ORIGINAL

CONFIDENTIAL

DRILL STEM TESTS

DST No. 1

API#15-185-22956

Lansing "F"
Conventional Open Hole Test
Test Interval: 3,398'-3,428'
Anchor: 30'
Test Times: 15"-30"-60"-90"

FLOW PERIODS & SURFACE OBSERVATIONS:

Initial Flow Period: Strong blow off bottom of bucket in 30 seconds.

Time (minutes)	Pressure (PSIG)	Orifice	Flow (MCFG/D)
15	6	1/4"	22.9

Initial Shut in Period: Gas to Surface.

Final Flow Period: Strong blow off bottom of bucket in 15 seconds.

Time (minutes)	Inches of Water	Orifice	Flow (MCFG/D)
Open	40	1/2"	39.6
5	34	1/2"	36.5
10	32	1/2"	35.5
15	Caught gas sample		
20	24	1/2"	30.7
25	16	1/2"	25.1
30	12	1/2"	21.9
35	8	1/2"	17.2
40	26	1/4"	8.6
45	70	1/4"	14.1
50	86	1/4"	15.5
55	64	1/4"	13.4
60	56	1/4"	12.6

Final Shut in Period: Strong blow back.

Mud Level Changes During Test: None

DRILL PIPE RECOVERY:

KCC

JUN 13

CONFIDENTIAL

Total Gas In Pipe: Gas to Surface
Total Fluid Recovery: 480 feet
Type Recovery: 300 feet of Gassy Oil (50% gas, 50% oil)
60 feet of Gassy Mud Cut Oil (20% gas, 50% oil, 30% mud)
60 feet of Gassy Mud & Water Cut Oil (50% gas, 35% oil, 5% water, 10% mud)
60 feet of Gassy Mud & Water Cut Oil (10% gas, 60% oil, 5% water, 25% mud)

Resistivity of Recovery on DST: NA
Chloride Content-Recovery: Assumed filtrate (not enough water to take a chloride reading)

Mud Pit Sample Resistivity: NA
Chloride Content-Mud System: 6,000 ppm

RECEIVED
STATE CORPORATION COMMISSION
JUN 16 1994
CONSERVATION DIVISION
Wichita, Kansas

RELEASED
5
JUL 26 1995
FROM CONFIDENTIAL

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name RUSSELL #1 Test No. 1 Date 4/21/94

Company GENERAL ATLANTIC RESOURCES INC Zone LKC-"F"

Address 410 17th ST #1400 DENVER CO 80202 Elevation 1824 KB

Co. Rep./Geo. RICHARD HALL Cont. DUKE DRLG RIG #2 Est. Ft. of Pay 5

Location: Sec. 7 Twp. 23S Rge. 11W Co. STAFFORD State KS

Interval Tested 3398-3428 Drill Pipe Size 4.5" XH

Anchor Length 30 Wt. Pipe I.D. - 2.7 Ft. Run

Top Packer Depth 3393 Drill Collar – 2.25 Ft. Run

Bottom Packer Depth 3398 Mud Wt. 9.3 lb/Gal.

Total Depth 3428 Viscosity 37 Filtrate 13.6

Tool Open @ 9:51 PM Initial Blow STRONG BLOW-BOTTOM OF BUCKET IN 30 SECONDS GAS TO SURFACE IN INITIAL SHUTIN

Final Blow STRONG BLOW-GAUGING GAS-SEE GAS VOLUME REPORT- STRONG BLOW BACK ON SHUTIN

Recovery - Total Feet 480 Flush Tool? NO

Rec. 300 Feet of GASSY OIL- 50% GAS/ 50% OIL

Rec. 60 Feet of GSY MUD CUT OIL- 20%GAS/50%OIL/30%MUD

Rec. 60 Feet of GSY MUD & WTR CUT OIL-50%GAS/35%OIL/5%WTR/10%MUD

Rec. 60 Feet of GSY MUD & WTR CUT OIL-10%GAS/60%OIL/5%WTR/25%MUD

Rec. Feet of

BHT 116 °F Gravity 42 °API @ 60 °F Corrected Gravity 42 °API

RW @ °F Chlorides ppm Recovery Chlorides ppm System

(A) Initial Hydrostatic Mud 1618.4 PSI AK1 Recorder No. 22150 Range 3925

(B) First Initial Flow Pressure 87.6 PSI @ (depth) 3403 w / Clock No. 25109

(C) First Final Flow Pressure 73.4 PSI AK1 Recorder No. 24174 Range 3050

(D) Initial Shut-in Pressure 1057.4 PSI @ (depth) 3424 w / Clock No. 25110

(E) Second Initial Flow Pressure 104.8 PSI AK1 Recorder No. Range

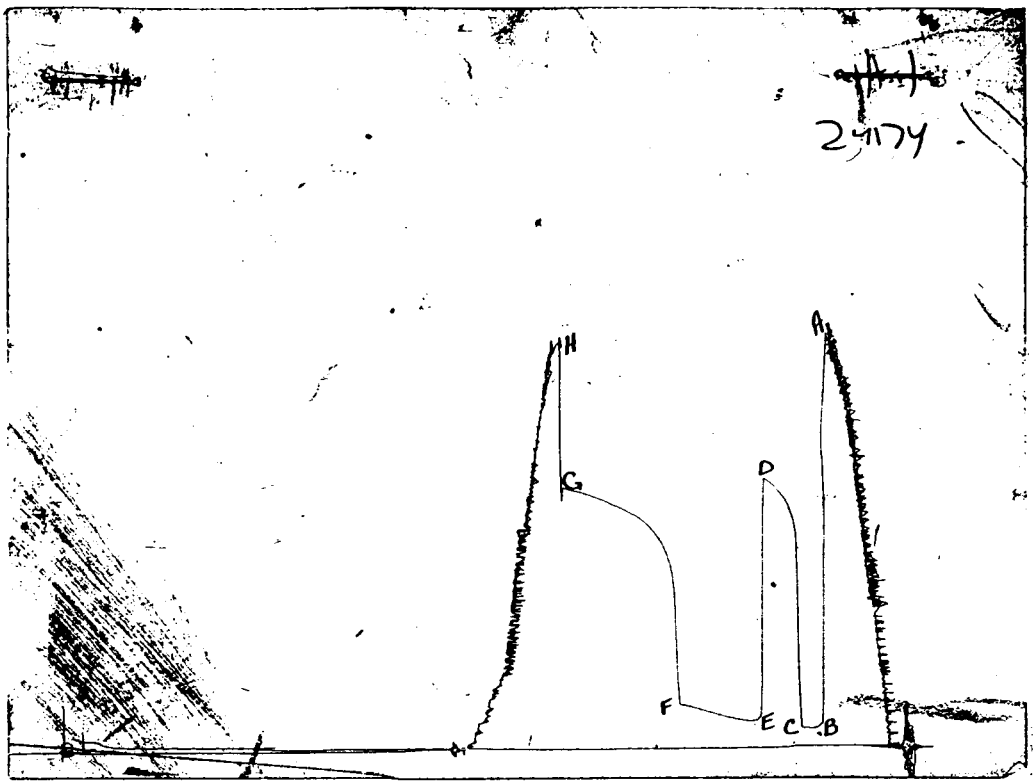
(F) Second Final Flow Pressure 168.0 PSI @ (depth) w / Clock No.

(G) Final Shut-in Pressure 1022.6 PSI Initial Opening 15 Final Flow 60

(H) Final Hydrostatic Mud 1606.2 PSI Initial Shut-in 30 Final Shut-in 90

Our Representative PAUL SIMPSON

CHART PAGE



This is an actual photograph of recorder chart #24174

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	1626	1618.4
(B) FIRST INITIAL FLOW PRESSURE	67	87.6
(C) FIRST FINAL FLOW PRESSURE	74	73.4
(D) INITIAL CLOSED-IN PRESSURE	1054	1057.4
(E) SECOND INITIAL FLOW PRESSURE	97	104.8
(F) SECOND FINAL FLOW PRESSURE	172	168
(G) FINAL CLOSED-IN PRESSURE	1024	1022.6
(H) FINAL HYDROSTATIC MUD	1620	1606.2

COMPUTER OIL EVALUATION BY TRILOBITE TESTING, L.L.C.

