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GEOPRESSURED-GEOTHERMAL TEST OF THE

EDNA DELCAMBRE NO. 1 WELL, VERMILION PARISH, LOUISIANA

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INTRODUCTION

Two sand intervals, Sand No. 3 and Sand No. 1, were independently tested during our program. Sand No. 3 was the deeper zone and was tested first. A Gamma Ray - Neutron log of these zones, and the intervals perforated, are shown in Figures 1 and 2, respectively. The Gamma Ray log run in 1968 showed Sand No. 1 to be a fairly uniform section with few shale breaks and our original plans were to perforate the entire interval. After obtaining the more recent GR log shown in Figure 2, big shale breaks were shown to exist throughout the zone, so a smaller interval was selected. A net sand thickness of 48 ft. was used for Sand No. 3 and 30 ft. for Sand No. 1. There was no data available to indicate whether these zones became thicker or thinner away from the wellbore; therefore, these values were used as net thickness in the reservoir calculations.

The procedure used to perforate the two sands were different. Both were perforated with 0.33 inch jets at a density of 4 shots per foot; however, Sand No. 3 was perforated in two runs using a stand-off gun, whereas Sand No. 1 was perforated in one run using a centralized gun with the jet density being 4 shots per foot but oriented alternately at 180 degrees.

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A summary of the reservoir data obtained is as follows:

	Sand No. 3	Sand No. 1
Bottom Hole Static Press.	11,012 psia (12,893 ft. L. D.)	10,858 psia (12,589 ft. L. D.)
Porosity	26%	29.3%
Bottom Hole Static Temp.	238°F	234°F
Lowest BHFP	1714 psia	1798 psia
Max. Water Production Rate	10,333 BPD	12,653 BPD
Max. Surface Flowing Temp.	219°F	222°F

TESTING SCHEDULE

Table 1 shows the test schedule used on Sand No. 3. Flow was initiated through an adjustable choke for a few hours at a very low rate and then switched to a 20/64 inch positive choke for the first flow test. The well was flowed for 25 hours and 46 minutes. The average water flow rate during the test period was 2557 BPD. The average gas-water ratio, cumulative water produced and average friction pressure were 235.3 SCF/bbl, 2762 bbls and 43.68 psi/100 ft.

The well had to be shut down for 17 minutes to change the choke to 30/64 inch. The well was flowed for 3 minutes and then had to be shut in for 5 more minutes to change a worn "O"-ring on the choke cap. The well was again opened on the 30/64 inch choke and flowed for 23 hours and 16 minutes. (See Table 1 for test results). The well was then shut in for 15 minutes to change to a 40/64 inch choke. The well was flowed for 2 hours and 56 minutes at

which time the HP pressure recorder shorted out. The well was shut in for 21 hours and 36 minutes during which time the HP was repaired and a pressure build-up test was performed. Also, the chicksans on the surface flow lines had to be replaced. Upon completion of the build-up test the well was opened again on the 40/64 inch choke and flowed for 14 hours and 29 minutes. During the second flow period on the 40/64 inch choke, the sand detector indicated that sand was being produced. The well was shut in for 6 hours and 4 minutes for a pressure build-up test and then an additional 22 hours during which time bottom hole fluid samples were obtained. The well was also checked for sand by lowering the tools in the casing below the perforations. No sand was detected in the well bore, eventhough approximately 35-40 gallons of sand were removed from the separator.

An ERDA advisory committee meeting was held to decide whether to continue testing Sand No. 3 or move to Sand No. 1. It was decided to let the well flow on a 20/64 inch choke while the meeting was being conducted to see if the reduced rate would stop the sand production. The well was flowed on the 20/64 inch choke for 32 hours and 31 minutes. The average production rate was 3563 bpd. The well had to be shut in to replace leaking chicksans. The choke was checked and found to contain a crack so a 22/64 inch choke was used. The well was flowed for 50 minutes at which time the chicksans started leaking again. The average flow rate was 2204 bpd. The well was shut in for 10 minutes to replace chicksans. The well was opened again on the 22/64 inch choke for 1 hour and 21 minutes, at which time the well had to be shut in for 23 minutes to replace the choke which had broken. The average flow rate was 4832 bpd. An 18/64 inch choke was

placed in the line and the well was flowed for 92 hours and 44 minutes. The average flow rate was 3125 bpd. Very little sand production was detected at the surface during these flow tests. The well was then shut in for 4 hours and 17 minutes to change chicksans and to go into the well with the bottom hole pressure recorder which had been left out due to fear of possibly sanding up the tool. The well was opened again on an 18/64 inch choke for 7 hours and 45 minutes to establish a flow rate before shutting in the well for a build-up test. The well was shut in for 49 hours and 2 minutes at which time the pressure recorder was removed from the well.

The ERDA advisory committee decided to run a spinner and temperature survey for determining where the gas was coming from within the Sand No. 3 interval. However, the logging tools would not go beyond the mid point of the sand section. A slick line bailer was run and sand was recovered so it was decided to squeeze off the zone and move up to Sand No. 1.

The test results for Sand No. 3 are summarized in Table 1 and Table 2. Table 2 summarizes the data in Table 1 and also contains the specific productivity index for each flow period. The data indicate that the zone stabilized around .088 bbl/day-psi-ft. The cumulative water produced during the test period was 32,880 bbls.

Table 3 contains the test sequence of Sand No. 1. It was decided to start the flow rate on Sand No. 1 on a 10/64 inch choke increasing choke size by 4/64 inch. Flow periods for each choke size was to be approximately 24 hours. To try and reduce chicksan leaks, the well was not shut in when changing chokes. Instead, the flow was diverted through the adjustable choke on the flow manifold. The choke size sequence, time

of flow and related production data are shown in Tables 3 and 4. At the end of the flow period for the 26/64 inch choke, the HP pressure recorder shorted out. The tool was removed from the well, replaced, and run back into the well for a pressure build-up test. Bottom hole fluid samples were also taken during the 96 hour and 36 minutes shut-in period. Average water flow rates varied from 1163 bpd on the 10/64 inch choke to 5,951 bpd on the 26/64 inch choke. The gas-water ratio started initially very near the value obtained in the laboratory from recombined samples. This is in contrast to the high values initially obtained from Sand No. 3. This can be explained though due to a small gas sand show on the log in the lower portion of Sand No. 3. The zone appeared to be approximately 3 feet thick. No free gas sand zones were evident on the log for Sand No. 1.

The next sequence of testing on Sand No. 1 consisted of flowing the well at a given choke size and then shutting in the well for a pressure build-up test. As shown in Table 3, this was done for choke sizes of 30/64 inch, 34/64 inch and 38/64 inch. No sand production had been detected at the surface; however, because sand production occurred from Sand No. 3 when flowing on a 40/64 inch choke, it was decided to remove the bottom hole pressure recorder from the well before opening the well on the 42/64 inch choke. While flowing the well on the 42/64 inch choke, the 2 inch turbine meter on the injection well was creating too large a back pressure on the separator requiring shutting in the well and removing the meter. No sand production had been detected at the surface. The average production rate while flowing through the 42/64 inch choke was 11,082 bpd.

After removing the turbine meter, the well was opened on a 46/64 inch choke for six hours after which the well was shut in due to the chicksans leaking and not being able to get any replacements. It was then decided to end the testing program, squeeze Sand No. 1 and abandon the well. The average flow rate on the 46/64 inch choke was 11,958 bpd. The total volume of water produced from Sand No. 1 was 58,268 bbls. No sand production more than approximately 500cc was evident through the entire testing program. A few pieces of shale were also recovered from the sand trap. It was assumed that the sand production was due to perforation cleanup. Referring to Table 4, the specific PI for Sand No. 1 is approximately three times that obtained for Sand No. 3, which is an indication that the permeability to water for Sand No. 1 is greater than that for Sand No. 3. The average gas-water ratios for both sands appeared to be in agreement near the 40/64 inch choke flow rates.

DISCUSSION OF RESULTS

Sand No. 3:

Figure 3 is a plot of the average gas-water ratio versus the average water production rate at each choke size for Sand No. 3. Refer to Table 1 for the sequence of the choke sizes used. The rapid drop in the gas-water ratio is probably due to the small gas stringer at the bottom of Sand No. 3 being water blocked.

Figure 4 is a plot of the average gas-water ratio versus the average bottom hole flowing pressure. Starting with the 20/64 inch choke, as the choke size is increased to a 30/64 inch choke the bottom hole pressure decreased which was expected. As the choke size was increased to a 40/64 inch choke, the bottom hole pressure increased which can be explained by

the lower gas-water ratio as well as an increase in hydrostatic head due to sand production. During the ninth flow test which was the last flow test using an 18/64 inch choke, the bottom hole pressure increased due to a lower production rate and possibly due to sand being held in suspension which was tagged at the mid-point of the sand section on completion of the test program.

Figure 5 is a plot of the average gas-water ratio versus the cumulative water production. As previously discussed, the gas-water ratio was very high initially and then began stabilizing.

Figure 6 is a plot of the cumulative gas production versus cumulative water production. There were approximately 3 million standard cubic feet of gas and 33,000 bbls of water produced during the testing of Sand No. 3.

Figure 7 is a plot of the friction loss versus water production rate at the different choke sizes. The deviation of the value for the 18/64 inch choke test is probably due to the increased hydrostatic head and turbulence created by the produced sand being held in suspension. The frictional pressure drop was measured across a tapered tubing string, the wellhead tree plus 40 feet of 3 inch flowline as listed on the figure. There was also a 5/16" single conductor electric line suspended inside the tubing.

Sand No. 1:

Figure 8 is a plot of the average gas-water ratio versus the water production rate for Sand No. 1. The flow test sequence started with the 10/64 inch choke going to the 26/64 inch choke after which the well had to be shut in due to the HP pressure recorder shorting out. When the well was

opened on the 30/64 inch choke, the gas-water ratio started in the low twenties and gradually increasing to 56 SCF/bbl at the end of the test resulting in an average of 41.6 SCF/bbl. The flow test on the 42/64 inch choke was short compared to the 34/64 inch choke and 38/64 inch choke flow periods which resulted in a low average for the gas-water ratio. Neglecting the two low points the shape of the curve is very similar to that obtained for a solution gas drive oil well.

Figure 9 is a plot of the average gas-water ratio versus the bottom hole flowing pressure. The drop in the gas-water ratio for the 30/64 inch choke is explained above. The data for the 42/64 inch and 46/64 inch chokes are not shown because the bottom hole pressure recorders were not in the well during these flow tests.

Figure 10 is a plot of the gas-water ratio versus the cumulative water production. The explanation for the drop in the gas water ratio curve is the same as for Figure 8.

Figure 11 is a plot of the cumulative gas production versus cumulative water production. Approximately 2.5 million standard cubic feet of gas and 58,300 bbls of water were produced during the testing of Sand No. 1.

Figure 12 is a plot of the friction loss versus water production rate at the different choke sizes. The values resulted in a smooth curve as shown. The frictional pressure drop was measured under similar conditions as in Sand No. 3 with the basic differences being the lengths of the different sizes of tubing in the tapered string. The values for the two test series compare relatively close above a production rate of 6000 bpd. The curve for Sand No. 3 is affected at the lower rates by the larger gas volumes produced initially during testing.

BOTTOM HOLE PRESSURE ANALYSIS RESULTS

The pressure build-up and draw down analysis for Sand No. 3 and Sand No. 1 have not been completed at this time. Four of the build-up tests for Sand No. 1 have been completed and the results are presented below. An Otis reservoir analysis model utilizing the procedure of nonlinear regression analysis was used to evaluate the data. The four build-up tests evaluated were taken after the flow periods for the 26/64 inch, 30/64 inch, 34/64 inch and 38/64 inch chokes. The build-up curves are shown in Figures 13 through 18. Figures 15 and 18 are expanded curves of Figures 14 and 17 respectively The calculated results of the various reservoir properties are shown in Table 5. The computed static pressures (Pi) are for a datum depth of 12,506 ft. (KB). The measured initial static pressure at this depth was 10,819 psia. A boundary effect (d), possibly a fault was detected in all four cases. An average of the distance to the boundary for the four cases was 460 feet. Geological subsurface maps of the area around the Delcambre No. 1 well show a fault near the well.

