

Oil Conservation Engineer
Department of Indian Affairs
and Northern Development
Oil and Mineral Division
112 - 11th. Ave. S. E.
Calgary 21, Alberta

WELL HISTORY REPORT

ON

MOBIL INEXCO NCO SUN MANUEL LAKE J-42

Approved By:


Drilling and Production Engineering Supervisor

Date: March 31, 1971

Edmonton, Alberta

C O N F I D E N T I A L

BY: R. W. Pidskalny
T. J. Slot

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Water Analysis
DST #1 Report
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WELL HISTORY REPORT

MOBIL INEXCO NCO SUN MANUEL LAKE J-42

SECTION I - SUMMARY OF WELL DATA

a. <u>Well Name:</u>	Mobil Inexco NCO Sun Manuel Lake J-42
b. <u>Permittee:</u>	Mobil Oil Canada, Ltd., North Canadian Oil, International Nuclear of Canada, Sun Oil Company
c. <u>Name of Operator:</u>	Mobil Oil Canada, Ltd. Calgary Place
d. <u>Location:</u>	Unit J Section 42, Grid 67° 20'N - 129° 15'W Latitude 67° 11'40"N - Longitude 129° 23'15"W Universal Well Location Reference Lat 67.19444°N Long 129.48750°W Unique well identifier 300 J-42 6720 129150
e. <u>Co-Ordinates:</u>	Not development well
f. <u>Permit No.:</u>	4094
g. <u>Drilling Contractor:</u>	Nabors Drilling Ltd. Rotary Rig #8
h. <u>Drilling Authority:</u>	479, December 17, 1970
i. <u>Classification:</u>	New Field Wildcat
j. <u>Elevations:</u>	KB 1068 (est.) Ground 1052 (est.)
k. <u>Spud Date:</u>	January 13, 1971
l. <u>Completed Drilling:</u>	March 1, 1971
m. <u>Final Total Depth:</u>	6710' Dr. 6700' Log.
n. <u>Well Status:</u>	Drilled and abandoned
o. <u>Rig Release Date:</u>	March 7, 1971
p. <u>Hole Sizes to Total Depth:</u>	24" to 77' KB 12½" to 701' KB 8 3/4" to 6710' KB
q. <u>Casing:</u>	20" conductor pipe landed @ 77' 9 5/8 J-55 ST&C landed @ 701'

SECTION II - GEOLOGICAL SUMMARY

<u>a. Formation Tops</u>	<u>Samples</u>	<u>E-Log</u>
Hume	910	923
Gossage	1180	1180
Ronning	2743	2587
Cambrian	5960	5970
Cambrian Salt	6200	6190
Base Salt	6400	6490
<u>b. Cored Intervals</u>		
None		
<u>c. Core Descriptions</u>		
None		
<u>d. Sample Description</u>		
To follow		
<u>e. Paleontological Determinations</u>		
None		

SECTION III - ENGINEERING SUMMARY

a. Report of Drill Stem Tests

i) DST #1 January 27, 1971

Interval 1770'-1798' - Dual bottom-hole test
 Preflow 5 min. ISI 26 min.
 VO 61 min. FSI 126 min.

	<u>Rec. #2013</u>	<u>Rec. #2453</u>
Depth ft.	1753	1792
Pressures psi - IH	822	828
ISI	446	453
IF	37	45
FF	49	54
FSI	460	468
FH	822	828

Temp. 112°F
 Recovery: 50' drilling mud
 Very weak initial puff. Very weak air blow dying in 4 min.

ii) DST #2 January 29, 1971

Interval 1985'-2053' - Dual bottom-hole test
 Preflow 30 min. ISI 67 min.
 VO 60 min. FSI 123 min.

	<u>Rec. #2453</u>	<u>Rec. #2013</u>
Depth ft.	1968	2047
Pressure psi - IH	944	966
ISI	569	600
IF	551	597
FF	570	597
FSI	574	593
FH	944	966

Temp. 114°F

Recovery: 50' muddy water

1383' sulphurous fresh water

Good initial puff. Good air blow, decreasing in 25 min.,
 dying in 50 min.

b. Casing Record

1. Conductor Pipe

Ran 79' of 20" liner and landed @ 77' KB. Cemented with 125 sacks Fondu cement.

2. Surface Casing

Ran 18 jts. of 9 5/8 36# J-55 ST&C and landed at 701' KB. Cemented with 350 sacks Fondu cement. Cement returns to surface.

c. Bit Record

<u>No.</u>	<u>Make</u>	<u>Type</u>	<u>Size</u>	<u>Hours</u>	<u>Depth</u>		<u>Footage</u>	<u>Cond.</u> <u>TBG</u>
					<u>In</u>	<u>Out</u>		
1A	HW	X1G	12½	13 3/4	76	233	157	211
2A	HW	X1G	12½	13½	233	656	423	
3A	HW	X1G	12½	5	656	701	45	
1	HW	OSC-3	8 3/4	24 3/4	701	1315	614	241
2	HW	X1G	8 3/4	40½	1315	1734	419	231
3	HW	X1G	8 3/4	29½	1734	2054	320	621
4	HW	X55R	8 3/4	107½	2054	3176	1122	770
5	HW	X55R	8 3/4	53	3176	3658	482	111
6	HW	X55R	8 3/4	59 3/4	3658	4230	572	770
7	HW	RG-7	8 3/4	32 3/4	4230	4500	270	661
8	HW	RG-7	8 3/4	41	4500	4805	305	731
9RR	HW	X55R	8 3/4	34 3/4	4805	5012	207	121
10	HW	X55R	8 3/4	29½	5012	5312	300	630
11	HW	X55R	8 3/4	19½	5312	5496	184	631
12	HW	X55R	8 3/4	31 3/4	5496	5751	255	
13	HW	X55R	8 3/4	15½	5751	5860	109	721
14	HW	X55R	8 3/4	25 3/4	5860	6002	142	
15	HW	WD7	8 3/4	22½	6002	6179		
16	HW	WD7	8 3/4	29 3/4	6179	6573	394	
17	HW	X55R	8 3/4	15½	6573	6655	82	111
18	HW	WD7	8 3/4	9	6655	6710	55	321

d. Mud Report

Mud Type: Gel Water

Materials Used:	Gel	1366 sacks
	Caustic	60 sacks
	Salt Gel	93 sacks
	Rapid Drill	20 lbs.
	Soda Ash	62 sacks
	Speresene	200 lbs.

e. Deviation Record

<u>Depth</u>	<u>Deviation</u>
90	1
130	1
162	1
196	1
225	7/8
255	1
284	1
314	3/4
344	$\frac{1}{2}$
374	3/4
405	15/16
435	1
466	3/4
498	7/8
529	7/8
561	15/16
593	15/16
625	7/8
656	3/4
688	3/4
801	$\frac{1}{2}$
1095	4
1188	$3\frac{1}{2}$
1220	3
1315	2 3/4
1389	$2\frac{1}{2}$
1452	$2\frac{1}{2}$
1515	2 5/8
1609	$2\frac{1}{4}$
1672	$2\frac{1}{4}$
1734	$2\frac{1}{4}$
1828	2
1860	2 1/16
1755	2
2053	2 1/8
2145	2 1/8
2240	2 3/8
2366	2 3/8
2460	2

<u>Depth</u>	<u>Deviation</u>
2554	1 3/4
2774	1 3/4
3176	1
4230	1 1/2
4500	2
5012	1
5496	1
5751	1
5860	1
6002	3/4
6179	1
6570	1
6710	1/2

f. Abandonment Plugs

Plug #1 March 4, 1971

6475'-6400' - Cemented with 75 sacks Portland cement. Felt after 8 hours at 6387' KB.

Plug #2 March 5, 1971

6225'-6175' - Cemented with 75 sacks Portland cement. Felt after 8 hours at 6149' KB.

Plug #3 March 5, 1971

2610'-2535' - Cemented with 60 sacks Portland cement. Felt plug after 8 hours at 2507' KB.

Plug #4 March 6, 1971

1250'-1175' - Cemented with 60 sacks of Portland cement. Felt after 8 hours at 1147'.

Plug #5 March 6, 1971

750'-650' - Cemented with 80 sacks of Portland cement. Felt after 8 hours at 639' KB.

Cut off casing bowl and cemented with 10 sacks of cement. Welded on plate and installed 5' riser with plate and well name.

g. Lost Circulation

On Feb. 2, 1971 at 1530 hours, some mud was lost to the formation at a depth of 2789' KB in the Ronning formation.

Additional volume of gel mud was prepared and approximately one hundred barrels pumped before circulation was established at 0700 hours, Feb. 3, 1971.

h. Report of Blowouts

None

SECTION IV - LOGS

Induction electrolog (6696'-698') March 2, 1971
Borehole Compensated acoustilog caliper (6698'-698') March 3, 1971
Gamma ray log (6698'-0) March 3, 1971

SECTION V - ANALYSIS

a. Core Analysis

None

b. Water Analysis

See Enclosed

c. Gas Analysis

None

d. Oil Analysis

None

SECTION VI - COMPLETION SUMMARY

a. Tubing Record

None

b. Perforation Record

None

c. Cementation Record

Plug #1 6475'-6400' - 75 sacks. Felt at 6387' after 8 hours.

Plug #2 6225'-6175' - 75 sacks. Felt at 6149' after 8 hours.

Plug #3 2610'-2535' - 60 sacks. Felt at 2507' after 8 hours.

Plug #4 1250'-1175' - 60 sacks. Felt at 1147' after 8 hours.

Plug #5 750'-650' - 80 sacks. Felt at 639' after 8 hours.

d. Acidization and Fracturing Record

None

e. Back Pressure and Production Tests

None

A P P E N D I X

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. C71-2790-4

Received: Feb. 3, 1971 Reported: Feb. 11, 1971

Well: Location: Mobil et al Manvel Lake 67°11' 40" N-129° 23' 15" W.

Operator: MOBIL OIL CANADA, LTD.

Field or Area:

Elev.: K.B. 940' Grd. 925' Zone/Formation: Bear Rock Carbonate

Sample Interval: 1985' - 2053'

Method of Production: D.S.T. #2

Sampled from: Bottom

Sampled by: H. Reid

Date: Jan. 29, 1971

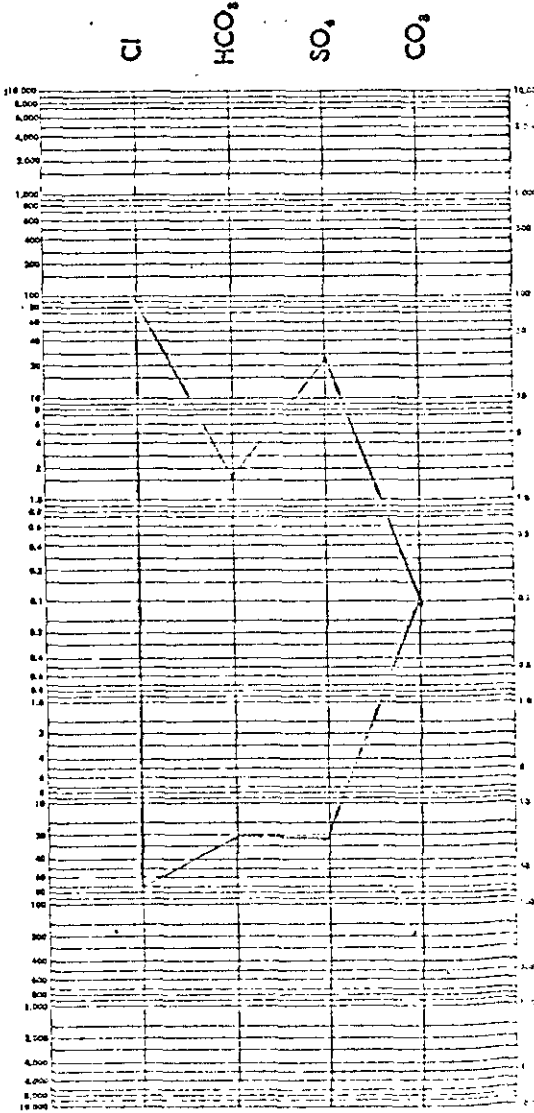
OTHER PERTINENT DATA Recovered 1433' water

(Signed)

Na	K	Ca	Mg		SO ₄	Cl	CO ₃	HCO ₃	
1810		440	278		1210	3430		98	
78.70		21.96	22.85		25.17	96.73		1.61	
31.86		8.89	9.25		10.19	39.16		0.65	

Total Solids Mg/L: By Evaporation 7450 Fe Trace Specific Gravity 1.006 @60°F Observed pH 7.7 @ 75 °F
 Calculated 7266 After Ignition 6400 H₂S Trace Refractive Index 1.3344 @25°C Resistivity 0.976 ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions

The sample as received, contained a trace of sediment. The filtrate was colorless.

continued.....

