

LEASE NAME	STEHL	WELL NO.	14-32	TEST NO.	1	TESTED INTERVAL	4079.0 - 4129.0	LEASE OWNER/COMPANY NAME	BWAB INCORPORATED
LEGAL LOCATION	SEC. - TWP. - RNG.	14-7N-91W	FIELD AREA	PINE RIDGE	COUNTY	MOFFAT	STATE	COLORADO	IC



TICKET NO. 24559600
 04-NOV-85
 VERNAL

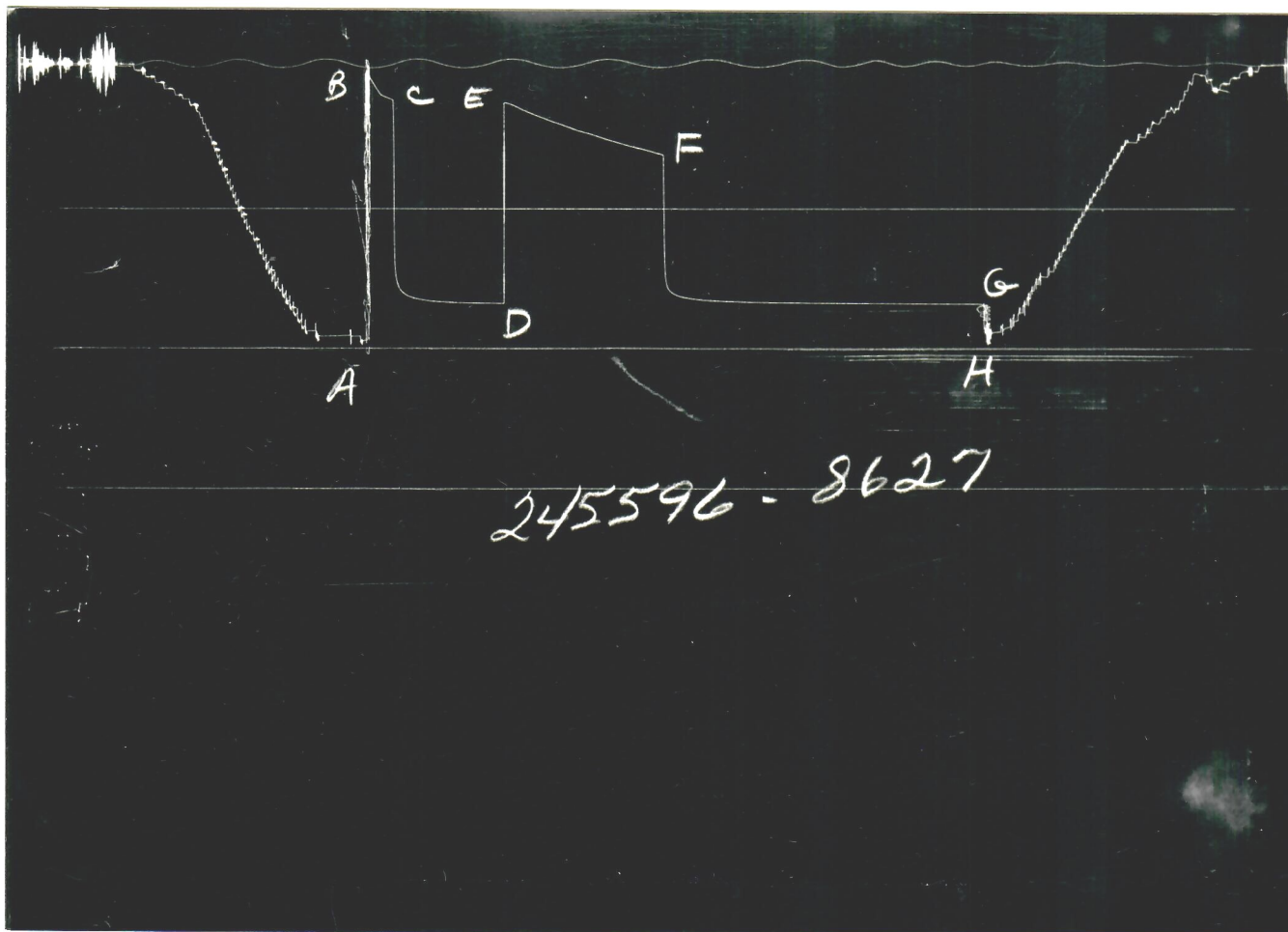


FORMATION TESTING SERVICE REPORT



53

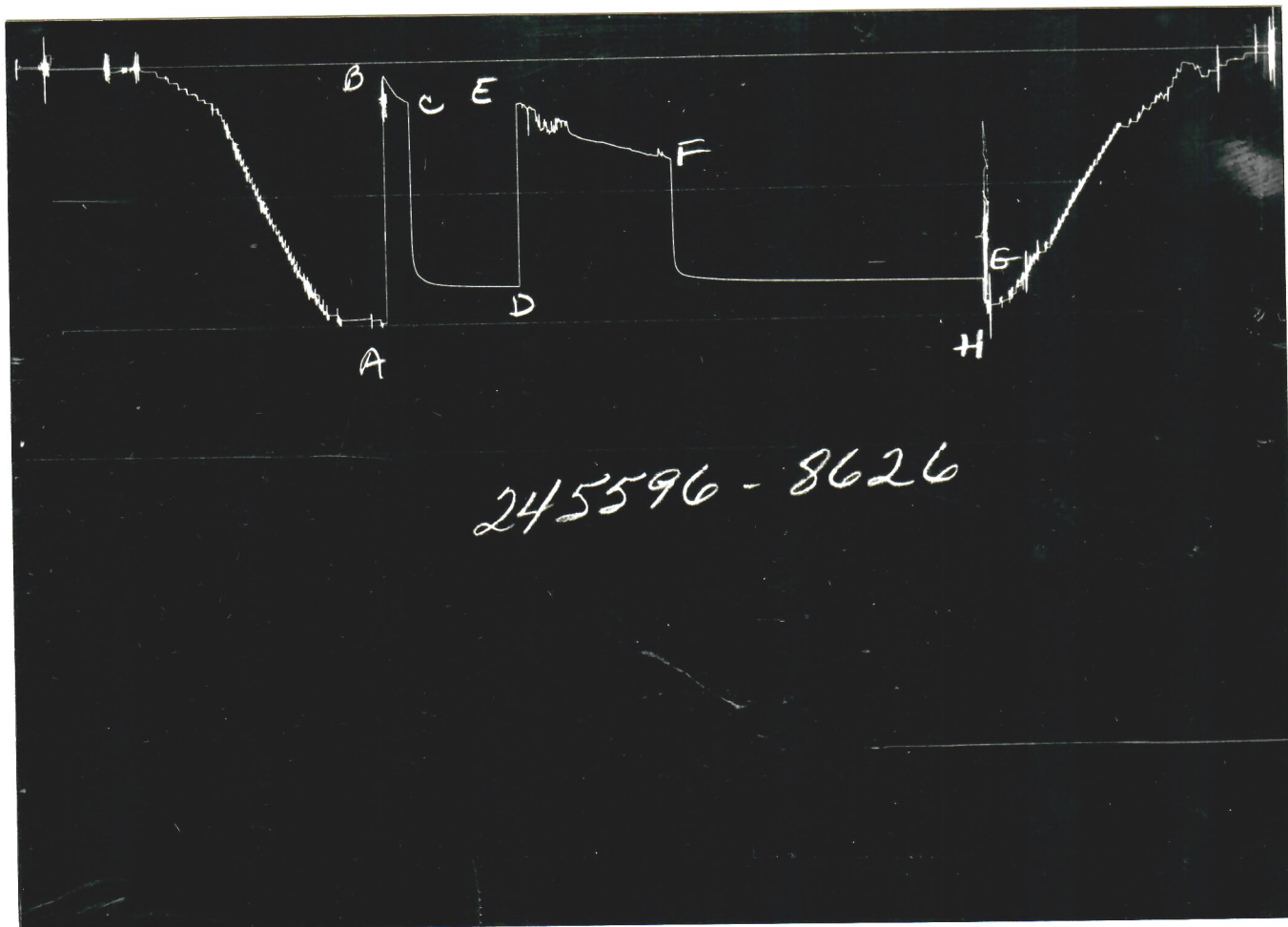
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GAUGE NO: 8627 DEPTH: 4054.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1979	1946.6			
B	INITIAL FIRST FLOW	56	47.2	15.0	14.8	F
C	FINAL FIRST FLOW	243	257.6			
C	INITIAL FIRST CLOSED-IN	243	257.6	60.0	61.8	C
D	FINAL FIRST CLOSED-IN	1733	1710.8			
E	INITIAL SECOND FLOW	299	276.7	90.0	89.2	F
F	FINAL SECOND FLOW	599	649.0			
F	INITIAL SECOND CLOSED-IN	599	649.0	180.0	179.2	C
G	FINAL SECOND CLOSED-IN	1733	1714.1			
H	FINAL HYDROSTATIC	1979	1909.1			

BEST IMAGE
AVAILABLE



