20-34-43W

ORIGINAL

CONFIDENTIAL

ANADARKO PETROLEUM CORPORATION

CONFIDENTIAL

LEASE : USA

WELL NO. : AE-1

TEST NO. : 1

API#15-129-21255

KCC

MAY 11

CONFIDENTIAL

TICKET NO. 64989700

14-FEB-94

LIBERAL

RELEASED

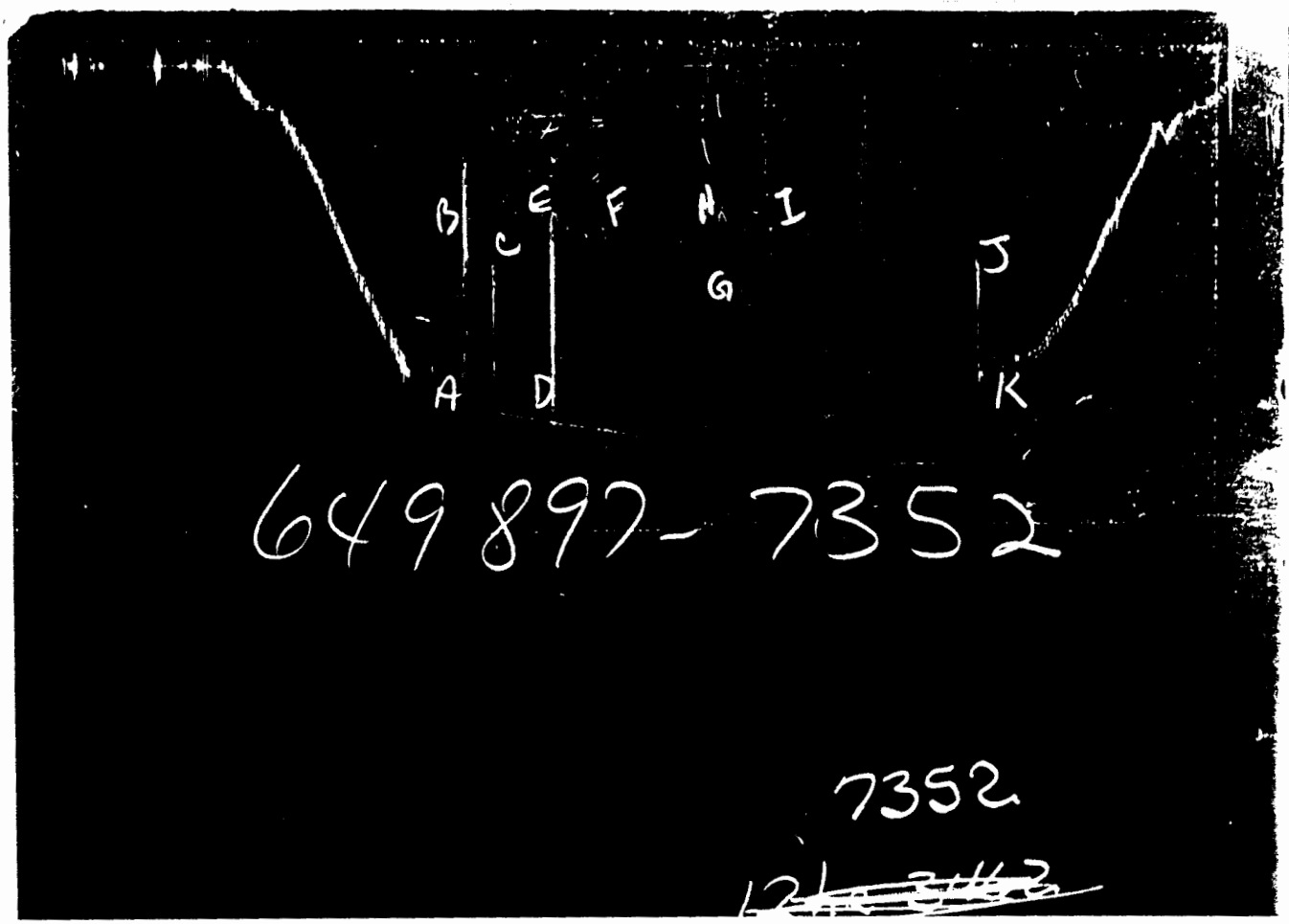
JUN 28 1995

FROM CONFIDENTIAL

DST REPORT PRODUCED BY HRS
A DIVISION OF HALLIBURTON COMPANY

LEGAL LOCATION SEC. - TWP. - RNG.	LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
20 - 34 S - 43 W	USA	AE-1	1	4060.0 - 4082.0	ANADARKO PETROLEUM CORPORATION