CHEMICAL & GEOLOGICAL LABORATORIES LIMITED

OPERATOR: MOBIL OIL CANADA, LTD. REPORT NUMBER: C71-2790
 KIND OF SAMPLE: Water DATE RECEIVED: Feb. 3, 1971 DATE REPORTED: Feb. 12, 1971

LABORATORY NUMBER	SAMPLED FROM	DATE SAMPLED (1971)	METHOD OF PRODUCTION	RESISTIVITY	
				(OHM-meters at 68°F.)	
C71-2790-1	Base of fluid	Jan. 27	D.S.T. #1	5.57	
-2	Top	Jan. 29	D.S.T. #2	2.54	
-3	Middle	Jan. 29	D.S.T. #2	1.1	



DRILL-STEM TEST DATA

Well Name	MOBIL ET AL MANUEL LAKE	Test No.	1
Well Number	J-42	Zone Tested	BEAR ROCK
Company	MOBIL OIL OF CANADA LTD.	Interval	1770 - 1798
Comp Rep	H. RIEDER, CHAPMAN	Tester	N. MOSCRIPT
		Date	JAN. 27, 1971

Type of Test DUAL BOTTOM HOLE

RFS Tool No. 53 + 5'

Preflow 5 mins ISI 26 mins. Flow 61 mins. FSI 126 mins.

	1 REC. No. 2013	0 REC. No. 2453	REC. No.
	6200 RANGE 12 HR. CLOCK	3400 RANGE 12 HR. CLOCK	RANGE HR. CLOCK
DEPTH	1753	1792	
Initial Hydra Mud Press	822	828	
Initial Shut-In Press	446	453	
Initial Flow Press	37	45	
Final Flow Press	49	54	
Final Shut-In Press	460	468	
Final Hydra Mud Press	822	828	

Mud Drop NIL

Viscosity 65

Top Packer Depth 1764

Drill Pipe Size 3.5 I.F.

Surface Choke Size CLOSED

Anchor Size 4.75

Cushion Amount

Fluid Loss

Temperature °F 112

Bottom Packer Depth 1770

Wt. 13.3 Drill Collar I.D. 2.875

Bottom Choke Size 0.5

Rot Hole Size

Type

Mud Weight 8.9

Net Pay Tested EST. 28 FT.

Total Depth 1798

Ft. Run 622.09

Main Hole Size 8.75

Feet of Rot Hole

Rubber Size 7.5

Fluid Recovery Total Feet 50

Recovered 50

Recovered

Recovered

Recovered

Recovered

Feet of DRILLING MUD

Feet of

Feet of

Feet of

Feet of

Gas Recovery

How Measured

Riser size:

mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg	psi	Orifice Size	=	MCF/Day

Bleed Off Time for Drill Pipe

REMARKS: VERY WEAK INITIAL PUFF, VERY WEAK AIR BLOW DYING IN 4 MIN.
NOTE - 6.5 HOURS SPENT THAWING FLARE LINE
DUE TO TEMP OF 50 DEGREES BELOW ZERO.

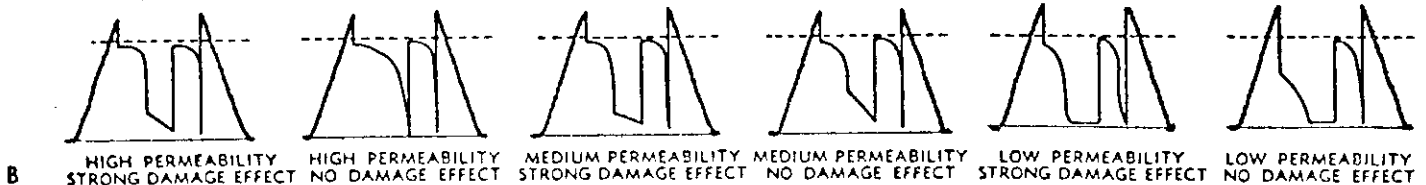


TEST NO. 1

TESTING REPORT

	45 LANDING SUB		
	45 CHAMBER		
	45 TOOL OR P.O. SUB		
	CO SUB		1.00
	SHUT IN TOOL		5.20
	R.F.S. No. 53		3.30
	R.F.S. No. 55		3.30
	HYDRAULIC TOOL		7.20
	JARS		6.00
	RECORDER No. 2013		5.00
	RECORDER No.		
	SAFETY JOINT		1.75
	BY PASS SUB		
	PACKER		6.00
	1. PACKER DEPTH	1764	
PACKER		5.00	
2. PACKER DEPTH	1770		
ANCHOR—SPECIFY		1.00	
BLANK OFF OR BY PASS SUB			
RECORDER No.		DEPTH	
PACKER			
3. PACKER DEPTH			
PACKER			
4. PACKER DEPTH			
ANCHOR—SPECIFY PERF		20.00	
RECORDER No. 2453		5.00	
DEPTH	1792		
TOTAL DEPTH	1798		
BULLNOSE		2.00	
TOTAL TAIL PIPE		28.00	
TOTAL TEST TOOL		71.75	

DST CHARTS FOR COMPARATIVE VISUAL ANALYSIS





WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

MEASURED PRESSURES

	POINT NUMBER -----	TIME MIN -----	PRESSURE PSIG -----
RUN IN HOLE	1	0.0	0.0
	2	32.0	309.8
	3	51.0	309.6
	4	77.0	822.1
	5	286.0	822.1
	6	287.0	72.1
	7	297.0	55.2
	8	298.0	822.1
INITIAL HYDRO PRESSURE	9	341.0	822.1
INITIAL PREFLOW PRESSURE	10	341.0	38.3
FINAL PREFLOW PRESSURE	11	346.0	38.3
START INITIAL SHUT IN	12	346.0	38.3
	13	351.0	392.6
	14	356.0	420.2
	15	361.0	432.5
	16	366.0	441.7
	17	371.0	446.3
INITIAL SHUT IN PRESSURE	18	372.0	446.3
START FLOW PERIOD	19	372.0	446.3
INITIAL FLOW PRESSURE	20	373.0	36.8
	21	377.0	38.3
	22	382.0	39.9
	23	387.0	39.9
	24	402.0	42.9
	25	417.0	46.0
FINAL FLOW PRESSURE	26	433.0	49.1
START FINAL SHUT IN	27	433.0	49.1
	28	438.0	294.9
	29	443.0	343.0
	30	448.0	369.6
	31	453.0	380.0
	32	458.0	403.4
	33	463.0	414.1



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
	34	468.0	421.8
	35	473.0	427.9
	36	478.0	434.0
	37	483.0	438.7
	38	488.0	441.7
	39	493.0	444.8
	40	498.0	447.9
	41	503.0	449.6
	42	508.0	450.9
	43	513.0	454.0
	44	518.0	455.5
	45	523.0	457.1
	46	528.0	457.1
	47	533.0	458.6
	48	538.0	458.6
	49	543.0	460.1
FINAL SHUT IN PRESSURE	50	559.0	460.1
RUN OUT OF HOLE	51	559.0	460.1
FINAL HYDRO PRESSURE	52	560.0	822.1
OUT	53	564.0	0.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

CALCULATIONS FOR LIQUID RECOVERY (FIRST SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	470.6
NO. OF POINTS CONSIDERED IN BUILD-UP	6
NO. OF POINTS USED IN EXTRAPOLATION	5
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.47
EFFECTIVE PRODUCING TIME (MIN)	5.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

DATA FOR BUILD-UP PLOT (FIRST SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	$T + \Delta T(t) /$ $\Delta T(t)$
-----------------	-------------	------------------	---	--	--------------------------------------

PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

13	5.0	392.6			2.00
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POINTS USED IN EXTRAPOLATION

14	10.0	420.2	415.2	-5.0	1.50
15	15.0	432.5	431.3	-1.2	1.33
16	20.0	441.7	440.1	-1.7	1.25
17	25.0	446.3	445.6	-0.7	1.20
18	26.0	446.3	446.5	0.2	1.19



WELL NAME MORIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

CALCULATIONS FOR LIQUID RECOVERY (SECOND SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	499.3
NO. OF POINTS CONSIDERED IN BUILD-UP	23
NO. OF POINTS USED IN EXTRAPOLATION	23
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	3.12
EFFECTIVE PRODUCING TIME (MIN)	66.0
 (B) IN SITU CAPACITY (KH - MD FT)	 5.09
SLOPE OF BUILD-UP CURVE (PSI/CYCLE)	176.33
PRODUCING RATE (BBL/DAY)	0.76
FLUID VISCOSITY (CP)	0.630
FORMATION VOLUME FACTOR (RES BBL/ST BBL).....	1.000
 (C) EFFECTIVE PERMEABILITY (MD)	 0.10
FORMATION THICKNESS	20.00
 (D) PRODUCTIVITY INDEX (BBL/DAY/PSI)	 0.02
FLOWING PRESSURE (PSIG)	49.1
 (E) APPROXIMATE DRAINAGE RADIUS (FT)	 15.0
TOTAL FLOWING TIME (MIN)	66.0
 (F) ESTIMATED DAMAGE RATIO	 0.70
RESERVOIR POROSITY (PERCENT)	20.00
TOTAL COMPRESSIBILITY (VOL/VOL/PSI X 10-6)	6.70
WELL-BORE RADIUS (IN)	4.30
CALCULATED SKIN FACTOR	-0.29



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

DATA FOR BUILD-UP PLOT (SECOND SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
-----------------	-------------	------------------	---	--	-------------------------

POINTS USED IN EXTRAPOLATION

28	5.0	294.5	296.1	1.6	14.20
29	10.0	343.6	343.9	0.4	7.60
30	15.0	369.6	370.1	0.5	9.40
31	20.0	388.0	387.6	-0.5	4.30
32	25.0	403.4	400.3	-3.1	3.64
33	30.0	414.1	410.2	-3.9	3.20
34	35.0	421.8	418.1	-3.7	2.89
35	40.0	427.9	424.6	-3.3	2.65
36	45.0	434.0	430.1	-3.9	2.47
37	50.0	438.7	434.8	-3.8	2.32
38	55.0	441.7	438.9	-2.8	2.20
39	60.0	444.0	442.4	-2.4	2.10
40	65.0	447.9	445.6	-2.3	2.02
41	70.0	449.4	448.4	-1.0	1.94
42	75.0	450.9	450.9	-0.0	1.88
43	80.0	454.0	453.2	-0.8	1.82
44	85.0	455.5	455.2	-0.3	1.70
45	90.0	457.1	457.1	0.1	1.73
46	95.0	457.1	458.9	1.8	1.69
47	100.0	458.6	460.4	1.9	1.66
48	105.0	458.6	461.9	3.3	1.63
49	110.0	460.1	463.3	3.1	1.60
50	126.0	460.1	467.0	6.9	1.52

