

DRILL-STEM TEST DATA

Well Name: ARMBRISTER #1
Company : KENMARK CORPORATION
Location - Sec: 31 **Twp:** 12S **Rge:** 19W
County: ELLIS **State:** KS
Date: 06/08/95

TRILOBITE TESTING L.L.C.

OPERATOR : KenMark Corporation

DATE 06/06/95

WELL NAME: Armbrister #1

KB 2152.00 ft

TICKET NO: 7930

DST #1

LOCATION : 31-12S-19W

GR 2144.00 ft

FORMATION: LKC

INTERVAL : 3494.00 To 3570.00 ft

TD 3570.00 ft

TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins		Field	1	2	3	4	TIME DATA-----
PF 30	Rec.	13754	13754	13849			PF Fr. 30 to hr
SI 30	Range(Psi)	4000.0	4000.0	4375.0	0.0	0.0	IS Fr. 30 to hr
SF 30	Clock(hrs)	25810	25810	23858			SF Fr. 30 to hr
FS 30	Depth(ft)	3498.0	3498.0	3566.0	0.0	0.0	FS Fr. 30 to hr

	Field	1	2	3	4	
A. Init Hydro	1756.0	1727.0	1797.0	0.0	0.0	T STARTED 1100 hr
B. First Flow	39.0	22.0	77.0	0.0	0.0	T ON BOTM 1315 hr
B1. Final Flow	39.0	22.0	77.0	0.0	0.0	T OPEN 1320 hr
C. In Shut-in	305.0	293.0	333.0	0.0	0.0	T PULLED 1400 hr
D. Init Flow	49.0	32.0	88.0	0.0	0.0	T OUT 1500 hr
E. Final Flow	49.0	32.0	88.0	0.0	0.0	
F. Fl Shut-in	246.0	228.0	288.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	1736.0	1721.0	1786.0	0.0	0.0	Tool Wt. 2000.00 lbs
Inside/Outside	I	I	O			Wt Set On Packer 30000.00 lbs

RECOVERY

Tot Fluid 50.00 ft of 0.00 ft in DC and 50.00 ft in DP
 50.00 ft of Drilling mud
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of

SALINITY 0.00 P.P.M. A.P.I. Gravity 0.00

BLOW DESCRIPTION

INITIAL BLOW -
 Weak, building to 1"

FINAL BLOW -
 Weak, building to 1/2"

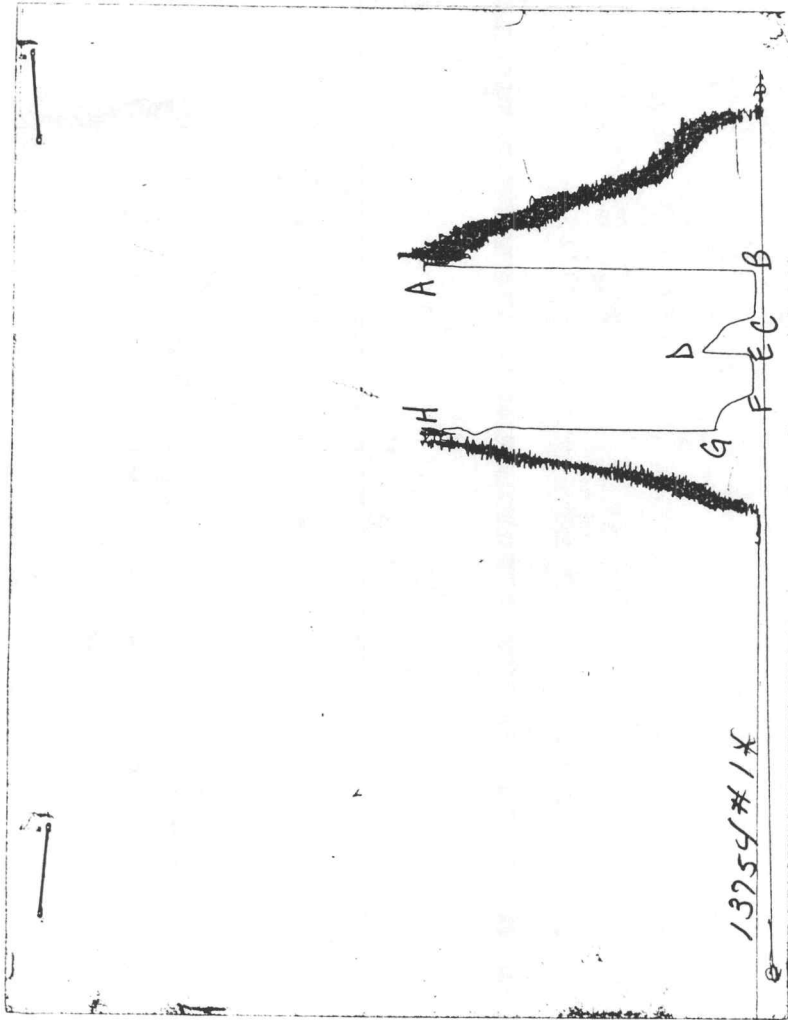
SAMPLES:

SENT TO:

MUD DATA-----	
Mud Type	Chemical
Weight	9.10 lb/cf
Vis.	45.00 S/L
W.L.	8.40 in3
F.C.	0.00 in
Mud Drop	
Amt. of fill	0.00 ft
Btm. H. Temp.	111.00 F
Hole Condition	Good
% Porosity	0.00
Packer Size	6.75 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out N	
Tool Chased N	
Tester	Dan Bangle
Co. Rep.	Mark Kilian
Contr.	Duke
Rig #	4
Unit #	
Pump T.	

Test Successful: Y

CHART PAGE



This is an actual photograph of an AK1 recorder chart

*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: Armbrister #1
 LOCATION : 31-12S-19W
 TICKET No. 7930 D.S.T. No. 1 DATE 06/06/95
 TOTAL TOOL TO BOTTOM OF TOP PACKERS 21
 INTERVAL TOOL
 BOTTOM PACKERS AND ANCHOR 76
 TOTAL TOOL 97
 DRILL COLLAR ANCHOR IN INTERVAL
 D.C. ANCHOR STND.Stands Single Total
 D.P. ANCHOR STND.Stands 1 Single Total 63
 TOTAL ASSEMBLY 97
 D.C. ABOVE TOOLS.Stands Single Total
 D.P. ABOVE TOOLS.Stands57 Single Total 3473
 TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 3578
 TOTAL DEPTH 3570
 TOTAL DRILL PIPE ABOVE K.B. 8
 REMARKS:

	P.O. SUB	3358
	C.O. SUB	3478
	S.I. TOOL	3479
	HMV	3484
	JARS	
	SAFETY JOINT	
	PACKER	3489
	PACKER	3494
	DEPTH 3494	
	STUBB	3495
	ANCHOR 5'perfs	3500
	1'co	3501
	1Std DP 63'	
	T.C. DEPTH	
	BULLNOSE 1'co	3564
	T.D. Bullplug	3570

TRILOBITE TESTING L.L.C.

OPERATOR : KenMark Corporation

DATE 06/07/95

WELL NAME: Armbrister #1

KB 2152.00 ft

TICKET NO: 7931

DST #2

LOCATION : 31-12S-19W

GR 0.00 ft

FORMATION: LKC

INTERVAL : 3576.00 To 3670.00 ft

TD 3670.00 ft

TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins	Field	1	2	3	4	TIME DATA-----
PF 30 Rec.	13754	13754	13849			PF Fr. 30 to hr
SI 30 Range(Psi)	4000.0	4000.0	4375.0	0.0	0.0	IS Fr. 30 to hr
SF 45 Clock(hrs)	25810	25810	23858			SF Fr. 45 to hr
FS 60 Depth(ft)	3580.0	3580.0	3666.0	0.0	0.0	FS Fr. to 1 hr

	Field	1	2	3	4	
A. Init Hydro	1816.0	1808.0	1852.0	0.0	0.0	T STARTED 2430 hr
B. First Flow	39.0	58.0	88.0	0.0	0.0	T ON BOTM 0500 hr
B1. Final Flow	59.0	91.0	100.0	0.0	0.0	T OPEN 0505 hr
C. In Shut-in	344.0	362.0	377.0	0.0	0.0	T PULLED 0750 hr
D. Init Flow	98.0	119.0	155.0	0.0	0.0	T OUT 0850 hr
E. Final Flow	137.0	161.0	166.0	0.0	0.0	
F. Fl Shut-in	324.0	336.0	333.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	1736.0	1743.0	1754.0	0.0	0.0	Tool Wt. 2000.00 lbs
Inside/Outside	I	I	O			Wt Set On Packer 30000.00 lbs