FIELD AREA	COUNTY	STATE
INTERSTATE	MORTON	KANSAS



GAUGE NO: 7352 DEPTH: 4041.5 BLANKED OFF: NO HOUR OF CLOCK: 1

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1899	1936.1			
B	TOOL OPENED INITIALLY		949.2		15.4	
C	OPENED BYPASS		1244.2			
C	OPENED BYPASS		1244.2		33.6	
D	CLOSED BYPASS		1934.4			
E	INITIAL SECOND FLOW	933	982.4	39.0	33.1	F
F	FINAL SECOND FLOW	1058	1046.6			
F	INITIAL FIRST CLOSED-IN	1058	1046.6	60.0	66.0	C
G	FINAL FIRST CLOSED-IN	1213	1245.7			
H	INITIAL THIRD FLOW	933	968.9	30.0	30.9	F
I	FINAL THIRD FLOW	1058	1039.3			
I	INITIAL SECOND CLOSED-IN	1058	1039.3	120.0	120.1	C
J	FINAL SECOND CLOSED-IN	1213	1240.7			
K	FINAL HYDROSTATIC	1899	1917.1			

EQUIPMENT & HOLE DATA

FORMATION TESTED: MORROW
NET PAY (ft): _____
GROSS TESTED FOOTAGE: 22.0 PACKER TO T.D.
ALL DEPTHS MEASURED FROM: K.B.
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 3475.0 (AT GROUND LEVEL)
TOTAL DEPTH (ft): 4082.0
PACKER DEPTH(S) (ft): 4054, 4060
FINAL SURFACE CHOKE (in): 0.62500
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.10
MUD VISCOSITY (sec): 47
ESTIMATED HOLE TEMP. (°F): 100
ACTUAL HOLE TEMP. (°F): 105 @ 4077.0 ft

TICKET NUMBER: 64989700
DATE: 02-06-94 TEST NO: 1
TYPE DST: OPEN HOLE
FIELD CAMP: LIBERAL
TESTER: M. KELLY
WITNESS: J. BARLOW, T. LEWIS
DRILLING CONTRACTOR: NORSEMAN #2

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY			CHLORIDES	
TOP	0.850	@	58 °F	6193	ppm
BOTTOM	0.850	@	58 °F	6193	ppm
PIT	1.800	@	65 °F	2654	ppm
		@	°F		ppm
		@	°F		ppm
		@	°F		ppm

SAMPLER DATA

Psig AT SURFACE: 785.0
cu.ft. OF GAS: 4.764
cc OF OIL: _____
cc OF WATER: 5.0
cc OF MUD: _____
TOTAL LIQUID cc: 5.0

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ ___ °F
GAS/OIL RATIO (cu.ft. per bbl): _____
GAS GRAVITY: 0.600 EST.

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

3774 FT. OF GAS IN PIPE
258 FT. OF SALTWATER

MEASURED FROM TESTER VALVE

REMARKS:

TICKET NO: 64989700

CLOCK NO: 3247 HOUR: 12

GAUGE NO: 7352

DEPTH: 4041.5

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	949.2			
	2	1.0	1223.1			
	3	2.0	971.2			
	4	3.0	1010.2			
	5	4.0	1061.1			
	6	5.0	1118.8			
	7	6.0	1163.9			
	8	7.0	1199.8			
	9	8.0	1220.1			
	10	9.0	1233.1			
	11	10.0	1238.4			
	12	11.0	1241.2			
	13	12.0	1242.7			
	14	13.0	1244.5			
	15	14.0	1244.3			
C	16	15.4	1244.2			
			PACKERS BYPASSED			
C	1	0.0	1244.2			
D	2	33.6	1934.4			
			SECOND FLOW			
E	1	0.0	982.4			
	2	1.0	951.6	-30.8		
	3	2.0	946.6	-5.0		
	4	3.0	960.4	13.9		
	5	4.0	981.0	20.6		
	6	5.0	996.6	15.6		
	7	6.0	1005.6	9.0		
	8	7.0	1009.9	4.2		
	9	8.0	1019.2	9.4		
	10	9.0	1024.2	5.0		
	11	10.0	1024.2	0.0		
	12	12.0	1042.3	18.1		
	13	14.0	1045.4	3.1		
	14	16.0	1045.9	0.5		
	15	18.0	1044.0	-1.9		
	16	20.0	1043.8	-0.2		
	17	22.0	1043.7	-0.2		
	18	24.0	1043.8	0.2		
	19	26.0	1045.4	1.6		
	20	28.0	1044.6	-0.8		
	21	30.0	1043.8	-0.8		
	22	32.0	1045.9	2.0		
F	23	33.1	1046.6	0.8		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
			FIRST CLOSED-IN			
F	1	0.0	1046.6			
	2	1.0	1219.3	172.7	1.0	1.531
	3	2.0	1226.2	179.6	1.9	1.242
	4	3.0	1229.5	182.8	2.7	1.086
	5	4.0	1231.7	185.0	3.6	0.970
	6	5.0	1233.4	186.7	4.3	0.884
	7	6.0	1235.7	189.1	5.1	0.816
	8	7.0	1236.2	189.6	5.8	0.761
	9	8.0	1237.0	190.3	6.5	0.710
	10	9.0	1237.6	191.0	7.1	0.669
	11	10.0	1238.2	191.6	7.7	0.636
	12	12.0	1239.5	192.8	8.8	0.575
	13	14.0	1240.4	193.8	9.9	0.527
	14	16.0	1240.7	194.1	10.8	0.488
	15	18.0	1241.2	194.5	11.6	0.454
	16	20.0	1241.8	195.2	12.5	0.424
	17	22.0	1241.8	195.2	13.2	0.399
	18	24.0	1241.8	195.2	13.9	0.377
	19	26.0	1241.8	195.2	14.6	0.357
	20	28.0	1241.8	195.2	15.2	0.339
	21	30.0	1241.2	194.5	15.8	0.323
	22	35.0	1240.4	193.8	17.0	0.289
	23	40.0	1242.6	196.0	18.1	0.262
	24	45.0	1245.1	198.5	19.1	0.240
	25	50.0	1245.1	198.5	19.9	0.221
	26	55.0	1245.6	198.9	20.7	0.205
	27	60.0	1246.0	199.4	21.4	0.191
G	28	66.0	1245.7	199.1	22.1	0.177
			THIRD FLOW			
H	1	0.0	968.9			
	2	1.0	930.2	-38.6		
	3	2.0	941.9	11.7		
	4	3.0	962.0	20.1		
	5	4.0	987.6	25.6		
	6	5.0	1011.9	24.3		
	7	6.0	1028.4	16.5		
	8	7.0	1042.3	13.9		
	9	8.0	1050.2	8.0		
	10	9.0	1054.0	3.7		
	11	10.0	1055.9	1.9		
	12	12.0	1054.0	-1.9		
	13	14.0	1050.4	-3.6		
	14	16.0	1047.3	-3.1		
	15	18.0	1045.4	-1.9		
	16	20.0	1044.6	-0.8		
	17	22.0	1050.1	5.5		
	18	24.0	1047.0	-3.1		
	19	26.0	1045.4	-1.6		
	20	28.0	1042.9	-2.5		

REMARKS:

TICKET NO: 64989700	GAUGE NO: 7351
CLOCK NO: 3462 HOUR: 12	DEPTH: 4079.0

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	974.6			
	2	1.0	1220.5			
	3	2.0	998.0			
	4	3.0	1032.7			
	5	4.0	1083.6			
	6	5.0	1131.7			
	7	6.0	1175.8			
	8	7.0	1203.0			
	9	8.0	1224.2			
	10	9.0	1234.0			
	11	10.0	1238.3			
	12	11.0	1239.9			
	13	12.0	1241.7			
	14	13.0	1243.6			
	15	14.0	1244.6			
C	16	15.4	1245.5			
PACKERS BYPASSED						
C	1	0.0	1245.5			
D	2	33.6	1949.0			
SECOND FLOW						
E	1	0.0	1019.9			
	2	1.0	1010.6	-9.3		
	3	2.0	997.2	-13.4		
	4	3.0	1002.9	5.8		
	5	4.0	1018.6	15.7		
	6	5.0	1032.7	14.1		
	7	6.0	1041.2	8.5		
	8	7.0	1047.4	6.2		
	9	8.0	1054.2	6.7		
	10	9.0	1058.0	3.8		
	11	10.0	1060.4	2.4		
	12	12.0	1068.4	8.0		
	13	14.0	1073.2	4.8		
	14	16.0	1075.0	1.8		
	15	18.0	1074.7	-0.3		
	16	20.0	1074.0	-0.6		
	17	22.0	1073.4	-0.6		
	18	24.0	1072.4	-1.0		
	19	26.0	1072.3	-0.2		
	20	28.0	1071.6	-0.6		
	21	30.0	1071.0	-0.6		
	22	32.0	1070.8	-0.2		
F	23	33.1	1071.5	0.6		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
FIRST CLOSED-IN						
F	1	0.0	1071.5			
	2	1.0	1217.6	146.1	1.0	1.52
	3	2.0	1225.5	154.0	1.9	1.24
	4	3.0	1228.7	157.2	2.8	1.08
	5	4.0	1230.6	159.1	3.6	0.9[illegible]
	6	5.0	1232.7	161.2	4.4	0.8[illegible]
	7	6.0	1232.7	161.2	5.1	0.8[illegible]
	8	7.0	1234.3	162.8	5.8	0.7[illegible]
	9	8.0	1235.6	164.1	6.4	0.7[illegible]
	10	9.0	1235.6	164.1	7.1	0.6[illegible]
	11	10.0	1235.9	164.4	7.7	0.6[illegible]
	12	12.0	1236.4	164.9	8.8	0.5
	13	14.0	1238.3	166.8	9.8	0.5
	14	16.0	1239.2	167.8	10.8	0.4
	15	18.0	1239.9	168.4	11.7	0.4
	16	20.0	1240.7	169.2	12.5	0.4
	17	22.0	1240.7	169.2	13.2	0.4
	18	24.0	1241.3	169.9	13.9	0.3
	19	26.0	1241.5	170.0	14.6	0.3
	20	28.0	1241.7	170.2	15.2	0.3
	21	30.0	1242.1	170.7	15.8	0.3
	22	35.0	1243.1	171.6	17.0	0.2
	23	40.0	1243.1	171.6	18.1	0.2
	24	45.0	1243.7	172.3	19.1	0.2
	25	50.0	1244.2	172.8	19.9	0.2
	26	55.0	1244.2	172.8	20.7	0.2
	27	60.0	1241.8	170.4	21.4	0.1
G	28	66.0	1243.9	172.4	22.1	0.1
THIRD FLOW						
H	1	0.0	1021.8			
	2	1.0	976.2	-45.6		
	3	2.0	965.8	-10.4		
	4	3.0	982.8	17.0		
	5	4.0	1003.6	20.8		
	6	5.0	1024.4	20.8		
	7	6.0	1039.9	15.5		
	8	7.0	1055.5	15.5		
	9	8.0	1064.1	8.6		
	10	9.0	1068.6	4.5		
	11	10.0	1070.8	2.2		
	12	12.0	1071.6	0.8		
	13	14.0	1070.7	-1.0		
	14	16.0	1067.8	-2.9		
	15	18.0	1065.4	-2.4		
	16	20.0	1063.8	-1.6		
	17	22.0	1063.8	0.0		
	18	24.0	1063.3	-0.5		
	19	26.0	1061.1	-2.2		
	20	28.0	1058.4	-2.7		