The computed porosity-feet gave an average of 11.9 for the four cases. Using the value 29.3% for porosity which was obtained from the well log and a net thickness of 30 ft., the value would be 8.8 as compared to 11.9. The porosity-feet values shown in Table 5 were calculated using the average hydraulic diffusivity determined by regression analysis using an estimated water viscosity of 0.386 cp and an estimated total compressibility of $25.5 * 10^{-6}$ psi^{-1}.

An Otis computer model was used to calculate the effect of shale water influx on the different parameters. From the results obtained, the shale water influx effect was considered not to be significant enough to be included at

this time. Therefore, the data shown in Table 5 was computed neglecting shale water influx.

Because the analysis of the data for Sand No. 3 and Sand No. 1 have not been completed at this time, the conclusions for the test data obtained from the Delcambre No. 1 well will be presented in the formal report to DOE.

TABLE I

TEST SCHEDULE FOR SAND NO.3

CHOKE SIZE (INCHES)	TIME OF FLOW (HRS-MIN)	AVG. WATER FLOW RATE (BPD)	AVG. GAS-WATER RATIO (SCF/BBL)	CUMULATIVE WATER PROD (BBLS)	AVG. FRICTION PRESS (PSI/100ft)
20/64	25-46	2557	235.3	2762	43.68
WELL SHUT IN FOR 17 MINUTES TO CHANGE CHOKE TO 30/64 INCH. FLOWED FOR 3 MINUTES AND SHUT IN WELL FOR 5 MINUTES TO CHANGE O-RING ON CHOKE VALVE.					
30/64	23-16	5496	78.5	8093	49.34
WELL SHUT IN FOR 15 MINUTES TO CHANGE TO 40/64 INCH CHOKE.					
40/64	2-56	8670	48.68	9223	55.60
WELL SHUT IN TO REPLACE CHICKSANS. HAD PROBLEMS WITH HP RECORDER, WELL WAS SHUT IN FOR 21HRS AND 36MIN WHILE TAKING PRESS BLD-UP DATA					
40/64	14-29	8732	58.66	14,564	55.87
SHUT IN WELL 6HRS 4MIN FOR BUILD-UP TEST, WELL SHUT IN FOR 22HRS WHILE COLLECTING BOTTOM HOLE FLUID SAMPLES.					

TABLE NO. 1 (CONT'D)

TEST SCHEDULE FOR SAND NO. 3

CHOKE SIZE (INCHES)	TIME OF FLOW (HR-MIN)	AVG. WATER FLOW RATE (BPD)	AVG. GAS-WATER RATIO (SCF/BBL)	CUMULATIVE WATER PROD (BBLS)	AVG FRICTION PRESS (PSI/100ft)
20/64	32-31	3563	64.8	19,410	—
SHUT IN WELL 1HR 29MIN TO CHANGE CHOKE AND REPLACE CHICKSANS.					
22/64	0-50	2204	15.0	19,487	—
SHUT IN WELL 10MIN TO REPLACE CHICKSANS					
22/64	1-21	4832	62.3	19,759	—
SHUT IN WELL 23MIN TO REPLACE BROKEN CHOKE CORE. CHANGED TO 18/64 INCH CHOKE.					
18/64	92-44	3125	80.2	31,946	—
SHUT IN WELL 4HRS 17MIN TO GIH WITH HP PRESS RECORDER AND CHANGE CHICKSANS.					
18/64	7-45	2829	86.4	32,880	46.23
SHUT IN WELL FOR 49HRS 2MIN FOR PRESS BUILD-UP TEST.					
		—END OF TEST—			

TABLE NO. 2

TEST DATA SAND NO. 3

CHOKE SIZE (Inches)	TIME OF FLOW (Hrs-Min)	AVG. GAS-WATER RATIO (SCF/Bbl)	SPECIFIC PI (Bbl/day·psi·ft)
20/64	25-46	235.30	0.027
30/64	23-16	78.50	0.071
40/64	2-56	48.68	0.082
40/64	14-29	58.66	0.088
18/64	7-45	86.40	0.087

TABLE NO.3

TEST SCHEDULE FOR SAND NO. I

CHOKE SIZE (INCHES)	TIME OF FLOW (HRS-MIN)	AVG WATER FLOW RATE (BPD)	AVG GAS-WATER RATIO (SCF/BBL)	CUMULATIVE WATER PROD. (BBL)	AVG FRICTION psi/100ft
10/64	50-14	1163	25.0	2435	46.48
14/64	47-50	1988	20.3	6399	46.75
18/64	48-9	3094	21.1	12609	47.61
22/64	47-56	4707	28.9	22014	49.17
26/64	38-55	5951	51.7	31667	50.57
SHUT IN 96 HRS 30 MIN FOR BUILD-UP TEST AND BOTTOM HOLE SAMPLES					
30/64	20-30	7672	41.6	38227	53.38
SHUT IN 31 HRS 34 MIN FOR BUILD-UP TEST					
34/64	20-19	8691	54.9	45588	55.23
SHUT IN 23 HRS 2 MIN FOR BUILD-UP TEST					
38/64	18-25	10018	56.5	53282	58.29
SHUT IN 23 HRS 58 MIN FOR BUILD-UP TEST AND RETRIEVE BHP RECORDERS					
42/64	4-18	11082	46.9	55277	——
SHUT IN 3 HRS 23 MIN TO REMOVE 2" TURBINE METER					
46/64	6-0	11958	62.5	58267	——
END OF TEST					

TABLE NO.4

TEST DATA SAND NO. 1

CHOKE SIZE (Inches)	TIME OF FLOW (Hrs-Min)	AVG. GAS-WATER RATIO (SCF/Bbl)	SPECIFIC PI (Bbl/day·psi·ft)
10/64	50-14	25.0	0.177
14/64	47-50	20.3	0.161
18/64	48-9	21.1	0.177
22/64	47-56	28.9	0.208
26/64	38-55	51.7	0.219
30/64	20-30	41.6	0.258
34/64	20-19	54.9	0.270
38/64	18-25	56.5	0.298

TABLE 5

SUMMARY OF PRESSURE BUILDUP ANALYSES
OSBORNE, HODGES, ROBERTS, WIELAND
EDNA DELCAMBRE NO.1 WELL

TEST DATE (mo/d/yr)	NO. DATA POINTS (-)	MAX. SI TIME (hrs)	PRIOR FLOW RATE (RBPD)	S_y (a) (±psi)	r_i (b) (feet)
7/3-7/77	18	99.51	6273	0.15	2720
7/8-9/77	17	16.68	7770	0.56	1360
7/10-11/77	27	20.45	9040	0.57	1430
7/12-13/77	26	20.38	10461	0.50	1510

$k_w h$ (md-ft.)	η (c) (hrs^{-1})	p_i (psia)	d (feet)	ϕh (d) (feet)	s' (e) (-)	$\Delta p_{s'}/q$ (f) (psi/RBPD)
8697	18564	10842	496	12.55	12.96	0.0812
11677	27715	10828	491	11.29	17.85	0.0833
11417	25076	10828	428	12.20	15.47	0.0739
11926	27810	10824	425	11.49	14.89	0.0681

(a) average deviation between measured pressures and pressures calculated by nonlinear regression analysis

(b) radius investigated, $r_i=(4\eta\Delta t)^{0.5}$

(c) hydraulic diffusion constant, $0.0002637\ k/\phi\mu c$

(d) porosity-thickness, $\phi h=0.0002637kh/\eta\mu c$

(e) total skin effect, $s'=s+Dq=1.151\left[\frac{p_{ws1}-p_{wf}}{m} - \log\left(\frac{4\eta}{1.781r_w^2}\right)\right]$

(f) pressure drop due to total skin per unit flow rate,

$$\frac{\Delta p_{s'}}{q} = 0.8686\frac{m}{q}(s')$$

note: parameters evaluated by nonlinear regression analysis are: $k_w h$, η, d, p_i

FIGURE I

GAMMA RAY–NEUTRON LOG OF SAND NO 3.