RECOVERY

Tot Fluid 293.00 ft of 0.00 ft in DC and 293.00 ft in DP
 263.00 ft of Gas in pipe
 45.00 ft of OIL CUT GASSY MUD - 20% GAS, 20% OIL, 60% MUD
 248.00 ft of MUDDY WATER - 60% WATER, 40% MUD
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 SALINITY 55000.00 P.P.M. A.P.I. Gravity 0.00

Wt Pulled Loose	80000.00 lbs
Initial Str Wt	48000.00 lbs
Unseated Str Wt	50000.00 lbs
Bot Choke	0.75 in
Hole Size	7.88 in
D Col. ID	0.00 in
D. Pipe ID	3.82 in
D.C. Length	0.00 ft
D.P. Length	0.00 ft

MUD DATA-----	
Mud Type	Chemical
Weight	9.10 lb/cf
Vis.	45.00 S/L
W.L.	8.40 in3
F.C.	0.00 in
Mud Drop	

BLOW DESCRIPTION

INITIAL BLOW -

Strong, off bottom of bucket in 10 min

FINAL BLOW -

Strong, off bottom of bucket in 20 min

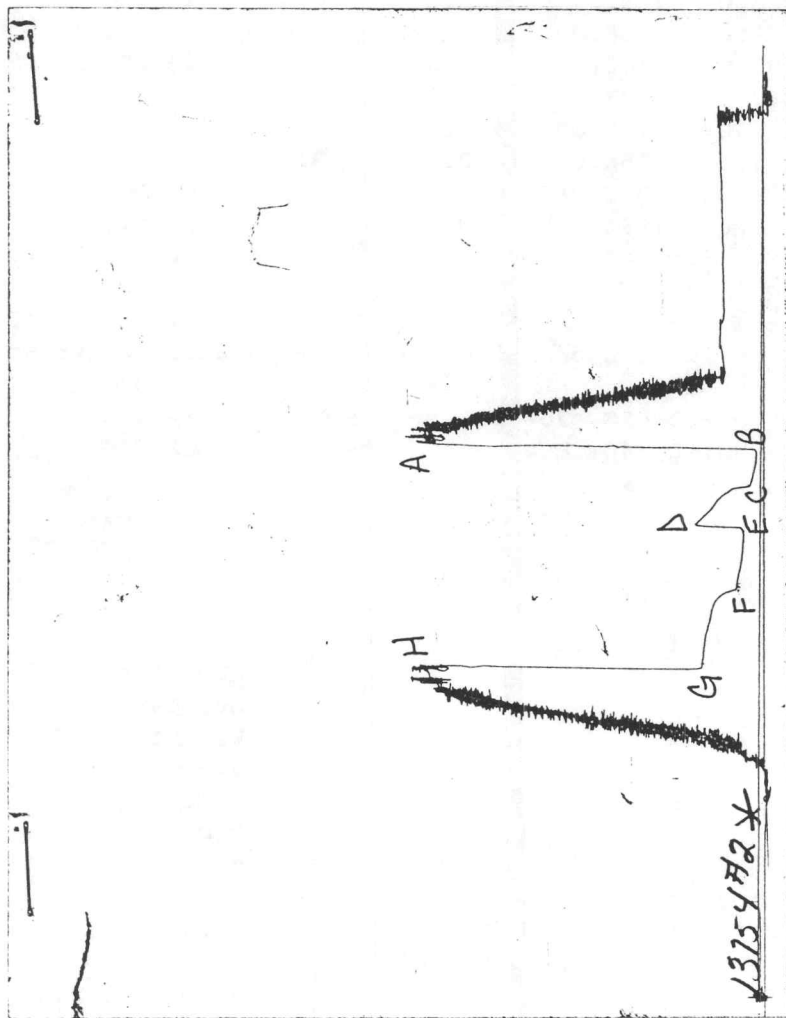
Amt. of fill	0.00 ft
Btm. H. Temp.	113.00 F
Hole Condition	Good
% Porosity	0.00
Packer Size	6.75 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out N	
Tool Chased N	
Tester	Dan Bangle
Co. Rep.	Mark Kilian
Contr.	Duke
Rig #	4
Unit #	
Pump T.	