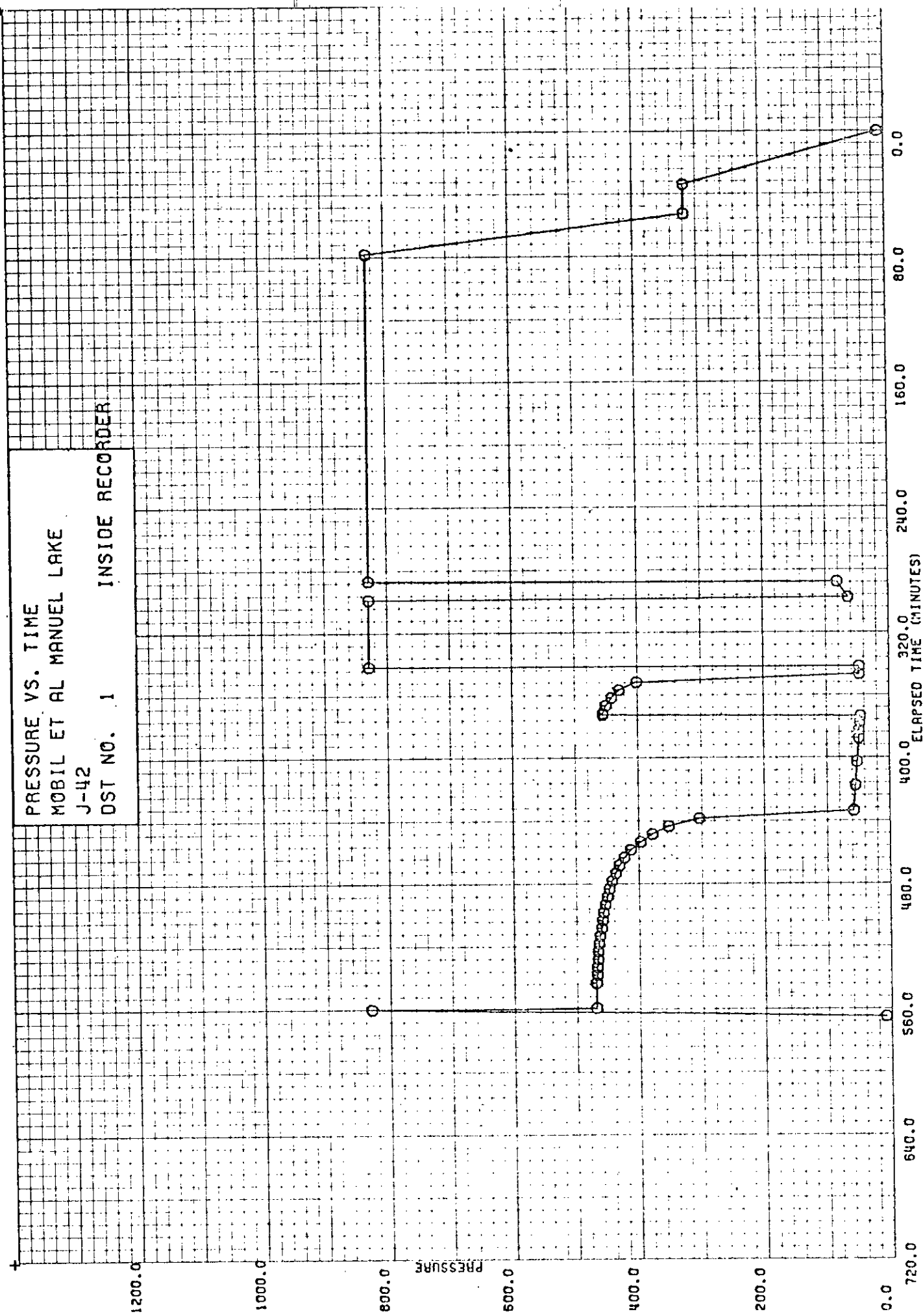
ASSUMPTIONS AND LIMITATIONS

THE ENCLOSED DST INTERPRETATION CALCULATIONS REQUIRE SEVERAL NECESSARY ASSUMPTIONS TO PROVIDE A QUICK ESTIMATE OF MANY OF THE FACTORS INVOLVED. AS A RESULT THE INFORMATION GAINED SHOULD BE USED TO FORM AN OPINION OR ESTIMATE ONLY, UNTIL THE ASSUMPTIONS OF RESERVOIR AND FLUID PROPERTIES CAN BE WHOLLY OR PARTIALLY CLARIFIED BY MORE COMPLETE ANALYSIS AND TESTING.

PRESSURE VS. TIME
MOBIL ET AL MANUEL LAKE

J-42

DST NO. 1 INSIDE RECORDER

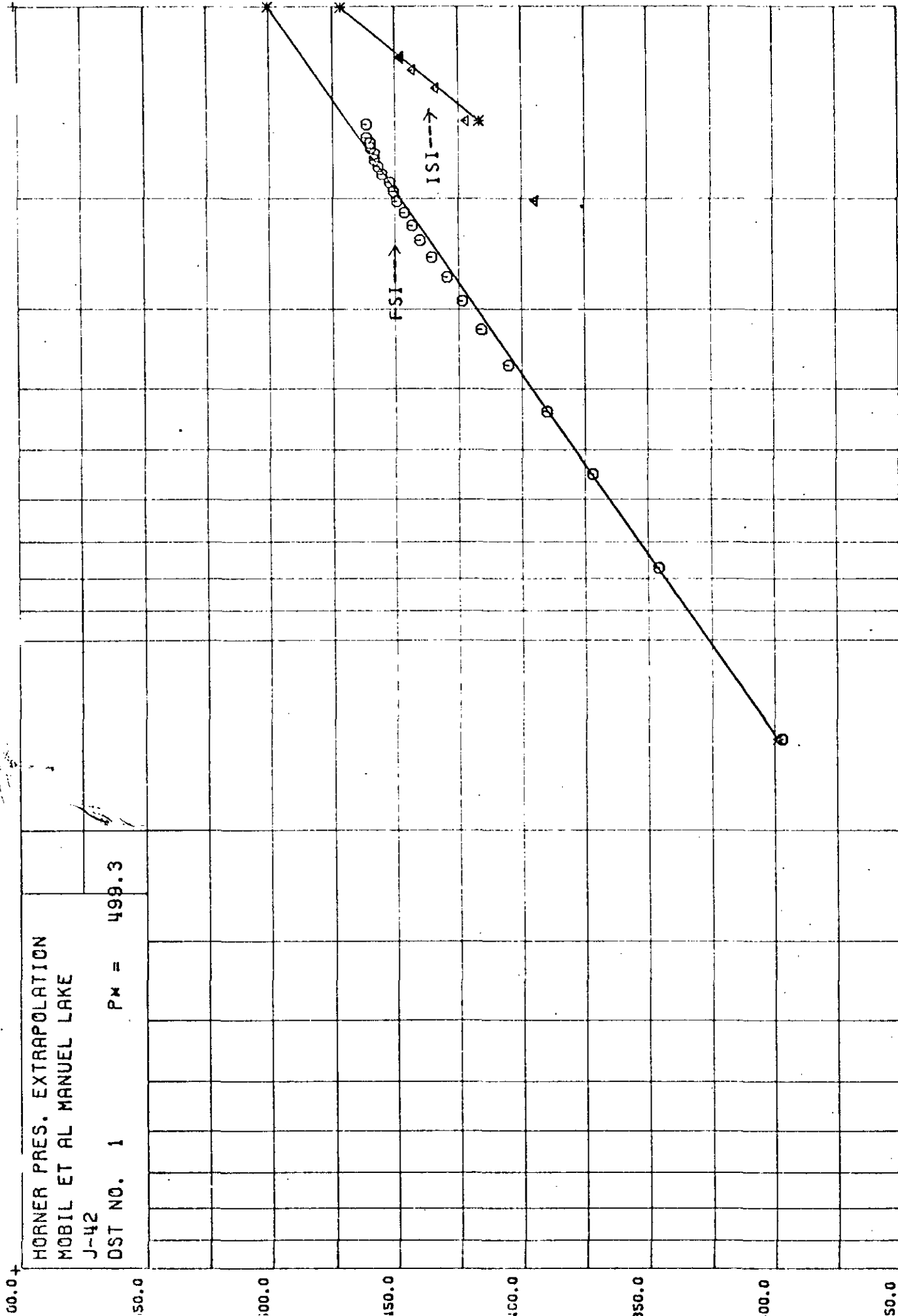


HORNER PRES. EXTRAPOLATION
MOBIL ET AL MANUEL LAKE

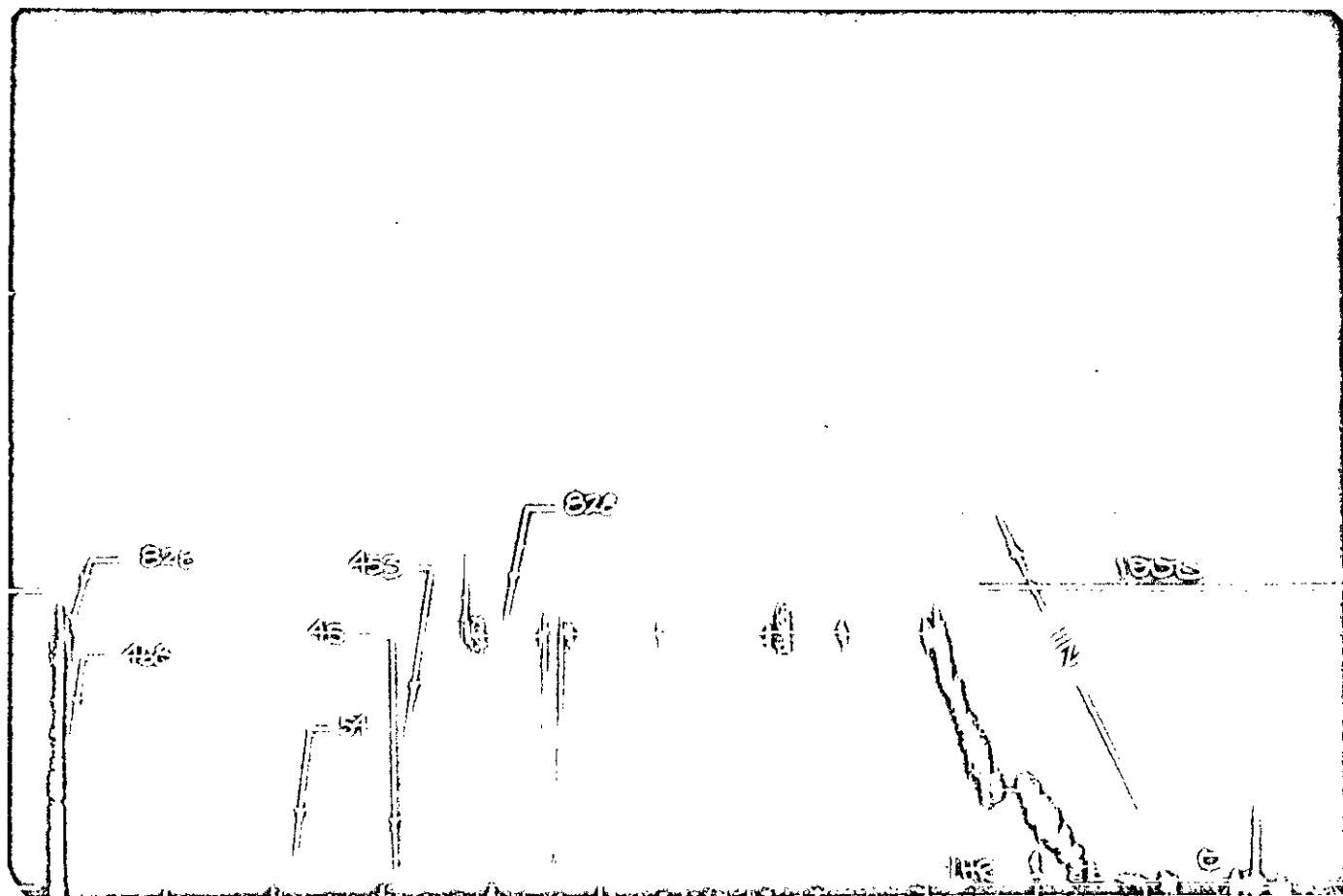
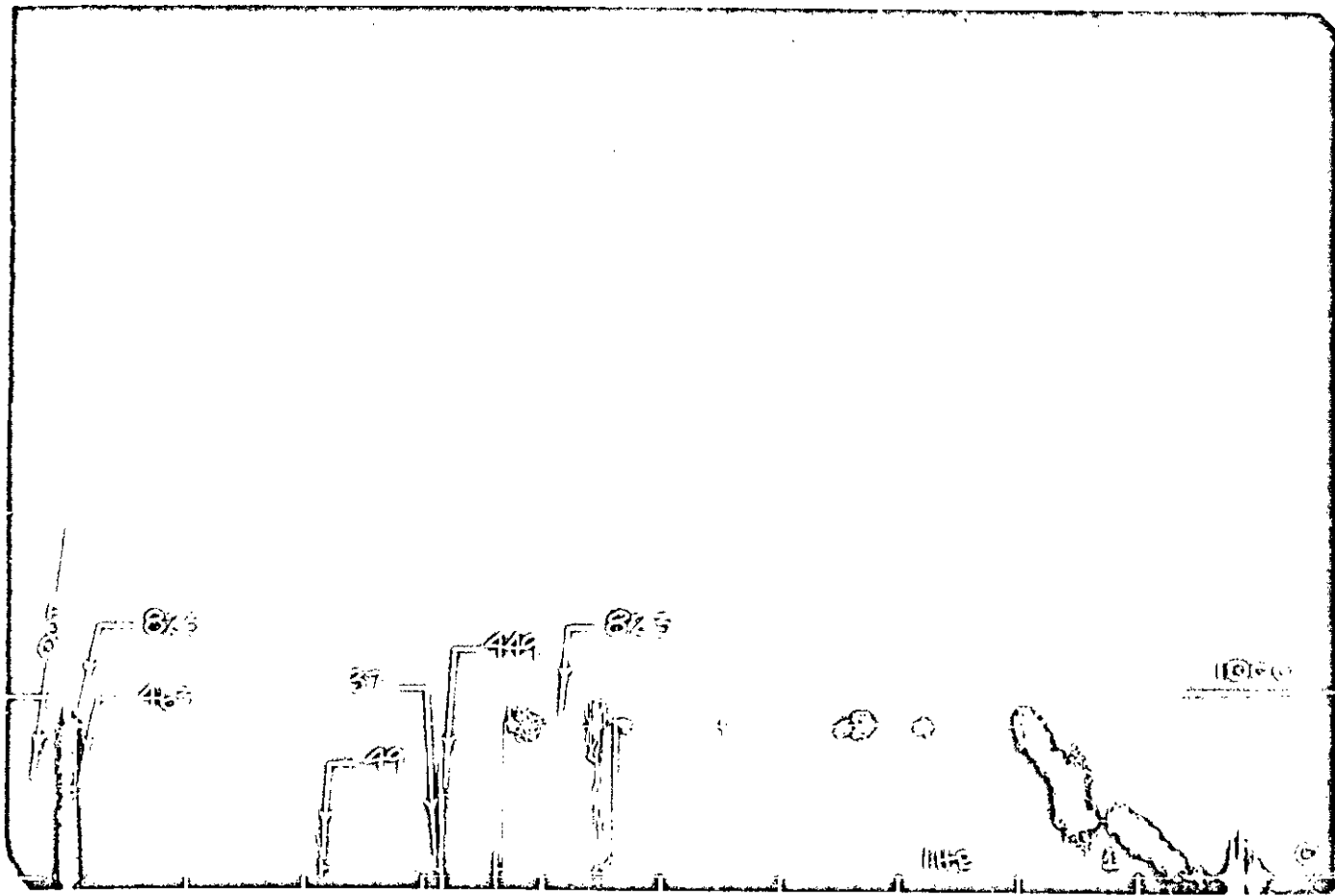
J-42