DUAL SPACING THERMAL NEUTRON DECAY TIME

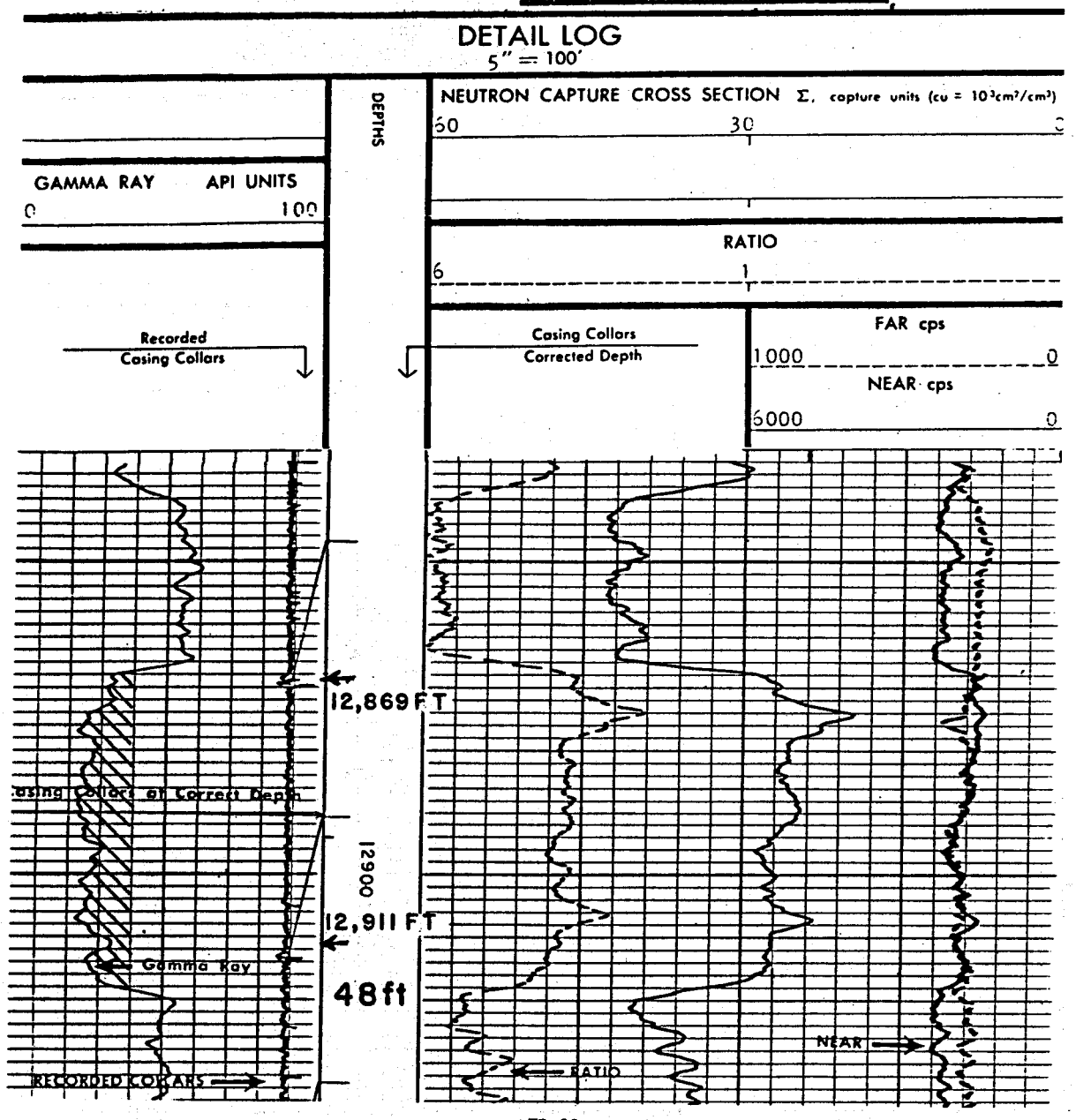
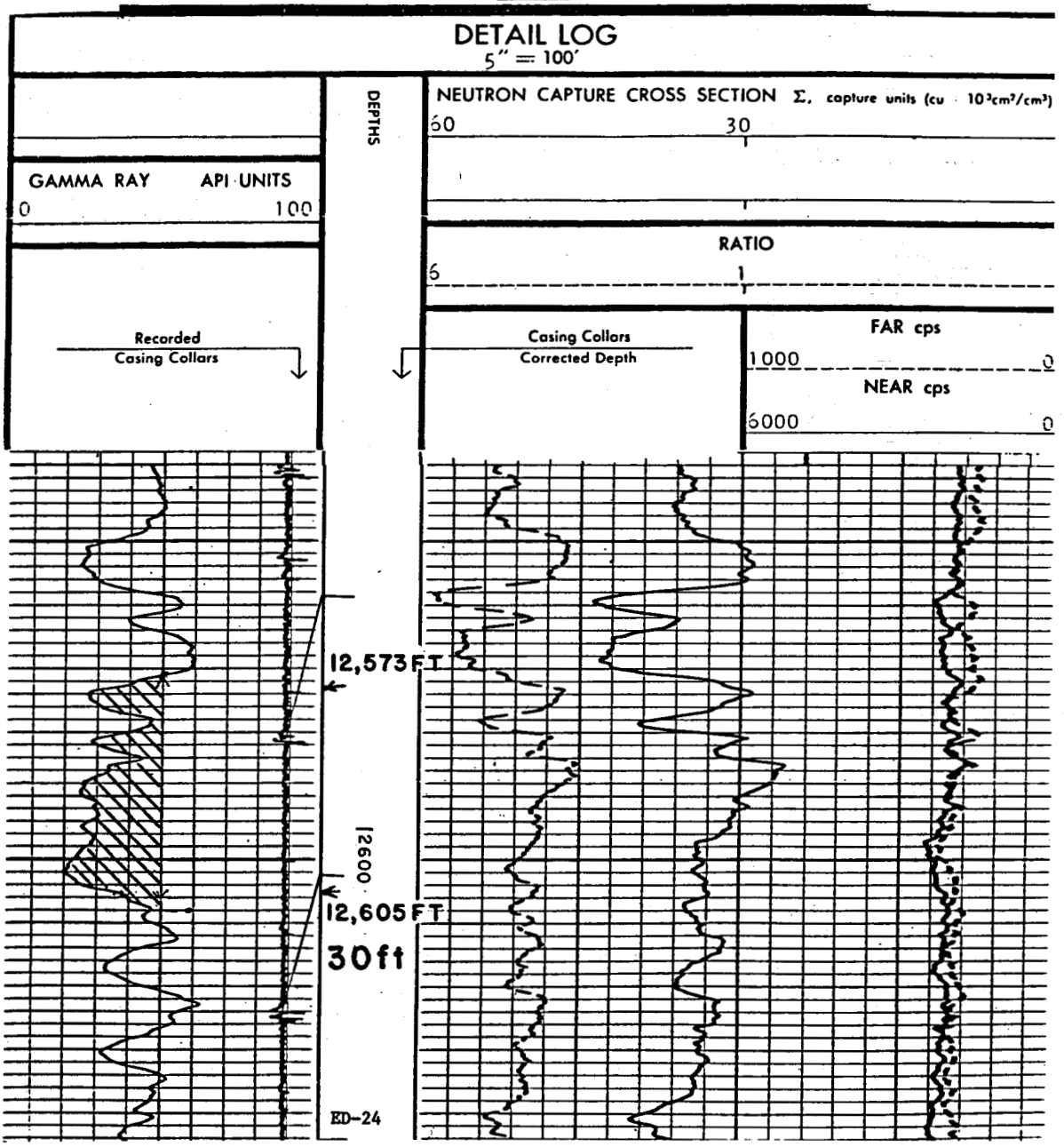


FIGURE 2

GAMMA RAY–NEUTRON LOG OF SAND NO I.

DUAL SPACING THERMAL NEUTRON DECAY TIME



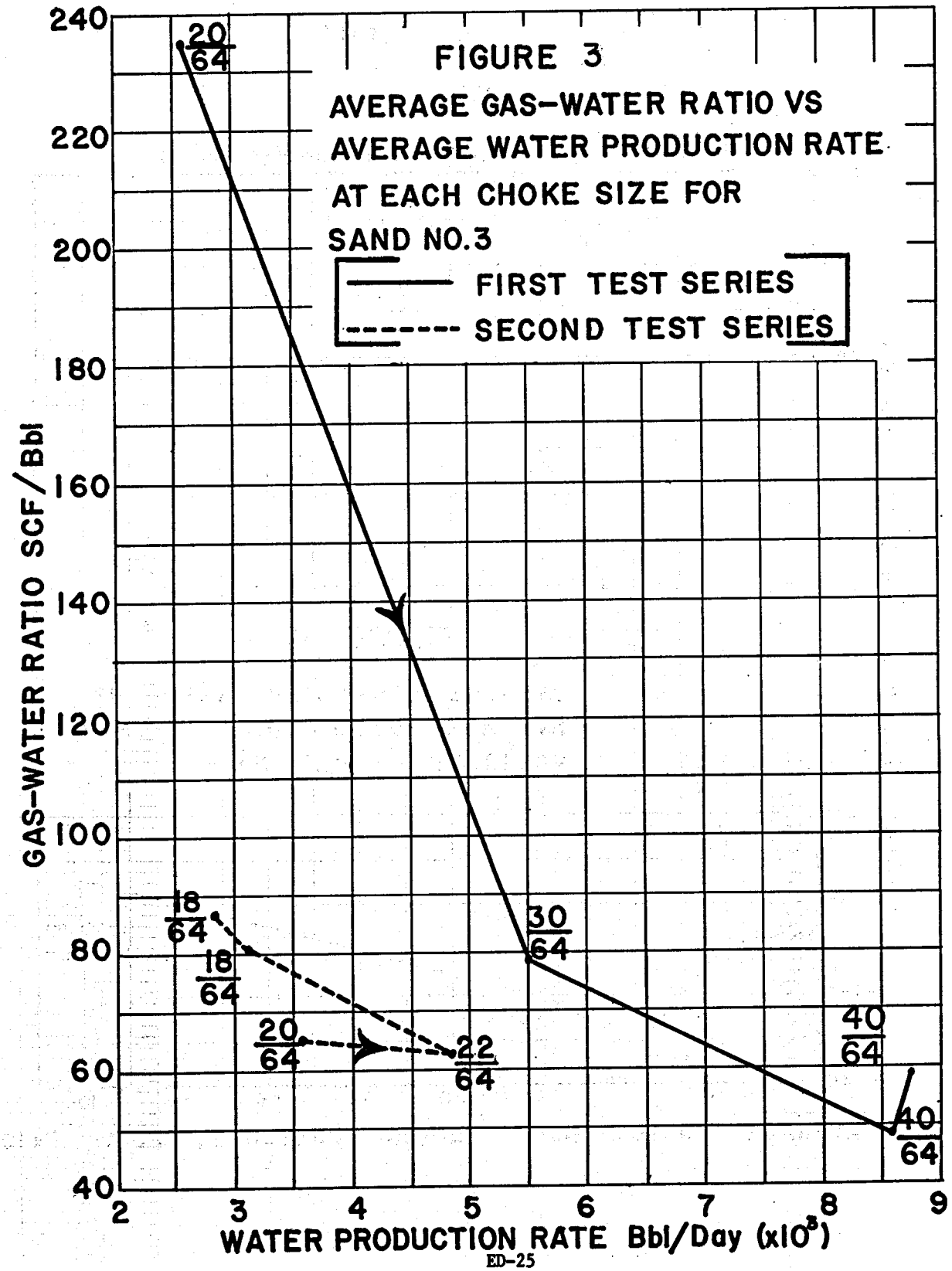


FIGURE 3
AVERAGE GAS-WATER RATIO VS
AVERAGE WATER PRODUCTION RATE
AT EACH CHOKE SIZE FOR
SAND NO.3
FIRST TEST SERIES
SECOND TEST SERIES
GAS-WATER RATIO SCF/Bbl
WATER PRODUCTION RATE Bbl/Day (x10³)
240
220
200
180
160
140
120
100
80
60
40
2
3
4
5
6
7
8
9
20/64
18/64
18/64
20/64
22/64
30/64
40/64
40/64