SAMPLES:

SENT TO:

Test Successful: Y

CHART PAGE



This is an actual photograph of an AK1 recorder chart

TRILOBITE TESTING L.L.C.

OPERATOR : KenMark Corporation

DATE 6-8-95

WELL NAME: Armbrister #1

KB 2152.00 ft

TICKET NO: 7932

DST #3

LOCATION : 31-12S-19W

GR 0.00 ft

FORMATION: Marmaton

INTERVAL : 3784.00 To 3830.00 ft

TD 3830.00 ft

TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins		Field	1	2	3	4	TIME DATA-----
PF	30	Rec.	13754	13754	13849		PF Fr. 30 to hr
SI	30	Range(Psi)	4000.0	4000.0	4375.0	0.0	0.0 IS Fr. 30 to hr
SF	45	Clock(hrs)	25810	25810	23858		SF Fr. 45 to hr
FS	60	Depth(ft)	3788.0	3788.0	3826.0	0.0	0.0 FS Fr. to 1 hr

	Field	1	2	3	4	
A. Init Hydro	1986.0	1970.0	2070.0	0.0	0.0	T STARTED 1145 hr
B. First Flow	305.0	305.0	355.0	0.0	0.0	T ON BOTM 1240 hr
B1. Final Flow	452.0	463.0	477.0	0.0	0.0	T OPEN 1245 hr
C. In Shut-in	778.0	772.0	797.0	0.0	0.0	T PULLED 0330 hr
D. Init Flow	501.0	510.0	577.0	0.0	0.0	T OUT 0500 hr
E. Final Flow	679.0	672.0	752.0	0.0	0.0	
F. Fl Shut-in	778.0	781.0	808.0	0.0	0.0	
G. Final Hydro	1896.0	1906.0	1917.0	0.0	0.0	
Inside/Outside	I	I	O			

TOOL DATA-----

Tool Wt.	2000.00 lbs
Wt Set On Packer	30000.00 lbs
Wt Pulled Loose	53000.00 lbs
Initial Str Wt	49000.00 lbs
Unseated Str Wt	53000.00 lbs
Bot Choke	0.75 in
Hole Size	7.88 in
D Col. ID	0.00 in
D. Pipe ID	3.82 in
D.C. Length	0.00 ft
D.P. Length	0.00 ft

RECOVERY

Tot Fluid 2230.00 ft of 0.00 ft in DC and 2230.00 ft in DP
 226.00 ft of Gas in pipe
 2168.00 ft of CLEAN GASSY OIL - 10% GAS, 90% OIL
 62.00 ft of OIL CUT GASSY MUD - 20% GAS, 40% OIL, 40% MUD
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of

SALINITY 0.00 P.P.M. A.P.I. Gravity 36.00

MUD DATA-----

Mud Type	Chemical
Weight	9.40 lb/c
Vis.	50.00 S/L
W.L.	8.80 in3
F.C.	0.00 in
Mud Drop	