DST NO. 1

PM = 499.3



$(T + \Delta t) / \Delta t$





DRILL-STEM TEST DATA

Well Name **MOBIL ET AL MANUEL LAKE** Test No. **2**
Well Number **J-42** Zone Tested **BEAR ROCK**
Company **MOBIL OIL OF CANADA LTD.** Interval **1985 - 2053**
Comp. Rep. **H. RIED & P. CHAPMAN** Tester **M. MOSCRIPT** Date **JAN. 29, 1971**

Type of Test **DUAL BOTTOM HOLE** RFS Tool No. **53 + 55**

Preflow **30** mins. ISI **67** mins. Flow **60** mins. FSI **123** mins

	I REC. No. 2453	0 REC. No. 2013	REC. No.
	3400 RANGE 12 HR. CLOCK	6200 RANGE 24 HR. CLOCK	RANGE HR. CLOCK
DEPTH	1968	2047	
Initial Hydro. Mud Press	944	966	
Initial Shut-In Press	569	600	
Initial Flow Press	551	597	
Final Flow Press	570	597	
Final Shut-In Press	574	593	
Final Hydro. Mud Press	944	966	

Mud Drop **NIL** Fluid Loss Mud Weight **8.9**
Viscosity **60** Temperature °F **114** Net Pay Tested **EST. 68 FT.**
Top Packer Depth **1979** Bottom Packer Depth **1985** Total Depth **2053**
Drill Pipe Size **3.5 IF** Wt. **13.3** Drill Collar I.D. **2.875** Ft. Run **622**
Surface Choke Size **CLOSED** Bottom Choke Size **0.5** Main Hole Size **8.75**
Anchor Size **4.75** Rot Hole Size Feet of Rot Hole
Cushion Amount Type Rubber Size **7.5**

Fluid Recovery Total Feet **1433**
Recovered **50** Feet of **MUDDY WATER**
Recovered **1383** Feet of **SULPHUROUS FRESH WATER**
Recovered Feet of
Recovered Feet of
Recovered Feet of

Gas Recovery	How Measured	Riser size:
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day
mins.	Temp. °F Press Rdg. psi Orifice Size	= MCF/Day

Bleed Off Time for Drill Pipe

REMARKS: **GOOD INITIAL PUFF. GOOD AIR BLOW,
DECREASING IN 25 MINS., DYING IN 50 MINS.**



TEST NO. 2

TESTING REPORT



4S LANDING SUB _____

4S CHAMBER _____

4S TOOL OR P.O. SUB _____

CO SUB _____ 1.00

SHUT IN TOOL _____ 5.20

R.F.S. No. 55 _____ 3.30

R.F.S. No. 53 _____ 3.30

HYDRAULIC TOOL _____ 7.20

JARS _____ 6.00

RECORDER No. 2453 _____ 5.00 DEPTH 1968

RECORDER No. _____ DEPTH _____

SAFETY JOINT _____ 1.75

BY PASS SUB _____

1. PACKER DEPTH 1979 _____

PACKER _____ 6.00

2. PACKER DEPTH 1985 _____

PACKER _____ 5.00

ANCHOR—SPECIFY _____ 1.00

BLANK OFF OR BY PASS SUB _____

RECORDER No. _____ DEPTH _____

PERF _____ 29.00

3. PACKER DEPTH _____

PACKER _____

TOTAL INTERVAL 68.00

4. PACKER DEPTH _____

PACKER _____

ANCHOR—SPECIFY 1 Single _____ 31.00

RECORDER No. 2013 _____ 5.00 DEPTH 2047

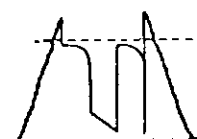
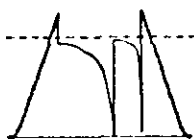
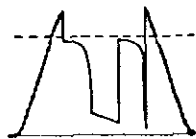
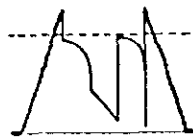
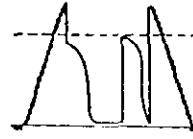
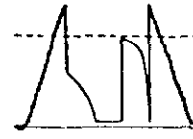
TOTAL DEPTH 2053 _____

BULLNOSE _____ 2.00

TOTAL TAIL PIPE 68.00

DST CHARTS FOR COMPARATIVE VISUAL ANALYSIS

TOTAL TEST TOOL 80.75

HIGH PERMEABILITY
STRONG DAMAGE EFFECTHIGH PERMEABILITY
NO DAMAGE EFFECTMEDIUM PERMEABILITY
STRONG DAMAGE EFFECTMEDIUM PERMEABILITY
NO DAMAGE EFFECTLOW PERMEABILITY
STRONG DAMAGE EFFECTLOW PERMEABILITY
NO DAMAGE EFFECT

B



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
RUN IN HOLE	1	0.0	0.0
	2	39.0	320.1
	3	54.0	320.1
	4	95.0	681.6
	5	105.0	681.6
	6	117.0	944.3
INITIAL HYDROSTATIC PRESSURE	7	163.0	944.3
INITIAL PREFLOW PRESSURE	8	163.0	208.6
	9	168.0	293.9
	10	173.0	386.8
	11	178.0	454.4
	12	183.0	498.3
	13	188.0	526.2
FINAL PREFLOW PRESSURE	14	193.0	543.1
START INITIAL SHUT IN	15	193.0	543.1
	16	198.0	563.3
	17	203.0	564.2
	18	208.0	565.9
	19	213.0	566.7
	20	218.0	566.7
	21	223.0	567.6
	22	228.0	567.6
	23	233.0	568.4
	24	238.0	568.4
	25	243.0	568.4
	26	248.0	568.4
	27	258.0	568.4
INITIAL SHUT-IN PRESSURE	28	260.0	569.3
START FINAL FLOW	29	260.0	569.3
INITIAL FLOW PRESSURE	30	261.0	550.7
	31	262.0	557.4
	32	265.0	560.8
	33	280.0	567.6
FINAL FLOW PRESSURE	34	320.0	570.1



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
START FINAL SHUT-IN	35	320.0	570.1
	36	321.0	574.3
	37	325.0	574.3
	38	340.0	574.3
	39	360.0	574.3
	40	380.0	574.3
	41	400.0	574.3
	42	420.0	574.3
	43	440.0	574.3
FINAL SHUT-IN PRESSURE	44	442.0	574.3
RUN OUT OF HOLE	45	442.0	574.3
FINAL HYDROSTATIC PRESSURE	46	443.0	944.3
	47	461.0	944.3
OUT	48	565.0	0.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

CALCULATIONS FOR LIQUID RECOVERY (FIRST SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	570.5
NO. OF POINTS CONSIDERED IN BUILD-UP	13
NO. OF POINTS USED IN EXTRAPOLATION	12
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.12
EFFECTIVE PRODUCING TIME (MIN)	30.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

DATA FOR BUILD-UP PLOT (FIRST SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
-----------------	-------------	------------------	---	--	-------------------------

PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

16	5.0	563.3			7.00
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POINTS USED IN EXTRAPOLATION

17	10.0	564.2	564.4	0.2	4.00
18	15.0	565.9	565.7	-0.2	3.00
19	20.0	566.7	566.5	-0.3	2.50
20	25.0	566.7	567.0	0.3	2.20
21	30.0	567.6	567.5	-0.1	2.00
22	35.0	567.6	567.8	0.2	1.86
23	40.0	568.4	568.0	-0.4	1.75
24	45.0	568.4	568.3	-0.2	1.67
25	50.0	568.4	568.4	0.0	1.60
26	55.0	568.4	568.6	0.2	1.55
27	65.0	568.4	568.8	0.4	1.46
28	67.0	569.3	568.9	-0.4	1.45



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

CALCULATIONS FOR LIQUID RECOVERY (SECOND SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	574.3
NO. OF POINTS CONSIDERED IN BUILD-UP	9
NO. OF POINTS USED IN EXTRAPOLATION	8
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.0
EFFECTIVE PRODUCING TIME (MIN)	90.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

DATA FOR BUILD-UP PLOT (SECOND SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
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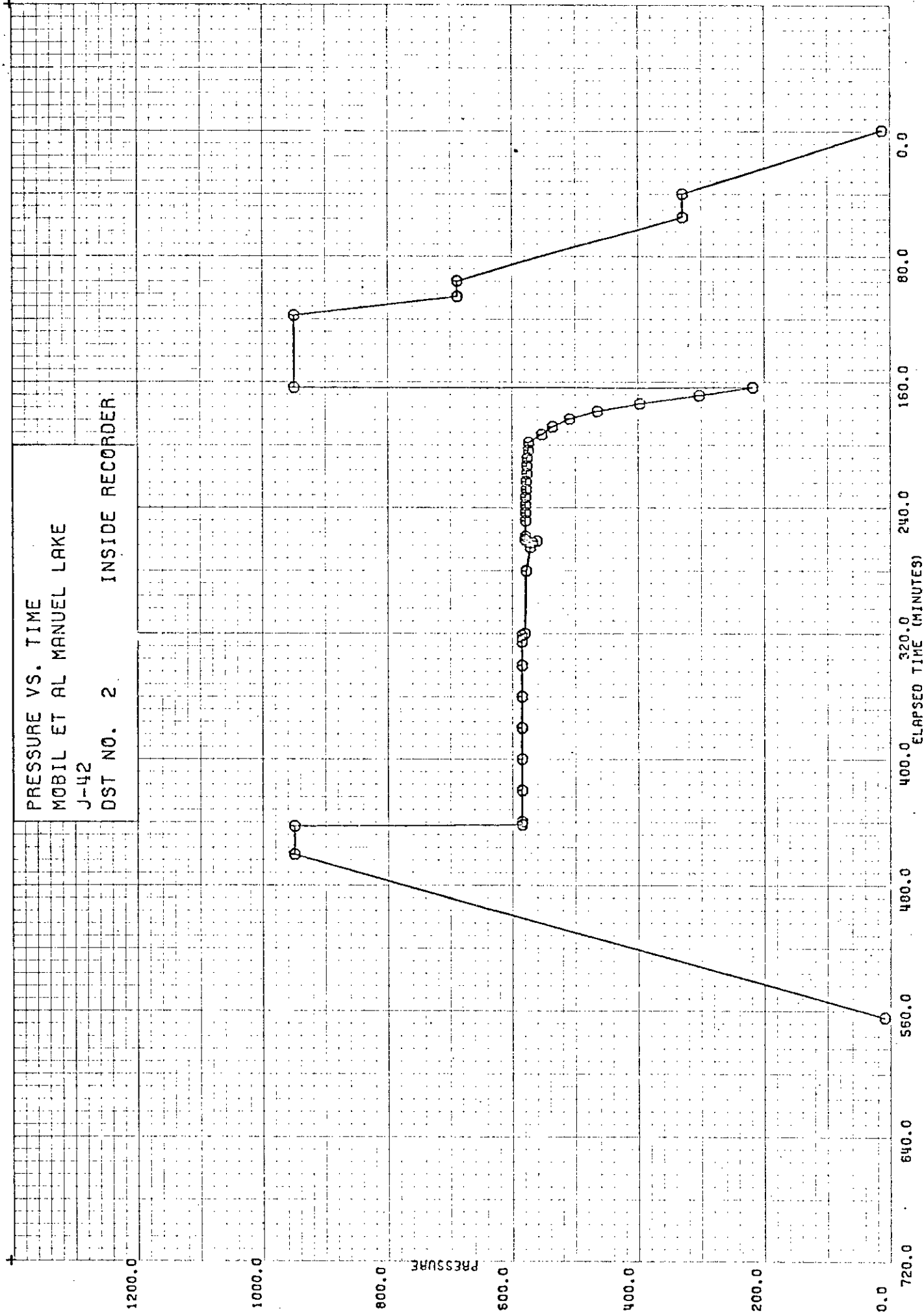
PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

36	1.0	574.3			91.00
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POINTS USED IN EXTRAPOLATION

37	5.0	574.3	574.3	-0.0	19.00
38	20.0	574.3	574.3	-0.0	5.50
39	40.0	574.3	574.3	-0.0	3.25
40	60.0	574.3	574.3	-0.0	2.50
41	80.0	574.3	574.3	-0.0	2.13
42	100.0	574.3	574.3	-0.0	1.90
43	120.0	574.3	574.3	-0.0	1.75
44	122.0	574.3	574.3	-0.0	1.74

PRESSURE VS. TIME
 MOBIL ET AL MANUEL LAKE
 J-42
 DST NO. 2
 INSIDE RECORDER.