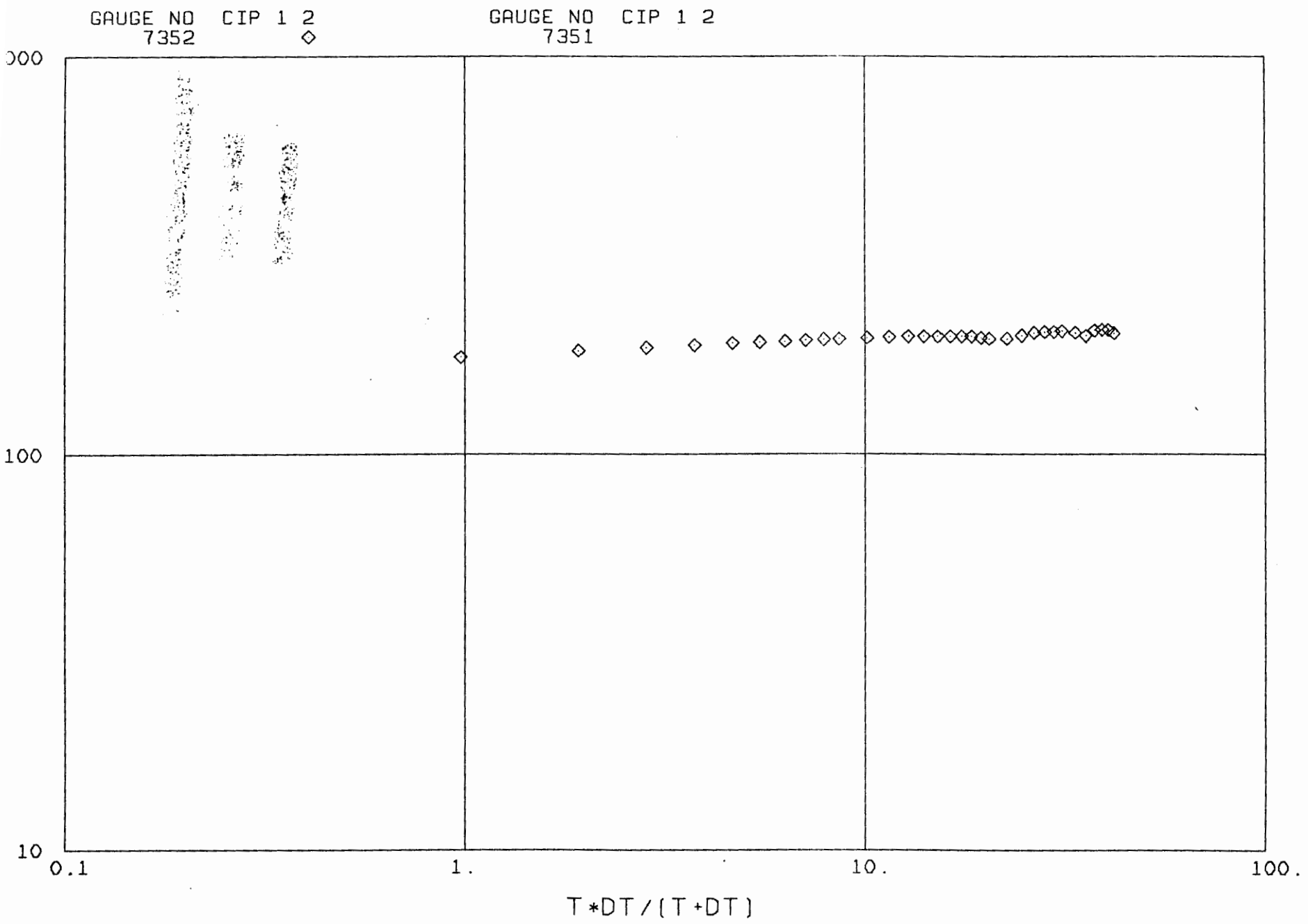
REMARKS:

TICKET NO. 64989700

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE	4.500	3.826	3424.1	
3	DRILL COLLARS	6.000	2.250	534.9	
50	IMPACT REVERSING SUB	6.000	3.000	1.0	3959.5
3	DRILL COLLARS	6.000	2.250	61.1	
5	CROSSOVER	6.000	3.000	1.0	
11	HANDLING SUB & CHOKE ASSEMBLY	4.500	3.820	4.7	
13	DUAL CIP SAMPLER	5.000	0.750	6.6	
60	HYDROSPRING TESTER	5.000	0.750	5.0	4037.4
80	AP RUNNING CASE	5.000	2.250	4.1	4039.5
15	JAR	5.000	1.750	5.0	
16	VR SAFETY JOINT	5.000	1.000	2.8	
70	OPEN HOLE PACKER	6.750	1.530	5.8	4054.2
70	OPEN HOLE PACKER	6.750	1.530	5.8	4060.0
20	FLUSH JOINT ANCHOR	5.000	2.370	15.0	
83	HT-500 TEMPERATURE CASE	5.000		1.0	4077.0
81	BLANKED-OFF RUNNING CASE	5.000		4.1	4079.0
	TOTAL DEPTH				4082.0

