

FORMATION TESTING SERVICES

P.O. Box 518, Hays
 Hays, Kansas 67601 (913) 628-1115

Company: THOMAS C. LUTZ

Company Address: DRAWER AR

SHELL KNOB, MO. 65747

Company Representative: ROD TREMBLAY

Contractor: RED TIGER Rig #9

Mud: 3K P.P.M.CI Hydrostatic P.S.I./ft.

Mud Weight: 9.2 Viscosity: 50 Water Loss: 10

Total Depth: 4590'

Anchor Length: 46'

Top Packer Depth: 4474

Bottom Packer Depth: 4480

Surface Choke: 1" Bottom Choke: 3/4"

Drill Pipe Size: 4 1/2 X 4 Wt. Pipe Run: - I.D. -

Collars Run: - I.D. -

Main Hole Size: 7 7/8

Internal Rec# 13752 Depth: 4482

Test# #1

Lease Name: EVEL #2

Location: Sec. 13 Twp. 16 Rng. 26W

County: NESS St. KS

Date: 5/15/88

Elevation: 2572 G.H.

Tester: R. Link

(JEP) Strong Blow, Bottom of Bucket in 25 min (Increasing)

(JEP) Fair Blow, in Bucket in 45 min (Increasing)

Tool Open: 6:33 AM Remarks: E.T.S. on location, 9:10 PM (Flushed Tool on 2nd opening) (Run STRADDLE TEST)

External Rec# 13753 Depth: 4523'

13751 - 4586

TEST RESULTS & RECOVERY

Interval Tested: <u>4480 - 4526</u>	Zone Tested: <u>MISS</u>
Initial Hydrostatic Mud: <u>2288</u> P.S.I.	Initial Flow Period: <u>45</u> Min.
Initial Flow Pressure: <u>87</u> To <u>252</u> P.S.I.	Initial Shut-In: <u>45</u> Min.
Initial Shut-In Pressure: <u>1087</u> P.S.I.	Final Flow Period: <u>45</u> Min.
Final Flow Pressure: <u>252</u> To <u>319</u> P.S.I.	Final Shut-In: <u>45</u> Min.
Final Shut-In Pressure: <u>1087</u> P.S.I.	
Final Hydrostatic Mud: <u>2268</u> P.S.I.	
<u>420'</u> Feet Total Fluid Recovery	Feet Gas In Pipe
Recovered <u>180'</u> Feet <u>50/ACM</u>	%Gas <u>30%</u> %Oil <u>-</u> %H ₂ O <u>97%</u> %Mud
Recovered <u>60'</u> Feet <u>OGFCM</u>	%Gas <u>30%</u> %Oil <u>-</u> %H ₂ O <u>70%</u> %Mud
Recovered <u>180'</u> Feet <u>OGFCM</u>	%Gas <u>50%</u> %Oil <u>-</u> %H ₂ O <u>50%</u> %Mud
Recovered _____ Feet _____	%Gas _____ %Oil _____ %H ₂ O _____ %Mud
Recovered _____ Feet _____	%Gas _____ %Oil _____ %H ₂ O _____ %Mud
Recovered Fluid Properties: _____ P.P.M.CI _____ Gravity: _____ °A.P.I. _____ Resistivity: _____ Ω/m ² BHT _____ °F	