BLOW DESCRIPTION

INITIAL BLOW -

Strong, off bottom of bucket in 2 min

FINAL BLOW -

Strong, off bottom of bucket in 2 min

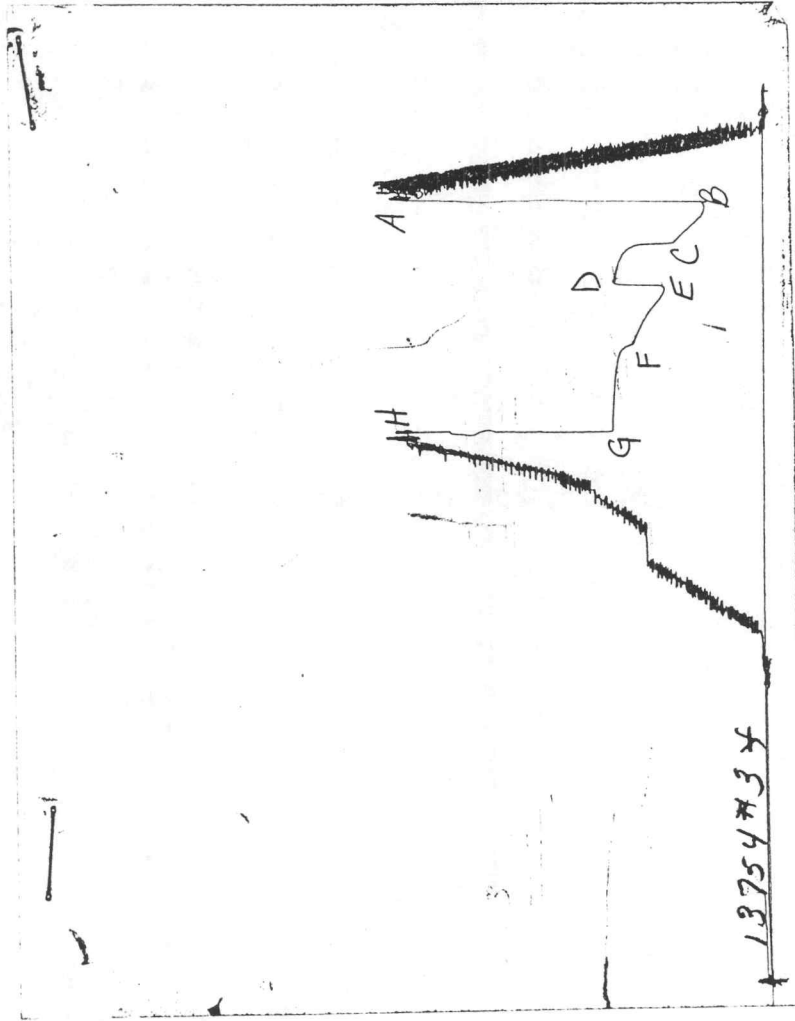
Amt. of fill	0.00 ft
Btm. H. Temp.	119.00 F
Hole Condition	Good
% Porosity	0.00
Packer Size	6.75 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out N	
Tool Chased N	
Tester	Dan Bangle
Co. Rep.	Mark Kilian
Contr.	Duke
Rig #	4
Unit #	
Pump T.	

SAMPLES:

SENT TO:

Test Successful: Y

CHART PAGE



This is an actual photograph of an AK1 recorder chart

Operator.....: KENMARK CORPORATION
Well Name.....: ARMBRISTER #1
DST Number.....: 3

Location.: 31-12S-19W
Test Type: CONVENTIONAL
Formation: MARMATON

Recorder No...: 13754
Recorder Depth: 3788
Test Interval.: 3787-3830

RESERVOIR CALCULATIONS: Fluid calculations based on shut-in #2

RESERVOIR PARAMETERS USED:

Net Pay.....: 20.00 ft
Porosity.....: 17.00 %
Bottom Hole Temp.....: 119.00 F
Specific Gravity.....: 0.845
API Gravity.....: 36.00
Compressibility.....: 0.000008 /psi
Viscosity.....: 7.5227 cp
Total Recovery.....: 2230.00 ft
Total Flowing Time.....: 75.00 min.
Flow Rate.....: 539.50 bbls/d
Final Flowing Pressure.....: 672.00 psi
Horner Slope.....: 67.4000 psi/cycle
Extrapolated Pressure.....: 802.16 psi
Formation Volume Factor.....: 1.03 Reservoir/Surface
Well Bore Radius.....: 3.94 in

RESULTS:

Effective Permeability.....: 504.186136 md
Flow Capacity.....: 10083.7227 md.ft
Transmissibility.....: 1340.4393 md.ft/cp
Skin Factor.....: -3.6736
Radius of Investigation.....: 220.81454 ft
Damage Ratio.....: 0.3770
Productivity Index.....: 4.1449 bbls/psi.d
Productivity Index W/O Damage.: 1.5625 bbls/psi.d