GENERAL ATLANTIC RESOURCES INC

RUSSELL #1 DST 1

7 23S 11W STAFFORD KS

ELEVATION:	1824	KB	EST. PAY	5	FT
DATUM:	-1601		ZONE TESTED:	LKC-"F"	
TEST INTERVAL:	3398-3428		TIME INTERVALS:	15-30-60-90	
RECORDER DEPTH:	3424		VISCOSITY:	1.45	CP
BOTTOM HOLE TEMP:	116		HOLE SIZE:	7.875	IN

CUBIC FEET OF GAS IN PIPE:	1193			
TOTAL FEET OF RECOVERY:	480.00	CORRECTED PIPE FILLUP:	474.576	
TOTAL BARRELS OF RECOVERY:	6.83	CORR. BARRELS OF RECOVERY:	6.740	BBL
BARRELS IN DRILL PIPE:	6.83	API GRAVITY:	42	
BARRELS IN WEIGHT PIPE:	0.00	FLUID GRADIENT:	0.354	
BARRELS IN DRILL COLLARS:	0.00			
GAS OIL RATIO:	174.74	CU.FT/BBL		
BUBBLE POINT PRESSURE:	764			
UNCORRECTED INITIAL PRODUCTION:			131.05	BBL
INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:			129.41	BBL/DAY
INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:			68.125	

INITIAL SLOPE	547.3	PSI/CYCL	FINAL SLOPE	490.5	PSI/CYCLE
INITIAL P*	1153.8	PSI	FINAL P*	1151.7	PSI

TRANSMISSIBILITY	42.90	(MD.-FT./CP.)
PERMEABILITY	12.47	(MD.)
INDICATED FLOW CAPACITY	62.36	(MD.FT)
PRODUCTIVITY INDEX	0.05	(BARREL/DAY/PSI)
DAMAGE RATIO	0.37	
RADIUS OF INVESTIGATION	30.59	(FT,)
POTENTIOMETRIC SURFACE	1070.86	(FT.)
DRAWDOWN FACTOR	0.178	(%)
THEORETICAL POTENTIAL FROM FINAL FLOW PRESSURE	0.00	
THEORETICAL POTENTIAL FROM PSEUDO STEADY FLOW STATE	0.00	

INITIAL FLOW

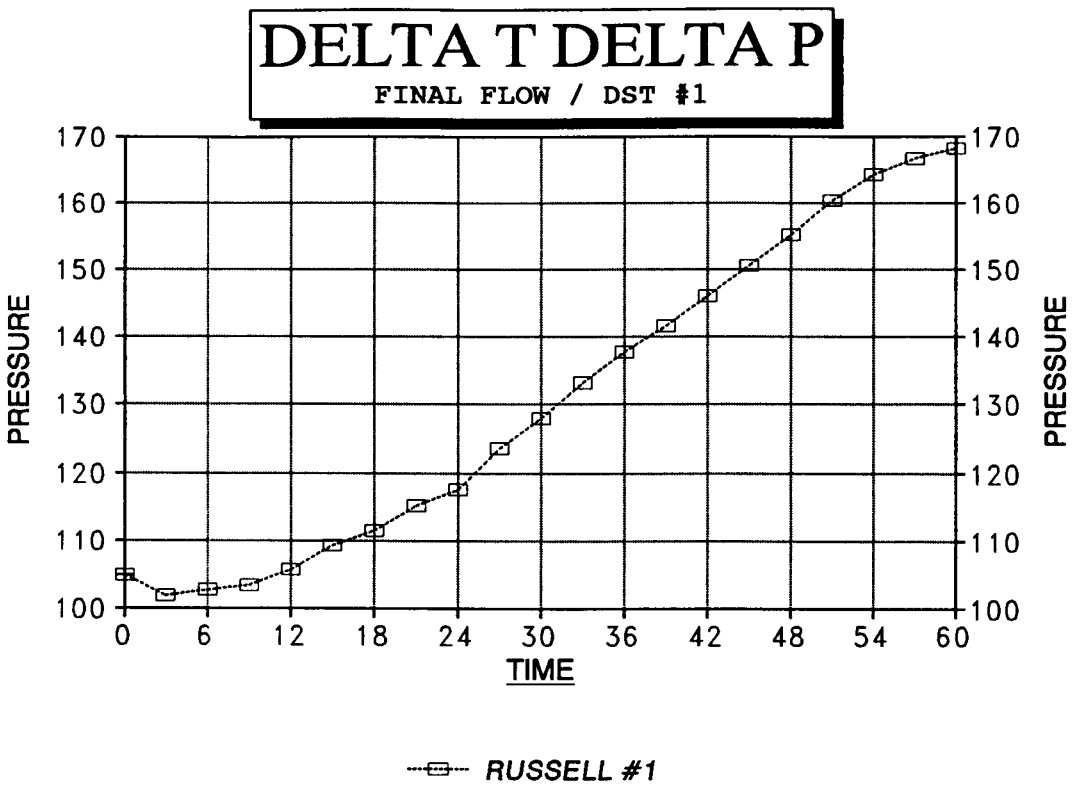
RECORDER 24174 DST # 1

TIME(MIN)	PRESSURE	<> PRESSURE
0	87.6	87.6
3	76.4	-11.2
6	71.9	-4.5
9	73.4	1.5
12	73.4	0.0
15	73.4	0.0

FINAL FLOW

RECORDER 24174 DST # 1

TIME(MIN)	PRESSURE	<> PRESSURE
0	104.8	104.8
3	101.8	-3.0
6	102.6	0.8
9	103.3	0.7
12	105.6	2.3
15	109.3	3.7
18	111.6	2.3
21	115.3	3.7
24	117.6	2.3
27	123.6	6.0
30	128.1	4.5
33	133.3	5.2
36	137.8	4.5
39	141.6	3.8
42	146.1	4.5
45	150.6	4.5
48	155.2	4.6
51	160.4	5.2
54	164.2	3.8
57	166.5	2.3
60	168.0	1.5



INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE: 68.125

RUSSELL #1 DST #1
INITIAL SHUTIN

15 INITIAL FLOW TIME

SLOPE 547.3 PSI/CYCLE
P* 1153.78 PSI

	TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
	3	695.4	0.778	695.4	6
	6	904.5	0.544	209.1	4
	9	942.4	0.426	37.9	3
	12	972.7	0.352	30.3	2
	15	993.9	0.301	21.2	2
X	18	1009.7	0.263	15.8	2
	21	1030.2	0.234	20.5	2
	24	1041.5	0.211	11.3	2
	27	1051.3	0.192	9.8	2
X	30	1057.4	0.176	6.1	2