GAUGE NO: 8626 DEPTH: 4126.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1998	1988.2			
B	INITIAL FIRST FLOW	100	102.7	15.0	14.8	F
C	FINAL FIRST FLOW	300	311.4			
C	INITIAL FIRST CLOSED-IN	300	311.4	60.0	61.8	C
D	FINAL FIRST CLOSED-IN	1778	1750.2			
E	INITIAL SECOND FLOW	320	334.0	90.0	89.2	F
F	FINAL SECOND FLOW	781	780.7			
F	INITIAL SECOND CLOSED-IN	781	780.7	180.0	179.2	C
G	FINAL SECOND CLOSED-IN	1778	1753.2			
H	FINAL HYDROSTATIC	1998	1949.2			

BEST IMAGE
AVAILABLE

EQUIPMENT & HOLE DATA

FORMATION TESTED: LEWIS SHALE
 NET PAY (ft): 10.0
 GROSS TESTED FOOTAGE: 50.0
 ALL DEPTHS MEASURED FROM: KELLY BUSHING
 CASING PERFS. (ft): _____
 HOLE OR CASING SIZE (in): 7.875
 ELEVATION (ft): 6691.0
 TOTAL DEPTH (ft): 4129.0
 PACKER DEPTH(S) (ft): 4071. 4079
 FINAL SURFACE CHOKE (in): _____
 BOTTOM HOLE CHOKE (in): 0.750
 MUD WEIGHT (lb/gal): 9.00
 MUD VISCOSITY (sec): 50
 ESTIMATED HOLE TEMP. (°F): _____
 ACTUAL HOLE TEMP. (°F): 120 @ 4125.0 ft

