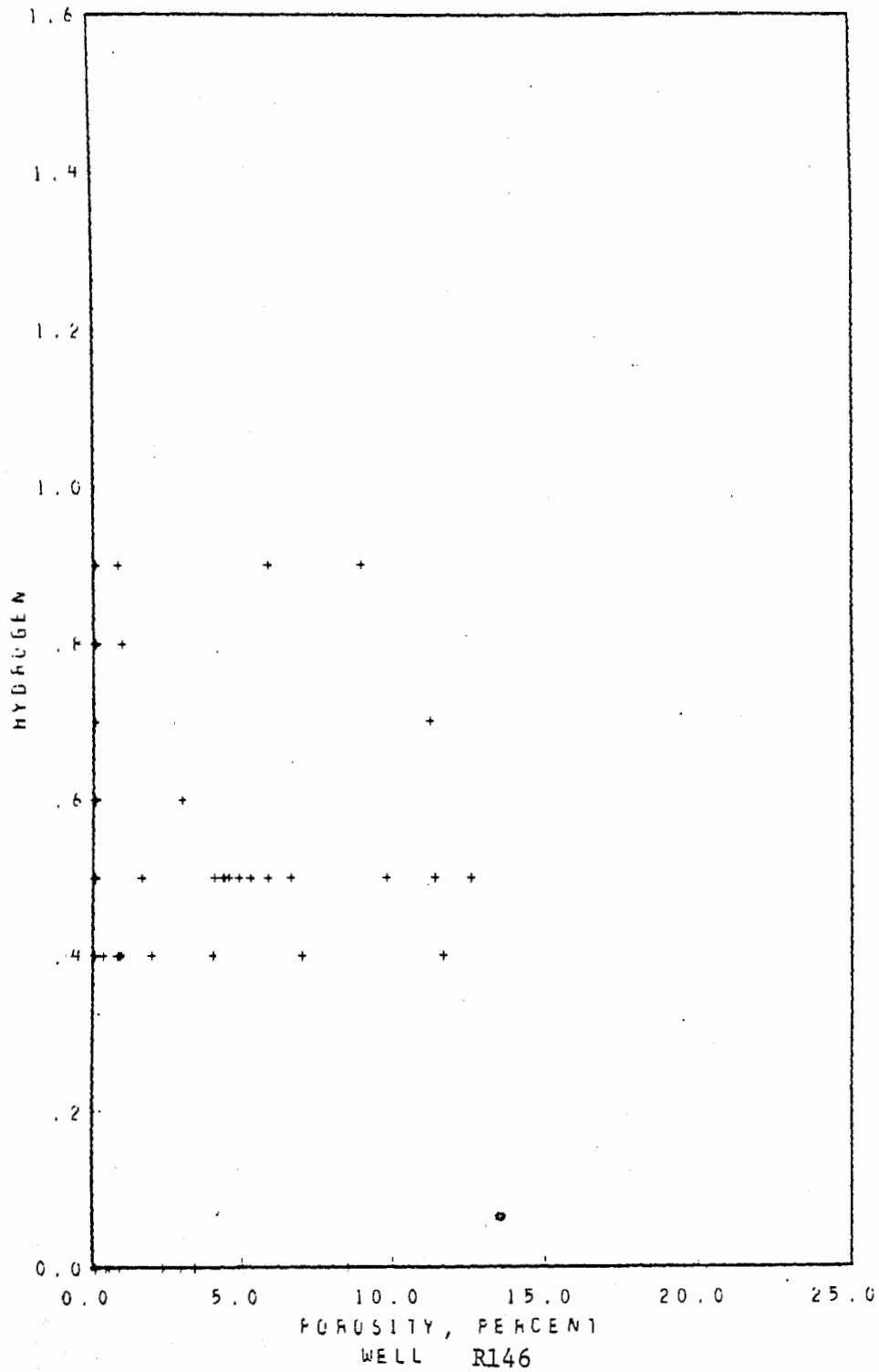


FIGURE 60. HYDROGEN CONTENTS AS A FUNCTION OF POROSITY FOR WELL R-146

A147

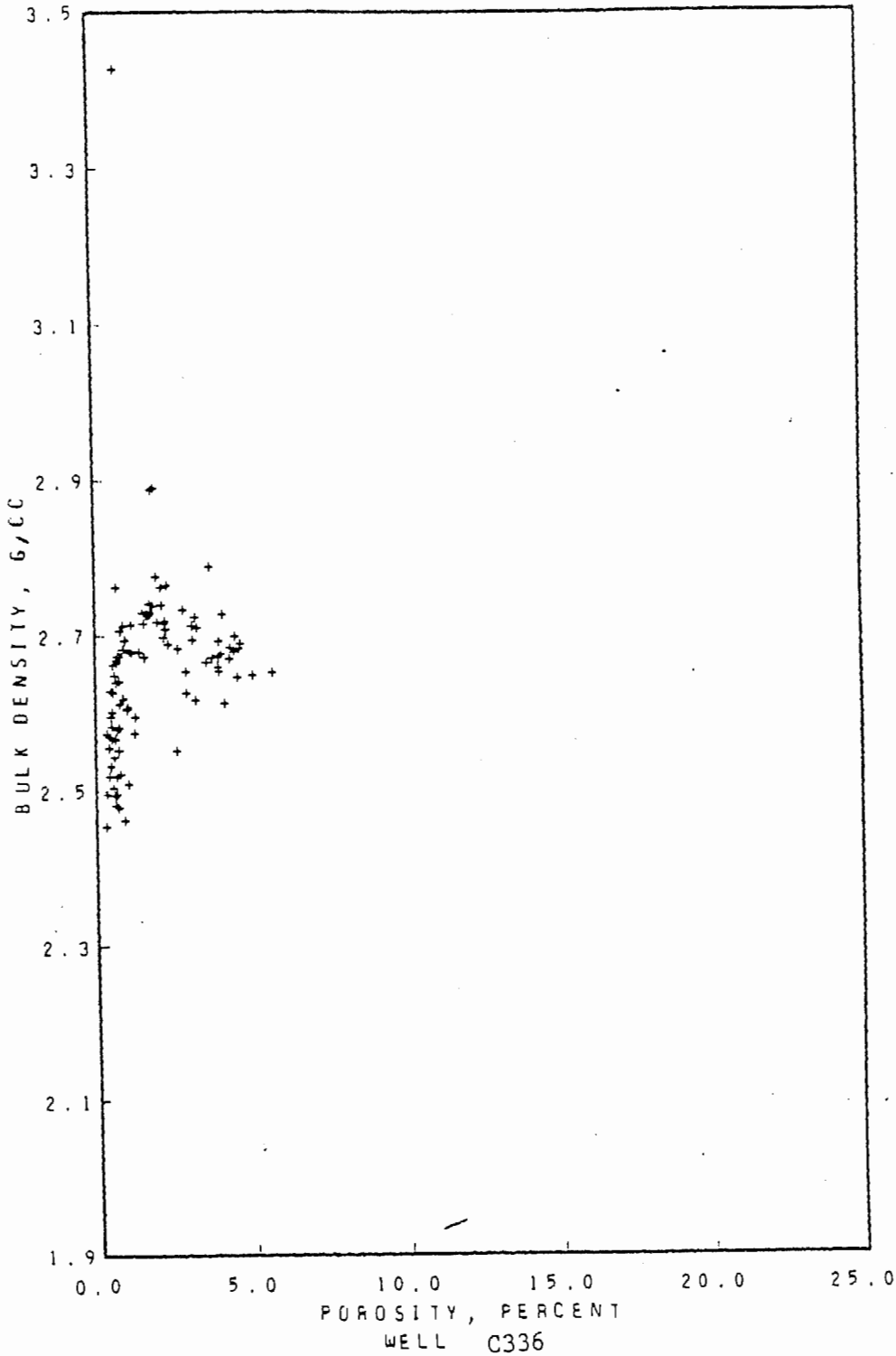