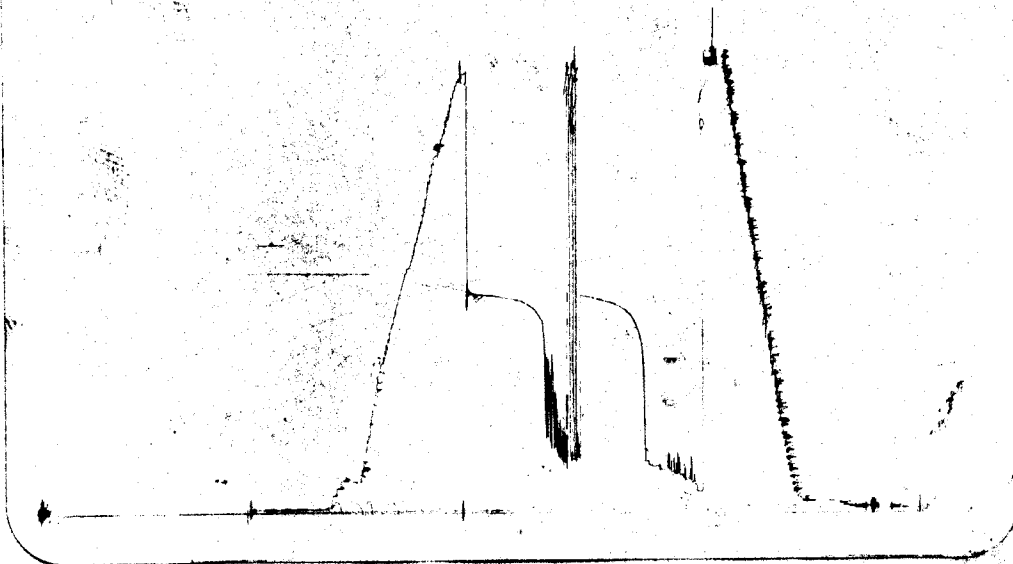
Extra Equipment: PACKER - A.P. Case

Price of Job: \$650.00

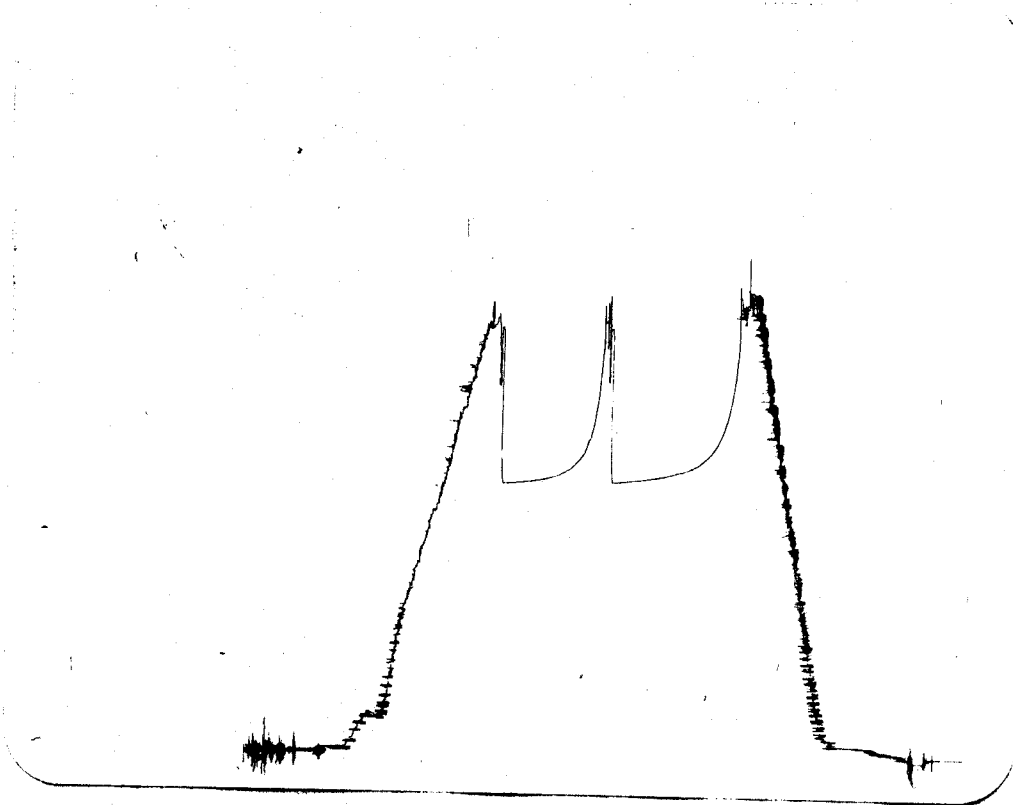
Approved By: R. J. Link
Randy Link
 Our Representative

Formation Testing Services Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

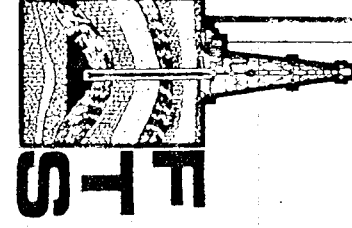
Ticket No 2845



D.S.T. #1



BOTTOM PACKER



Complete Field Service and Chart Evaluation

FORMATION TESTING SERVICES INC.