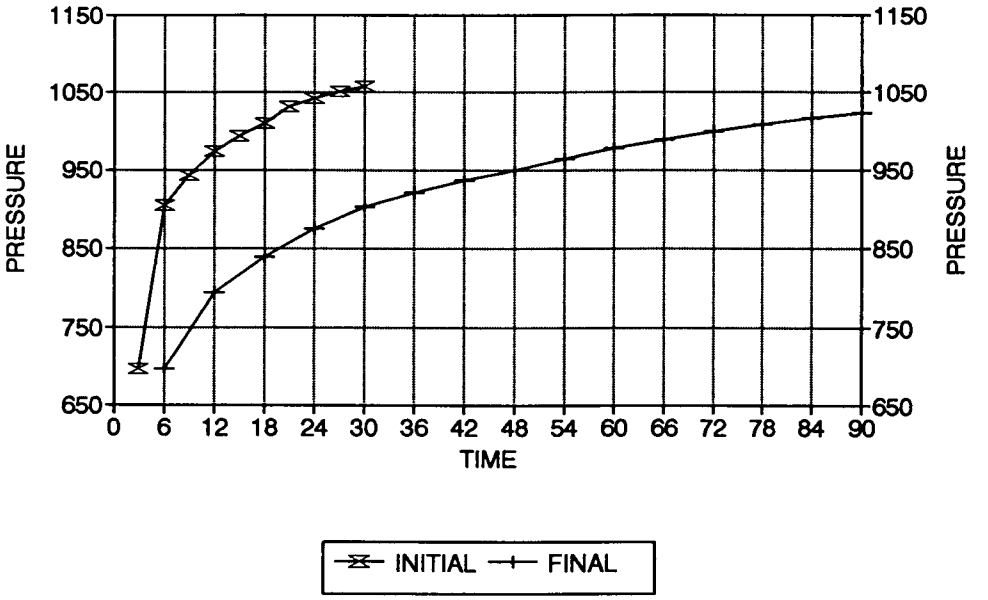
RUSSELL #1 DST #1
FINAL SHUTIN

75 TOTAL FLOW TIME

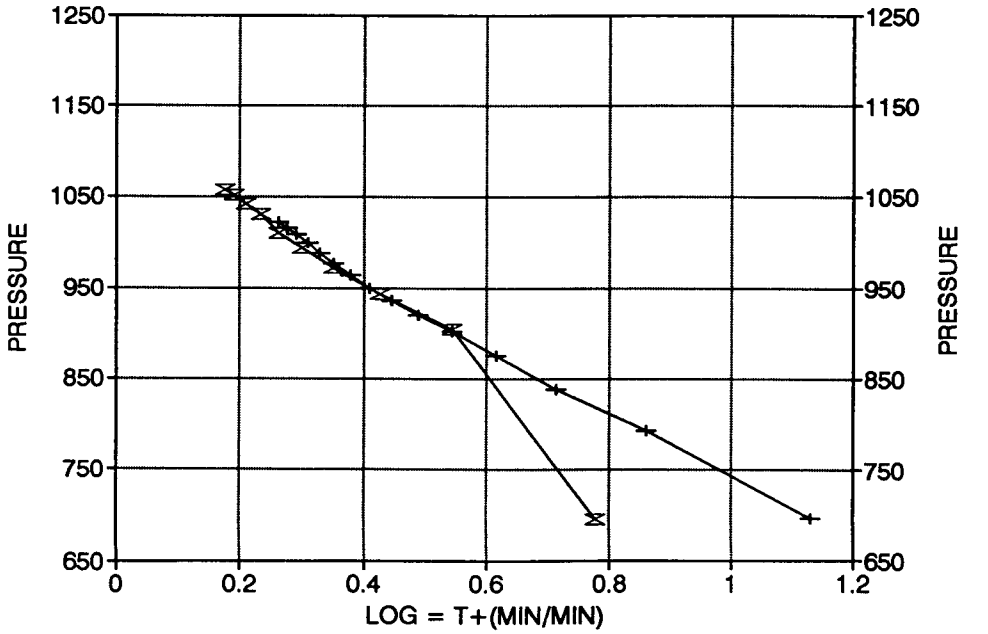
SLOPE 490.5 PSI/CYCLE
P* 1151.7 PSI

			Log Horn T	<> PRESSURE	Horn T
	6	696.1	1.130	696.1	14
	12	792.8	0.860	96.7	7
	18	838.5	0.713	45.7	5
	24	874.9	0.615	36.4	4
	30	902.2	0.544	27.3	4
	36	920.4	0.489	18.2	3
	42	935.6	0.445	15.2	3
	48	949.9	0.409	14.3	3
	54	964.3	0.378	14.4	2
	60	977.2	0.352	12.9	2
	66	988.6	0.330	11.4	2
	72	999.2	0.310	10.6	2
X	78	1008.2	0.293	9.0	2
	84	1015.8	0.277	7.6	2
X	90	1022.6	0.263	6.8	2

RUSSELL #1 / DST #1
DELTA T DELTA P



HORNER PLOT

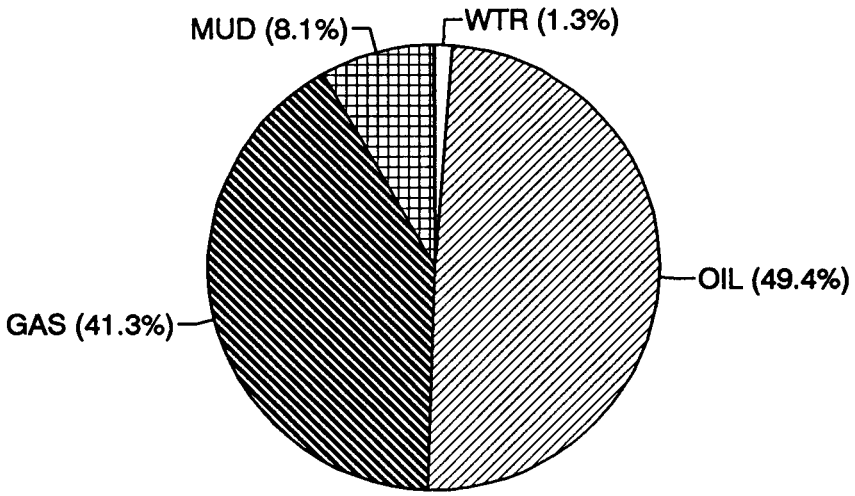


CALCULATED RECOVERY ANALYSIS DRILL PIPE

DST # 1 TICKET 6583

SAMPLE	TOTAL	GAS		OIL		WATER		MUD	
#	FEET	%	FEET	%	FEET	%	FEET	%	FEET
1	300	50	150	50	150	0	0	0	0
2	60	20	12	50	30	0	0	30	18
3	60	50	30	35	21	5	3	10	6
4	60	10	6	60	36	5	3	25	15
5			0		0		0		0
6			0		0		0		0
TOTAL	480	41.25	198	49.4	237	1.25	6	8.13	39

			HRS	BBL/DAY
BBL OIL=	3.37014	*	1.25	64.707
BBL WATER=	0.08532	*		1.6381
BBL MUD=	0.55458			
BBL GAS	2.81556			



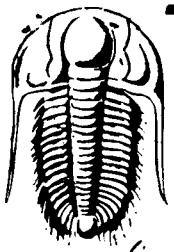
GAS VOLUME REPORT

GENERAL ATLANTIC RESOURCES INC

RUSSELL #1 DST # 1

MIN	PSIG	ORIFICE	MCF/D	MIN	PSIG	ORIFICE	MCF/D
15	6	0.25	22.9	0	40	0.5	39.6
				5	34	0.5	36.5
				10	32	0.5	35.5
				15	CAUGHT SAMPLE		
				20	24	0.5	30.7
				25	16	0.5	25.1
				30	12	0.5	21.9
				35	8	0.5	17.2
				40	26	0.25	8.56
				45	70	0.25	14.1
				50	86	0.25	15.5
				55	64	0.25	13.4
				60	56	0.25	12.6

Remarks: GAS TO SURFACE DURING INITIAL SHUTIN



TRILOBITE TESTING

P.O. Box 362 • Hays, Kansas 67601 • (913) 625-4778

GAS VOLUME REPORT

General Atlantic — OPERATOR

Russell #1 — WELL NAME AND NO.

1 — DST NO.