FIGURE 61. BULK DENSITIES AS A FUNCTION OF POROSITY FOR WELL C-336

A148

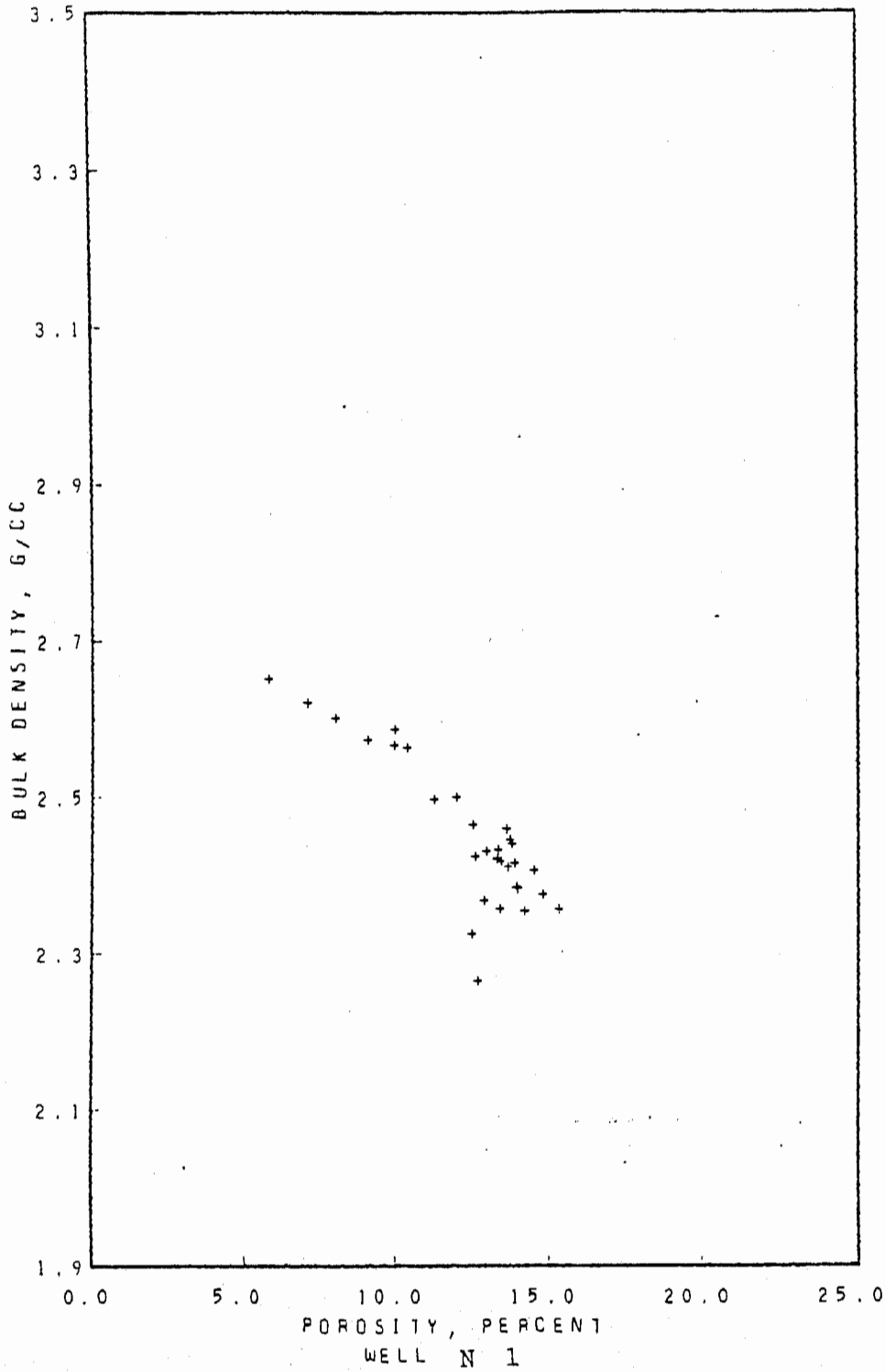


FIGURE 62. BULK DENSITIES AS A FUNCTION OF POROSITY FOR WELL N-1