595.0 +

590.0

585.0

580.0

575.0

570.0

565.0

560.0

BOTTOM - HOLE PRESSURE (psig)

HORNER PRES. EXTRAPOLATION
MOBIL ET AL MANUEL LAKE

J-42

DST NO. 2

P_x = 574.3

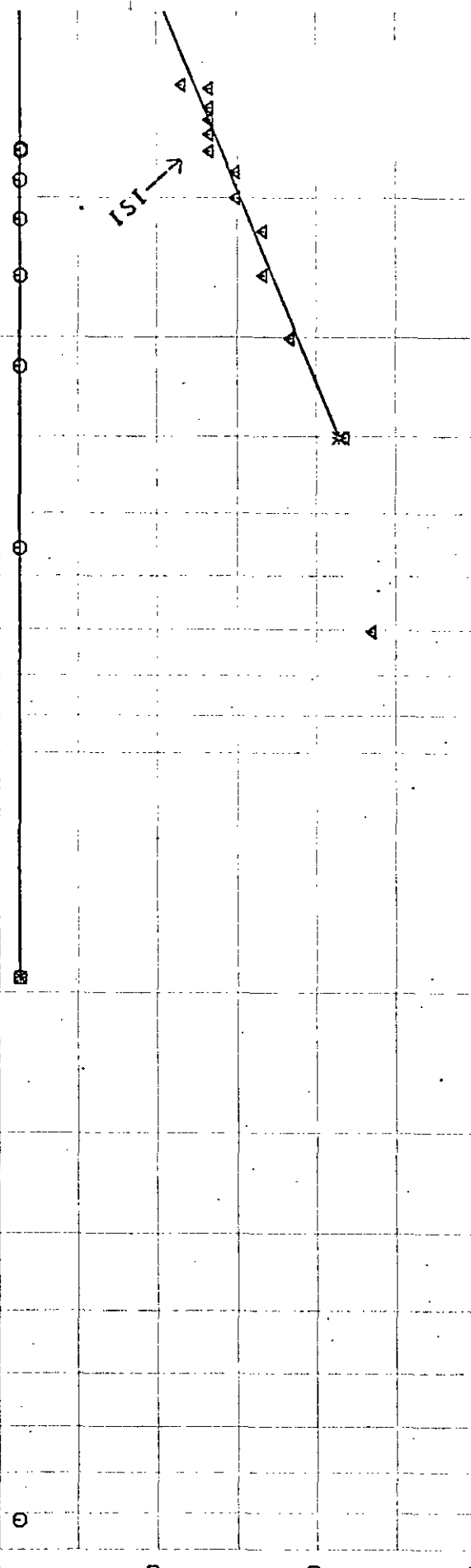
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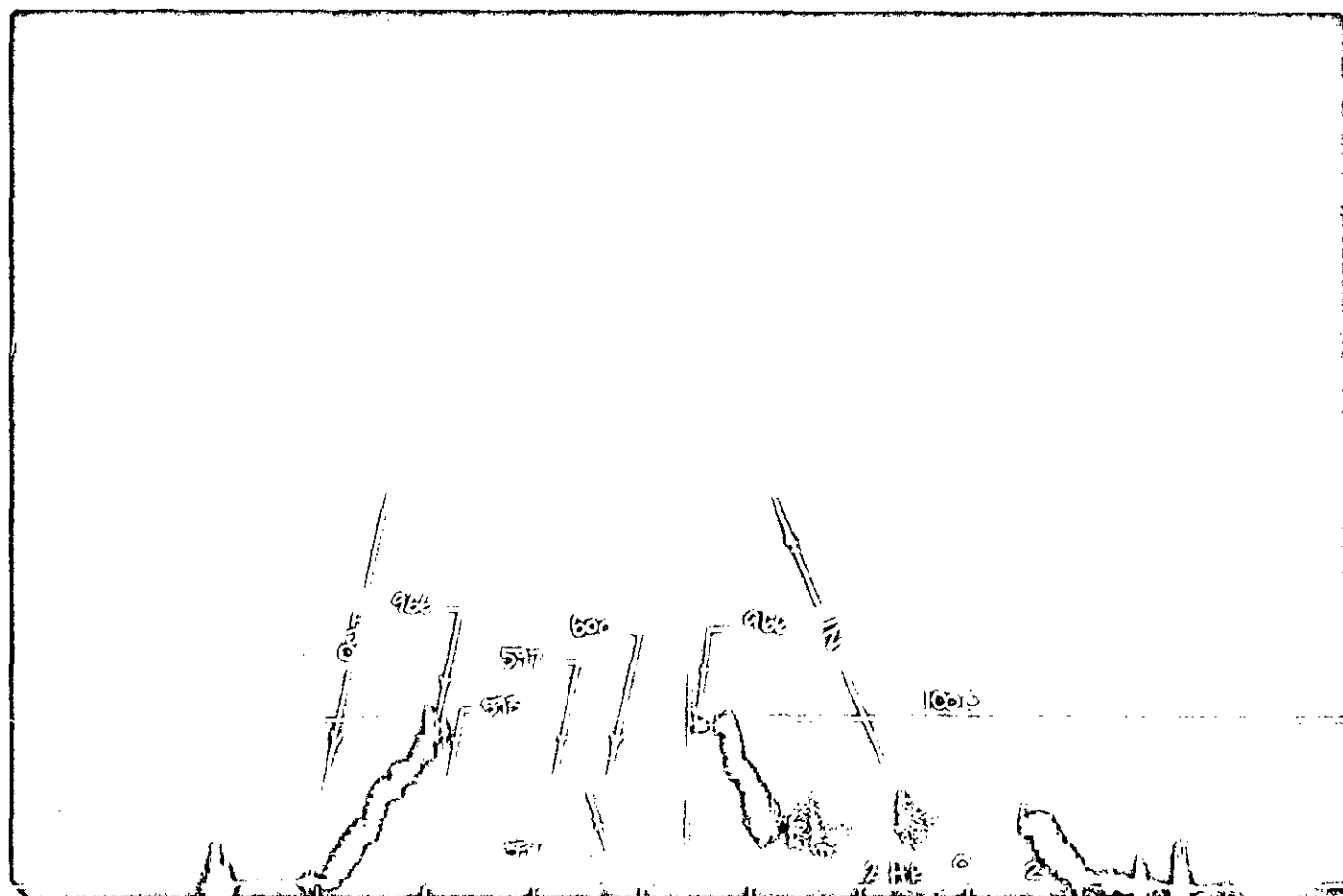
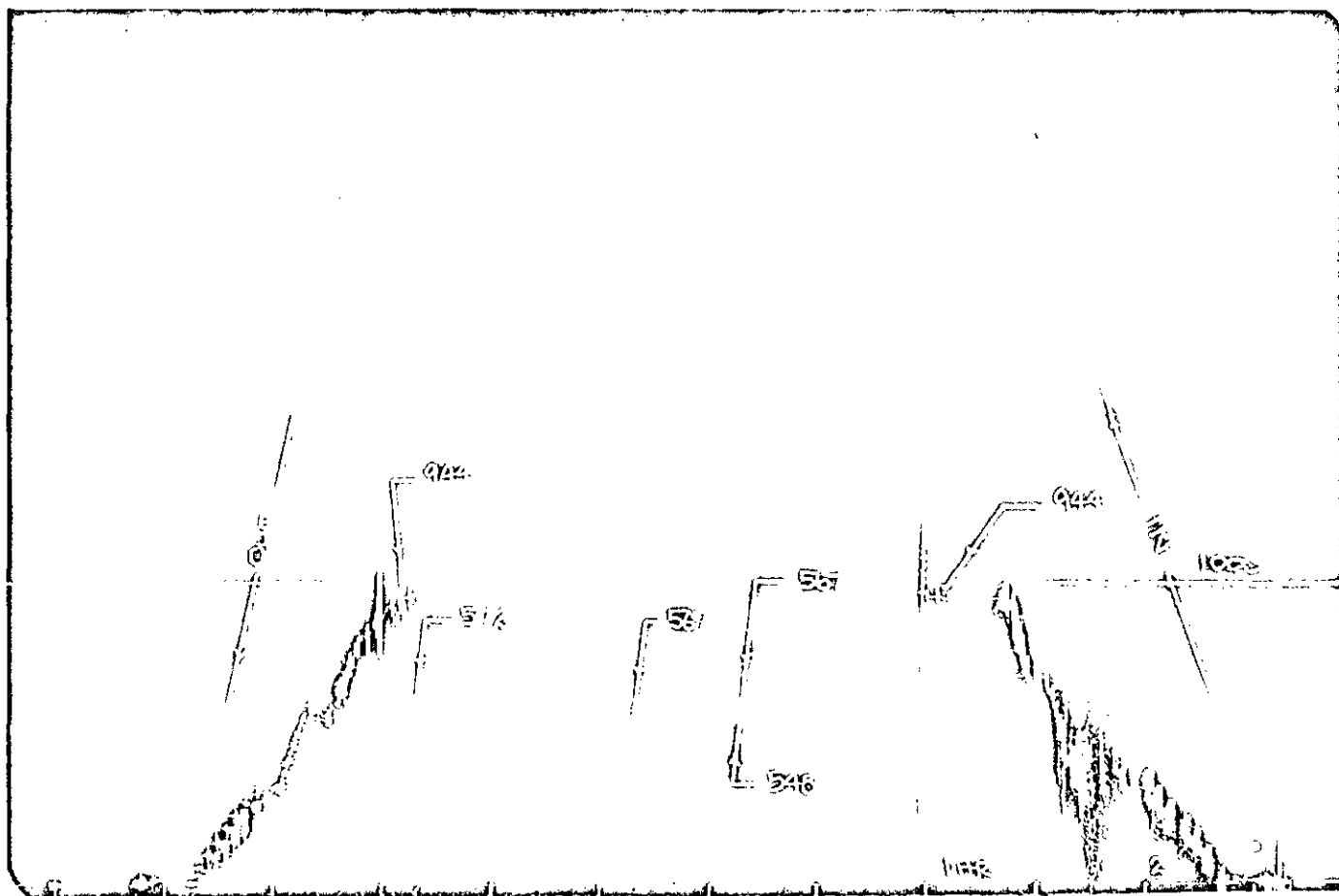
ISI →

100

10

$(T + \Delta T) / \Delta T$





CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. C71-2790-4

Received: Feb. 3, 1971 Reported: Feb. 11, 1971

Well: Location: Mobil et al Marvel Lake 67°11' 40" N-129° 23' 15" W.

Operator: MOBIL OIL CANADA, LTD.