FORMATION TESTING

FORMATION TEST REPORT

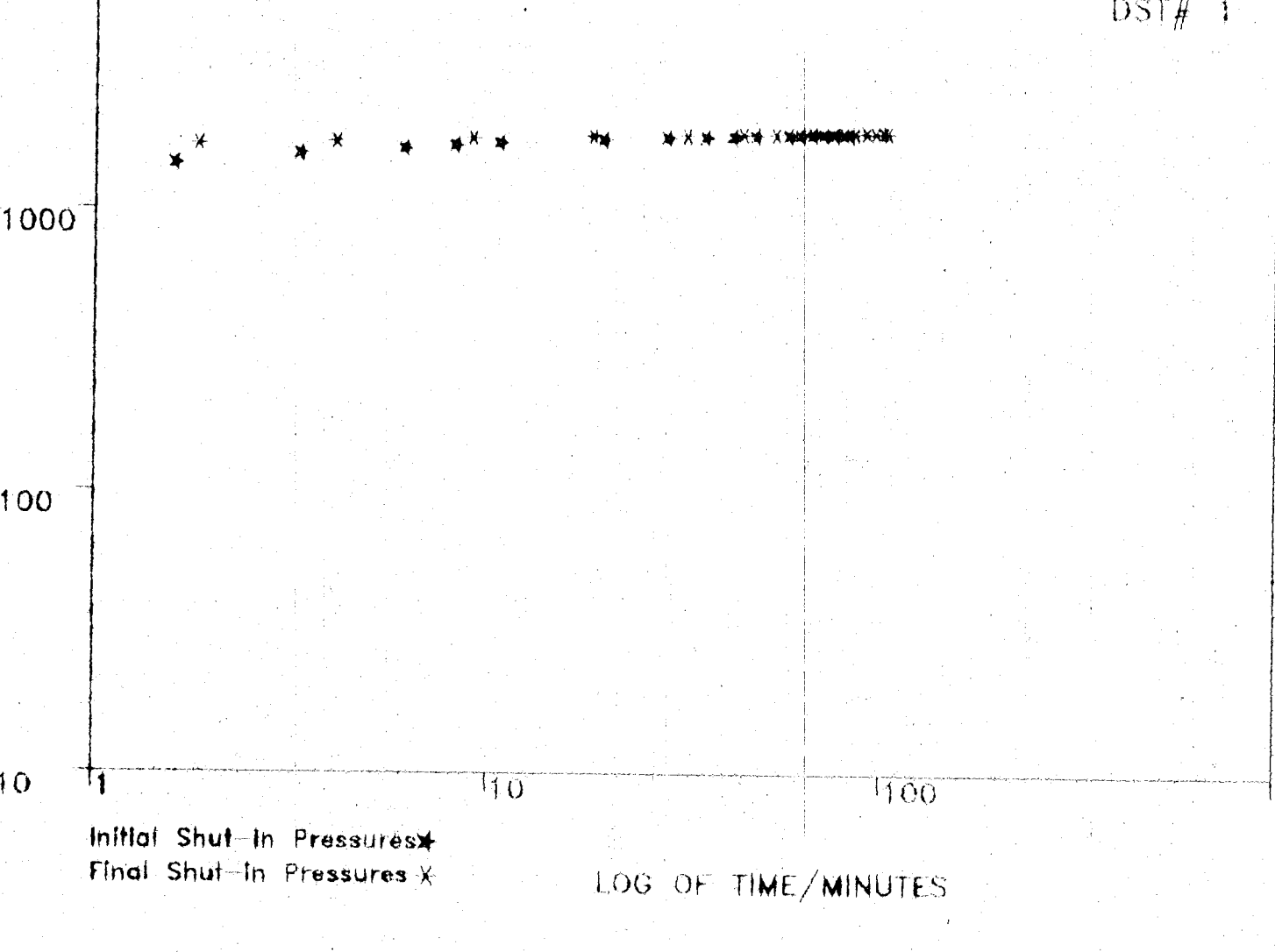