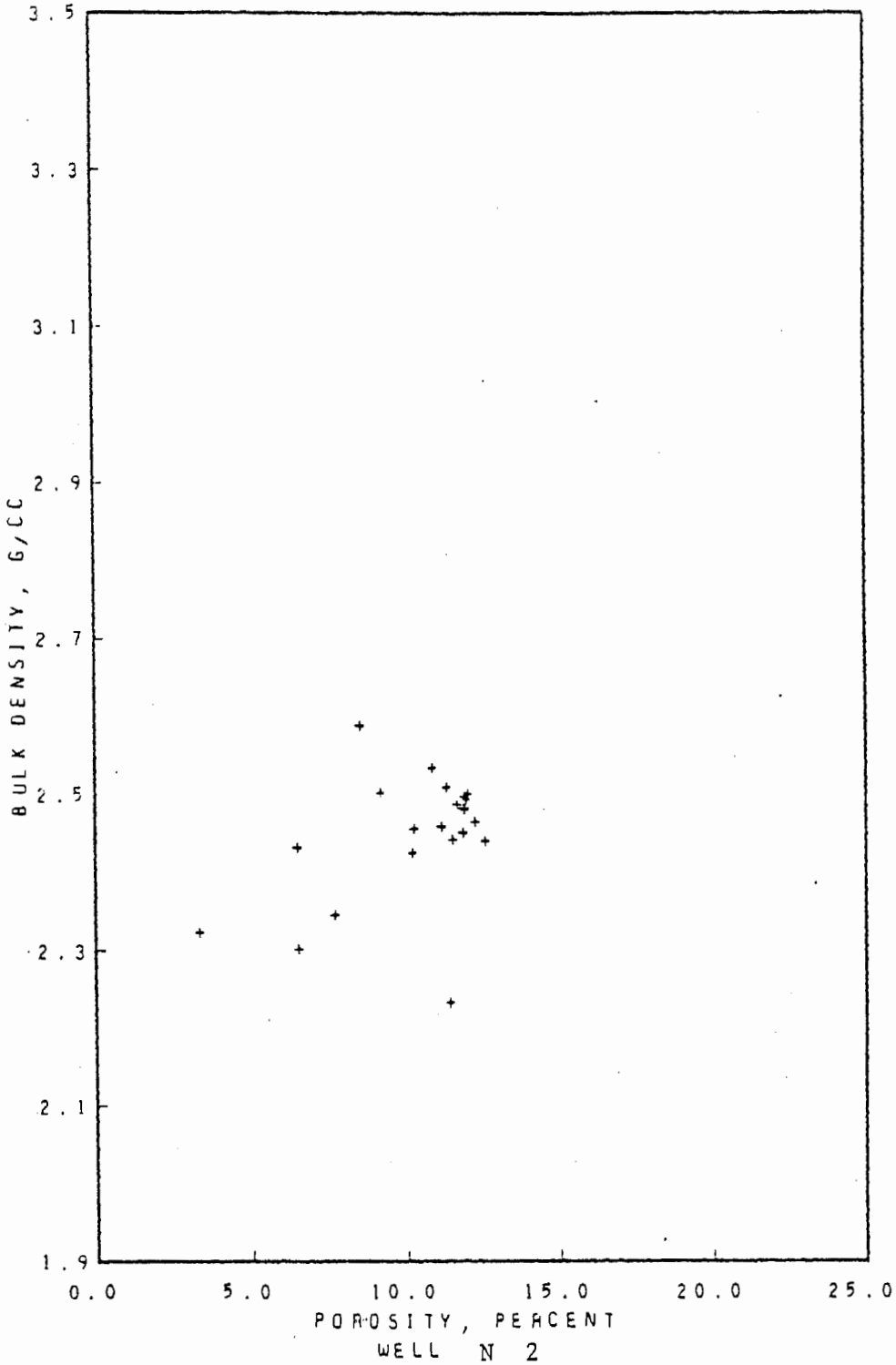


FIGURE 63. BULK DENSITIES AS A FUNCTION OF POROSITY FOR WELL N-2

A150

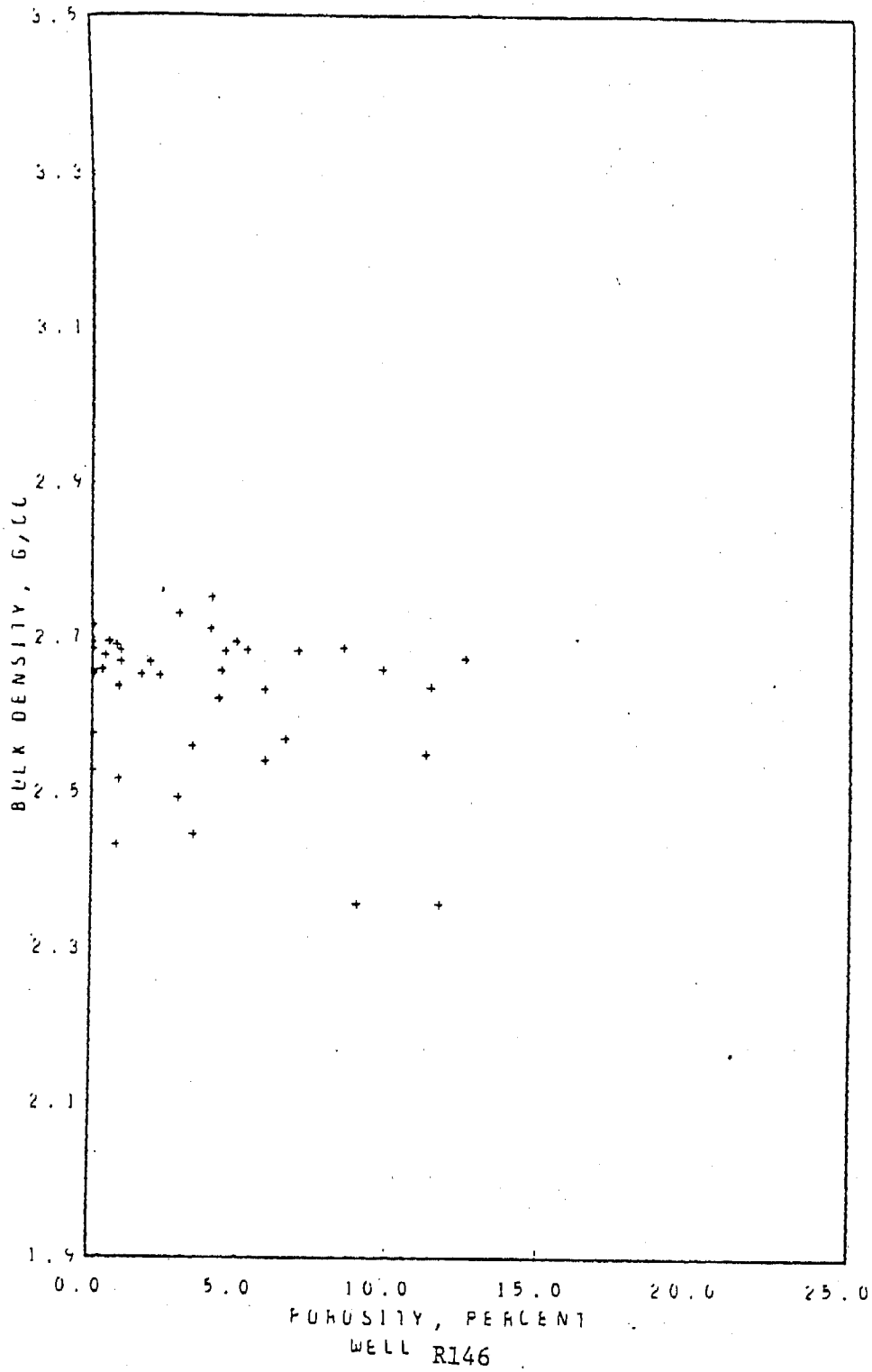


FIGURE 64. BULK DENSITIES AS A FUNCTION OF POROSITY FOR WELL R-146