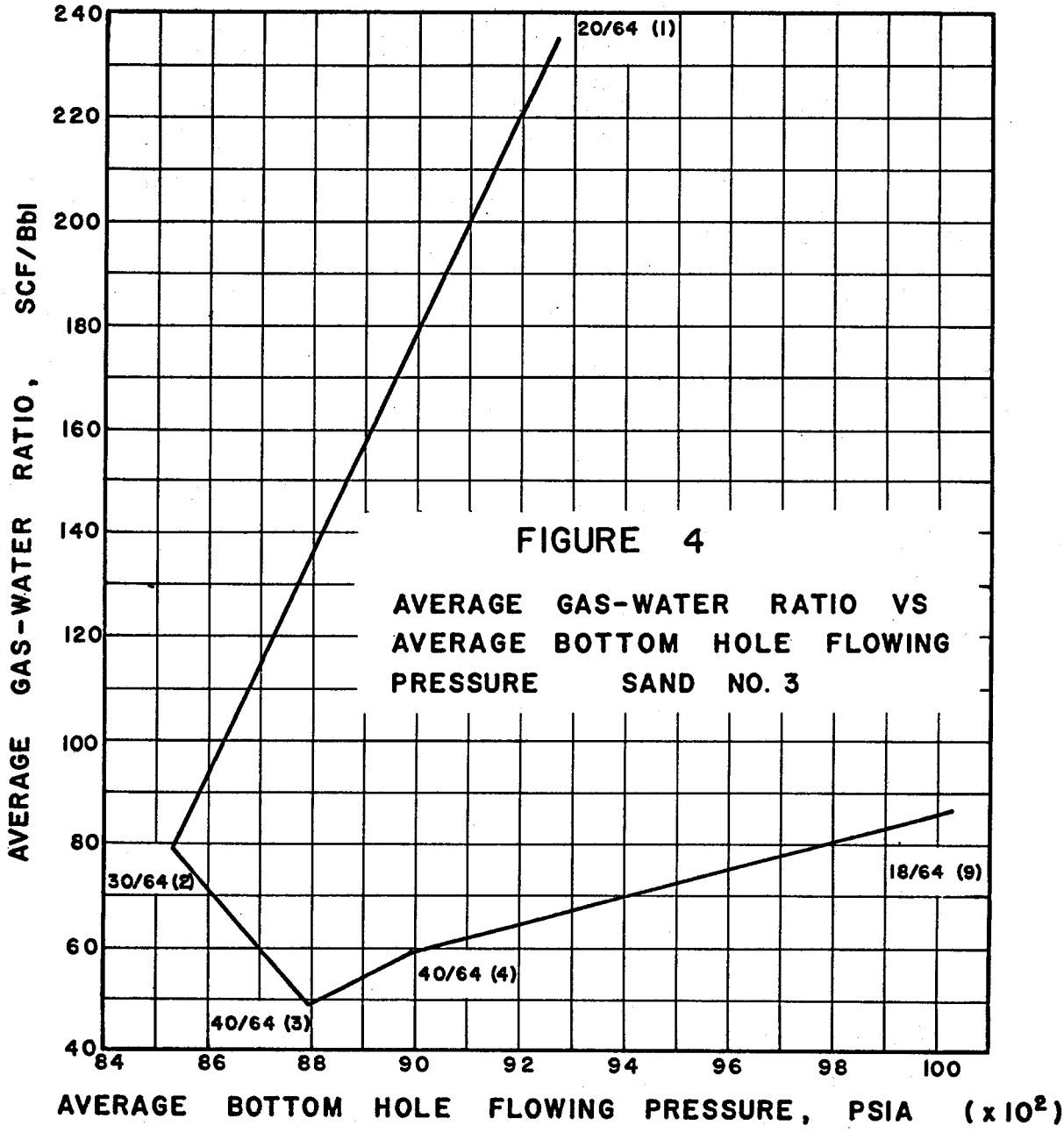


FIGURE 4

AVERAGE GAS-WATER RATIO VS AVERAGE BOTTOM HOLE FLOWING PRESSURE SAND NO. 3

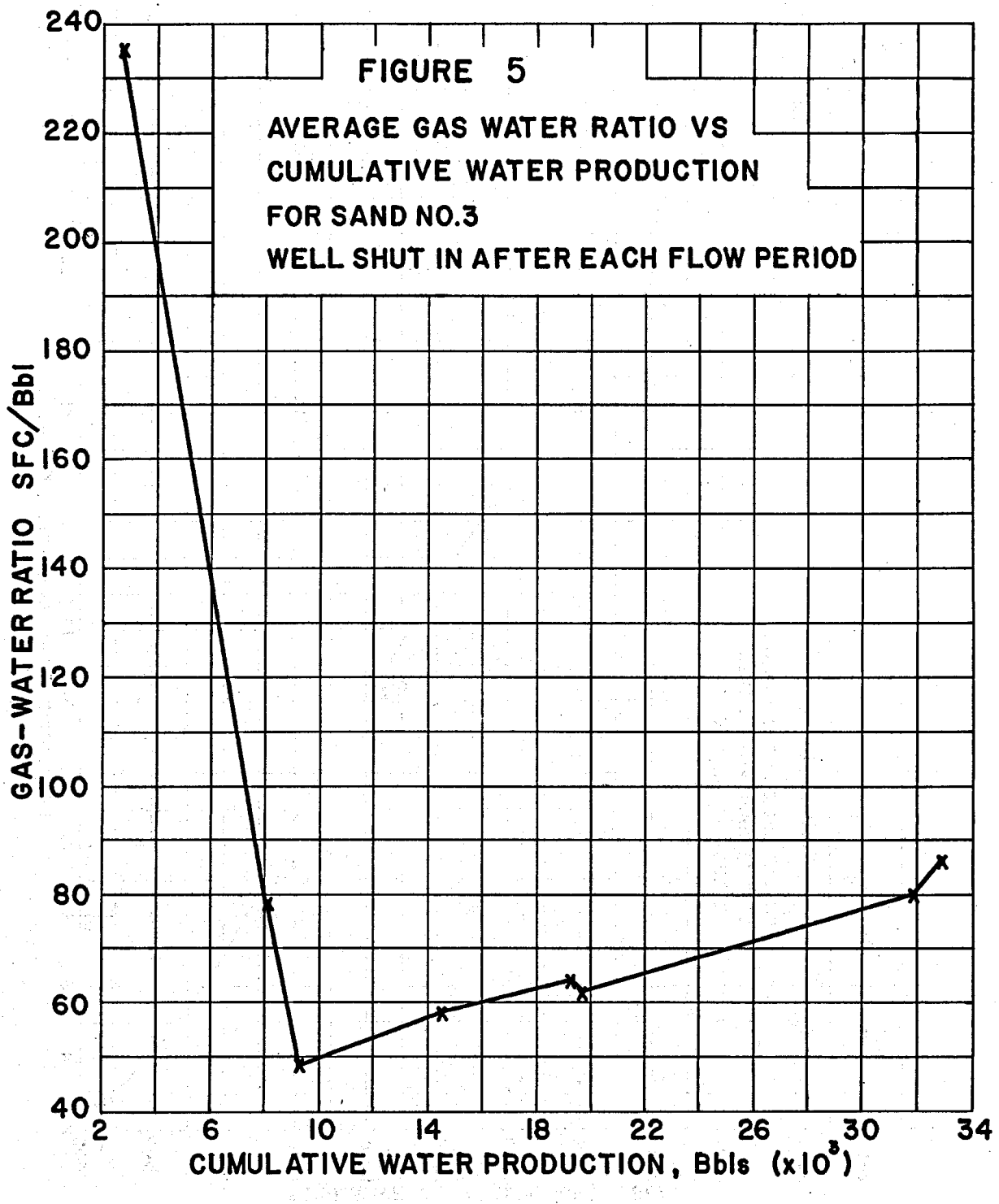


FIGURE 5
AVERAGE GAS WATER RATIO VS
CUMULATIVE WATER PRODUCTION
FOR SAND NO.3
WELL SHUT IN AFTER EACH FLOW PERIOD
GAS-WATER RATIO SFC/Bbl
240
220
200
180
160
140
120
100
80
60
40
2
6
10
14
18
22
26
30
34
CUMULATIVE WATER PRODUCTION, Bbls (x10³)

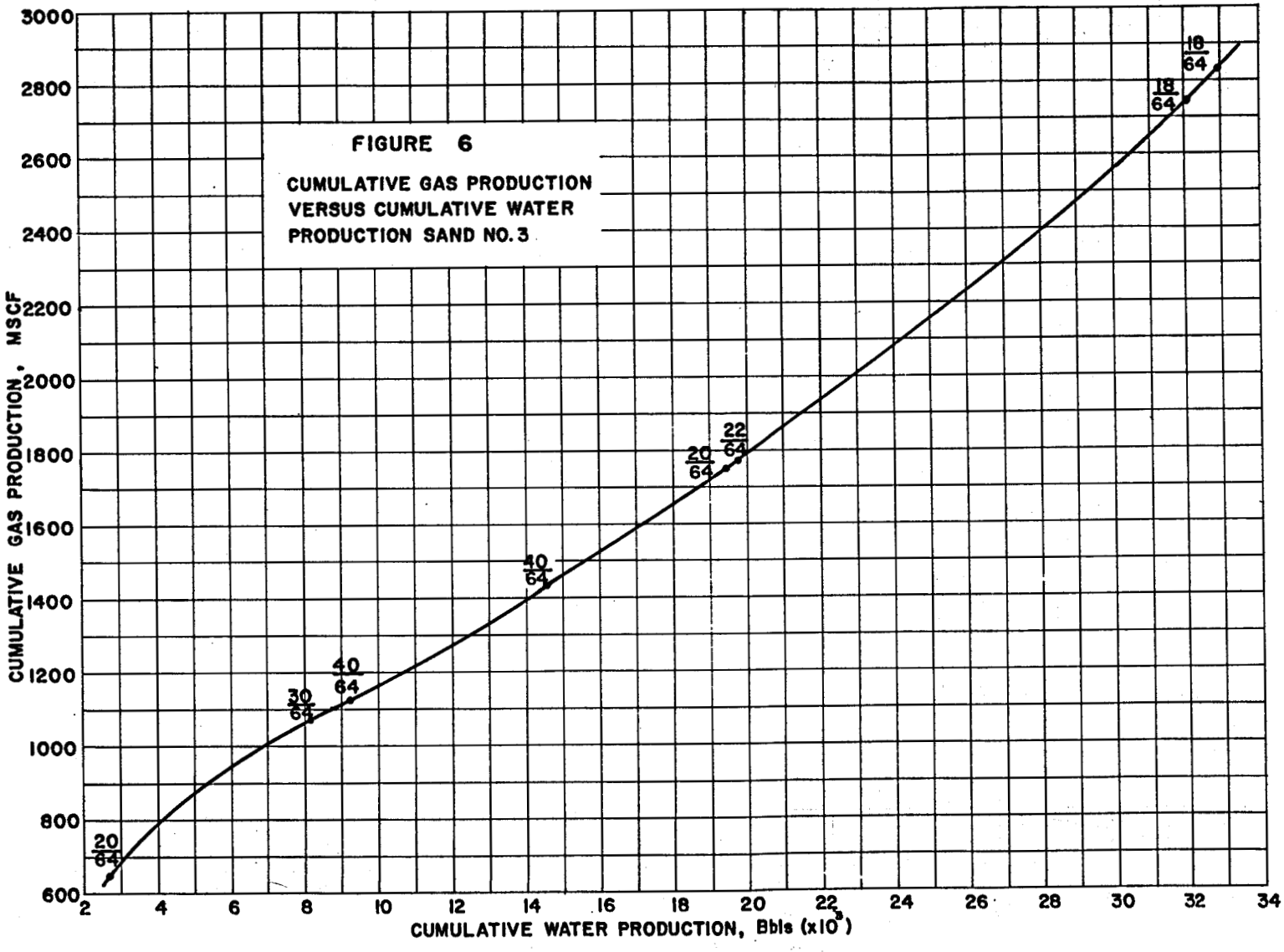


FIGURE 6
CUMULATIVE GAS PRODUCTION VERSUS CUMULATIVE WATER PRODUCTION SAND NO. 3
CUMULATIVE GAS PRODUCTION, MSCF
CUMULATIVE WATER PRODUCTION, Bbls (x10³)
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
2
4
6
8
10
12
14
16
18
20
22
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20/64
22/64
18/64
18/64

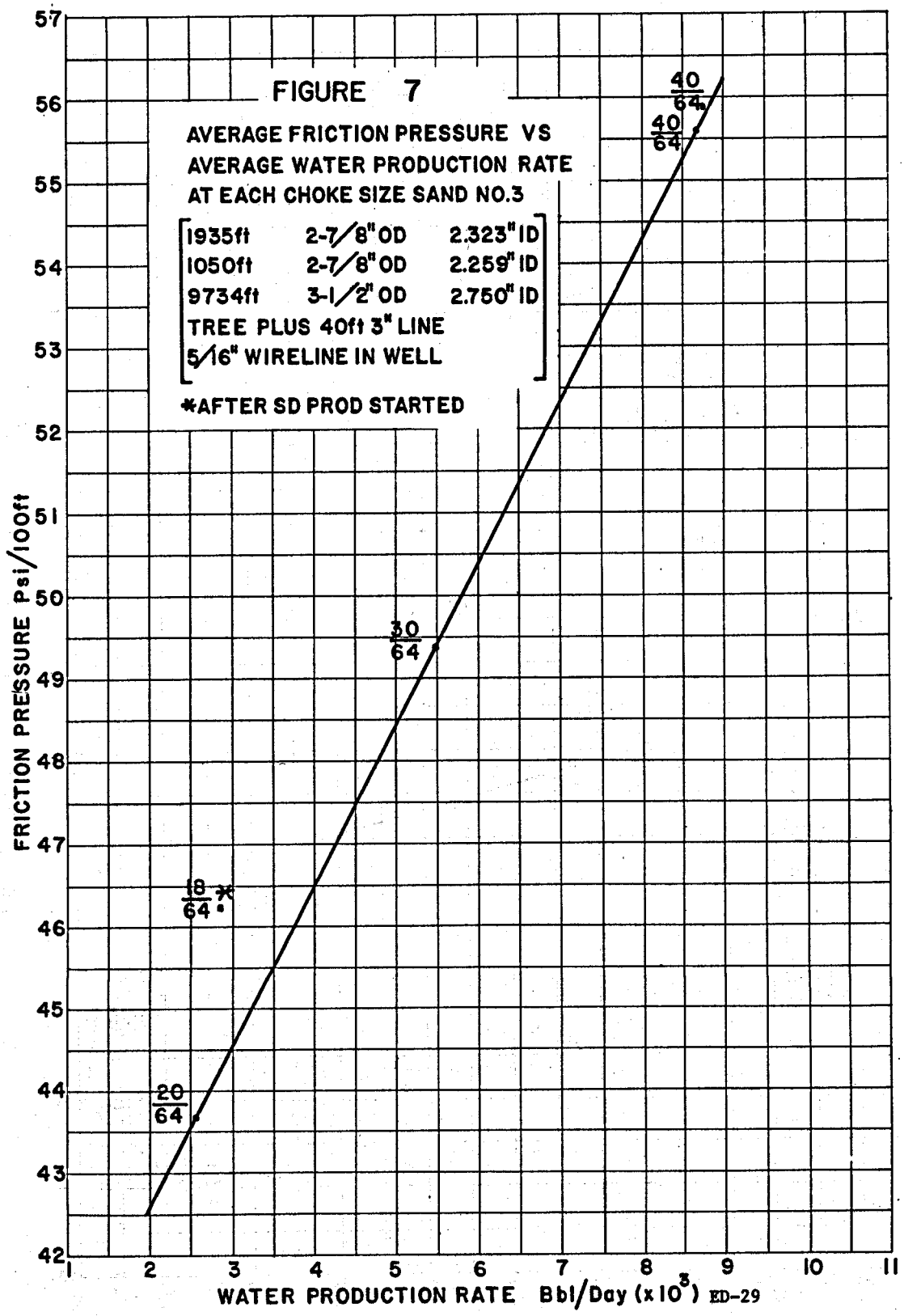


FIGURE 7
AVERAGE FRICTION PRESSURE VS
AVERAGE WATER PRODUCTION RATE
AT EACH CHOKE SIZE SAND NO.3
1935ft 2-7/8" OD 2.323" ID
1050ft 2-7/8" OD 2.259" ID
9734ft 3-1/2" OD 2.750" ID
TREE PLUS 40ft 3" LINE
5/16" WIRELINE IN WELL
*AFTER SD PROD STARTED
FRICTION PRESSURE Psi/100ft
WATER PRODUCTION RATE Bbl/Day (x10³)
20/64
18/64 *
30/64
40/64
40/64
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
1
2
3
4
5
6
7
8
9
10
11