TICKET NUMBER: 24559600DATE: 10-29-85 TEST NO: 1TYPE DST: OPEN HOLEHALLIBURTON CAMP:
VERNALTESTER: DON MC MILLANWITNESS: BILL STOCKMANDRILLING CONTRACTOR:
SHELBY #11FLUID PROPERTIES FOR
RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
MUD PIT	<u>1.040 @ 68 °F</u>	<u>4700</u> ppm
TOP OF FLUID	<u>1.040 @ 68 °F</u>	<u>4700</u> ppm
MIDDLE	<u>1.730 @ 68 °F</u>	<u>3300</u> ppm
BOTTOM	<u>2.090 @ 68 °F</u>	<u>3100</u> ppm
SAMPLER	<u>2.090 @ 68 °F</u>	<u>3100</u> ppm
	<u> @ °F</u>	<u> </u> ppm

SAMPLER DATA

Psig AT SURFACE: 340.0
 cu.ft. OF GAS: 0.001
 cc OF OIL: _____
 cc OF WATER: 2100.0
 cc OF MUD: _____
 TOTAL LIQUID cc: 2100.0

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ _____ °F
 GAS/OIL RATIO (cu.ft. per bbl): _____
 GAS GRAVITY: _____

CUSHION DATA

TYPE	AMOUNT	WEIGHT
_____	_____	_____
_____	_____	_____

RECOVERED:

120 FEET OF GAS CUT MUD
 1310 FEET OF GAS CUT WATER

MEASURED FROM
TESTER VALVE

REMARKS:

READINGS FOR GAUGE #8627 MAY BE QUESTIONABLE DUE TO WAVEY BASELINE.

CHARTS INDICATE POSSIBLE PARTIAL PLUGGING OF THE ANCHOR PIPE
 PERFORATIONS DURING THE FINAL FLOW PERIOD.

TICKET NO: 24559600

CLOCK NO: 2797 HOUR: 12



GAUGE NO: 8627

DEPTH: 4054.0

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	47.2			
2	1.0	74.2	27.0		
3	2.0	102.1	27.9		
4	3.0	123.8	21.7		
5	4.0	144.6	20.8		
6	5.0	168.8	24.2		
7	6.0	187.5	18.7		
8	7.0	206.4	18.9		
9	8.0	220.7	14.2		
10	9.0	228.0	7.3		
11	10.0	233.6	5.6		
12	11.0	239.2	5.6		
13	12.0	245.0	5.8		
14	13.0	250.3	5.2		
C 15	14.8	257.6	7.3		
FIRST CLOSED-IN					
C 1	0.0	257.6			
2	1.0	1466.3	1208.7	0.9	1.201
3	2.0	1562.4	1304.8	1.8	0.921
4	3.0	1595.5	1337.9	2.5	0.772
5	4.0	1619.0	1361.4	3.1	0.672
6	5.0	1633.1	1375.6	3.7	0.596
7	6.0	1643.9	1386.4	4.3	0.538
8	7.0	1651.2	1393.6	4.7	0.492
9	8.0	1657.9	1400.3	5.2	0.455
10	9.0	1664.4	1406.9	5.6	0.421
11	10.0	1668.9	1411.3	5.9	0.395
12	12.0	1676.3	1418.8	6.6	0.348
13	14.0	1681.2	1423.6	7.2	0.313
14	16.0	1685.3	1427.7	7.7	0.284
15	18.0	1689.4	1431.8	8.1	0.259
16	20.0	1692.2	1434.6	8.5	0.240
17	22.0	1695.0	1437.4	8.8	0.223
18	24.0	1696.3	1438.7	9.1	0.208
19	26.0	1698.3	1440.7	9.4	0.195
20	28.0	1700.0	1442.4	9.7	0.184
21	30.0	1701.5	1443.9	9.9	0.173
22	35.0	1703.3	1445.8	10.4	0.153
23	40.0	1705.8	1448.2	10.8	0.136
24	45.0	1707.4	1449.9	11.1	0.123
25	50.0	1708.9	1451.4	11.4	0.112
26	55.0	1709.7	1452.1	11.6	0.103
27	60.0	1710.0	1452.5	11.8	0.095
D 28	61.8	1710.8	1453.2	11.9	0.093
SECOND FLOW					
E 1	0.0	276.7			