A151

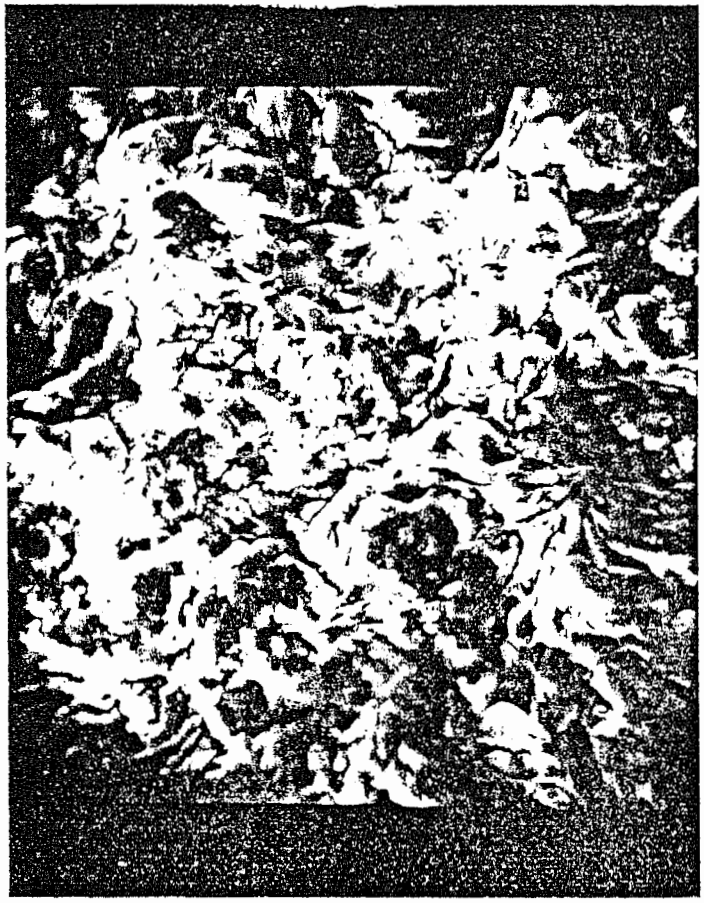
R-146-2700 700X

FIGURE 65. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-2700 AT700X MAGNIFICATION