ED-29

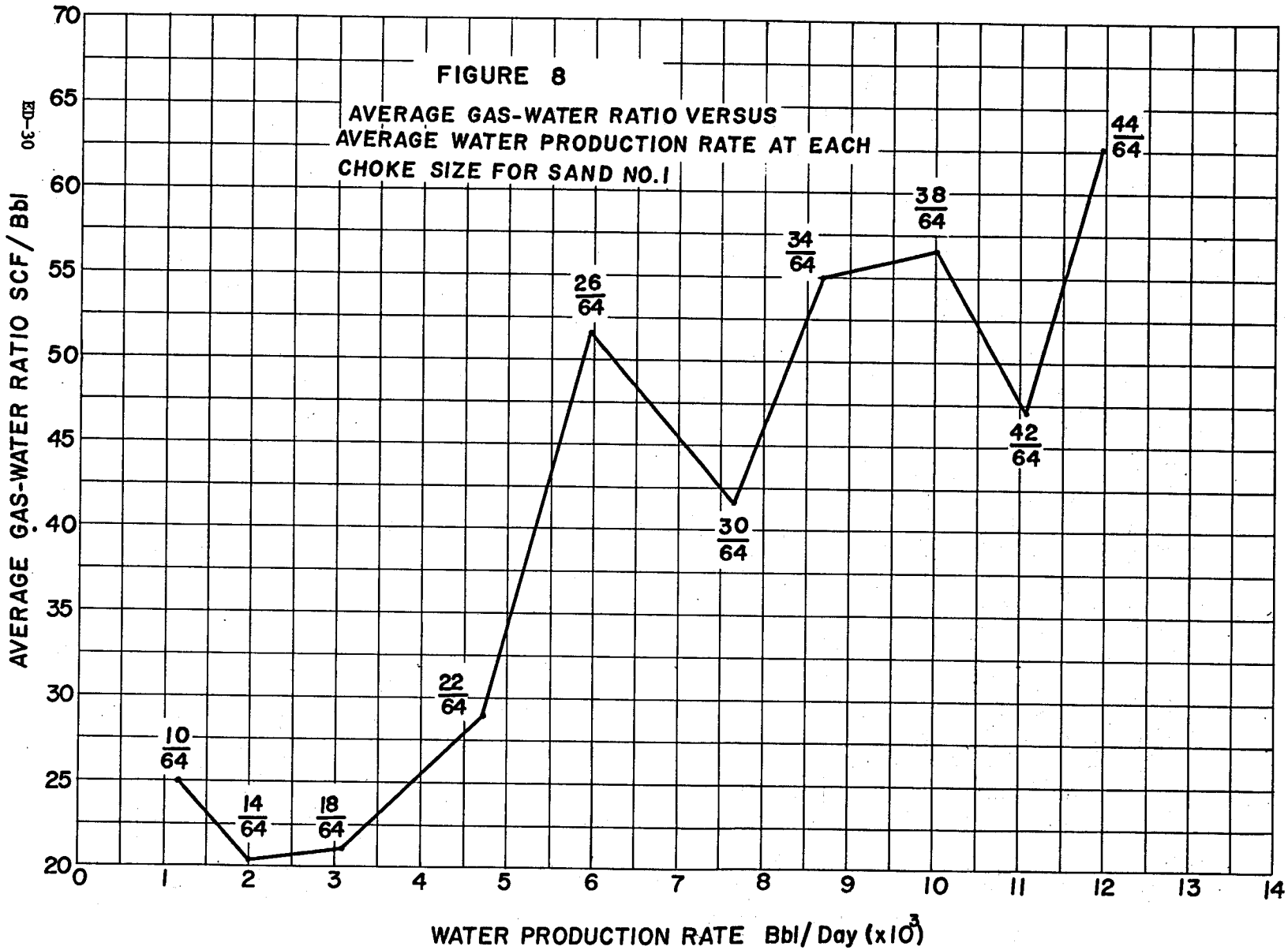


FIGURE 8

AVERAGE GAS-WATER RATIO VERSUS AVERAGE WATER PRODUCTION RATE AT EACH CHOKE SIZE FOR SAND NO. 1

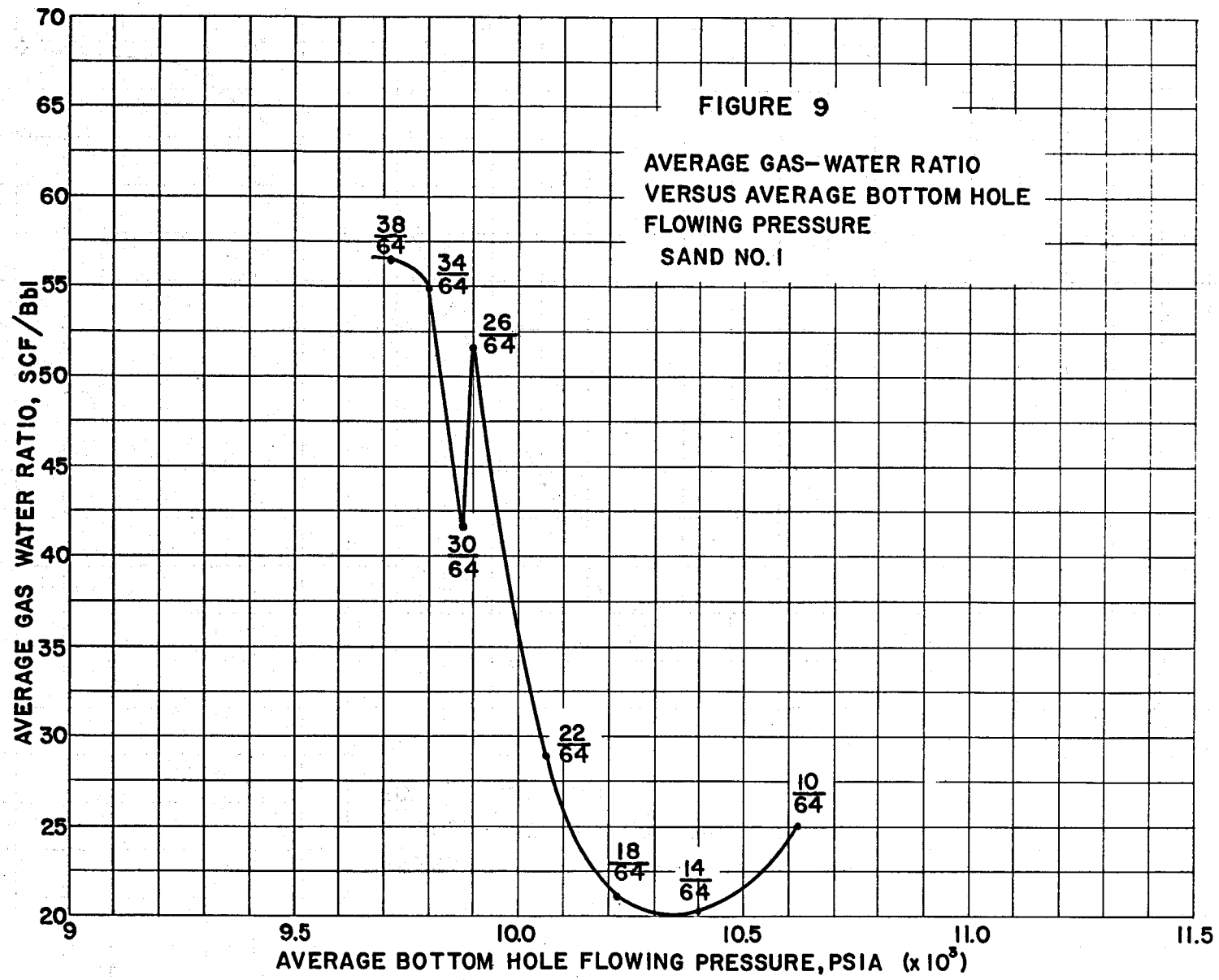


FIGURE 9
AVERAGE GAS-WATER RATIO
VERSUS AVERAGE BOTTOM HOLE
FLOWING PRESSURE
SAND NO. 1
AVERAGE GAS WATER RATIO, SCF/Bbl
AVERAGE BOTTOM HOLE FLOWING PRESSURE, PSIA (x 10³)
70
65
60
55
50
45
40
35
30
25
20
9
9.5
10.0
10.5
11.0
11.5
38/64
34/64
26/64
30/64
22/64
18/64
14/64
10/64