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND FLOW - CONTINUED					
2	5.0	293.4	16.7		
3	10.0	323.0	29.6		
4	15.0	351.1	28.1		
5	20.0	376.6	25.5		
6	25.0	401.7	25.1		
7	30.0	423.4	21.7		
8	35.0	445.9	22.5		
9	40.0	469.5	23.6		
10	45.0	487.9	18.4		
11	50.0	508.3	20.4		
12	55.0	526.8	18.5		
13	60.0	546.5	19.7		
14	65.0	564.5	18.0		
15	70.0	582.7	18.2		
16	75.0	599.2	16.5		
17	80.0	616.2	17.0		
18	85.0	631.4	15.2		
F 19	89.2	649.0	17.6		
SECOND CLOSED-IN					
F 1	0.0	649.0			
2	1.0	1512.8	863.8	1.0	2.007
3	2.0	1586.3	937.4	1.9	1.735
4	3.0	1612.6	963.6	2.9	1.552
5	4.0	1628.4	979.5	3.9	1.429
6	5.0	1637.6	988.6	4.8	1.340
7	6.0	1645.8	996.8	5.7	1.264
8	7.0	1650.2	1001.3	6.6	1.197
9	8.0	1655.8	1006.8	7.4	1.148
10	9.0	1658.6	1009.6	8.3	1.100
11	10.0	1662.3	1013.4	9.1	1.058
12	12.0	1667.0	1018.0	10.8	0.984
13	14.0	1671.3	1022.3	12.3	0.926
14	16.0	1676.3	1027.3	13.9	0.875
15	18.0	1678.7	1029.8	15.3	0.831
16	20.0	1681.7	1032.7	16.8	0.793
17	22.0	1683.8	1034.8	18.2	0.758
18	24.0	1686.0	1037.0	19.5	0.727
19	26.0	1687.5	1038.5	20.8	0.699
20	28.0	1689.2	1040.2	22.1	0.674
21	30.0	1690.5	1041.5	23.3	0.650
22	35.0	1693.1	1044.1	26.2	0.599
23	40.0	1696.1	1047.1	28.9	0.556
24	45.0	1697.9	1048.9	31.4	0.520
25	50.0	1699.6	1050.6	33.8	0.488
26	55.0	1700.5	1051.6	36.0	0.461
27	60.0	1701.5	1052.5	38.0	0.437
28	70.0	1703.5	1054.5	41.8	0.396
29	80.0	1705.4	1056.4	45.2	0.362
30	90.0	1707.2	1058.3	48.3	0.333
31	100.0	1708.2	1059.2	51.0	0.310
32	110.0	1708.7	1059.7	53.5	0.289

REMARKS:

TICKET NO: 24559600

CLOCK NO: 2418 HOUR: 12



GAUGE NO: 8626

DEPTH: 4126.0

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	102.7			
2	1.0	118.2	15.4		
3	2.0	133.6	15.4		
4	3.0	160.7	27.1		
5	4.0	182.1	21.4		
6	5.0	199.3	17.2		
7	6.0	223.4	24.1		
8	7.0	243.4	20.0		
9	8.0	264.7	21.2		
10	9.0	270.5	5.8		
11	10.0	279.5	9.0		
12	11.0	285.9	6.4		
13	12.0	296.4	10.4		
14	13.0	303.6	7.2		
C 15	14.8	311.4	7.8		
FIRST CLOSED-IN					
C 1	0.0	311.4			
2	1.0	1531.6	1220.2	0.9	1.212
3	2.0	1601.1	1289.8	1.8	0.922
4	3.0	1635.6	1324.2	2.5	0.767
5	4.0	1657.1	1345.7	3.2	0.669
6	5.0	1669.9	1358.5	3.7	0.598
7	6.0	1681.6	1370.2	4.3	0.539
8	7.0	1690.4	1379.0	4.8	0.492
9	8.0	1698.0	1386.6	5.2	0.456
10	9.0	1702.5	1391.2	5.6	0.422
11	10.0	1707.1	1395.7	6.0	0.393
12	12.0	1715.5	1404.1	6.6	0.347
13	14.0	1721.1	1409.7	7.2	0.312
14	16.0	1725.9	1414.5	7.7	0.284
15	18.0	1729.2	1417.9	8.1	0.260
16	20.0	1731.8	1420.5	8.5	0.240
17	22.0	1733.8	1422.4	8.8	0.223
18	24.0	1735.6	1424.2	9.1	0.208
19	26.0	1737.8	1426.4	9.4	0.195
20	28.0	1739.6	1428.2	9.7	0.184
21	30.0	1740.6	1429.2	9.9	0.174
22	35.0	1743.6	1432.2	10.4	0.153
23	40.0	1745.8	1434.4	10.8	0.136
24	45.0	1747.0	1435.6	11.1	0.123
25	50.0	1748.0	1436.6	11.4	0.112
26	55.0	1749.4	1438.0	11.6	0.103
27	60.0	1750.0	1438.6	11.8	0.095
D 28	61.8	1750.2	1438.8	11.9	0.093
SECOND FLOW					
E 1	0.0	334.0			

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND FLOW - CONTINUED					
2	5.0	347.6	13.6		
3	10.0	377.3	29.7		
4	15.0	463.1	85.8		
5	20.0	549.5	86.4		
6	25.0	458.9	-90.6		
7	30.0	527.3	68.4		
8	35.0	595.2	68.0		
9	40.0	620.3	25.1		
10	45.0	637.3	17.0		
11	50.0	644.9	7.6		
12	55.0	667.8	22.9		
13	60.0	688.1	20.2		
14	65.0	697.7	9.6		
15	70.0	721.1	23.5		
16	75.0	743.6	22.5		
17	80.0	754.2	10.6		
18	85.0	752.4	-1.8		
F 19	89.2	780.7	28.3		
SECOND CLOSED-IN					
F 1	0.0	780.7			
2	1.0	1542.1	761.4	1.0	2.029
3	2.0	1624.2	843.5	2.0	1.719
4	3.0	1647.3	866.7	2.9	1.556
5	4.0	1662.9	882.2	3.9	1.428
6	5.0	1672.4	891.8	4.8	1.339
7	6.0	1679.0	898.3	5.7	1.262
8	7.0	1684.0	903.3	6.5	1.202
9	8.0	1688.8	908.1	7.5	1.144
10	9.0	1693.0	912.3	8.3	1.100
11	10.0	1696.0	915.3	9.1	1.056
12	12.0	1700.9	920.3	10.7	0.987
13	14.0	1705.9	925.2	12.3	0.927
14	16.0	1709.5	928.8	13.9	0.875
15	18.0	1712.5	931.8	15.3	0.831
16	20.0	1715.3	934.6	16.8	0.792
17	22.0	1717.3	936.6	18.1	0.758
18	24.0	1719.3	938.6	19.5	0.727
19	26.0	1721.7	941.0	20.8	0.699
20	28.0	1723.5	942.8	22.1	0.673
21	30.0	1725.7	945.0	23.3	0.650
22	35.0	1728.4	947.8	26.2	0.599
23	40.0	1731.2	950.6	28.9	0.556
24	45.0	1734.0	953.3	31.4	0.520
25	50.0	1735.8	955.1	33.7	0.489
26	55.0	1737.6	956.9	36.0	0.461
27	60.0	1739.0	958.3	38.0	0.437
28	70.0	1740.8	960.1	41.8	0.395
29	80.0	1743.0	962.3	45.2	0.362
30	90.0	1745.0	964.3	48.2	0.334
31	100.0	1746.2	965.5	51.0	0.310
32	110.0	1747.6	966.9	53.5	0.289