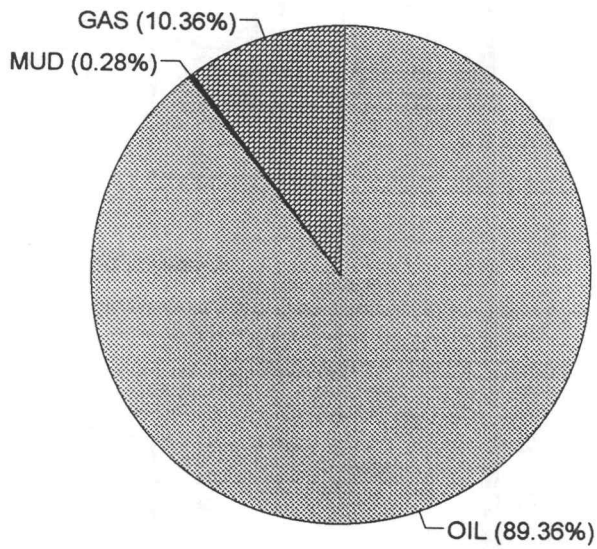
CALCULATED RECOVERY ANALYSIS DRILL PIPE

DST # 3

TICKET # 7932

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
1	2168	10	216.8	90	1951.2		0		0
2	62	20	12.4	40	24.8		0	10	6.2
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
6			0		0		0		0
TOTAL	2230	10.28	229.2	88.61	1976	0	0	0.28	6.2

		HRS OPEN	BBL/DAY
BBL OIL=	28.09872	*	1.25
BBL WATER=	0	*	0.00
BBL MUD=	0.088164		
BBL GAS	3.259224		



INITIAL FLOW

DST # 3
RECORDER 13754

		<>
<u>TIME(MIN)</u>	<u>PRESSURE</u>	<u>PRESSURE</u>
0	305.1	305.1
3	305.1	0.0
6	305.1	0.0
9	312.0	6.9
12	323.8	11.8
15	345.5	21.7
18	366.1	20.7
21	387.8	21.7
24	411.4	23.6
27	432.1	20.7
30	450.8	18.7
33	462.6	11.8

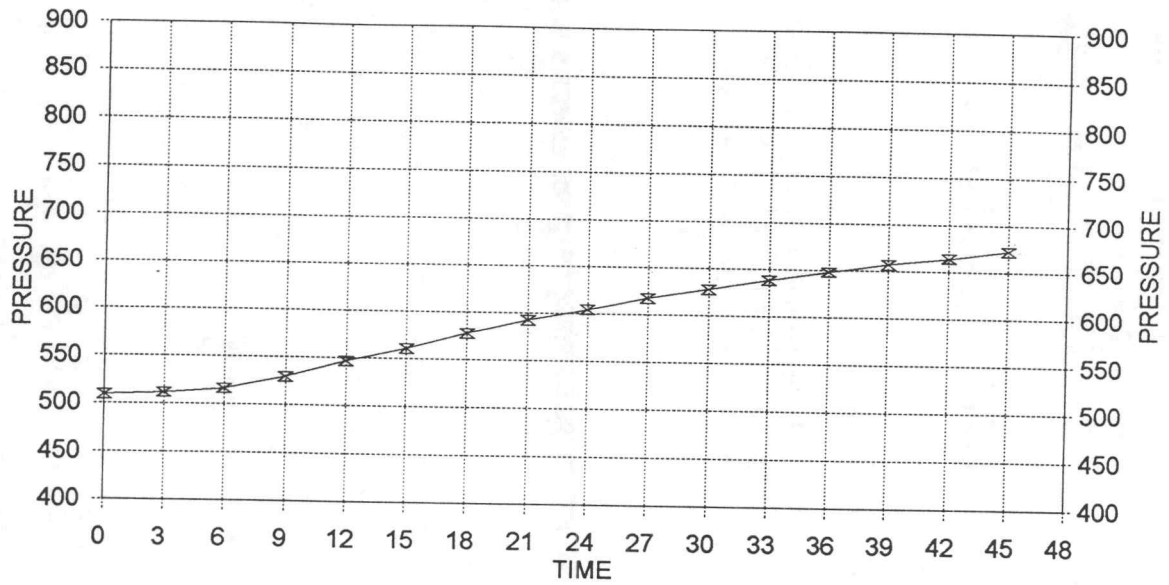
FINAL FLOW

DST # 3
RECORDER 13754

		<>
<u>TIME(MIN)</u>	<u>PRESSURE</u>	<u>PRESSURE</u>
0	509.9	509.9
3	511.9	2.0
6	516.8	4.9
9	529.7	12.8
12	547.4	0.0
15	561.3	3.8
18	578.1	0.0
21	592.9	4.8
24	604.7	11.9
27	617.6	12.8
30	627.5	9.9
33	638.3	10.9
36	648.2	9.9
39	657.1	8.9
42	664.0	6.9
45	671.9	7.9