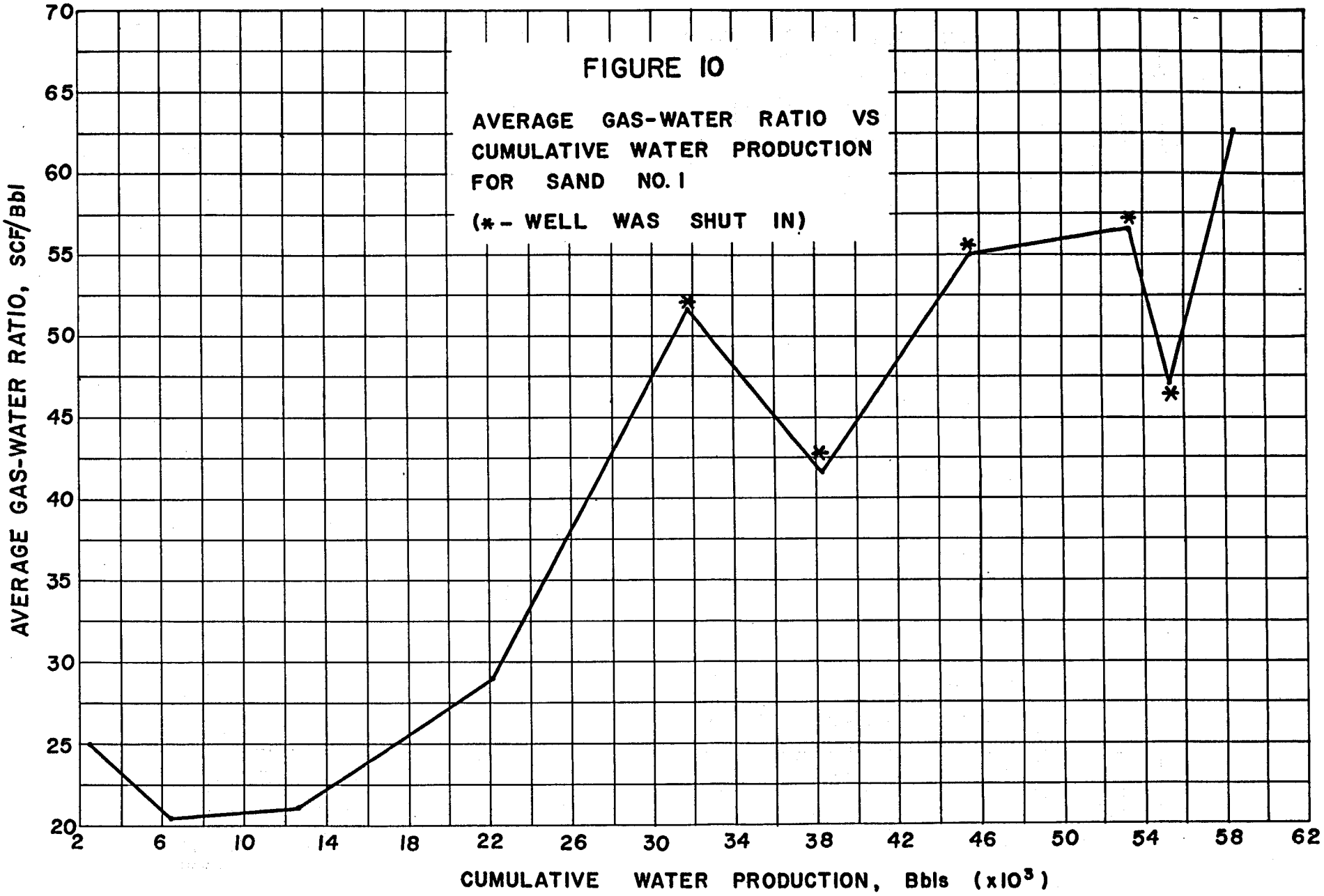


FIGURE 10
AVERAGE GAS-WATER RATIO VS CUMULATIVE WATER PRODUCTION FOR SAND NO. 1
(* - WELL WAS SHUT IN)
AVERAGE GAS-WATER RATIO, SCF/BBl
CUMULATIVE WATER PRODUCTION, Bbls (x10³)
70
65
60
55
50
45
40
35
30
25
20
2
6
10
14
18
22
26
30
34
38
42
46
50
54
58
62

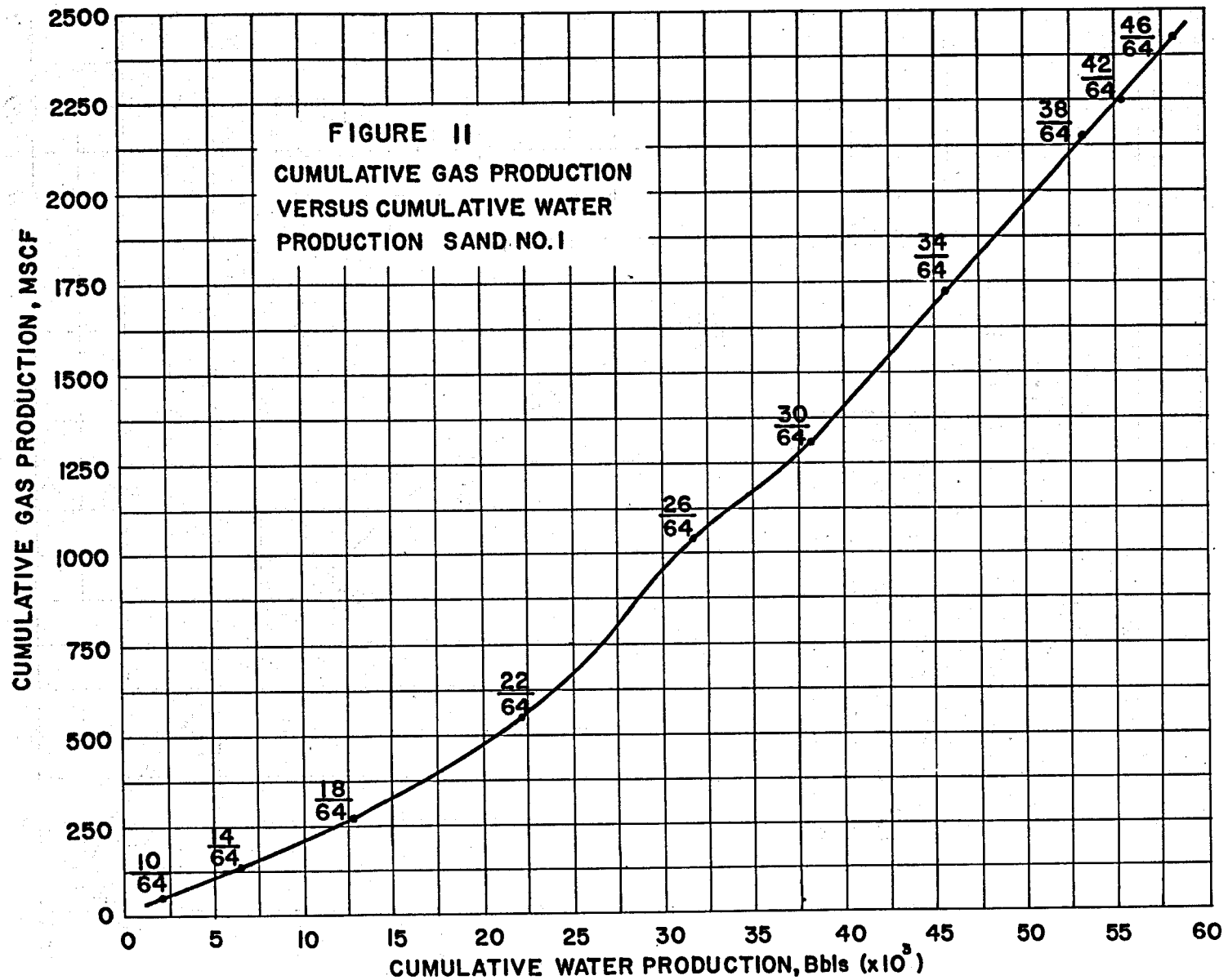


FIGURE II
CUMULATIVE GAS PRODUCTION VERSUS CUMULATIVE WATER PRODUCTION SAND NO. I
CUMULATIVE GAS PRODUCTION, MSCF
CUMULATIVE WATER PRODUCTION, Bbls (x10³)
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
0
5
10
15
20
25
30
35
40
45
50
55
60
10/64
14/64
18/64
22/64
26/64
30/64
34/64
38/64
42/64
46/64