REMARKS:

TICKET NO: 24559600

CLOCK NO: 2418 HOUR: 12



GAUGE NO: 8626
















DEPTH: 4126.0

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED					
G	33	120.0	1748.8	968.1	55.7 0.271
	34	150.0	1751.6	970.9	61.4 0.229
	35	179.2	1753.2	972.5	65.8 0.199

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$

REMARKS:

TICKET NO. 24559600

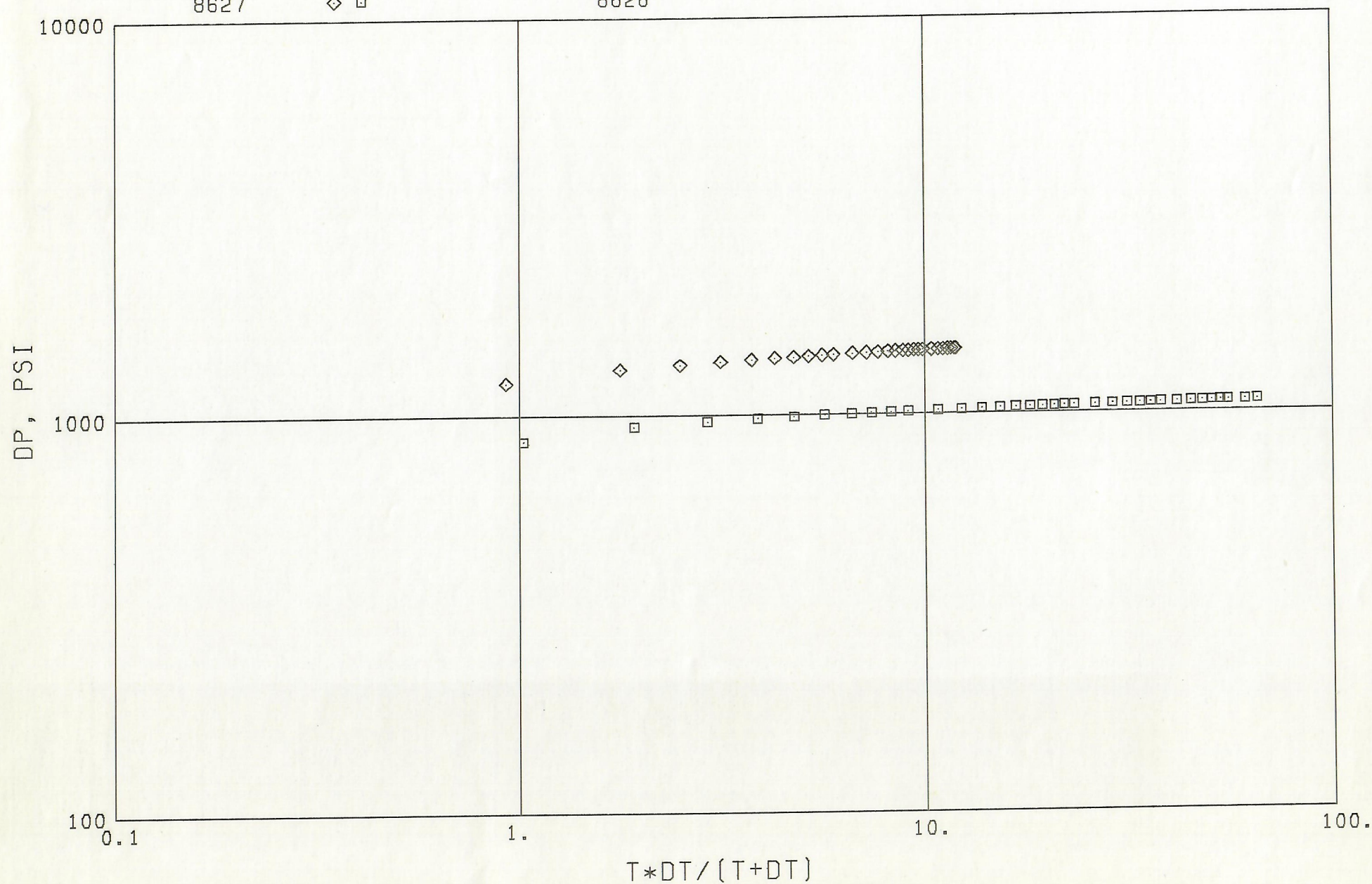
		O.D.	I.D.	LENGTH	DEPTH	
1		DRILL PIPE.....	4.500	3.826	3578.9	
3		DRILL COLLARS.....	6.250	2.375	367.9	
50		IMPACT REVERSING SUB.....	5.000	3.000	1.0	3948.0
3		DRILL COLLARS.....	6.250	2.375	92.7	
5		CROSSOVER.....		3.000	0.6	
13		DUAL CIP SAMPLER.....	5.000	0.750	7.0	
60		HYDROSPRING TESTER.....	5.000	0.750	5.0	4052.0
80		AP RUNNING CASE.....	5.000	2.250	4.1	4054.0
15		JAR.....	4.625	1.750	7.0	
16		VR SAFETY JOINT.....	5.000	1.000	2.8	
70		OPEN HOLE PACKER.....	7.000	1.530	5.8	4071.0
18		DISTRIBUTOR VALVE.....	5.000	1.680	2.0	
70		OPEN HOLE PACKER.....	7.000	1.530	5.8	4079.0
20		FLUSH JOINT ANCHOR.....	5.750	3.500	44.0	
81		BLANKED-OFF RUNNING CASE.....	5.750		4.5	4126.0
TOTAL DEPTH					4129.0	