A152

R-146-2753 700X

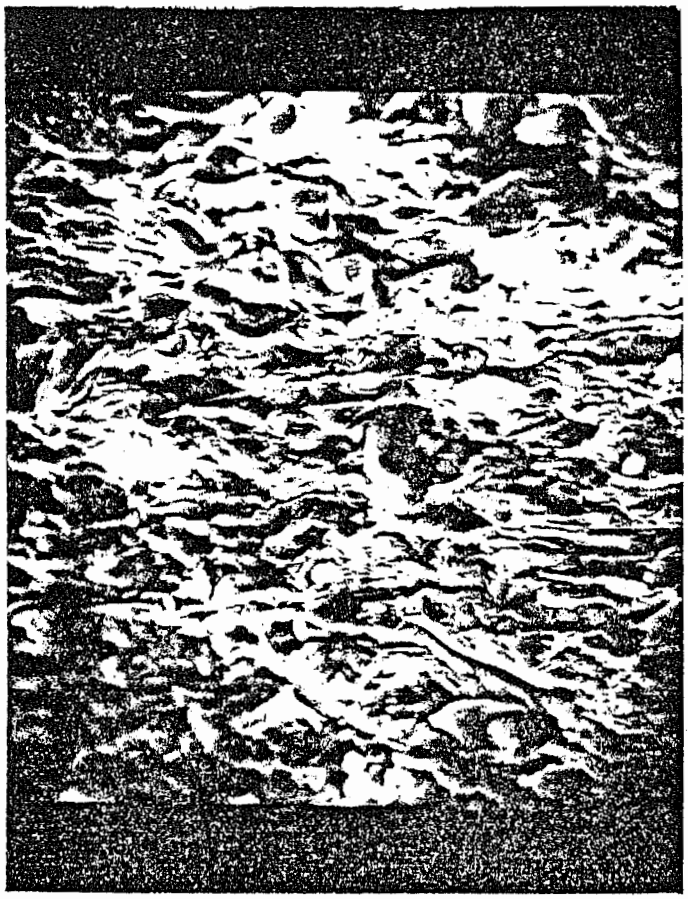
FIGURE 66. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-2753 AT 700X MAGNIFICATION



R-146-2821 700X

FIGURE 67. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-2821 AT 700X MAGNIFICATION

A154



R-146-2899 700X

FIGURE 68. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-2899 AT 700X MAGNIFICATION

R-146-2977 700X

FIGURE 69. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-2977 AT 700X MAGNIFICATION

A156

R-146-3035 700X

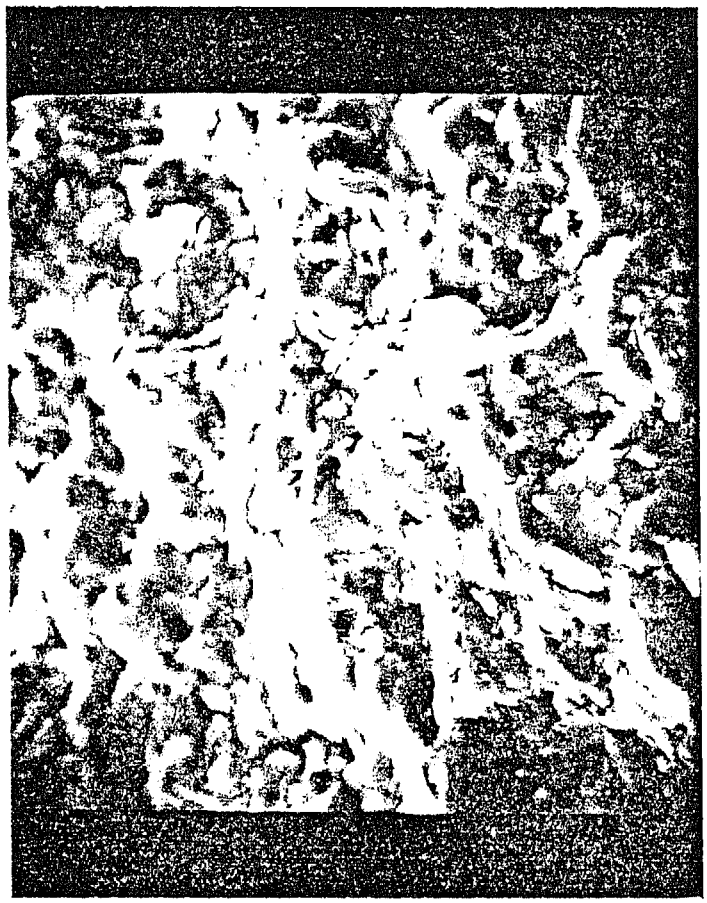
FIGURE 70. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-3035 AT 700X MAGNIFICATION

FIGURE 71. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-3035A AT 525X MAGNIFICATION