EQUIPMENT DATA

TICKET NO 64989700



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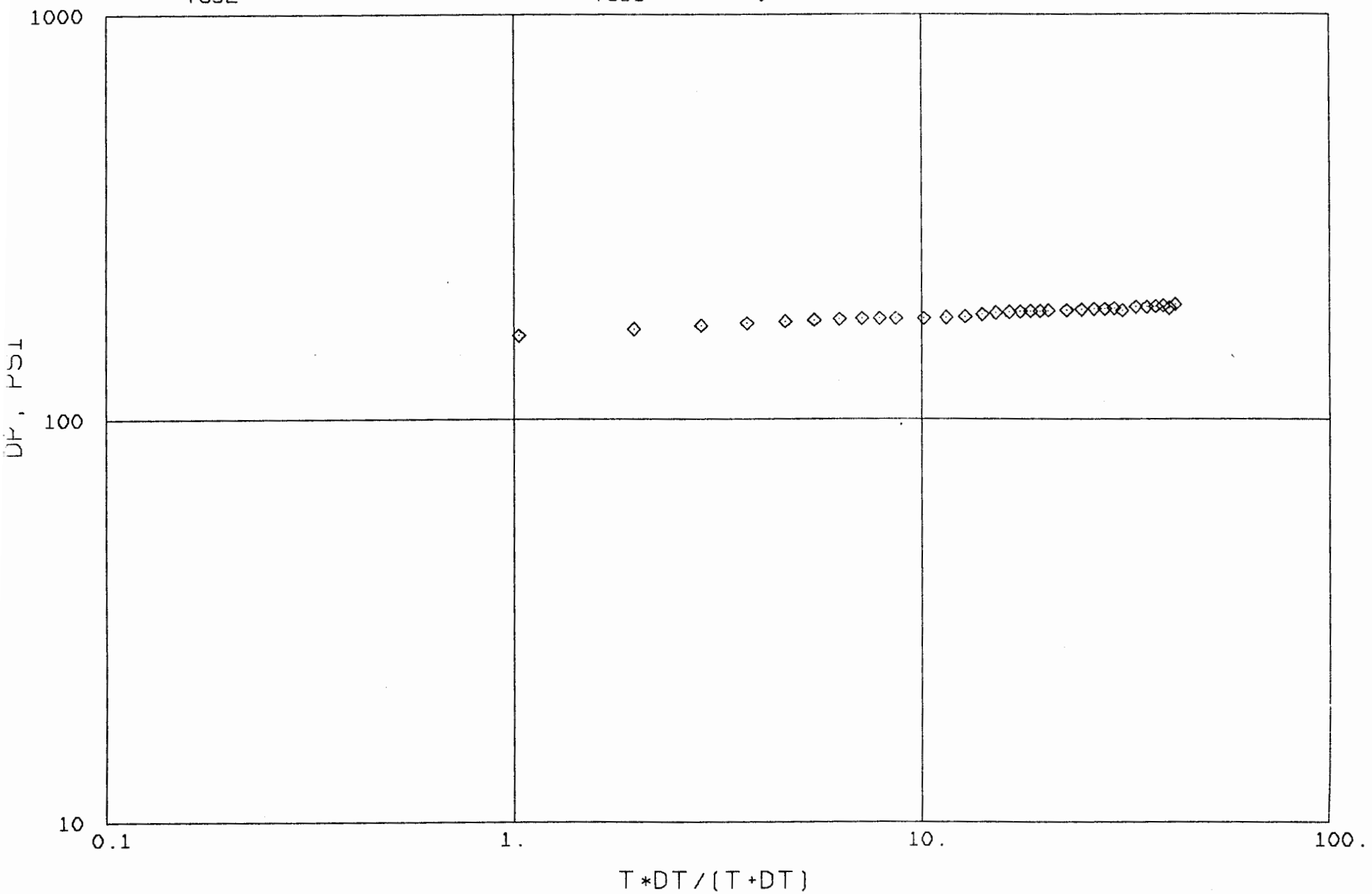
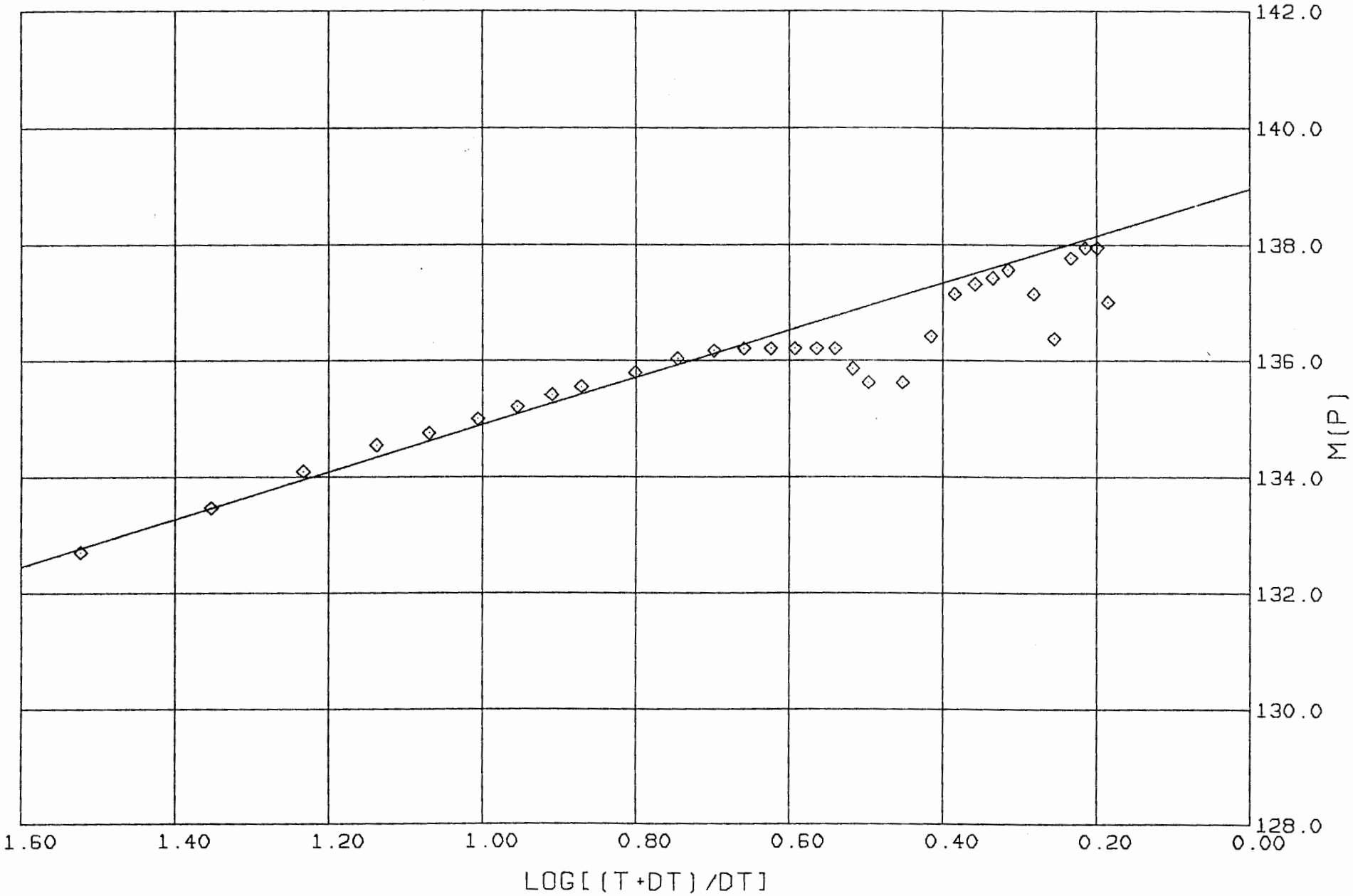