DELTA T DELTA

FINAL FLOW / DST #3



INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:

270.4911

INITIAL SHUT-IN

ARMBRISTER #1

DST # 3

INITIAL FLOW TIME 30

SLOPE

124.1

PSI/CYCLE

P*

809.10

PSI

	<u>TIME(MIN)</u>	<u>Pws (psi)</u>	<u>Log Horn T</u>	<u><> PRESSURE</u>	<u>Horn T</u>
Q	3	679.8	1.041	679.8	11
	6	709.5	0.778	29.6	6
	9	726.3	0.637	16.8	4
	12	739.1	0.544	12.8	4
	15	748.0	0.477	8.9	3
	18	753.0	0.426	4.9	3
	21	760.9	0.385	7.9	2
	24	761.9	0.352	1.0	2
	27	768.8	0.325	6.9	2
X	30	771.7	0.301	3.0	2

FINAL SHUT-IN

ARMBRISTER #1

DST # 3

TOTAL FLOW TIME 75

SLOPE

67.4

PSI/CYCLE

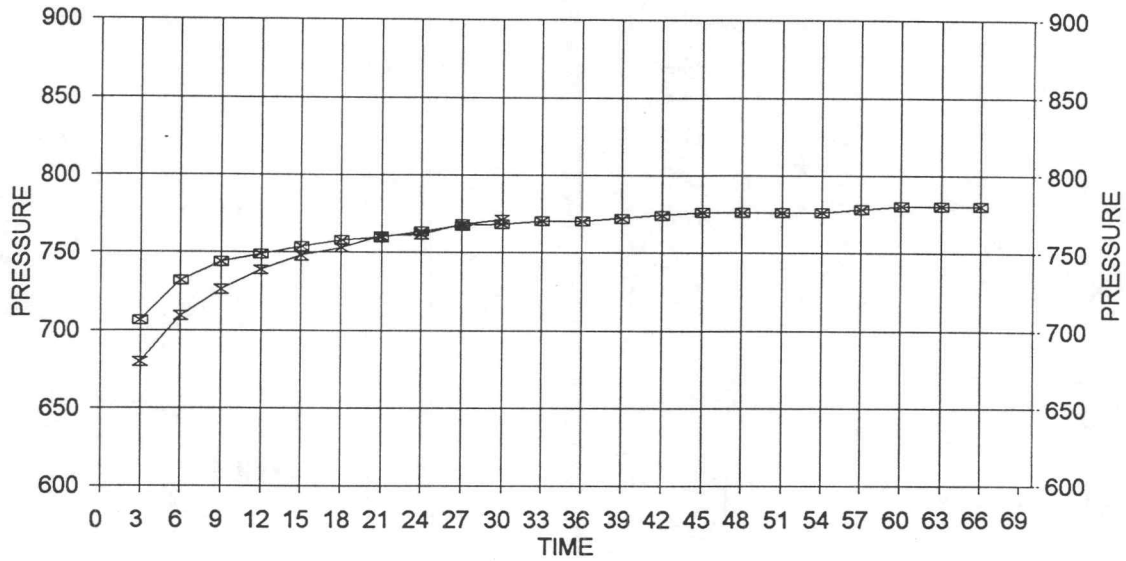
P*

802.16

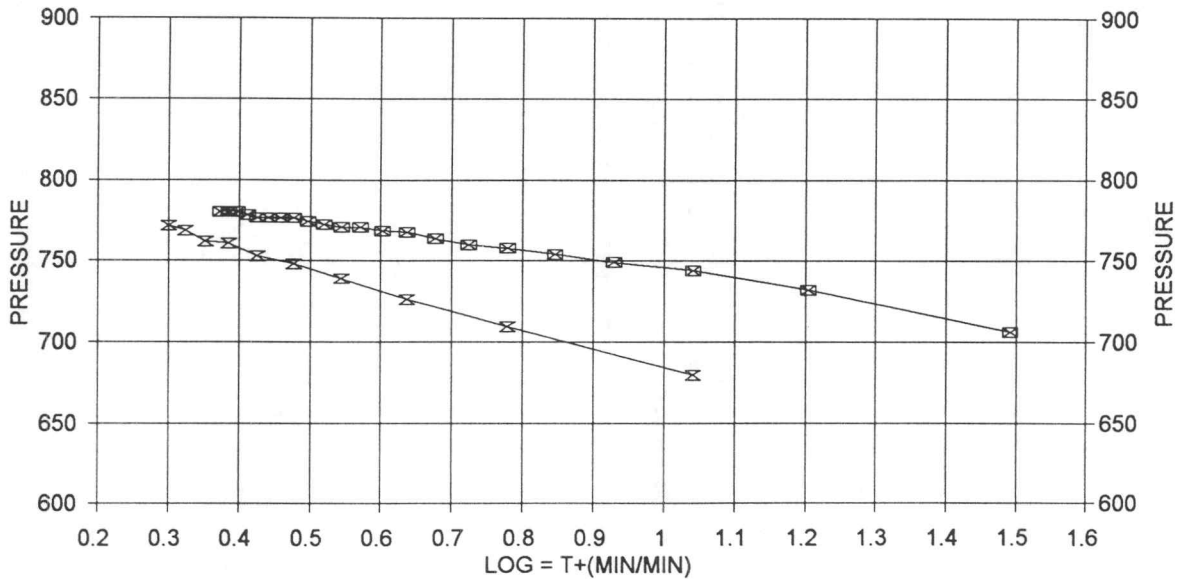
PSI

	<u>TIME(MIN)</u>	<u>Pws (psi)</u>	<u>Log Horn T</u>	<u><> PRESSURE</u>	<u>Horn T</u>
	3	706.5	1.415	706.5	26
	6	732.2	1.130	25.7	14
	9	744.1	0.970	11.9	9
	12	749.0	0.860	4.9	7
	15	753.9	0.778	4.9	6
	18	757.9	0.713	4.0	5
	21	759.9	0.660	2.0	5
	24	763.8	0.615	4.0	4
	27	767.8	0.577	4.0	4
	30	768.8	0.544	1.0	4
	33	770.7	0.515	2.0	3
	36	770.7	0.489	0.0	3
	39	772.7	0.466	2.0	3
	42	774.7	0.445	2.0	3