A158

R-146-3102 700X

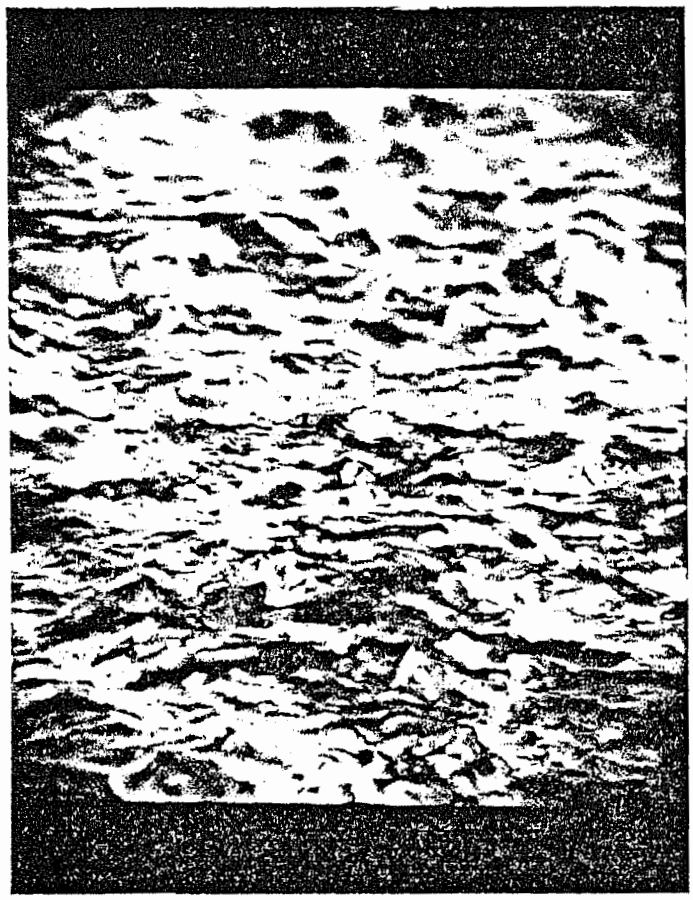
FIGURE 72. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-3102 AT 700X MAGNIFICATION



R-146-3181 700X

FIGURE 73. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-3181 AT 700X MAGNIFICATION

A160



R-146-3311 700X

FIGURE 74. SCANNING ELECTRON MICROGRAPH OF SHALE SAMPLE R-146-3311 AT 700X MAGNIFICATION

CLASSIFICATION USING GENERATED VECTORS

SAMPLE	KNOWN CLASS	VOTE (2 HIGHEST)					
C336-2960	1	125 FOR CLASS	1	67	FOR CLASS	2
C336-2960Z	1	125 FOR CLASS	1	67	FOR CLASS	2
C336-3069	1	125 FOR CLASS	1	57	FOR CLASS	3
01-2239	1	125 FOR CLASS	1	125	FOR CLASS	2
01-2259	1	125 FOR CLASS	1	125	FOR CLASS	2
01-2281	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2505	1	125 FOR CLASS	1	124	FOR CLASS	2
P1-2515	1	125 FOR CLASS	1	124	FOR CLASS	2
P1-2528	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2536	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2547	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2554	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2565	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2575	1	125 FOR CLASS	1	125	FOR CLASS	2
P1-2585	1	125 FOR CLASS	1	122	FOR CLASS	2
P1-2595	1	125 FOR CLASS	1	125	FOR CLASS	2
R109-3606B	1	125 FOR CLASS	1	125	FOR CLASS	2
R109-3644A	1	125 FOR CLASS	1	124	FOR CLASS	3
R109-3695	1	125 FOR CLASS	1	125	FOR CLASS	2
C2-3000	2	125 FOR CLASS	1	125	FOR CLASS	2
C2-3050	2	125 FOR CLASS	2	124	FOR CLASS	1
C2-3101	2	125 FOR CLASS	2	124	FOR CLASS	1
C2-3378	2	125 FOR CLASS	2	124	FOR CLASS	3
C2-3428	2	125 FOR CLASS	2	123	FOR CLASS	3
C2-3478	2	125 FOR CLASS	2	123	FOR CLASS	3
C2-3528	2	125 FOR CLASS	2	121	FOR CLASS	3
C2-3922	2	125 FOR CLASS	2	124	FOR CLASS	3
C2-3961	2	125 FOR CLASS	2	124	FOR CLASS	3
C2-3971	2	125 FOR CLASS	2	114	FOR CLASS	3
C336-3069Z	2	125 FOR CLASS	2	124	FOR CLASS	3
C336-3186	2	125 FOR CLASS	2	76	FOR CLASS	3
C336-3254	2	125 FOR CLASS	2	67	FOR CLASS	3
C336-3325	2	125 FOR CLASS	2	121	FOR CLASS	3
C336-3384	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2183	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2191	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2220	2	125 FOR CLASS	2	123	FOR CLASS	3
01-2230	2	125 FOR CLASS	2	122	FOR CLASS	3
01-2271	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2290	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2300	2	125 FOR CLASS	1	125	FOR CLASS	2
01-2310	2	125 FOR CLASS	1	125	FOR CLASS	2
P1-2495	2	125 FOR CLASS	2	47	FOR CLASS	3
R109-3494	2	125 FOR CLASS	2	125	FOR CLASS	3
R109-3506	2	125 FOR CLASS	1	125	FOR CLASS	2
R109-3516	2	125 FOR CLASS	1	125	FOR CLASS	2
R109-3526	2	125 FOR CLASS	2	122	FOR CLASS	3
R109-3555	2	125 FOR CLASS	2	120	FOR CLASS	1
R109-3575	2	125 FOR CLASS	2	121	FOR CLASS	3
R109-3585	2	125 FOR CLASS	1	125	FOR CLASS	2