Min.	~~Ins. of Water~~ PSIG	Orifice Size	MCF/D	Min.	Ins. of Water ~~PSIG~~	Orifice Size	MCF/D
~~15~~	6	1/4"	22.9	Open	40	1/2	39.6
				5	34	"	36.5
				10	32		35.5
				15	Gas to surface	Sample	
				20	24	"	30.7
				25	16	"	25.1
				30	12	"	21.9
				35	8	"	17.2
				40	26	1/4	8.56
				45	70		14.1
				50	86		15.5
				55	64		13.4
				60	56		12.6

Remarks: GTS ISI

Gen. Atlantic –

WELL NAME Russell #1 DST # 1 RECORDER # 24174

INIT. HYD. MUD. 2.137 1618.4 FINAL HYD. MUD 2.121 1606.2

INITIAL FLOW MINUTES 15 INTERVAL 3		INITIAL SHUTIN MINUTES 30 INTERVAL 3			FINAL FLOW MINUTES 60 INTERVAL 3		FINAL SHUTIN MINUTES 90 INTERVAL 6	
~~.118~~	87.6	—	—	1	.141	104.8	—	—
.103	76.4	.917		2	.137		.918	
.097	71.9	1.192		3	.138		1.045	
.099	73.4	1.242		4	.139		1.105	
.099	73.4	1.282		5	.142		1.153	
.098	73.4	1.310		6	.147		1.189	
		1.331		7	.150		1.213	
		1.358		8	.155		1.233	
		1.373		9	.156		1.252	
		1.386		10	.166		1.271	
		1.394	1057.4	11	.172		1.288	
				12	.179		1.303	
				13	.185		1.317	
				14	.190		1.329	
				15	.196		1.339	
				16	.202		1.353	1026.4
				17	.208			
				18	.215			
				19	.220			
				20	.223			
				21	.225	168.0		
				22				
				23				
				24				
				25				
				26				
				27				

1	0.917	695.4072
2	1.192	904.5379
3	1.242	942.4235
4	1.282	972.7184
5	1.31	993.9127
6	1.331	1009.793
7	1.358	1030.208
8	1.373	1041.549
9	1.386	1051.377
10	1.394	1057.424

ISI — 1125.4

FSI — ~~1176.2~~ 1164.9

C-11

A25 . . A39

D . . D . . 25

1	0.918	696.1689
2	1.045	792.8726
3	1.105	838.5049
4	1.153	874.9366
5	1.189	902.2609
6	1.213	920.4575
7	1.233	935.6067
8	1.252	949.9976
9	1.271	964.3877
10	1.288	977.2624
11	1.303	988.6188
12	1.317	999.2064
13	1.329	1008.281
14	1.339	1015.842
15	~~1.353~~	~~1026.428~~

1	0.141	104.8737	
2	0.137	101.8774	
3	0.138	102.6264	
4	0.139	103.3754	Q
5	0.142	105.623	
6	0.147	109.3705	
7	0.15	111.62	
8	0.155	115.3688	
9	0.158	117.619	
10	0.166	123.6226	
11	0.172	128.1284	
12	0.179	133.3885	
13	0.185	137.8999	
14	0.19	141.6615	
15	0.196	146.1777	
16	0.202	150.6948	
17	0.208	155.2106	
18	0.215	160.4819	
19	0.22	164.2491	
20	0.223	166.5101	
21	0.225	168.0178	

D1..D51

NATURAL GAS ANALYSIS REPORT

Sampled by:
Trilobite Testing, L.L.C.
Hays, Kansas
Scott City, Kansas
Phone: 800-728-5369
Fax: 913-625-5620

Analyzed by:
Caraway Analytical, L.L.C.
728 North Roosevelt
Liberal, Kansas 67901
Phone: 316-324-5389
Fax: 316-626-7108

Lab Number:	940197	Analyzed:	04/26/94
Sample From:	Russell #1	Pressure:	
Producer:	General Atlantic	Temperature:	
Date:		Location:	7-23-11W
Time:		County:	Stafford
Sampler:		State:	Kansas
Source:	DST #1 LKC G-H	Formation:	

		Mole %	GPM
Helium	He:		0.000
Oxygen	O2:	0.000	0.000
Nitrogen	N2:	4.075	0.000
Carbon Dioxide	CO2:	0.000	0.000
Methane	C1:	53.078	0.000
Ethane	C2:	14.196	3.797
Propane	C3:	13.514	3.724
Iso Butane	iC4:	2.310	0.756
Normal Butane	nC4:	6.564	2.069
Iso Pentane	iC5:	1.326	0.485
Normal Pentane	nC5:	2.206	0.799
Hexanes Plus	C6+:	2.731	1.191
	TOTAL:	100.000	12.821
	Z Fact:	0.9924	
	SP.GR.:	1.0484	
	BTU (SAT):	1685.2 @ 14.73 psia	
	BTU (DRY):	1715.0 @ 14.73 psia	
	OCTANE RATING:	107.8	

COMMENTS: Sample entered under vacuum
Insufficient pressure for Helium analysis

Caraway Analytical, 26-Apr-94

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name RUSSELL #1 Test No. 2 Date 4/22/94

Company GENERAL ATLANTIC RESOURCES INC Zone LKC-"G-H"

Address 410 17th ST #1400 DENVER CO 80202 Elevation 1824 KB

Co. Rep./Geo. RICHARD HALL Cont. DUKE DRLG RIG #2 Est. Ft. of Pay

Location: Sec. 7 Twp. 23S Rge. 11W Co. STAFFORD State KS

Interval Tested 3429-3485 Drill Pipe Size 4.5" XH

Anchor Length 56 Wt. Pipe I.D. - 2.7 Ft. Run

Top Packer Depth 3424 Drill Collar – 2.25 Ft. Run

Bottom Packer Depth 3429 Mud Wt. 9 lb/Gal.

Total Depth 3485 Viscosity 41 Filtrate 9.8

Tool Open @ 10:52 AM Initial Blow WEAK SURFACE BLOW BUILDING TO 3"

Final Blow 1/4" BLOW BUILDING TO 4"

Recovery - Total Feet 130 Flush Tool? NO

Rec. 130 Feet of MUDDY SALT WATER

Rec. Feet of

Rec. Feet of

Rec. Feet of

Rec. Feet of

BHT 104 °F Gravity °API @ °F Corrected Gravity °API

RW 0.21 @ 66.4 °F Chlorides 36000 ppm Recovery Chlorides 8000 ppm System

(A) Initial Hydrostatic Mud 1643.4 PSI AK1 Recorder No. 22150 Range 3925

(B) First Initial Flow Pressure 66.7 PSI @ (depth) 3462 w / Clock No. 23839

(C) First Final Flow Pressure 65.2 PSI AK1 Recorder No. 24174 Range 3050

(D) Initial Shut-in Pressure 1182.7 PSI @ (depth) 3482 w / Clock No. 25110

(E) Second Initial Flow Pressure 95.1 PSI AK1 Recorder No. Range

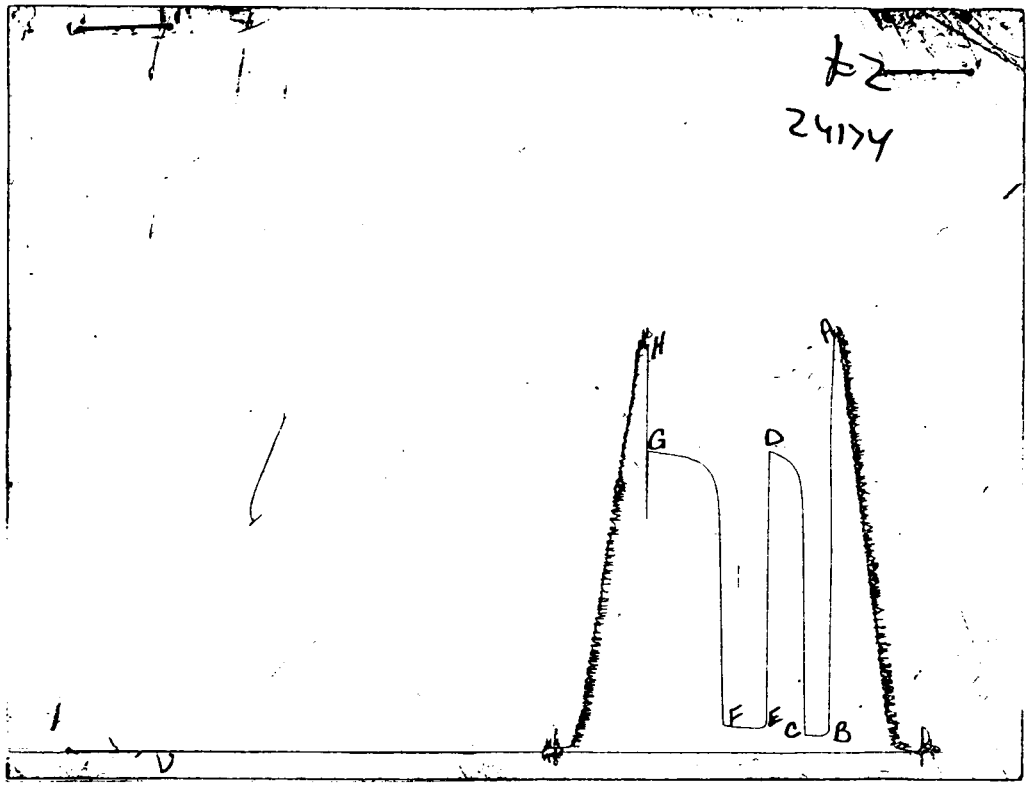
(F) Second Final Flow Pressure 107.8 PSI @ (depth) w / Clock No.