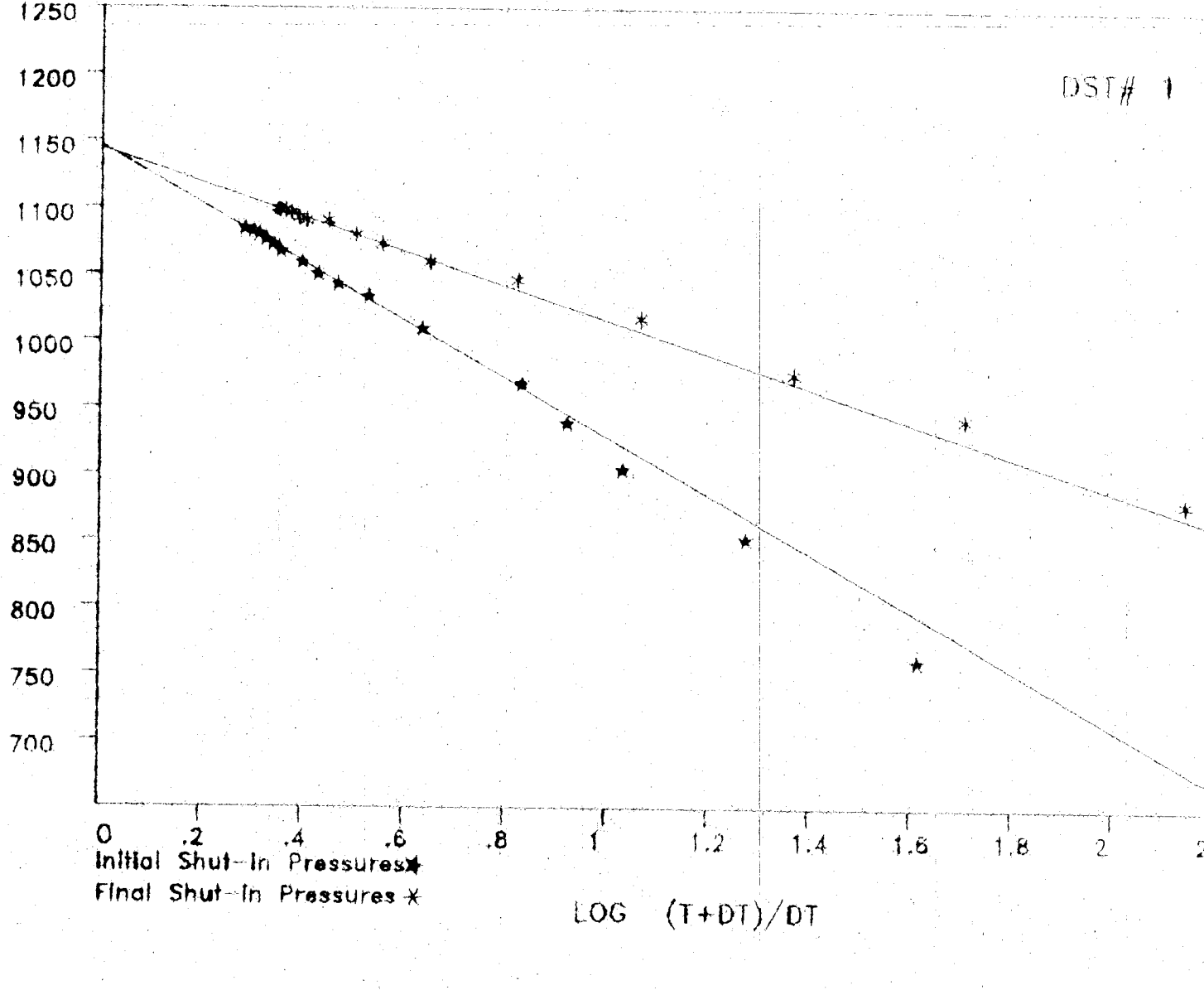