Field or Area:

Elev.: K.B. 940' Grd. 925' Zone/Formation: Bear Rock Carbonate

Sample Interval: 1985' - 2053'

Method of Production: D.S.T. #2

Sampled from: Bottom

Sampled by: H. Reid

Date: Jan. 29, 1971

OTHER PERTINENT DATA

Recovered 1433' water

(Signed)

	Na	K	Ca	Mg		SO ₄	Cl		CO ₃	HCO ₃	
Mg./L	1810		440	278		1210	3430			98	
Mg./L	78.70		21.96	22.85		25.17	96.73			1.61	
Meq. %	31.86		8.89	9.25		10.19	39.16			0.65	

Total Solids Mg/L:

By Evaporation 7450

Fe Trace

Specific Gravity 1.006

@60°F

Observed pH

7.7

@ 75 °F

Calculated 7266

After Ignition

6400

H₂S Trace

Refractive Index 1.3344

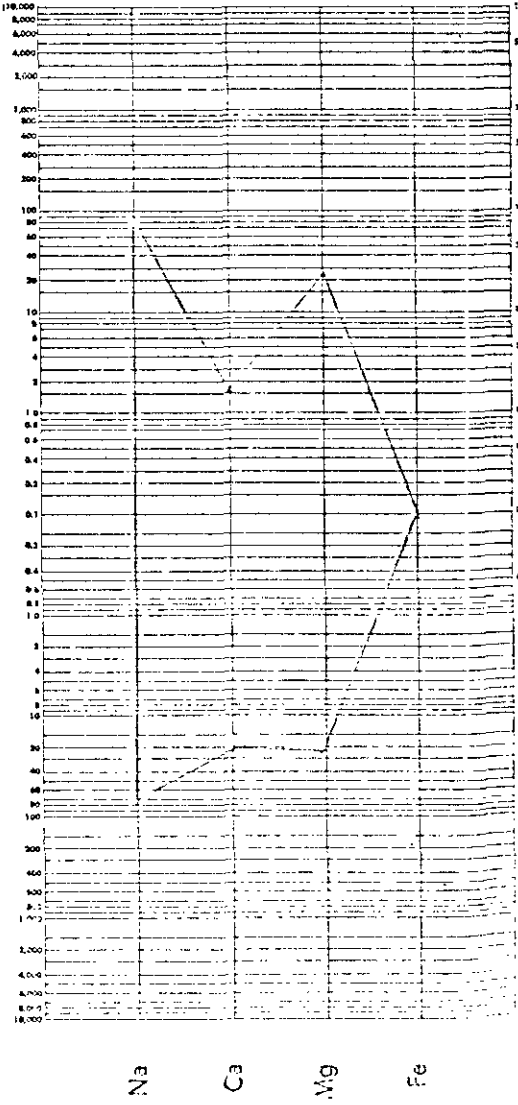
@25°C

Resistivity 0.976

ohm meters @

68 °F

Pattern Unit Meq./L



Remarks and Conclusions

The sample as received, contained a trace of sediment. The filtrate was colorless.

continued.....

CHEMICAL & GEOLOGICAL LABORATORIES LIMITED

OPERATOR: MOBIL OIL CANADA, LTD.

REPORT NUMBER: C71-2790

KIND OF SAMPLE: Water

DATE RECEIVED: Feb. 3, 1971

DATE REPORTED: Feb. 12, 1971

<u>LABORATORY NUMBER</u>	<u>SAMPLED FROM</u>	<u>DATE SAMPLED (1971)</u>	<u>METHOD OF PRODUCTION</u>	<u>RESISTIVITY (OHM-meters at 68°F.)</u>
C71-2790-1	Base of fluid	Jan. 27	D.S.T. #1	5.57
-2	Top	Jan. 29	D.S.T. #2	2.54
-3	Middle	Jan. 29	D.S.T. #2	1.1



DRILL-STEM TEST DATA

Well Name	MOBIL ET AL MANUEL LAKE	Test No.	1
Well Number	J-42	Zone Tested	BEAR ROCK
Company	MOBIL OIL OF CANADA LTD.	Interval	1770 - 1798
Comp. Rep.	H. RIEDER, CHAPMAN	Tester	M. MOSCIP
		Date	JAN. 27, 1971

Type of Test DUAL BOTTOM HOLE

RFS Tool No. 53 + 55

Preflow 5 mins. ISI 26 mins. Flow 61 mins. FSI 126 mins.

DEPTH	1 REC. No. 2013	1 REC. No. 2453	REC. No.
	6200 RANGE 12 HR. CLOCK	3400 RANGE 12 HR. CLOCK	RANGE HR. CLOCK
Initial Hydro Mud Press	1753	1792	
Initial Shut-In Press	822	828	
Initial Flow Press	446	453	
Final Flow Press	37	45	
Final Shut-In Press	49	54	
Final Hydro Mud Press	460	468	
	822	828	

Mud Drop	NIL	Fluid Loss		Mud Weight	8.9
Viscosity	65	Temperature °F	112	Net Pay Tested	EST. 28 FT.
Top Packer Depth	1764	Bottom Packer Depth	1770	Total Depth	1798
Drill Pipe Size	3.5 I.F.	Wt. 13.3	Drill Collar I.D.	2.875	Ft. Run 622.09
Surface Choke Size	CLOSED	Bottom Choke Size	0.5	Main Hole Size	8.75
Anchor Size	4.75	Rat Hole Size		Feet of Rat Hole	
Cushion Amount		Type		Rubber Size	7.5

Fluid Recovery Total Feet 50

Recovered	50	Feet of	DRILLING MUD
Recovered		Feet of	
Recovered		Feet of	
Recovered		Feet of	
Recovered		Feet of	

Gas Recovery How Measured

Riser size:

mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day

Bleed Off Time for Drill Pipe

REMARKS: VERY WEAK INITIAL PUFF, VERY WEAK AIR BLOW DYING IN 4 MIN.
NOTE - 4.5 HOURS SPENT THAWING FLARE LINE
DUE TO TEMP OF 50 DEGREES BELOW ZERO.

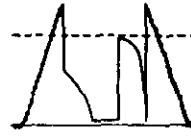
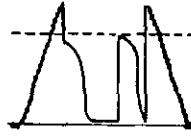
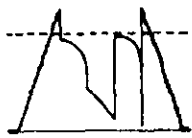
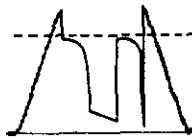
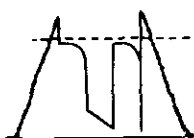


TEST NO. 1

TESTING REPORT

	4S LANDING SUB		
	4S CHAMBER		
	4S TOOL OR P.O. SUB		
	CO SUB	1.00	
	SHUT IN TOOL	5.20	
	R.F.S. No. 53	3.30	
	R.F.S. No. 55	3.30	
	HYDRAULIC TOOL	7.20	
	JARS	6.00	
	RECORDER No. 2013	5.00	DEPTH 1753
	RECORDER No.		DEPTH
	SAFETY JOINT	1.75	
	BY PASS SUB		
1. PACKER DEPTH 1764	PACKER	6.00	
2. PACKER DEPTH 1770	PACKER	5.00	TOTAL TOOL ABOVE INTERVAL 43.75
	ANCHOR—SPECIFY	1.00	
	BLANK OFF OR BY PASS SUB		
	RECORDER No.		DEPTH
3. PACKER DEPTH	PACKER		TOTAL INTERVAL 28.00
4. PACKER DEPTH	PACKER		
	ANCHOR—SPECIFY PERF	20.00	
	RECORDER No. 2453	5.00	DEPTH 1792
TOTAL DEPTH 1798	BULLNOSE	2.00	TOTAL TAIL PIPE 28.00
			TOTAL TEST TOOL 71.75

DST CHARTS FOR COMPARATIVE VISUAL ANALYSIS



B

HIGH PERMEABILITY
STRONG DAMAGE EFFECTHIGH PERMEABILITY
NO DAMAGE EFFECTMEDIUM PERMEABILITY
STRONG DAMAGE EFFECTMEDIUM PERMEABILITY
NO DAMAGE EFFECTLOW PERMEABILITY
STRONG DAMAGE EFFECTLOW PERMEABILITY
NO DAMAGE EFFECT



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
RUN IN HOLE	1	0.0	0.0
	2	32.0	309.8
	3	51.0	309.8
	4	77.0	822.1
	5	286.0	822.1
	6	287.0	72.1
	7	297.0	55.2
	8	298.0	822.1
INITIAL HYDRO PRESSURE	9	341.0	822.1
INITIAL PREFLOW PRESSURE	10	341.0	38.3
FINAL PREFLOW PRESSURE	11	346.0	38.3
START INITIAL SHUT IN	12	346.0	38.3
	13	351.0	392.6
	14	356.0	420.2
	15	361.0	432.5
	16	366.0	441.7
	17	371.0	446.3
INITIAL SHUT IN PRESSURE	18	372.0	446.3
START FLOW PERIOD	19	372.0	446.3
INITIAL FLOW PRESSURE	20	373.0	36.6
	21	377.0	38.3
	22	382.0	39.9
	23	387.0	39.9
	24	402.0	42.9
	25	417.0	46.0
FINAL FLOW PRESSURE	26	433.0	49.1
START FINAL SHUT IN	27	433.0	49.1
	28	438.0	294.5
	29	443.0	343.6
	30	448.0	369.6
	31	453.0	388.0
	32	458.0	403.4
	33	463.0	414.1



WELL NAME MOBIL ET AL MANUEL LAKE

OST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

MEASURED PRESSURES

POINT NUMBER	TIME MIN	PRESSURE PSIG
34	468.0	421.8
35	473.0	427.9
36	478.0	434.0
37	483.0	438.7
38	488.0	441.7
39	493.0	444.8
40	498.0	447.9
41	503.0	449.4
42	508.0	450.9
43	513.0	454.0
44	518.0	455.5
45	523.0	457.1
46	528.0	457.1
47	533.0	458.6
48	538.0	458.6
49	543.0	460.1
FINAL SHUT IN PRESSURE	50	559.0
RUN OUT OF HOLE	51	559.0
FINAL HYDRO PRESSURE	52	560.0
OUT	53	564.0
		0.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

CALCULATIONS FOR LIQUID RECOVERY (FIRST SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	470.4
NO. OF POINTS CONSIDERED IN BUILD-UP	6
NO. OF POINTS USED IN EXTRAPOLATION	5
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.47
EFFECTIVE PRODUCING TIME (MIN)	5.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

DATA FOR BUILD-UP PLOT (FIRST SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
-----------------	-------------	------------------	---	--	-------------------------

PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

13	5.0	392.6			2.00
----	-----	-------	--	--	------

POINTS USED IN EXTRAPOLATION

14	10.0	420.2	415.2	-5.0	1.50
15	15.0	432.5	431.3	-1.2	1.33
16	20.0	441.7	440.1	-1.7	1.25
17	25.0	446.3	445.6	-0.7	1.20
18	26.0	446.3	446.5	0.2	1.19



WELL NAME MOBIL ET AL MANUEL LAKE

TEST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

CALCULATIONS FOR LIQUID RECOVERY (SECOND SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	499.3
NO. OF POINTS CONSIDERED IN BUILD-UP	23
NO. OF POINTS USED IN EXTRAPOLATION	23
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	3.12
EFFECTIVE PRODUCING TIME (MIN)	66.0
(B) IN SITU CAPACITY (KH - MD FT)	5.09
SLOPE OF BUILD-UP CURVE (PSI/CYCLE)	176.33
PRODUCING RATE (BBL/DAY)	8.76
FLUID VISCOSITY (CP)	0.630
FORMATION VOLUME FACTOR (RES BBL/ST BBL).....	1.000
(C) EFFECTIVE PERMEABILITY (MD)	0.18
FORMATION THICKNESS	28.00
(D) PRODUCTIVITY INDEX (BBL/DAY/PSI)	0.02
FLOWING PRESSURE (PSIG)	49.1
(E) APPROXIMATE DRAINAGE RADIUS (FT)	15.8
TOTAL FLOWING TIME (MIN)	66.0
(F) ESTIMATED DAMAGE RATIO	0.78
RESERVOIR POROSITY (PERCENT)	20.00
TOTAL COMPRESSIBILITY (VOL/VOL/PSI X 10 ⁻⁶)	6.70
WELL-BORE RADIUS (IN)	4.38
CALCULATED SKIN FACTOR	-0.54



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 1

LOCATION J-42

REC. NO. 2013

DEPTH 1753.