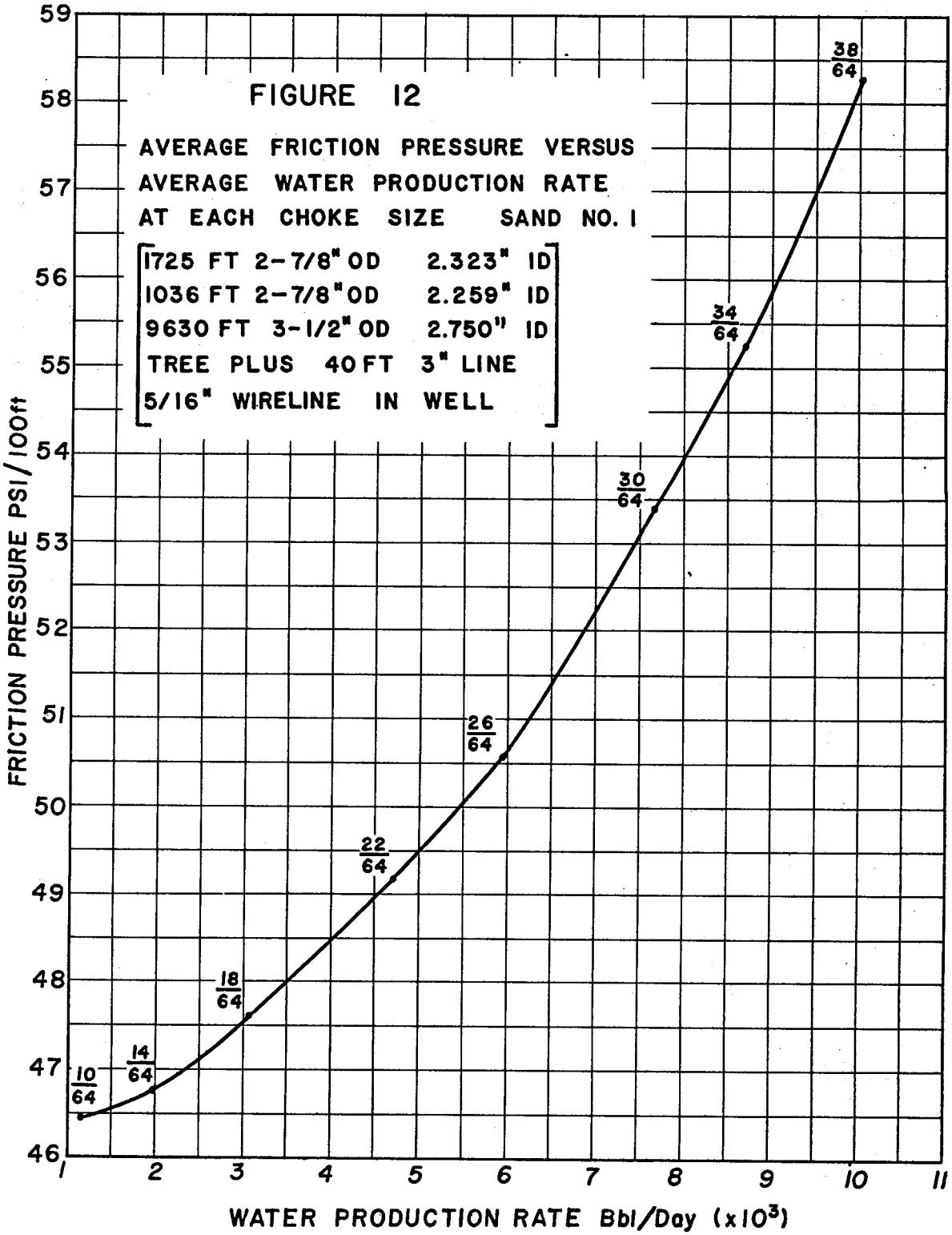


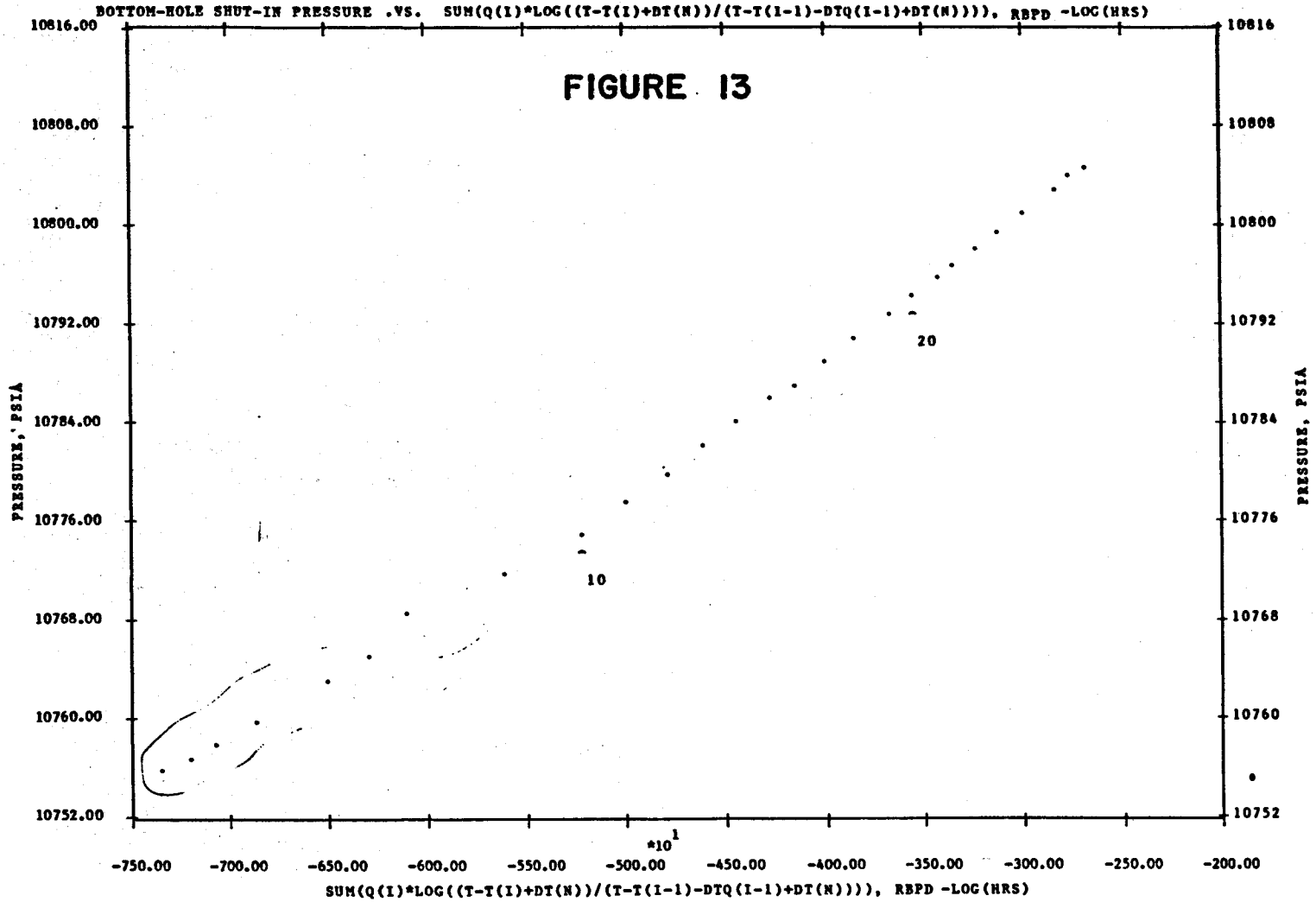
FIGURE 12
AVERAGE FRICTION PRESSURE VERSUS
AVERAGE WATER PRODUCTION RATE
AT EACH CHOKE SIZE SAND NO. 1
1725 FT 2-7/8" OD 2.323" ID
1036 FT 2-7/8" OD 2.259" ID
9630 FT 3-1/2" OD 2.750" ID
TREE PLUS 40 FT 3" LINE
5/16" WIRELINE IN WELL
10/64
14/64
18/64
22/64
26/64
30/64
34/64
38/64
FRICTION PRESSURE PSI/100ft
WATER PRODUCTION RATE Bbl/Day (x10³)
46
47
48
49
50
51
52
53
54
55
56
57
58
59
1
2
3
4
5
6
7
8
9
10
11

BUILDUP TEST OF 7/3-7/77
OSBORNE,HODGES,ROBERTS,WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 26/64 CHK
TIGRE LAGOON FIELD
VERMILLION PARISH,LOUISIANA

DATE: 10/31/77.
TIME: 11.15.21.
FILE: BUILT
CASE: 0

PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), RBPD -LOG(HRS)

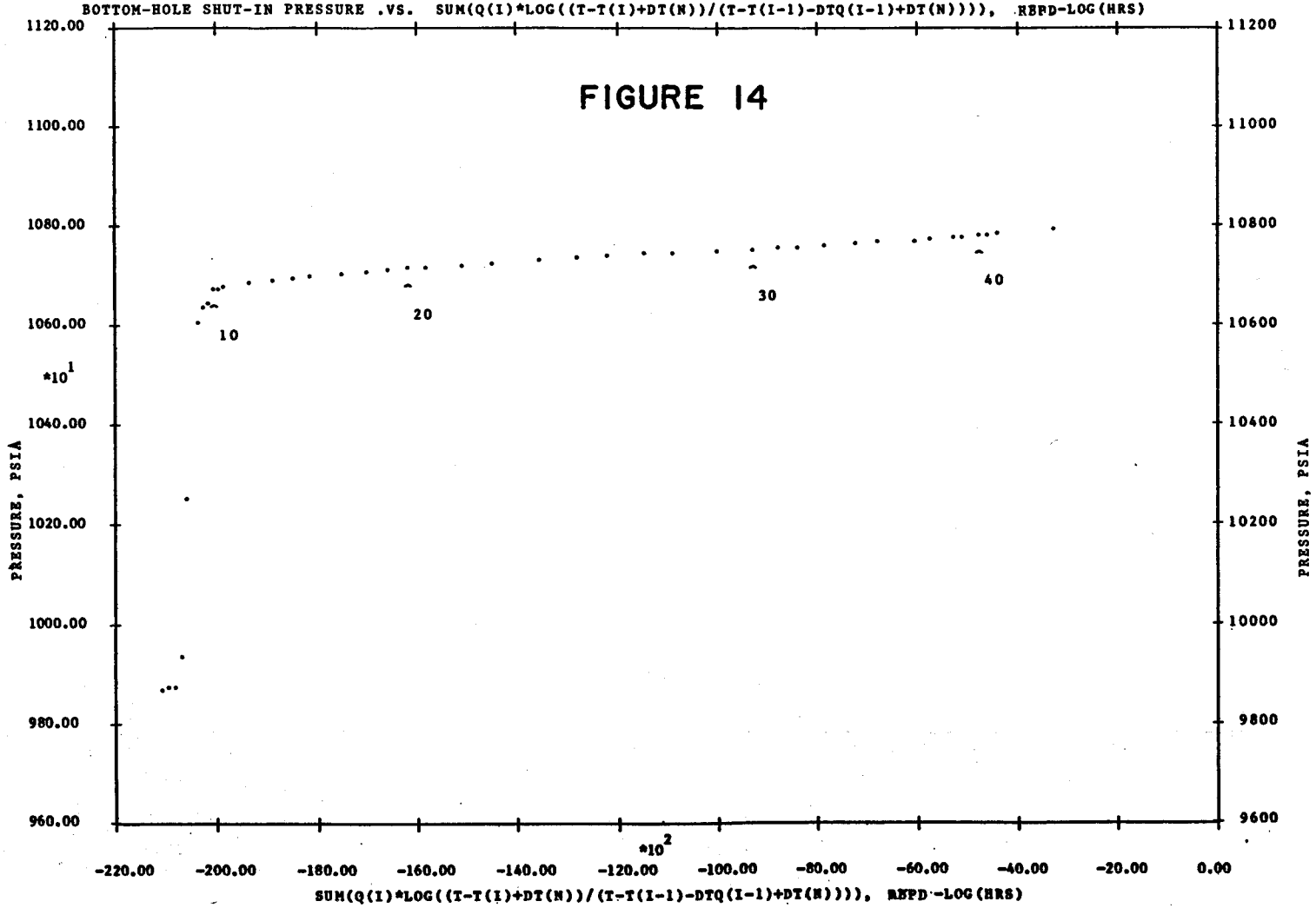


BUILDUP TEST OF 7/8-9/77
OSBORNE,HODGES,ROBERTS,WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 30/64 CHK.
TIGRE LAGOON FIELD
VERMILION PARISH LOUISIANA

DATE: 10/26/77.
TIME: 21.22.05.
FILE: BU2LT
CASE: 0

PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), REFD-LOG(HRS)

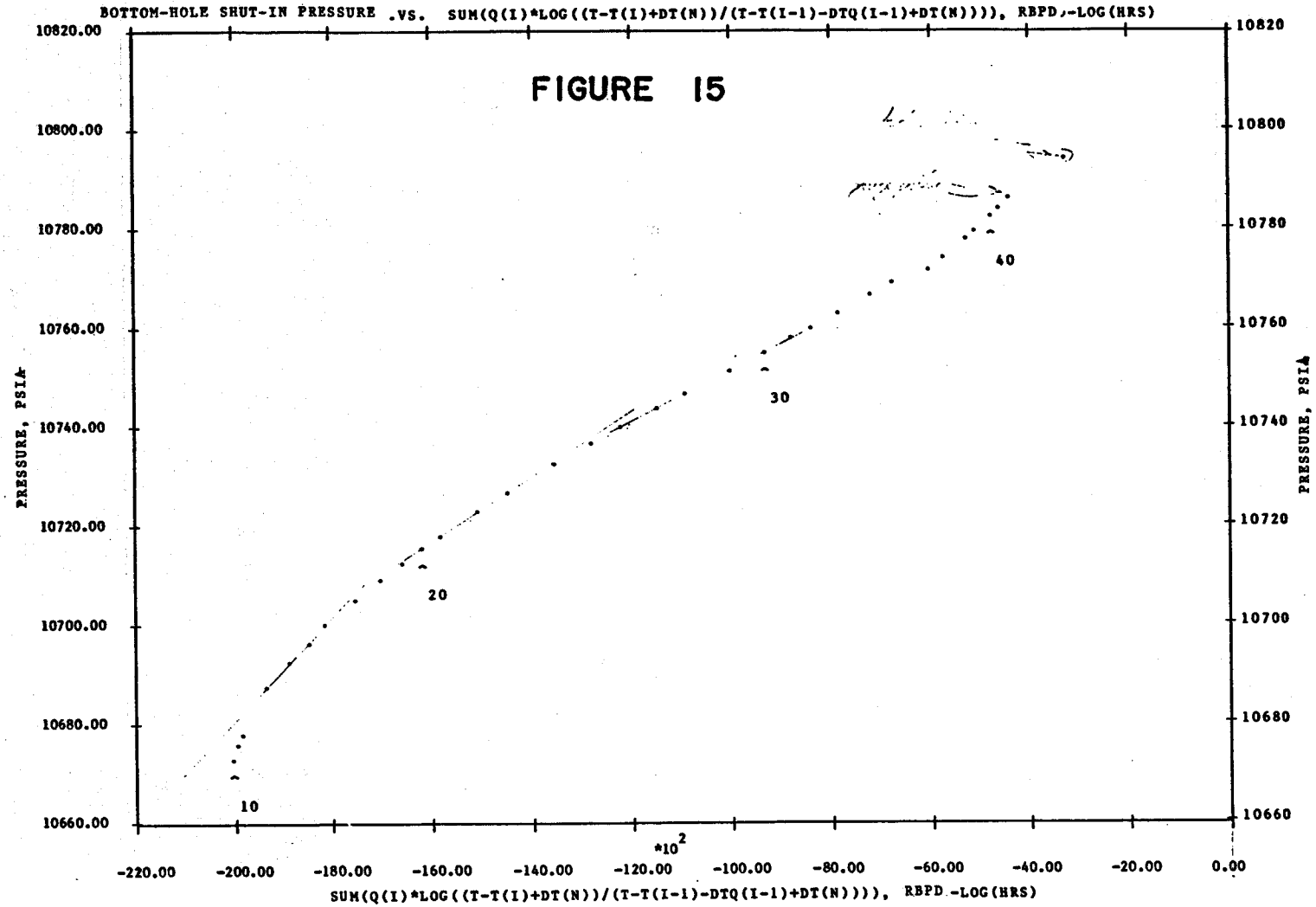


BUILDUP TEST OF 7/8-9/77
OSBORNE,HODGES,ROBERTS,WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 30/64 CHK.
TIGRE LAGOON FIELD
VERMILION PARISH LOUISIANA

DATE: 10/26/77.
TIME: 21.22.05.
FILE: BU2LT
CASE: 0

PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), RBPD,-LOG(HRS)