(G) Final Shut-in Pressure 1181.2 PSI Initial Opening 15 Final Flow 30

(H) Final Hydrostatic Mud 1595.6 PSI Initial Shut-in 30 Final Shut-in 60

Our Representative PAUL SIMPSON

CHART PAGE



This is an actual photograph of recorder chart #24174

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	1666	1643.4
(B) FIRST INITIAL FLOW PRESSURE	59	66.7
(C) FIRST FINAL FLOW PRESSURE	67	65.2
(D) INITIAL CLOSED-IN PRESSURE	1183	1182.7
(E) SECOND INITIAL FLOW PRESSURE	89	95.1
(F) SECOND FINAL FLOW PRESSURE	104	107.8
(G) FINAL CLOSED-IN PRESSURE	1175	1181.2
(H) FINAL HYDROSTATIC MUD	1605	1595.6

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name RUSSELL #1 Test No. 3 Date 4/23/94

Company GENERAL ATLANTIC RESOURCES INC Zone ARBUCKLE

Address 410 17th ST #1400 DENVER CO 80202 Elevation 1824 KB

Co. Rep./Geo. RICHARD HALL Cont. DUKE DRLG RIG #2 Est. Ft. of Pay 5

Location: Sec. 7 Twp. 23S Rge. 11W Co. STAFFORD State KS

Interval Tested 3730-3738 Drill Pipe Size 4.5" XH

Anchor Length 8 Wt. Pipe I.D. - 2.7 Ft. Run

Top Packer Depth 3725 Drill Collar – 2.25 Ft. Run

Bottom Packer Depth 3730 Mud Wt. 9.2 lb/Gal.

Total Depth 3738 Viscosity 49 Filtrate 10.4

Tool Open @ 1:34 PM Initial Blow VERY WEAK SURFACE BLOW BUILT TO 1/4"

Final Blow WEAK SURFACE BLOW BUILDING TO 1/4"

Recovery - Total Feet 15 Flush Tool? NO

Rec. 5 Feet of CLEAN OIL

Rec. 10 Feet of SLIGHTLY OIL CUT WATERY MUD- 5%OIL/20%WTR/75%MUD

Rec. Feet of

Rec. Feet of

Rec. Feet of

BHT 114 °F Gravity 40 °API @ 80 °F Corrected Gravity 38 °API

RW 0.65 @ 81 °F Chlorides 8200 ppm Recovery Chlorides 8000 ppm System

(A) Initial Hydrostatic Mud 1840.2 PSI AK1 Recorder No. 22150 Range 3925

(B) First Initial Flow Pressure 29.6 PSI @ (depth) 3732 w / Clock No. 23839

(C) First Final Flow Pressure 22.2 PSI AK1 Recorder No. 24174 Range 3050

(D) Initial Shut-in Pressure 1271.6 PSI @ (depth) 3734 w / Clock No. 25110

(E) Second Initial Flow Pressure 37.0 PSI AK1 Recorder No. Range

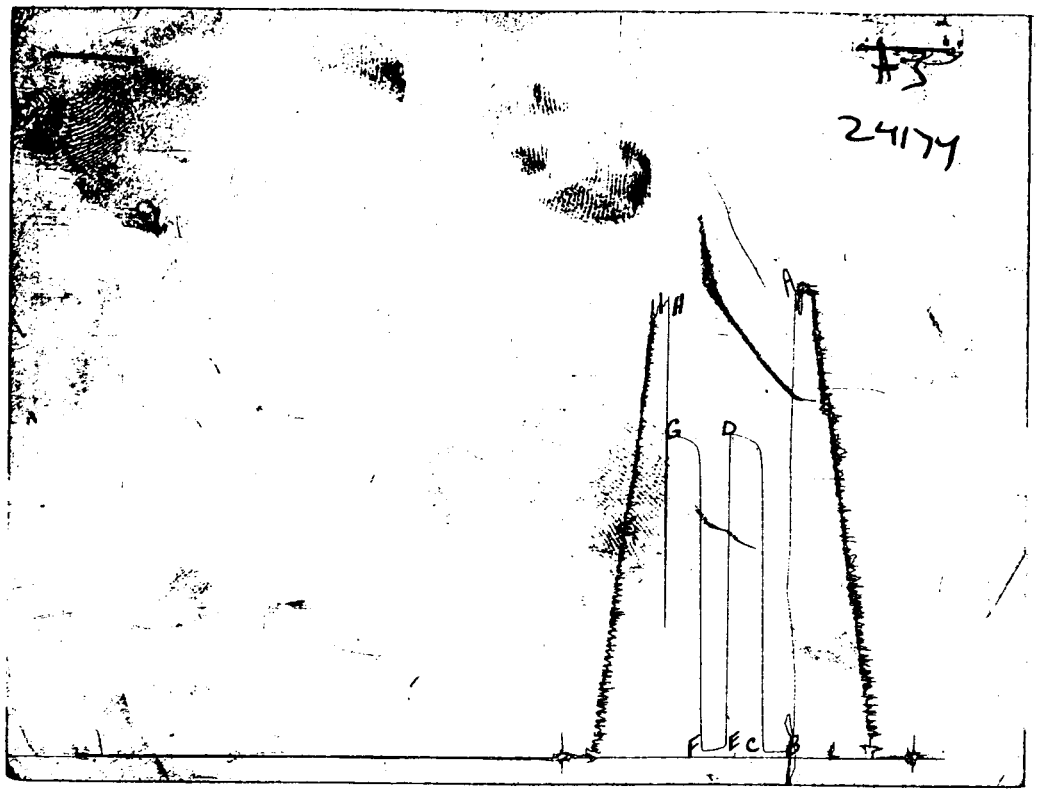
(F) Second Final Flow Pressure 24.4 PSI @ (depth) w / Clock No.

(G) Final Shut-in Pressure 1267.9 PSI Initial Opening 15 Final Flow 15

(H) Final Hydrostatic Mud 1808.8 PSI Initial Shut-in 30 Final Shut-in 30

Our Representative PAUL SIMPSON

CHART PAGE



This is an actual photograph of recorder chart #24174

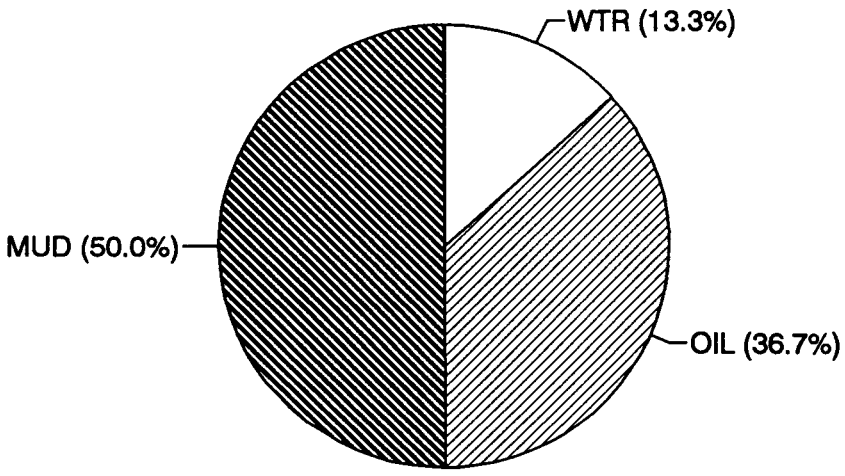
	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	1842	1840.2
(B) FIRST INITIAL FLOW PRESSURE	22	29.6
(C) FIRST FINAL FLOW PRESSURE	22	22.2
(D) INITIAL CLOSED-IN PRESSURE	1266	1271.6
(E) SECOND INITIAL FLOW PRESSURE	22	37
(F) SECOND FINAL FLOW PRESSURE	22	24.4
(G) FINAL CLOSED-IN PRESSURE	1266	1267.9
(H) FINAL HYDROSTATIC MUD	1811	1808.8