EQUIPMENT DATA

TICKET NO 24559600

GAUGE NO CIP 1 2
8627 ◇ □

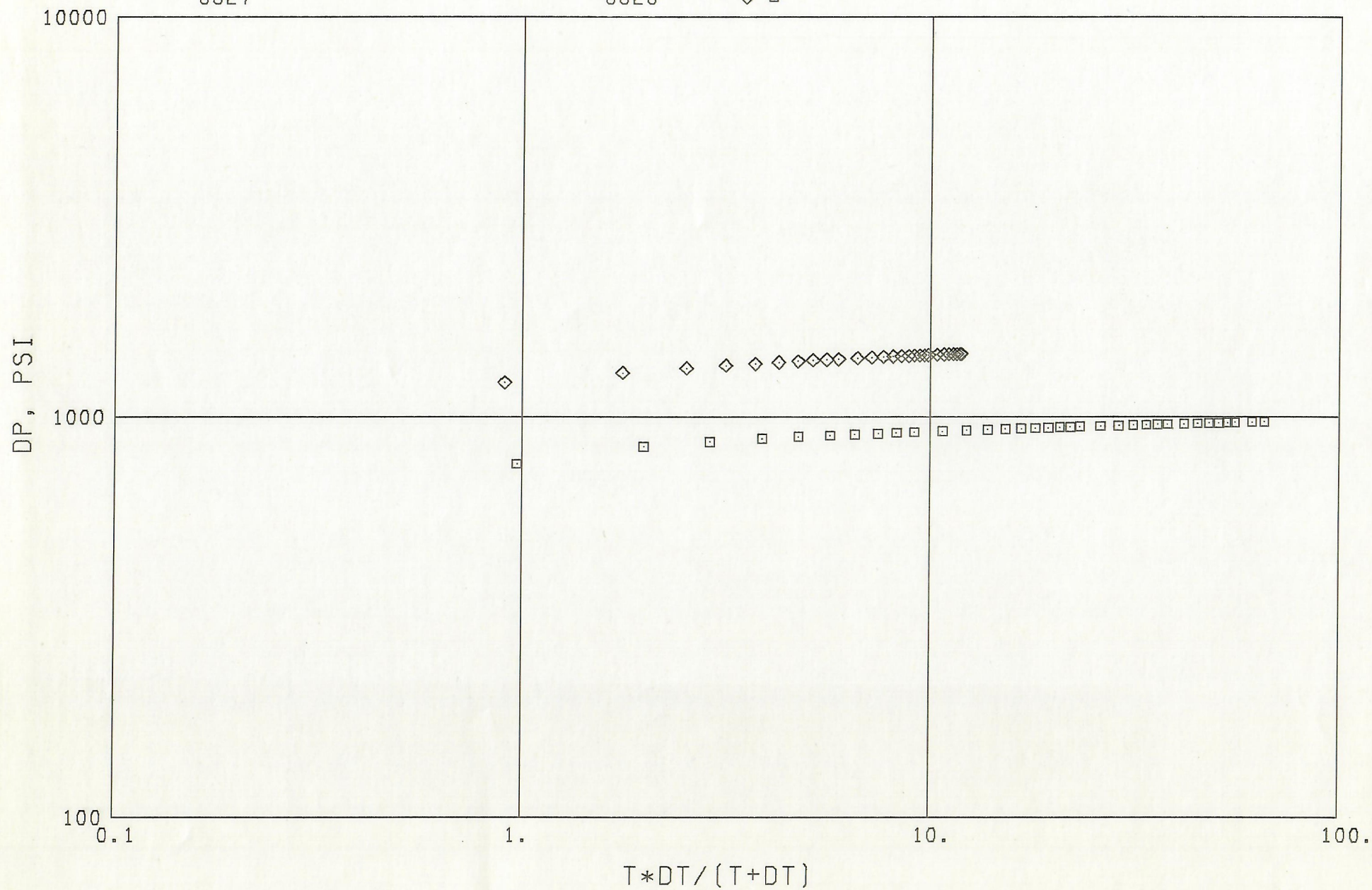
GAUGE NO CIP 1 2
8626



TICKET NO 24559600

GAUGE NO CIP 1 2
8627

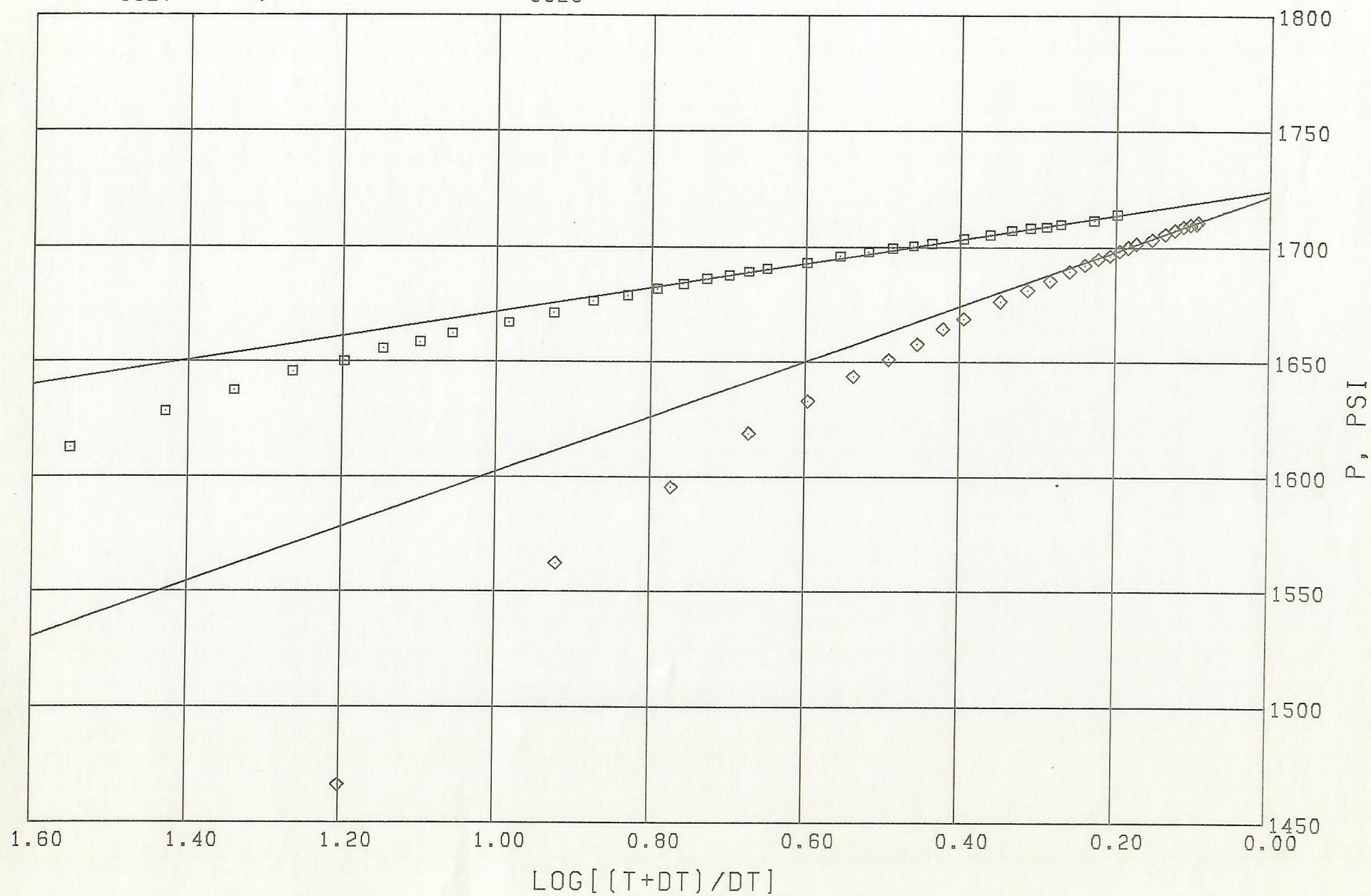
GAUGE NO CIP 1 2
8626 \diamond \square



TICKET NO 24559600

GAUGE NO CIP 1 2
8627 ◇ □

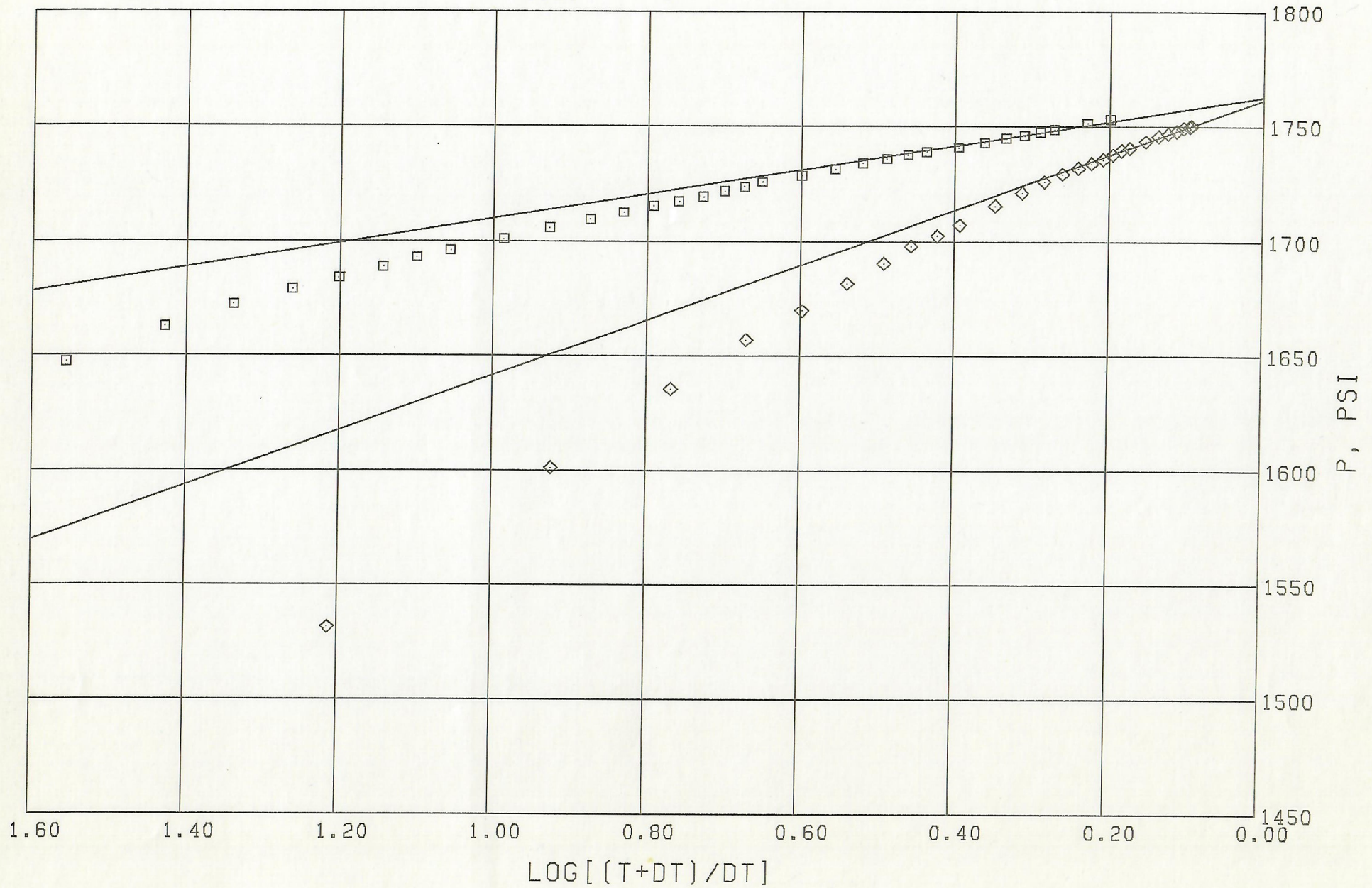
GAUGE NO CIP 1 2
8626 ◇ □



TICKET NO 24559600

GAUGE NO CIP 1 2
8627

GAUGE NO CIP 1 2
8626 \diamond \square



TICKET NUMBER 24559600

SUMMARY OF RESERVOIR PARAMETERS

USING HORNER METHOD FOR LIQUID WELLS

OIL GRAVITY 0.0 °API@60°F WATER SALINITY 0.3 % SALT