TICKET NO 64989700

GAUGE NO 7352 CIP 1 2 ◇

GAUGE NO 7351 CIP 1 2



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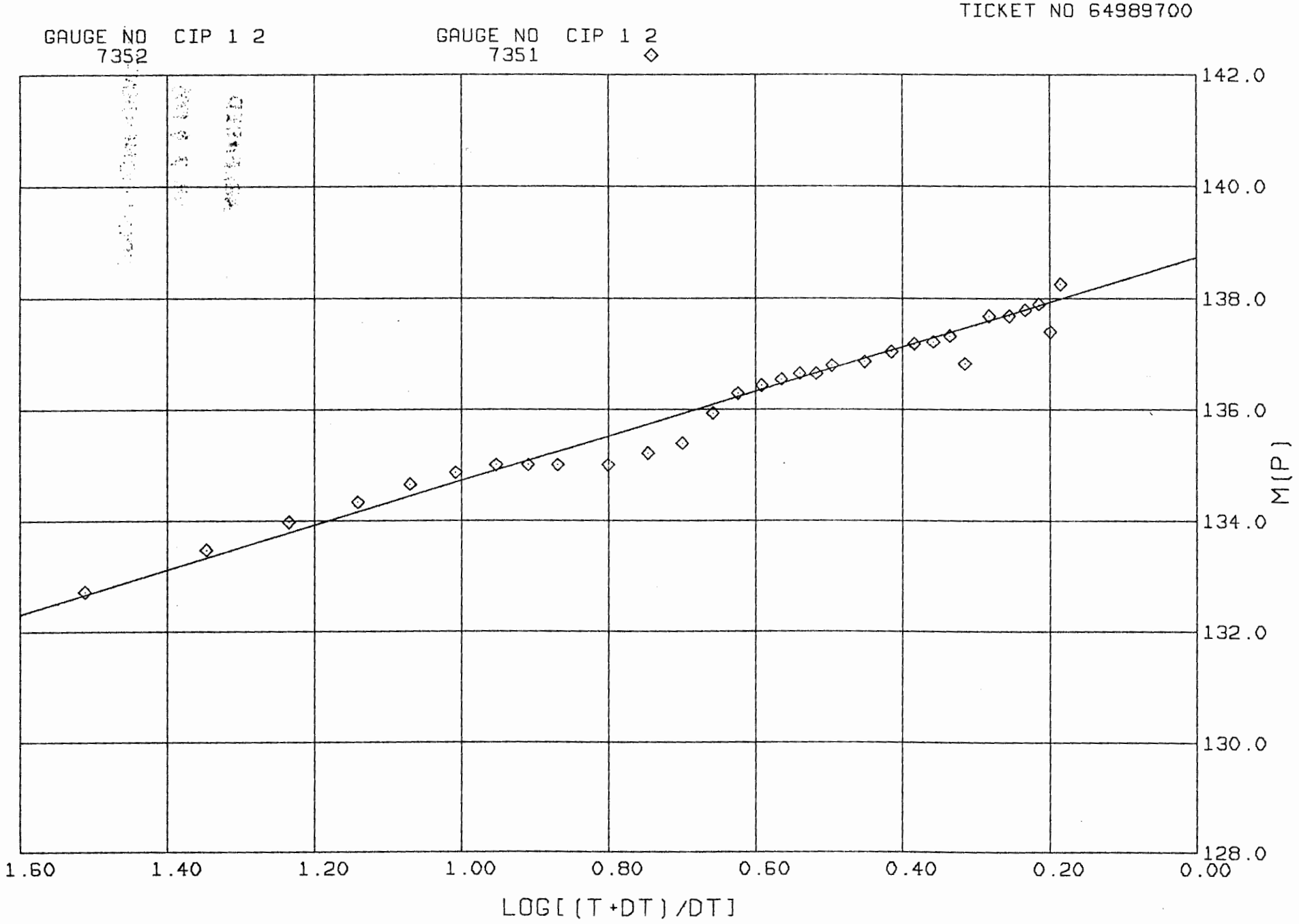

EQUATIONS FOR DST LIQUID WELL ANALYSIS

TEMPERATURE RECORDER CHART

10° each circle

Capacity — m

Average Effective Permeability — $k = \frac{kh}{h}$ — md

Skin Factor — $S = 1.151 \left[\frac{m(P^*)-m(P_i)}{m} - \text{LOG}\left(\frac{k\,(t/60)}{\phi\,\mu\,c\,r_w^2} \right) + 3.23 \right]$

Damage Ratio — $DR = \frac{m(P^*) - m(P_i)}{m(P^*) - m(P_i) - 0.87\,mS}$

Indicated Flow Rate (Maximum) — $AOF_1 = \frac{Q_g\, m(P^*)}{m(P^*) - m(P_i)}$ — MCFD

Indicated Flow Rate (Minimum) — $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}}$ — MCFD

Approx. Radius of Investigation — $r_i = 0.032 \sqrt{\frac{k\,(t/60)}{\phi\,\mu\,c_t}}$ — ft