FIGURE 75. CORRELATION RESULTS FROM PDP-11/34 FOR VARIOUS WELLS

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R109-3593	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3605	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3606A	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3616	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3626	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3634	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3665	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3675	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3685	2	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3711	2	125	FOR	CLASS	1	125	FOR	CLASS	2
C2-2655	3	125	FOR	CLASS	3	122	FOR	CLASS	2
C2-2710	3	125	FOR	CLASS	3	123	FOR	CLASS	2
C2-2761	3	125	FOR	CLASS	3	124	FOR	CLASS	2
C2-3025	3	125	FOR	CLASS	2	125	FOR	CLASS	3
C2-3303	3	125	FOR	CLASS	1	125	FOR	CLASS	2
C2-3328	3	125	FOR	CLASS	1	125	FOR	CLASS	2
C336-2524	3	125	FOR	CLASS	2	125	FOR	CLASS	3
C336-2637	3	125	FOR	CLASS	2	125	FOR	CLASS	3
C336-2852	3	125	FOR	CLASS	1	125	FOR	CLASS	2
C336-3216	3	125	FOR	CLASS	3	89	FOR	CLASS	2
O1-2251	3	125	FOR	CLASS	3	109	FOR	CLASS	2
O1-2319	3	125	FOR	CLASS	3	124	FOR	CLASS	1
R109-3536	3	125	FOR	CLASS	1	125	FOR	CLASS	2
R109-3545	3	125	FOR	CLASS	3	124	FOR	CLASS	2
R109-3564	3	125	FOR	CLASS	3	124	FOR	CLASS	2
R109-3705	3	125	FOR	CLASS	3	122	FOR	CLASS	2
C1-2999	0	125	FOR	CLASS	3	124	FOR	CLASS	2
C1-3085	0	125	FOR	CLASS	3	124	FOR	CLASS	2
C1-3175	0	124	FOR	CLASS	2	124	FOR	CLASS	3
C1-3198Z	0	125	FOR	CLASS	2	125	FOR	CLASS	3
C1-3651	0	125	FOR	CLASS	2	125	FOR	CLASS	3
C1-3426	0	125	FOR	CLASS	2	124	FOR	CLASS	3
C1-4045	0	125	FOR	CLASS	2	125	FOR	CLASS	3

FIGURE 75. (Continued)

CLASSIFICATION USING GENERATED VECTORS

SAMPLE	KNOWN CLASS	VOTE (2 HIGHEST)					
C336-2444	1	150 FOR CLASS	1	134 FOR CLASS	2		
C336-2454	1	150 FOR CLASS	1	126 FOR CLASS	2		
C336-2911	1	150 FOR CLASS	1	149 FOR CLASS	3	x	
C336-2940	1	150 FOR CLASS	1	148 FOR CLASS	3	x	
C336-2960	1	150 FOR CLASS	1	125 FOR CLASS	2		
C336-2960Z	1	150 FOR CLASS	1	101 FOR CLASS	2		
C336-2970	1	150 FOR CLASS	1	117 FOR CLASS	2		
C336-2990	1	150 FOR CLASS	1	111 FOR CLASS	2		
C336-3069	1	150 FOR CLASS	1	143 FOR CLASS	2	x	
C336-3089	1	150 FOR CLASS	1	150 FOR CLASS	2	x	
C336-3099	1	150 FOR CLASS	1	143 FOR CLASS	2	x	
C336-3107	1	150 FOR CLASS	1	148 FOR CLASS	2	x	
C336-3224	1	150 FOR CLASS	1	149 FOR CLASS	3	x	
C336-2474	2	150 FOR CLASS	2	138 FOR CLASS	3		
C336-2494	2	150 FOR CLASS	2	148 FOR CLASS	3	x	
C336-2504	2	150 FOR CLASS	2	147 FOR CLASS	1	x	
C336-2565	2	150 FOR CLASS	2	142 FOR CLASS	3	x	
C336-2656	2	150 FOR CLASS	2	147 FOR CLASS	3	x	
C336-2666	2	150 FOR CLASS	2	149 FOR CLASS	3	x	
C336-2666Z	2	150 FOR CLASS	2	126 FOR CLASS	3		
C336-2881	2	150 FOR CLASS	2	149 FOR CLASS	3	x	
C336-2901	2	150 FOR CLASS	2	150 FOR CLASS	3	x	
C33-3019Z	2	150 FOR CLASS	2	138 FOR CLASS	3		
C336-3038	2	150 FOR CLASS	2	126 FOR CLASS	3		
C336-3049	2	150 FOR CLASS	2	116 FOR CLASS	3		
C336-3054	2	150 FOR CLASS	2	143 FOR CLASS	1	x	
C336-3069Z	2	150 FOR CLASS	2	147 FOR CLASS	3	x	
C336-3254	2	150 FOR CLASS	2	148 FOR CLASS	3	x	
C336-3325	2	150 FOR CLASS	2	123 FOR CLASS	3		
C336-3365	2	150 FOR CLASS	2	150 FOR CLASS	3	x	
C336-3384	2	150 FOR CLASS	2	146 FOR CLASS	1	x	
C336-3394	2	150 FOR CLASS	2	137 FOR CLASS	1		
C336-3404	2	150 FOR CLASS	2	117 FOR CLASS	1		
C336-2463	3	150 FOR CLASS	3	127 FOR CLASS	2		
C336-2514	3	150 FOR CLASS	3	146 FOR CLASS	2	x	
C336-2614Z	3	150 FOR CLASS	3	146 FOR CLASS	2	x	
C336-2524	3	150 FOR CLASS	3	144 FOR CLASS	2	x	
C336-2534	3	150 FOR CLASS	3	121 FOR CLASS	2		
C336-2545	3	150 FOR CLASS	3	123 FOR CLASS	2		
C336-2555	3	150 FOR CLASS	3	109 FOR CLASS	2		
C336-2565Z	3	150 FOR CLASS	3	139 FOR CLASS	2		
C336-2575	3	150 FOR CLASS	3	137 FOR CLASS	2		
C336-2586	3	150 FOR CLASS	3	140 FOR CLASS	2		
C336-2588	3	150 FOR CLASS	3	123 FOR CLASS	2		
C336-2595	3	150 FOR CLASS	3	142 FOR CLASS	2		
C336-2607	3	150 FOR CLASS	3	122 FOR CLASS	2		
C336-2617	3	150 FOR CLASS	3	95 FOR CLASS	2		
C336-2617Z	3	150 FOR CLASS	3	127 FOR CLASS	2		