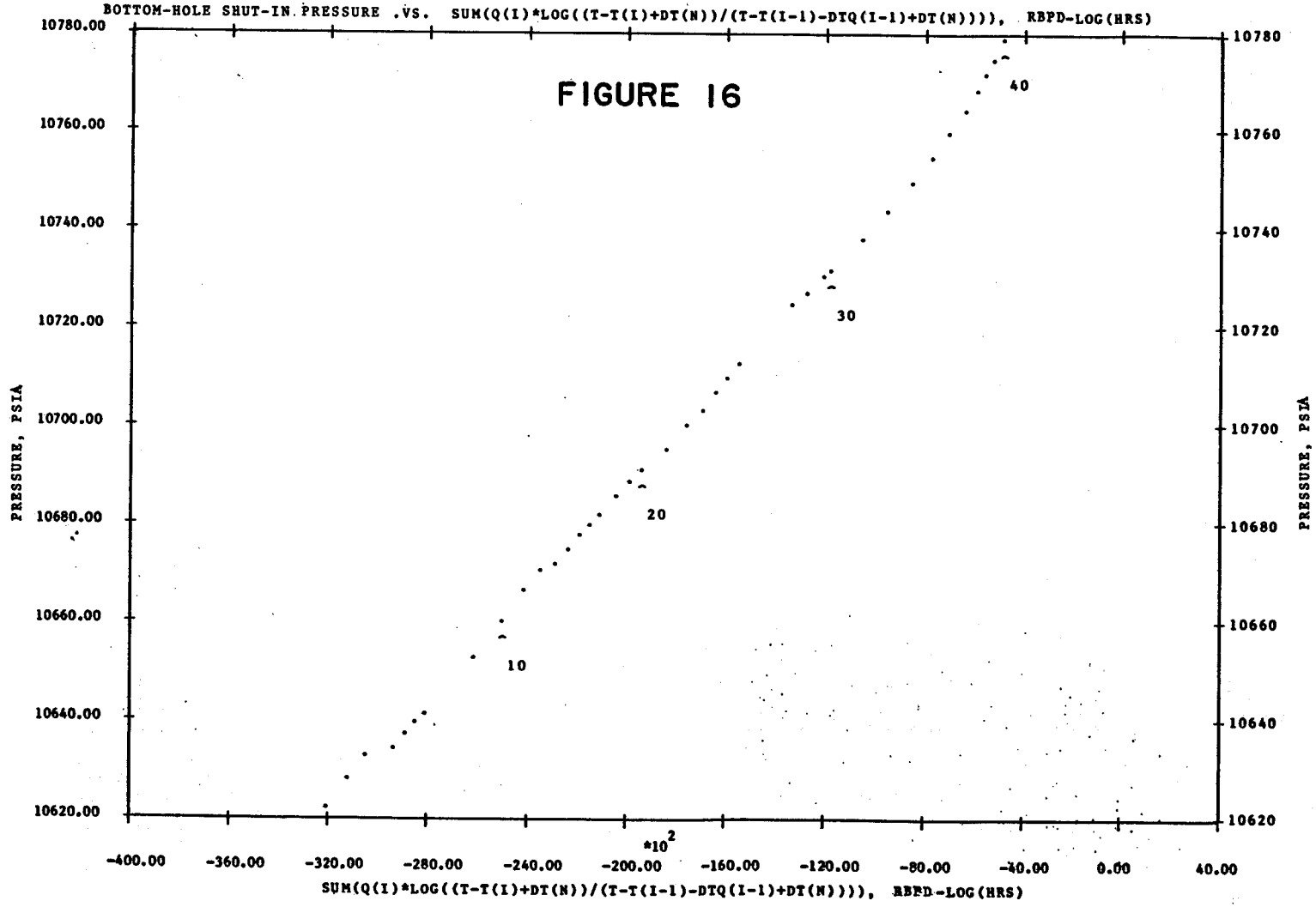


BUILDUP TEST OF 7/10-11/77
OSBORNE,HODGES,ROBERTS;WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 34/64 CHOKE
TIGRE LAGOON FIELD
VERMILION PARISH,LOUISIANA

DATE: 10/28/77.
TIME: 13.38.07.
FILE: BU3LT
CASE: 0

PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), RBPD-LOG(HRS)

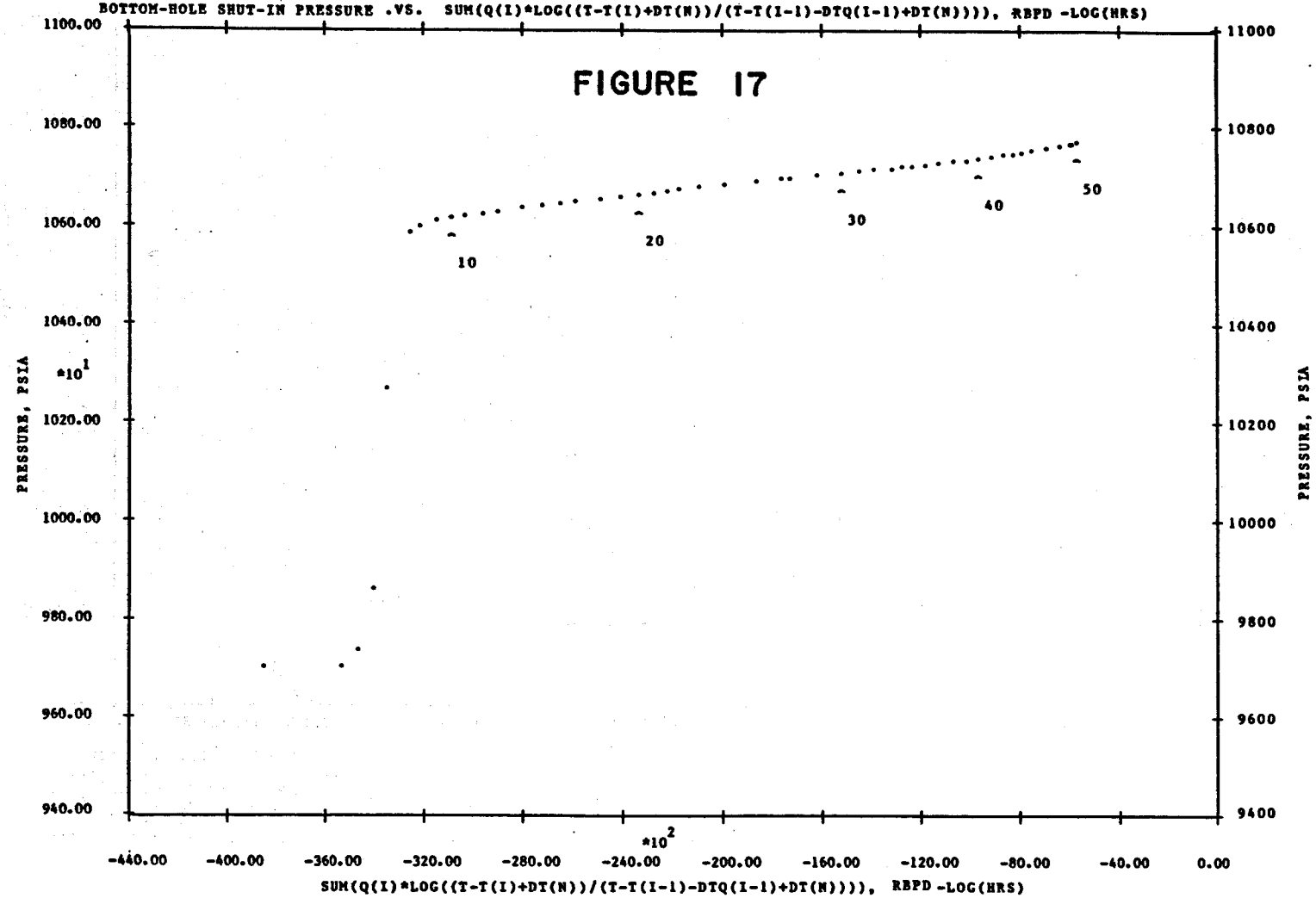


BUILDUP TEST OF 7/12-13/77
OSBORNE,HODGES,ROBERTS;WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 38/64 CHOKE
TIGRE LAGOON FIELD
VERMILION PARISH,LOUISIANA

DATE: 11/01/77.
TIME: 13.37.48.
FILE: BU4LT
CASE: 0

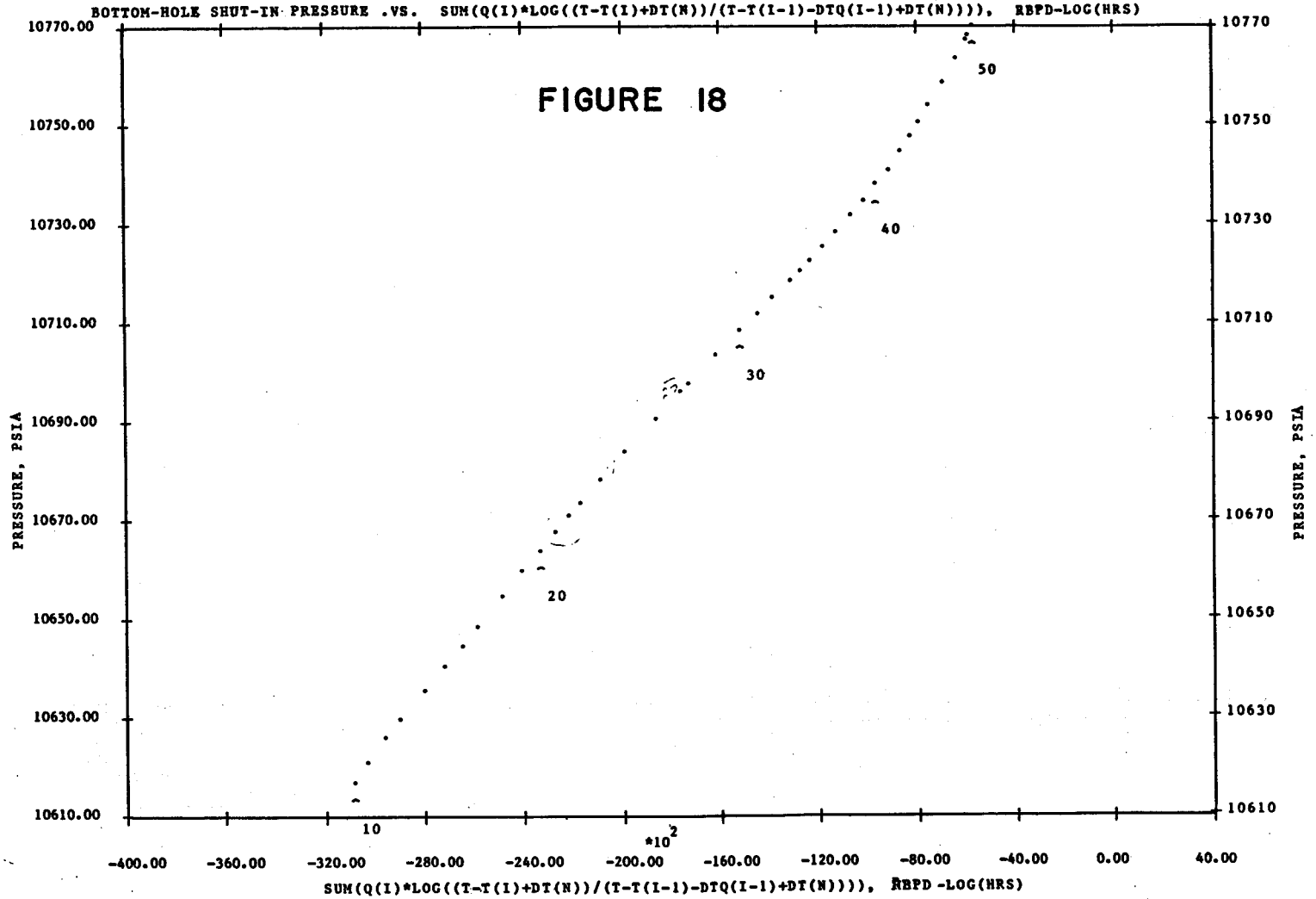
PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), RBPD -LOG(HRS)



BUILDUP TEST OF 7/12-13/77
OSBORNE,HODGES,ROBERTS;WIELAND
NO.1 EDNA DELCAMBRE WELL
PRIOR FLOW ON 38/64 CHOKE
TIGRE LAGOON FIELD
VERMILION PARISH,LOUISIANA

DATE: 11/01/77.
TIME: 13.37.48.
FILE: BU4LT
CASE: 0

PAGE:

BOTTOM-HOLE SHUT-IN PRESSURE .VS. SUM(Q(I)*LOG((T-T(I)+DT(N))/(T-T(I-1)-DTQ(I-1)+DT(N)))), RBPD-LOG(HRS)