CALCULATED RECOVERY ANALYSIS DRILL PIPE

DST # 3 TICKET 6585

SAMPLE	TOTAL	GAS		OIL		WATER		MUD	
#	FEET	%	FEET	%	FEET	%	FEET	%	FEET
1	5	0	0	100	5	0	0	0	0
2	10	0	0	5	0.5	20	2	75	7.5
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
6			0		0		0		0
TOTAL	15	0	0	36.7	5.5	13.333333	2	50	7.5

			HRS	BBL/DAY
BBL OIL=	0.07821	*	0.5	3.7541
BBL WATER=	0.02844	*		1.3651
BBL MUD=	0.10665			
BBL GAS	0			



TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name RUSSELL #1 Test No. 4 Date 4/24/94

Company GENERAL ATLANTIC RESOURCES INC Zone ARBUCKLE

Address 410 17th ST #1400 DENVER CO 80202 Elevation 1824 KB

Co. Rep./Geo. RICHARD HALL Cont. DUKE DRLG RIG #2 Est. Ft. of Pay 15

Location: Sec. 7 Twp. 23S Rge. 11W Co. STAFFORD State KS

Interval Tested 3730-3746 Drill Pipe Size 4.5" XH

Anchor Length 16 Wt. Pipe I.D. - 2.7 Ft. Run

Top Packer Depth 3725 Drill Collar – 2.25 Ft. Run

Bottom Packer Depth 3730 Mud Wt. 9.2 lb/Gal.

Total Depth 3746 Viscosity 49 Filtrate 10.4

Tool Open @ 1:21 AM Initial Blow WEAK 1/4" BLOW BUILDING TO 3"

Final Blow 1/4" BLOW BUILDING TO 4"

Recovery - Total Feet 150 Flush Tool? NO

Rec. 90 Feet of GAS IN PIPE

Rec. 130 Feet of GASSY OIL - 30% GAS/ 70% OIL

Rec. 20 Feet of HVY OIL CUT MUD- 25% OIL/ 75% MUD

Rec. Feet of

Rec. Feet of

BHT 112 °F Gravity 39 °API @ 70 °F Corrected Gravity 38 °API

RW @ °F Chlorides ppm Recovery Chlorides ppm System

(A) Initial Hydrostatic Mud 1826.4 PSI AK1 Recorder No. 22150 Range 3925

(B) First Initial Flow Pressure 16.2 PSI @ (depth) 3732 w / Clock No. 23839

(C) First Final Flow Pressure 32.5 PSI AK1 Recorder No. 24174 Range 3050

(D) Initial Shut-in Pressure 1279.9 PSI @ (depth) 3735 w / Clock No. 25109

(E) Second Initial Flow Pressure 71.2 PSI AK1 Recorder No. Range

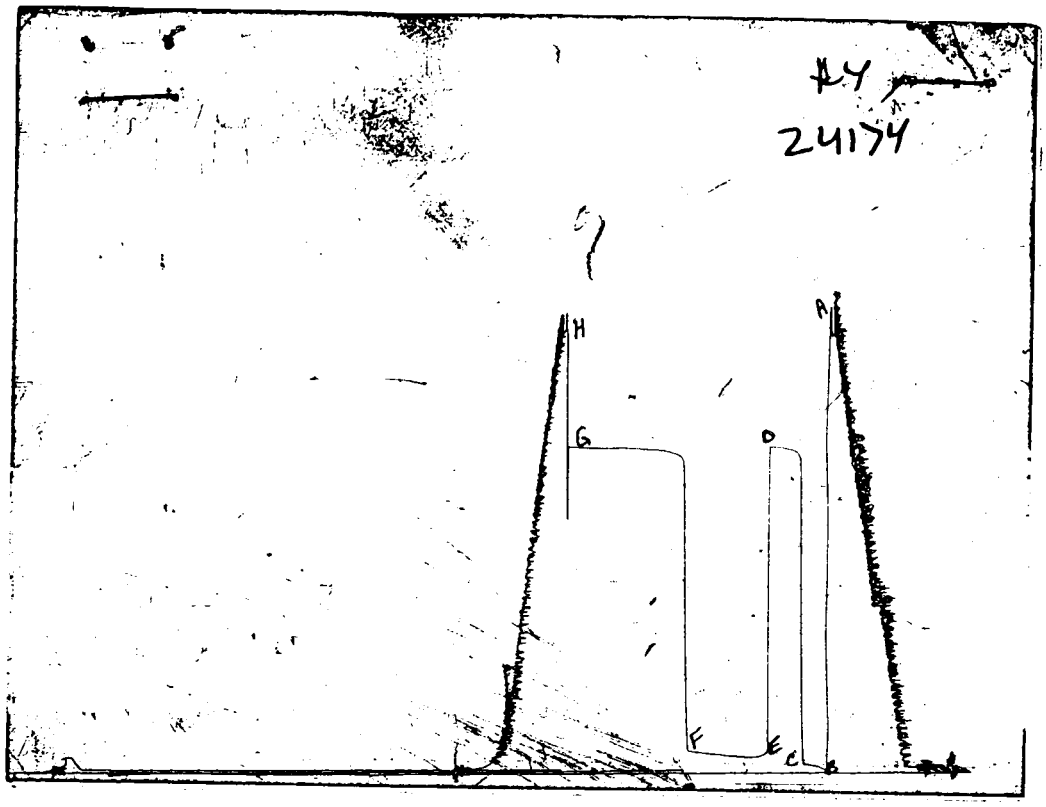
(F) Second Final Flow Pressure 83.1 PSI @ (depth) w / Clock No.

(G) Final Shut-in Pressure 1279.9 PSI Initial Opening 15 Final Flow 60

(H) Final Hydrostatic Mud 1743.9 PSI Initial Shut-in 30 Final Shut-in 90

Our Representative PAUL SIMPSON

CHART PAGE



This is an actual photograph of recorder chart #24174

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	1857	1826.4
(B) FIRST INITIAL FLOW PRESSURE	22	16.2
(C) FIRST FINAL FLOW PRESSURE	52	32.5
(D) INITIAL CLOSED-IN PRESSURE	1288	1279.9
(E) SECOND INITIAL FLOW PRESSURE	59	71.2
(F) SECOND FINAL FLOW PRESSURE	82	83.1
(G) FINAL CLOSED-IN PRESSURE	1288	1279.9
(H) FINAL HYDROSTATIC MUD	1818	1743.9

COMPUTER OIL EVALUATION BY TRILOBITE TESTING, L.L.C.