FIGURE 76. CORRELATION RESULTS FROM PDP-11/34 FOR WELL C-336

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C336-2637	3	150	FOR CLASS	3	126	FOR CLASS	2
C336-2646	3	150	FOR CLASS	3	142	FOR CLASS	2
C336-2676	3	150	FOR CLASS	3	144	FOR CLASS	2
C336-2696	3	150	FOR CLASS	3	137	FOR CLASS	2
C336-2705	3	150	FOR CLASS	3	143	FOR CLASS	2
C336-2715	3	150	FOR CLASS	3	147	FOR CLASS	2
C336-2725	3	150	FOR CLASS	3	146	FOR CLASS	2
C336-2755	3	150	FOR CLASS	3	140	FOR CLASS	2
C336-2763	3	150	FOR CLASS	2	150	FOR CLASS	3
C336-2773	3	150	FOR CLASS	3	137	FOR CLASS	2
C336-2784	3	150	FOR CLASS	3	143	FOR CLASS	2
C336-2784Z	3	150	FOR CLASS	3	145	FOR CLASS	2
C336-2814	3	150	FOR CLASS	3	136	FOR CLASS	2
C336-2830	3	150	FOR CLASS	3	128	FOR CLASS	2
C336-2842	3	150	FOR CLASS	3	148	FOR CLASS	2
C336-2842Z	3	150	FOR CLASS	3	120	FOR CLASS	2
C336-2852	3	150	FOR CLASS	3	148	FOR CLASS	2
C336-2891	3	150	FOR CLASS	3	141	FOR CLASS	2
C336-2901Z	3	150	FOR CLASS	3	141	FOR CLASS	2
C336-2931	3	150	FOR CLASS	3	124	FOR CLASS	2
C336-2980	3	150	FOR CLASS	3	124	FOR CLASS	2
C336-2999	3	150	FOR CLASS	3	121	FOR CLASS	2
C336-3019	3	150	FOR CLASS	3	119	FOR CLASS	2
C336-3029	3	150	FOR CLASS	3	108	FOR CLASS	2
C336-3117	3	150	FOR CLASS	3	136	FOR CLASS	2
C336-3157	3	150	FOR CLASS	3	134	FOR CLASS	2
C336-3176	3	150	FOR CLASS	3	129	FOR CLASS	2
C336-3196A	3	150	FOR CLASS	3	133	FOR CLASS	2
C336-3196B	3	150	FOR CLASS	3	126	FOR CLASS	2
C336-3216	3	150	FOR CLASS	3	133	FOR CLASS	2
C336-3234	3	150	FOR CLASS	3	138	FOR CLASS	2
C336-3244	3	150	FOR CLASS	3	119	FOR CLASS	2
C336-3294	3	150	FOR CLASS	3	116	FOR CLASS	2

FIGURE 76. (Continued)

CLASSIFICATION USING GENERATED VECTORS

SAMPLE	KNOWN CLASS	VOTE (2 HIGHEST)						
C338-4882	1	125	FOR CLASS	1	27	FOR	CLASS	3
C338-4912	1	125	FOR CLASS	1	28	FOR	CLASS	2
C338-5312	1	125	FOR CLASS	1	122	FOR	CLASS	2
C338-5447	1	125	FOR CLASS	1	64	FOR	CLASS	2
C338-4930	2	125	FOR CLASS	2	99	FOR	CLASS	1
C338-5242	2	125	FOR CLASS	2	34	FOR	CLASS	1
C338-5253	2	125	FOR CLASS	2	104	FOR	CLASS	1
C338-5305	2	125	FOR CLASS	2	86	FOR	CLASS	1
C338-5382	2	125	FOR CLASS	2	104	FOR	CLASS	1
C338-4960	3	125	FOR CLASS	3	32	FOR	CLASS	2
C338-4970	3	125	FOR CLASS	3	41	FOR	CLASS	1
C338-4980	3	125	FOR CLASS	3	31	FOR	CLASS	2
C338-5212	3	125	FOR CLASS	3	31	FOR	CLASS	2
C338-5222	3	125	FOR CLASS	3	34	FOR	CLASS	2
C338-5263	3	125	FOR CLASS	3	31	FOR	CLASS	2
C338-5283	3	125	FOR CLASS	3	41	FOR	CLASS	1
C338-5293	3	125	FOR CLASS	3	49	FOR	CLASS	1
C338-5347	3	125	FOR CLASS	3	48	FOR	CLASS	1
C338-5394	3	125	FOR CLASS	3	35	FOR	CLASS	1
C338-5434	3	125	FOR CLASS	3	34	FOR	CLASS	1
C338-5332	0	124	FOR CLASS	3	30	FOR	CLASS	2

FIGURE 77. CORRELATION RESULTS FROM PDP-11/34 FOR WELL C-338