DATA FOR BUILD-UP PLOT (SECOND SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
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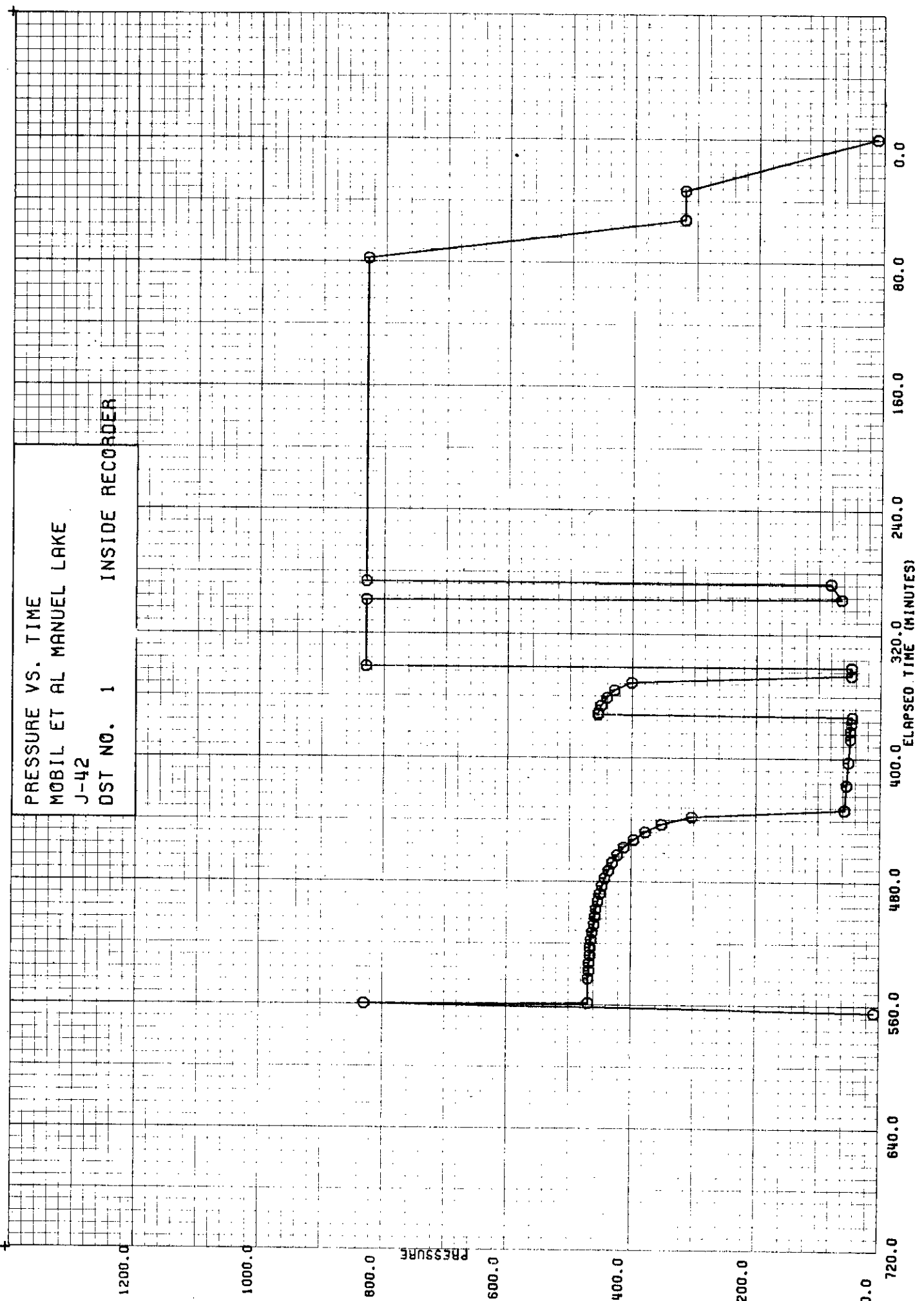
POINTS USED IN EXTRAPOLATION

28	5.0	294.5	296.1	1.6	14.20
29	10.0	343.6	343.9	0.4	7.60
30	15.0	369.6	370.1	0.5	5.40
31	20.0	388.0	387.6	-0.5	4.30
32	25.0	403.4	400.3	-3.1	3.64
33	30.0	414.1	410.2	-3.9	3.20
34	35.0	421.8	418.1	-3.7	2.89
35	40.0	427.9	424.6	-3.3	2.65
36	45.0	434.0	430.1	-3.9	2.47
37	50.0	438.7	434.8	-3.8	2.32
38	55.0	441.7	438.9	-2.8	2.20
39	60.0	444.8	442.4	-2.4	2.10
40	65.0	447.9	445.6	-2.3	2.02
41	70.0	449.4	448.4	-1.0	1.94
42	75.0	450.9	450.9	-0.0	1.88
43	80.0	454.0	453.2	-0.8	1.82
44	85.0	455.5	455.2	-0.3	1.78
45	90.0	457.1	457.1	0.1	1.73
46	95.0	457.1	458.9	1.8	1.69
47	100.0	458.6	460.4	1.9	1.66
48	105.0	458.6	461.9	3.3	1.63
49	110.0	460.1	463.3	3.1	1.60
50	126.0	460.1	467.0	6.9	1.52

ASSUMPTIONS AND LIMITATIONS

THE ENCLOSED DST INTERPRETATION CALCULATIONS REQUIRE SEVERAL NECESSARY ASSUMPTIONS TO PROVIDE A QUICK ESTIMATE OF MANY OF THE FACTORS INVOLVED. AS A RESULT THE INFORMATION GAINED SHOULD BE USED TO FORM AN OPINION OR ESTIMATE ONLY, UNTIL THE ASSUMPTIONS OF RESERVOIR AND FLUID PROPERTIES CAN BE WHOLLY OR PARTIALLY CLARIFIED BY MORE COMPLETE ANALYSIS AND TESTING.

PRESSURE VS. TIME
MOBIL ET AL MANUEL LAKE
J-42
DST NO. 1 INSIDE RECORDER



HORNER PRES. EXTRAPOLATION
MOBIL ET AL MANUEL LAKE

J-42

DST NO. 1

PM = 499.3

600.0

550.0

500.0

BOTTOM - HOLE PRESSURE (psig)

450.0

400.0

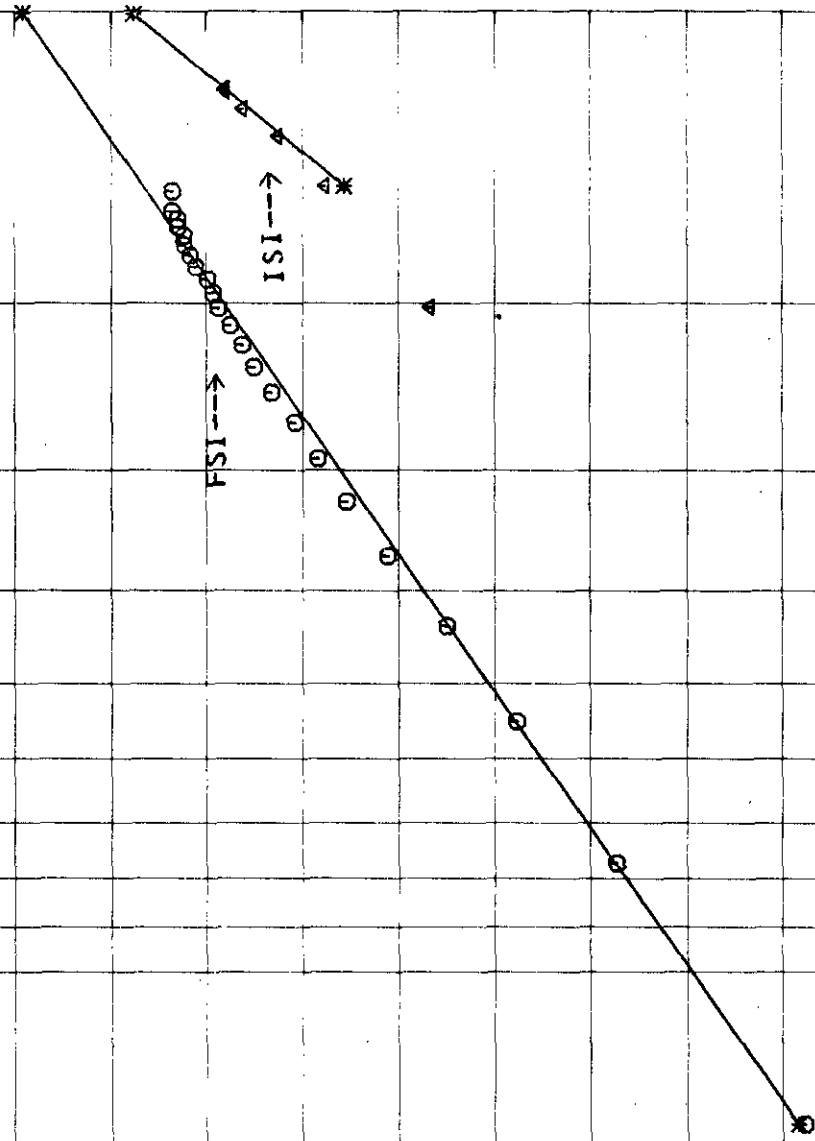
350.0

300.0

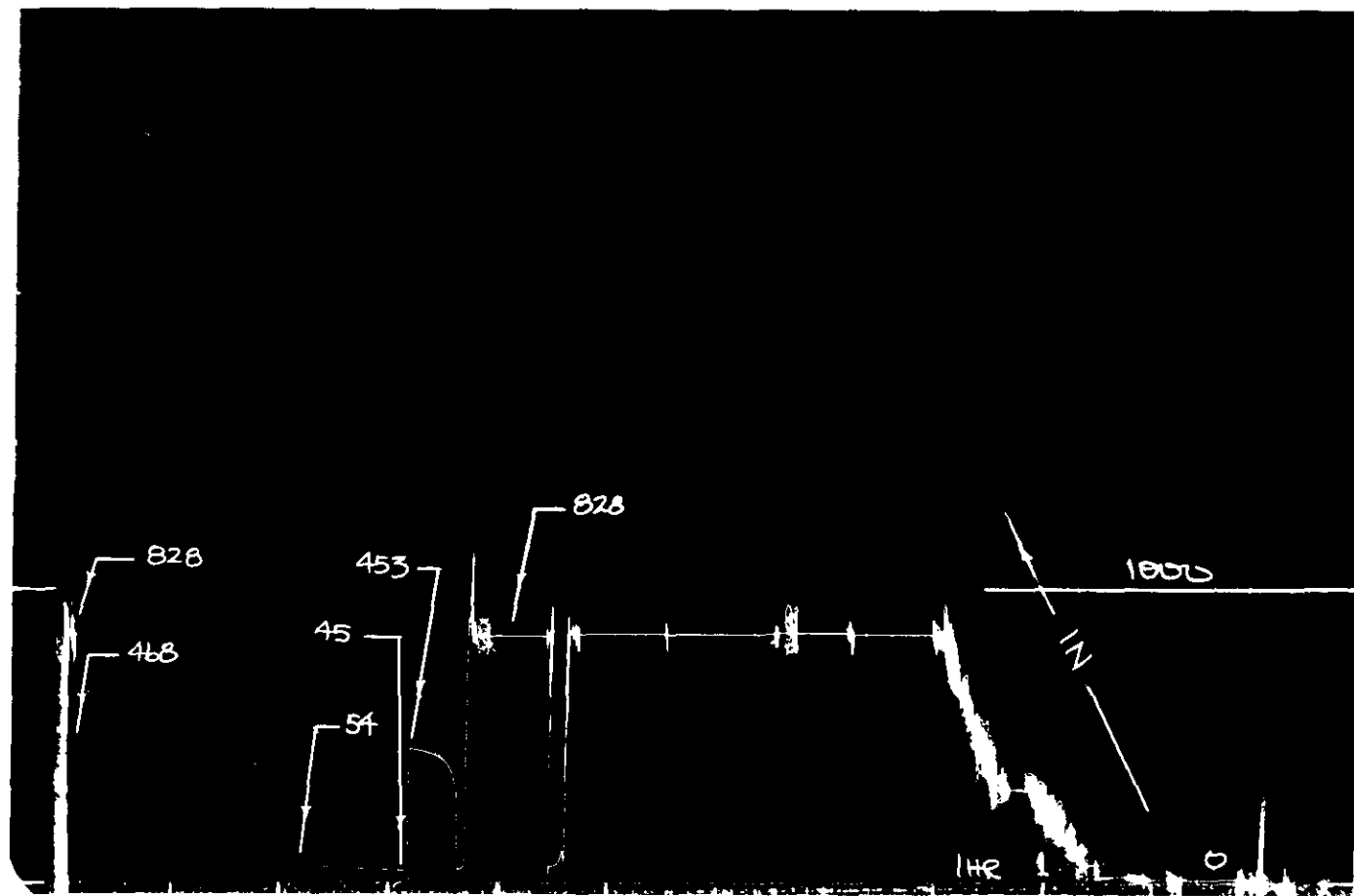
250.0

100

$\frac{10}{(T + \Delta T) / \Delta T}$









DRILL-STEM TEST DATA

Well Name	MOBIL ET AL MANUEL LAKE	Test No.	2
Well Number	J-42	Zone Tested	BEAR ROCK
Company	MOBIL OIL OF CANADA LTD.	Interval	1985 - 2053
Comp. Rep.	M. KIEDGP. CHAPMAN	Tester	M. MOSCRIPT
		Date	JAN. 29, 1971

Type of Test DUAL BOTTOM HOLE

RFS Tool No. 53 + 50

Preflow 30 mins. ISI 67 mins. Flow 60 mins. FSI 123 mins

	I	REC. No.	2453	0	REC. No.	2013	REC. No.	
DEPTH	3400	RANGE	12	6200	RANGE	24		
			HR. CLOCK			HR. CLOCK		
Initial Hydro Mud Press			1968			2047		
Initial Shut-In Press			944			966		
Initial Flow Press			569			600		
Final Flow Press			551			547		
Final Shut-In Press			570			597		
Final Hydro Mud Press			574			543		
			944			966		

Mud Drop NIL

Fluid Loss

Mud Weight 8.9

Viscosity 60

Temperature °F 114

Net Pay Tested EST. 68 FT.