GENERAL ATLANTIC RESOURCES INC

RUSSELL #1 DST 4

7 23S 11W STAFFORD KS

ELEVATION:	1824	KB	EST. PAY	15	FT
DATUM:	-1912		ZONE TESTED:	ARBUCKLE	
TEST INTERVAL:	3730-3746		TIME INTERVALS:	15-30-60-90	
RECORDER DEPTH:	3735		VISCOSITY:	7.05	CP
BOTTOM HOLE TEMP:	112		HOLE SIZE:	7.875	IN

CUBIC FEET OF GAS IN PIPE:	7			
TOTAL FEET OF RECOVERY:	150.00	CORRECTED PIPE FILLUP:	229.558	
TOTAL BARRELS OF RECOVERY:	2.13	CORR. BARRELS OF RECOVERY:	3.256	BBL
BARRELS IN DRILL PIPE:	2.13	API GRAVITY:	38	
BARRELS IN WEIGHT PIPE:	0.00	FLUID GRADIENT:	0.362	
BARRELS IN DRILL COLLARS:	0.00			
GAS OIL RATIO:	3.37	CU.FT/BBL		
BUBBLE POINT PRESSURE:	31			
UNCORRECTED INITIAL PRODUCTION:			40.95	BBL
INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:			62.52	BBL/DAY
INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:			30.234	

INITIAL SLOPE	63.1	PSI/CYCL	FINAL SLOPE	45.2	PSI/CYCLE
INITIAL P*	1292.0	PSI	FINAL P*	1291.8	PSI

TRANSMISSIBILITY	225.13	(MD.-FT./CP.)
PERMEABILITY	105.86	(MD.)
INDICATED FLOW CAPACITY	1587.89	(MD.FT)
PRODUCTIVITY INDEX	0.25	(BARREL/DAY/PSI)
DAMAGE RATIO	4.90	
RADIUS OF INVESTIGATION	89.10	(FT,)
POTENTIOMETRIC SURFACE	1084.65	(FT.)
DRAWDOWN FACTOR	0.017	(%)
THEORETICAL POTENTIAL FROM FINAL FLOW PRESSURE	306.24	
THEORETICAL POTENTIAL FROM PSEUDO STEADY FLOW STATE	148.09	

INITIAL FLOW

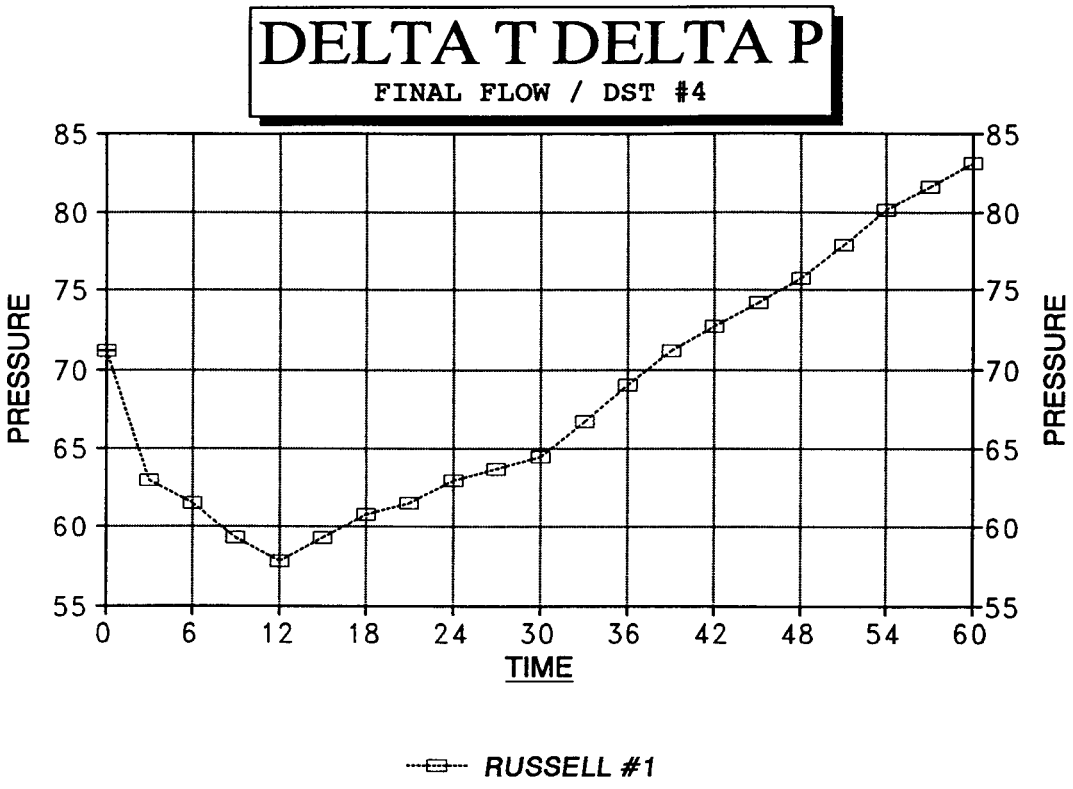
RECORDER 24174 DST # 4

TIME(MIN)	PRESSURE	<> PRESSURE
0	16.2	16.2
3	21.4	5.2
6	25.1	3.7
9	28.1	3.0
12	31.0	2.9
15	32.5	1.5

FINAL FLOW

RECORDER 24174 DST # 4

TIME(MIN)	PRESSURE	<> PRESSURE
0	71.2	71.2
3	63.0	-8.2
6	61.5	-1.5
9	59.3	-2.2
12	57.8	-1.5
15	59.3	1.5
18	60.8	1.5
21	61.5	0.7
24	63.0	1.5
27	63.7	0.7
30	64.5	0.8
33	66.7	2.2
36	69.0	2.3
39	71.2	2.2
42	72.7	1.5
45	74.2	1.5
48	75.7	1.5
51	77.9	2.2
54	80.1	2.2
57	81.6	1.5
60	83.1	1.5



INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE: 30.234

RUSSELL #1 DST #4
INITIAL SHUTIN

15 INITIAL FLOW TIME

SLOPE 63.1 PSI/CYCLE
P* 1292.00 PSI

	TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
	3	1237.0	0.778	1237.0	6
	6	1261.1	0.544	24.1	4
	9	1267.1	0.426	6.0	3
	12	1270.1	0.352	3.0	2
	15	1273.1	0.301	3.0	2
X	18	1275.4	0.263	2.3	2
	21	1276.9	0.234	1.5	2
	24	1278.4	0.211	1.5	2
X	27	1279.9	0.192	1.5	2