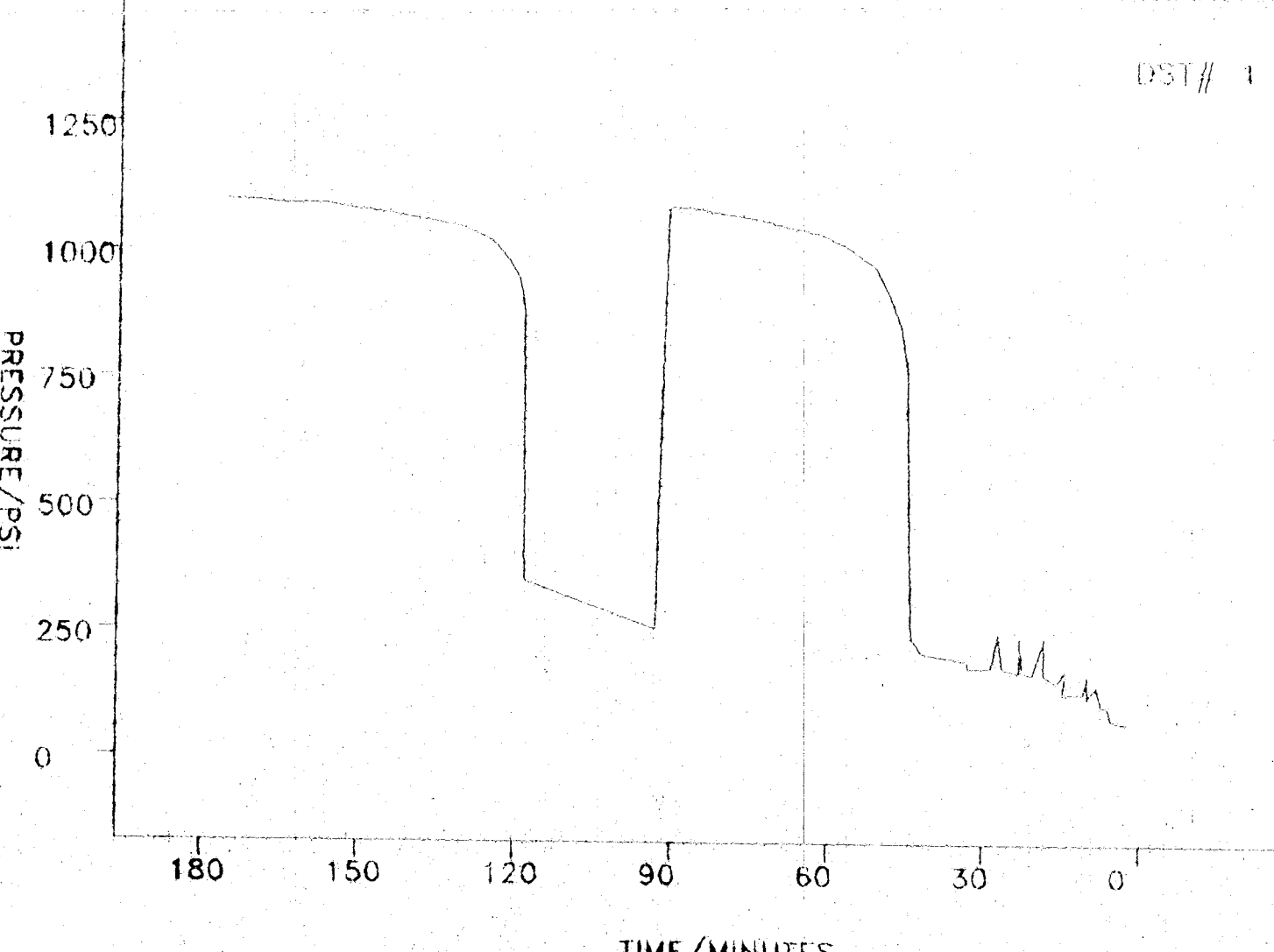
THOMAS C. LUTZ
Evel #2