 GAS GRAVITY 0.700 FLUID GRADIENT 0.4342 psi/ft
 GAS/OIL RATIO 0.0 SCF/STB FLUID PROPERTIES AT 1765.9 psi
 TEMPERATURE 120.0 °F VISCOSITY 0.553 cp
 NET PAY 10.0 ft FMT VOL FACTOR 1.009 Rvol/Svol
 POROSITY 10.0 % SYSTEM COMPRESSIBILITY 7.70 $\times 10^{-6}$ vol/vol/psi
 PIPE CAPACITY FACTORS _____ bbl/ft

GAUGE NUMBER		8627	8627	8626	8626			
GAUGE DEPTH		4054.0	4054.0	4126.0	4126.0			
FLOW AND CIP PERIOD		1	2	1	2			UNITS
FINAL FLOW PRESSURE	P_f	257.6	649.0	311.4	780.7			psig
TOTAL FLOW TIME	t	14.8	104.0	14.8	104.0			min
EXTRAPOLATED PRESSURE	P^*	1722.0	1724.1	1761.5	1762.7			psig
ONE CYCLE PRESSURE		1602.1	1671.6	1641.6	1709.8			psig
PRODUCTION RATE	Q		202.1		202.1			BPD
TRANSMISSIBILITY	kh/μ		631.3		627.5			md-ft cp
FLOW CAPACITY	kh		349.363		347.252			md-ft
PERMEABILITY	k		34.9363		34.7252			md
SKIN FACTOR	S		16.8		14.6			
DAMAGE RATIO	DR		3.5		3.2			
POTENTIAL RATE	Q_1		707.6		642.0			BPD
RADIUS OF INVESTIGATION	r_i		381.5		380.4			ft

REMARKS: ALL CALCULATED RESERVOIR PARAMETERS ARE RELATIVE TO 100% WATER PRODUCTION. THE RATE USED AS THE BASIS FOR THIS ANALYSIS WAS DETERMINED USING THE RECOVERY METHOD AND IS AN AVERAGE RATE FOR THE DURATION OF THE TEST.

NOTICE:

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