	45	776.7	0.426	2.0	3
	48	776.7	0.409	0.0	3
	51	776.7	0.393	0.0	2
Q	54	776.7	0.378	0.0	2
	57	778.7	0.365	2.0	2
	60	780.6	0.352	2.0	2
	63	780.6	0.341	0.0	2
	66	780.6	0.330	0.0	2
X	69	780.6	0.320	0.0	2

DELTA T DELTA ARMBRISTER #1/ DST #3



HORNER PLOT



—x— INITIAL —□— FINAL

*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: Armbrister #1
 LOCATION : 31-12S-19W
 TICKET No. 7932 D.S.T. No. 3 DATE 6-8-95
 TOTAL TOOL TO BOTTOM OF TOP PACKERS 21
 INTERVAL TOOL
 BOTTOM PACKERS AND ANCHOR 46
 TOTAL TOOL 67
 DRILL COLLAR ANCHOR IN INTERVAL
 D.C. ANCHOR STND.Stands Single Total
 D.P. ANCHOR STND.Stands Single 1 Total 31
 TOTAL ASSEMBLY 67
 D.C. ABOVE TOOLS.Stands Single Total
 D.P. ABOVE TOOLS.Stands61 Single 1 Total 3763
 TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 3800
 TOTAL DEPTH 3830
 TOTAL DRILL PIPE ABOVE K.B. 30
 REMARKS:

	P.O. SUB	3648
	C.O. SUB	3768
	S.I. TOOL	3769
	HMV	3774
	JARS	
	SAFETY JOINT	
	PACKER	3779
	PACKER	3784
	DEPTH 3784	
	STUBB	3785
	ANCHOR 5'perfs	3790
	3'perfs	3793
	co	3794
	1 Jt DP	31
	T.C.	
	DEPTH	
	co	3824
	BULLNOSE	
	T.D. 5'Bullplug	3830