P.O. Box 518
Hays, Kans. 67601

Hays-Bus (913) 628-1115

FORMATION TESTING SERVICES INC.
DRILL-STEM TEST REPORT

COMPANY-- THOMAS C LUTZ		WELL-- EVEL NO2		COUNTY-- NESS		STATE-- KANSAS	
DATE 5/15/88		D.S.T.# 1		D.S.T.#		D.S.T.#	
ZONE TESTED MISSISSI		INTERVAL 4480-4526		ANCHOR LENGTH 45 FT		INITIAL HYDRO. 2288 PSI	
INIT. FLOW PRESS. 87-252 PSI		INIT. SHUT-IN 1087 PSI		FINAL FLOW PRESS. 252-319 PSI		FINAL SHUT-IN 1087 PSI	
TOTAL FLUID REC. 420 FT		GAS (BBL) .602		OIL (BBL) 1.747		WATER (BBL) 0	
MUD (BBL) 3.67		TOTAL FLUID REC. 5.417 BBL		PERMANENT DATUM:GL		ELEVATIONS	
				ELEV OF PERM. DATUM: KS:2577		INTERVALS TESTED	
				MEASURED FROM:KB		DF: GL	



DRILL STEM TEST INFORMATION

RECORDED INFORMATION	DST #1	DST #	DST #	DST #
DATE TESTED	5/15/88			
ZONE TESTED	MISSISSI			
INTERVAL (FT)	4480-4526			
ANCHOR LENGTH (FT)	45			
INITIAL HYDRO (PSI)	2288			
INIT. FLOW PRES. (PSI)	87-252			
INIT. SHUT-IN (PSI)	1087			
FINAL FLOW PRES. (PSI)	252-319			
FINAL SHUT-IN (PSI)	1087			
FINAL HYDRO. (PSI)	2268			
TOTAL FLUID FT. (PSI)	420			
GAS (BBL)	.602			
OIL (BBL)	1.747			
WATER (BBL)	0			
MUD (BBL)	3.67			
TOTAL FLUID (BBL)	5.417			
PIPE CAPACITY (BBL/FT)	.0155			
WEIGHT PIPE CAPACITY (BBL/FT)	0			
COLOR CAPACITY (BBL/FT)	.0073			
EXTRA EQUIPMENT	XTR PK STRADD			
TESTER	LINK			
COMPANY REP.	R TREMBLAY			
HOLE SIZE (IN.)	7.875			
ZONE POROSITY (%)	19			
EFFECTIVE PERT PAY	6			
GRAVITY (API)	36			
CHLORIDES-MUD (PPM)	3K			
CHLORIDES-REC. FLUID (PPM)				
FORMATION TEMP. (F)	114			
TIME PERIODS (MINUTES)	45-45-45-45			
TYPE OF DRIVE	WATER			
AVERAGE WATER SATURATION (%)	55			
WATER VISCOSITY (CP)	.65			
ABANDONMENT PRESSURE (PSI)	40			
ECONOMIC LIMIT (BOPM)	90			

PRODUCTION CALCULATIONS	VALUE
GAS/OIL RATIO	136.9345
FORMATION VOL. FACTOR	1.0779
VIS OF FLUID-RESERVOIR (CP)	2.5418
BUBBLE POINT (PSI)	676.0692
EXTRAP. PRES. 1ST SI (PSI)	1145.745
EXTRAP. PRES. 2ND SI (PSI)	1143.681
SLOPE OF 2ND SI (PSI/LC)	127.3807
TRANSMISS. LIQUID (md-ft/cp)	136.1636
FLOW CAP (md-ft)	346.109
PRODUCT. INDEX (BOPD/PSI)	.0047
POTENTIO. SURFACE (ft ASL)	747.1973
PERMEABILITY (md)	57.6848
RADIUS OF INVEST. (FT)	90.895
FLOW RATE GAS (MCP)	0
FLOW RATE TOTAL FLUID (BPD)	98.9581
FLOW RATE OIL (BPD)	98.9581
ESTIMATED DAMAGE RATIO	1.1431
POTENTIAL/DAMAGE REM. (BPD)	113.1255

RESERVOIR CALCULATIONS	VALUE
RECOVERY FACTOR (%)	65.6326
ANNUAL DECLINE (%)	66.4018
WELL LIFE (YEARS)	3.328
NO. ACRES AFFECTED	.0131
NO. ACRES NOT AFFECTED	14.9868
ECONOMIC RESERVES (BBL)	36348.41

PROJECTED PRODUCTION SCHEDULE FOR DST#1

PROJECTION BEGINS: 7/1/

YEAR	START RATE BBL/MONTH	FINAL RATE BBL/MONTH	PRODUCTION (BBL) YEAR	PRODUCTION (BBL) CUM
1988	3393.765	1967.147	16695.646	15695.646
1989	1967.147	660.917	14371.143	30066.789
1990	660.917	222.054	4828.381	34895.172
1991	222.054	90.000	1452.853	36348.023

Formation Testing Services, Inc. shall not be liable for damages of any kind, or for losses suffered or sustained directly or indirectly through the use of its statements or opinion concerning the results of any test.

REMARKS AND CONCLUSIONS GENERAL

Pressure chart analyses used in this evaluation have been made using equations applicable to liquid recovery tests. Static bottom-hole extrapolations are based on the Horner method with a Least-Squares line fitting algorithm applied for final pressure extrapolation. Fluid property equations from the California Research Corporation and from Beal's Charts for Fluid Viscosities were used to calculate the formation volume factors.

Reserve calculations are based upon log derived information and drainage area. All calculations are volumetric and depletion and production schedules are based upon exponential decline curve expectations.

D.S.T.#1

- Liquid flow rates are based upon final flow period only for a total flow time of 45 minutes.
- Horner plots indicate a maximum reservoir pressure of 1145 p.s.i. with no drawdown.
- Log-log plots indicate the points used to extrapolate are within the radial flow portion of the shut-in curves, and therefore are assumed valid.
- Liquid flow rates of 90-95 barrels of oil may be expected. Potential reserves of 36,000 barrels of oil are indicated from 6 feet of pay 20% porosity, 15 acres of drainage and 55% water saturation.