Top Packer Depth 1979

Bottom Packer Depth 1985

Total Depth 2053

Drill Pipe Size 3.5 IF

Wt. 13.3 Drill Collar I.D. 2.875

Ft. Run 622

Surface Choke Size CLOSED

Bottom Choke Size 0.5

Main Hole Size 8.75

Anchor Size 4.75

Rat Hole Size

Feet of Rat Hole

Cushion Amount

Type

Rubber Size 7.5

Fluid Recovery Total Feet 1433

Recovered 50

Feet of MUDDY WATER

Recovered 1383

Feet of SULPHUROUS FRESH WATER

Recovered

Feet of

Recovered

Feet of

Recovered

Feet of

Gas Recovery

How Measured

Riser size:

mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day
mins.	Temp. °F	Press Rdg.	psi	Orifice Size	=	MCF/Day

Bleed Off Time for Drill Pipe

REMARKS: GOOD INITIAL PUFF. GOOD AIR BLOW.
DECREASING IN 25 MINS., DYING IN 50 MINS.

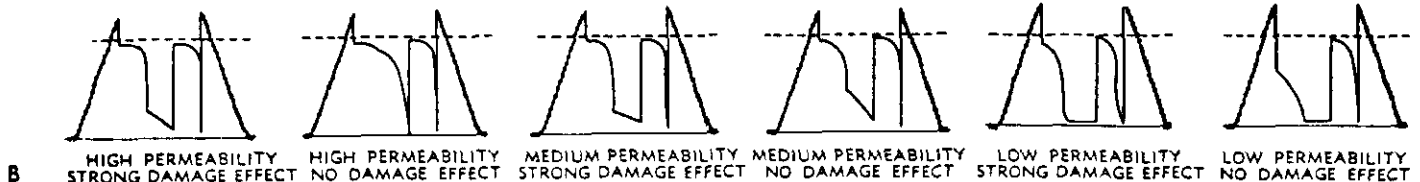


TEST NO. 2

TESTING REPORT

	4S LANDING SUB		
	4S CHAMBER		
	4S TOOL OR P.O. SUB		
	CO SUB	1.00	
	SHUT IN TOOL	5.20	
	R.F.S. No. 55	3.30	
	R.F.S. No. 53	3.30	
	HYDRAULIC TOOL	7.20	
	JARS	6.00	
	RECORDER No. 2453	5.00	DEPTH 1968
	RECORDER No.		DEPTH
	SAFETY JOINT	1.75	
	BY PASS SUB		
	1. PACKER DEPTH 1979	PACKER	6.00
	2. PACKER DEPTH 1985	PACKER	5.00
	ANCHOR—SPECIFY	1.00	
	BLANK OFF OR BY PASS SUB		
	RECORDER No.	DEPTH	
	PERF	29.00	
3. PACKER DEPTH	PACKER	TOTAL INTERVAL 68.00	
4. PACKER DEPTH	PACKER		
	ANCHOR—SPECIFY 1 Single	31.00	
	RECORDER No. 2013	5.00 DEPTH 2047	
TOTAL DEPTH 2053	BULLNOSE	2.00	
	TOTAL TAIL PIPE	68.00	
	TOTAL TEST TOOL	80.75	

DST CHARTS FOR COMPARATIVE VISUAL ANALYSIS





WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1960.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
RUN IN HOLE	1	0.0	0.0
	2	39.0	320.1
	3	54.0	320.1
	4	95.0	681.6
	5	105.0	681.6
	6	117.0	944.3
INITIAL HYDROSTATIC PRESSURE	7	163.0	944.3
INITIAL PREFLOW PRESSURE	8	163.0	208.6
	9	168.0	293.9
	10	173.0	386.8
	11	178.0	454.4
	12	183.0	498.3
	13	188.0	526.2
FINAL PREFLOW PRESSURE	14	193.0	543.1
START INITIAL SHUT IN	15	193.0	543.1
	16	198.0	563.3
	17	203.0	564.2
	18	208.0	565.9
	19	213.0	566.7
	20	218.0	566.7
	21	223.0	567.6
	22	228.0	567.6
	23	233.0	568.4
	24	238.0	568.4
	25	243.0	568.4
	26	248.0	568.4
	27	258.0	568.4
INITIAL SHUT-IN PRESSURE	28	260.0	569.3
START FINAL FLOW	29	260.0	569.3
INITIAL FLOW PRESSURE	30	261.0	550.7
	31	262.0	557.4
	32	265.0	560.8
	33	280.0	567.6
FINAL FLOW PRESSURE	34	320.0	570.1



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

MEASURED PRESSURES

	POINT NUMBER	TIME MIN	PRESSURE PSIG
START FINAL SHUT-IN	35	320.0	570.1
	36	321.0	574.3
	37	325.0	574.3
	38	340.0	574.3
	39	360.0	574.3
	40	380.0	574.3
	41	400.0	574.3
	42	420.0	574.3
	43	440.0	574.3
FINAL SHUT-IN PRESSURE	44	442.0	574.3
RUN OUT OF HOLE	45	442.0	574.3
FINAL HYDROSTATIC PRESSURE	46	443.0	944.3
	47	461.0	944.3
OUT	48	565.0	0.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

CALCULATIONS FOR LIQUID RECOVERY (FIRST SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	570.5
NO. OF POINTS CONSIDERED IN BUILD-UP	13
NO. OF POINTS USED IN EXTRAPOLATION	12
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.12
EFFECTIVE PRODUCING TIME (MIN)	30.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

DATA FOR BUILD-UP PLOT (FIRST SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
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PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

16	5.0	563.3			7.00
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POINTS USED IN EXTRAPOLATION

17	10.0	564.2	564.4	0.2	4.00
18	15.0	565.9	565.7	-0.2	3.00
19	20.0	566.7	566.5	-0.3	2.50
20	25.0	566.7	567.0	0.3	2.20
21	30.0	567.6	567.5	-0.1	2.00
22	35.0	567.6	567.8	0.2	1.86
23	40.0	568.4	568.0	-0.4	1.75
24	45.0	568.4	568.3	-0.2	1.67
25	50.0	568.4	568.4	0.0	1.60
26	55.0	568.4	568.6	0.2	1.55
27	65.0	568.4	568.8	0.4	1.46
28	67.0	569.3	568.9	-0.4	1.45



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

CALCULATIONS FOR LIQUID RECOVERY (SECOND SHUT-IN)

(A) EXTRAPOLATED RESERVOIR PRESSURE	574.3
NO. OF POINTS CONSIDERED IN BUILD-UP	9
NO. OF POINTS USED IN EXTRAPOLATION	8
ROOT MEAN SQUARE DEVIATION OF BEST-FIT LINE (PSI).....	0.0
EFFECTIVE PRODUCING TIME (MIN)	90.0



WELL NAME MOBIL ET AL MANUEL LAKE

DST. NO. 2

LOCATION J-42

REC. NO. 2453

DEPTH 1968.

DATA FOR BUILD-UP PLOT (SECOND SHUT-IN)

POINT NUMBER	TIME MIN	PRESSURE PSIG	PRESSURE CALC FROM BEST FIT LINE	PRESSURE DIFFERENCE CALC - OBSERVED	T+DELTA(T)/ DELTA(T)
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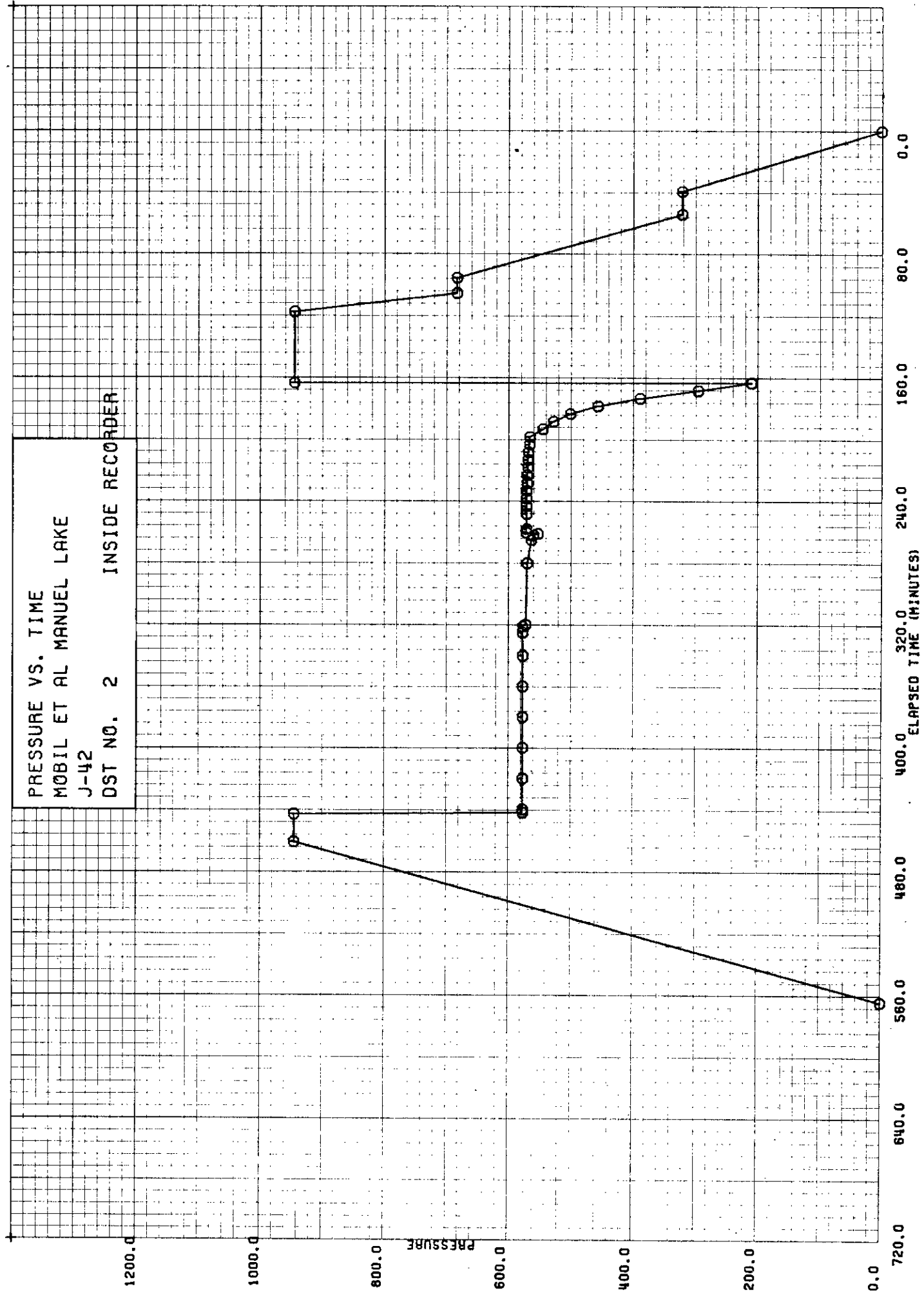
PORTION OF BUILD-UP CURVE NOT USED IN EXTRAPOLATION

36	1.0	574.3			91.00
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POINTS USED IN EXTRAPOLATION

37	5.0	574.3	574.3	-0.0	19.00
38	20.0	574.3	574.3	-0.0	5.50
39	40.0	574.3	574.3	-0.0	3.25
40	60.0	574.3	574.3	-0.0	2.50
41	80.0	574.3	574.3	-0.0	2.13
42	100.0	574.3	574.3	-0.0	1.90
43	120.0	574.3	574.3	-0.0	1.75
44	122.0	574.3	574.3	-0.0	1.74

PRESSURE VS. TIME
MOBIL ET AL MANUEL LAKE
J-42
DST NO. 2
INSIDE RECORDER



HORNER PRES. EXTRAPOLATION
MOBIL ET AL MANUEL LAKE

J-42

DST NO. 2 P* = 574.3

595.0

590.0

585.0

580.0

575.0

570.0

565.0

560.0

BOTTOM - HOLE PRESSURE (psig)

FSI →

ISI →

$(T + \Delta t) / \Delta t$

100