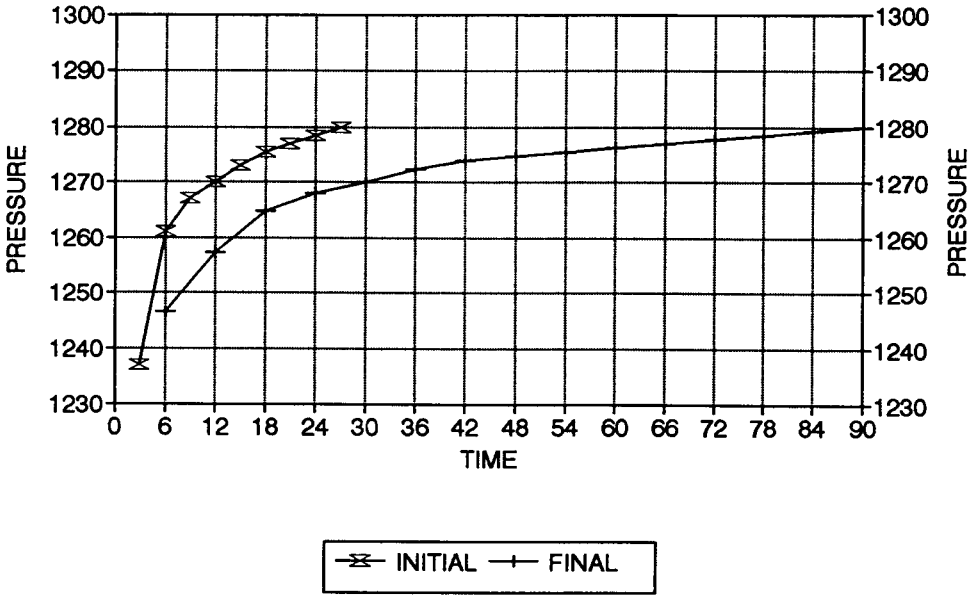
RUSSELL #1 DST #4
FINAL SHUTIN

75 TOTAL FLOW TIME

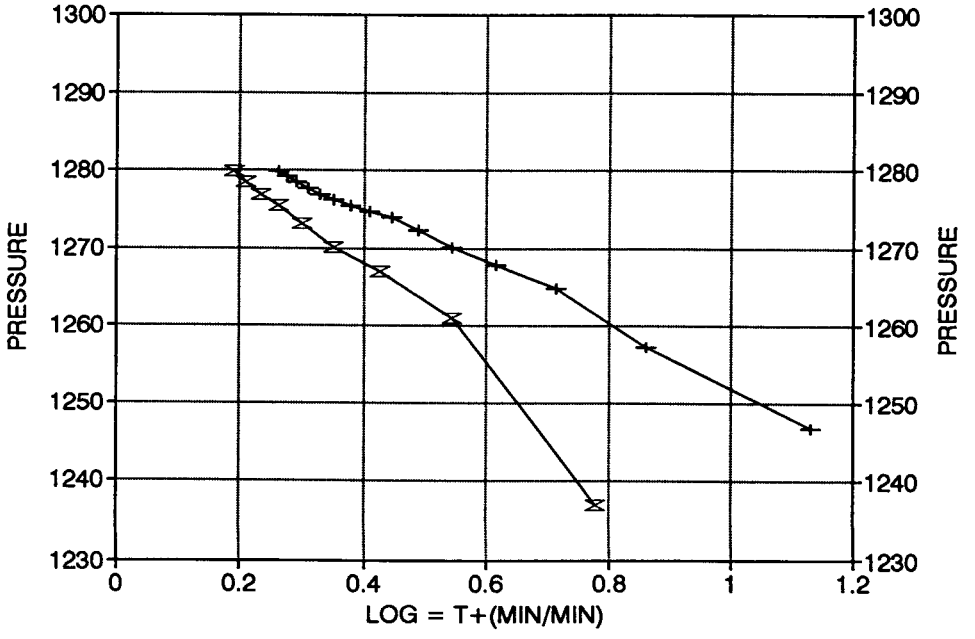
SLOPE 45.2 PSI/CYCLE
P* 1291.8 PSI

			Log Horn T	<> PRESSURE	Horn T
	6	1246.8	1.130	1246.8	14
	12	1257.3	0.860	10.5	7
	18	1264.9	0.713	7.6	5
	24	1267.9	0.615	3.0	4
	30	1271.6	0.544	3.7	4
	36	1273.1	0.489	1.5	3
	42	1273.9	0.445	0.8	3
	48	1274.7	0.409	0.8	3
	54	1275.4	0.378	0.7	2
	60	1276.2	0.352	0.8	2
X	66	1276.9	0.330	0.7	2
	72	1277.7	0.310	0.8	2
	78	1278.4	0.293	0.7	2
	84	1279.2	0.277	0.8	2
X	90	1279.9	0.263	0.7	2

RUSSELL #1 / DST #4
DELTA T DELTA P



HORNER PLOT

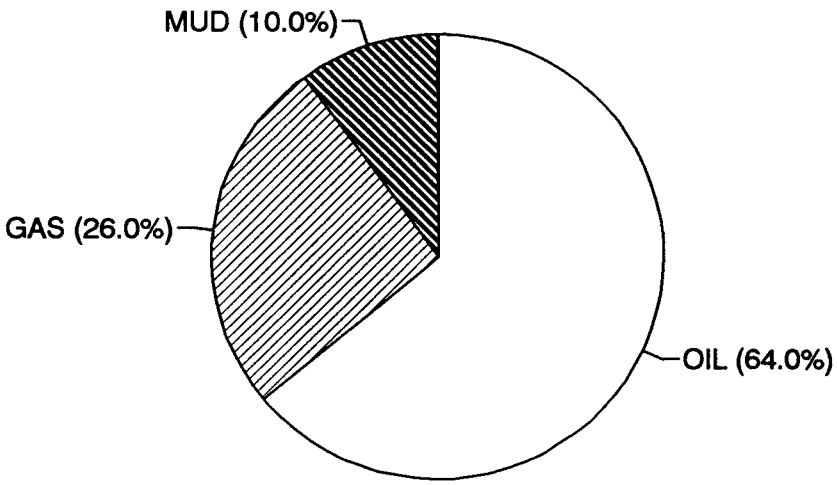


CALCULATED RECOVERY ANALYSIS DRILL PIPE

DST # 4 TICKET 6586

SAMPLE #	TOTAL FEET	GAS %	OIL FEET	OIL %	OIL FEET	WATER %	WATER FEET	MUD %	MUD FEET
1	130	30	39	70	91	0	0	0	0
2	20	0	0	25	5	0	0	75	15
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
6			0		0		0		0
TOTAL	150	26	39	64	96	0	0	10	15

			HRS	BBL/DAY
BBL OIL=	1.36512	*	1.25	26.21
BBL WATER=	0	*		0
BBL MUD=	0.2133			
BBL GAS	0.55458			



FLUID SAMPLER DATA

Ticket No.: 6586 Date: 4/24/94

Company: GENERAL ATLANTIC RESOURCES INC

Lease: RUSSELL #1 Test No.: 4

County: STAFFORD Sec.: 7 Twp.: 23S Rng.: 11W

SAMPLER RECOVERY

Gas	100
Oil	2300
Mud	1600
Water	
Other	
Pressure	150
TOTAL	4000

SAMPLER ANALYSIS

Resistivity ohms@ F

Chlorides ppm.

Gravity 38 corrected @60F

PIT MUD ANALYSIS

Chlorides

Resistivity ohms@ F

Viscosity 49

Mud Wt. 9.2

Filtrate 10.4

Other

PIPE RECOVERY

TOP

Resistivity ohms@ F

Chlorides ppm

MIDDLE

Resistivity ohms@ F

Chlorides ppm

BOTTOM

Resistivity ohms@ F

Chlorides ppm

TRILOBITE TESTING COMPANY

P.O. Box 362 - Hays, Kansas 67601

FLUID SAMPLER DATA

Ticket No. 6586 Date 4-24-94

Company Name General Atlantic Resources, Inc

Lease Russell #1 Test No. 4

County Stafford Ks Sec. 7 Twp. 23 Rng. 11W

SAMPLER RECOVERY

Gas 100 ML

Oil 2300 ML

Mud 1600 ML

Water ML

Other ML

Pressure 150 PSI

Total 4000 ML

PIT MUD ANALYSIS

Chlorides ppm.

Resistivity ohms @ F

Viscosity 49

Mud Weight 9.2

Filtrate 10.4

Other

SAMPLER ANALYSIS

Resistivity ohms @ F

Chlorides ppm.

Gravity 38 corrected @ 60 F

PIPE RECOVERY

TOP

Resistivity ohms @ F

Chlorides ppm.

MIDDLE

Resistivity ohms @ F

Chlorides ppm.

BOTTOM

Resistivity ohms @ F

Chlorides ppm.

Den Atl.

WELL NAME Russell #1 DST # 4 RECORDER # 24174

INIT. HYD. MUD. ~~2410~~ 2410 - 1826.4 FINAL HYD. MUD 2302 1743.9

INITIAL FLOW MINUTES 15 INTERVAL 3

INITIAL SHUTIN MINUTES 30 INTERVAL 3

FINAL FLOW MINUTES 60 INTERVAL 3

FINAL SHUTIN MINUTES 90 INTERVAL 6

~~.057~~	~~=~~	—	—	1	.096	71.2	—	—
.022	16.2	1.632		2	.085		1.645	
.029		1.664		3	.083		1.659	
.034		1.672		4	.080		1.669	
.038		1.676		5	.078		1.673	
.042		1.680		6	.080		1.678	
.044	32.5	1.683		7	.082		~~1.684~~ 1.680	
		1.685		8	.083		~~1.688~~ 1.681	
		1.687		9	.085		~~1.685~~ 1.682	
		1.689	1279.9	10	.086		1.683	
				11	.087		x 1.684	
				12	.090		1.685	
				13	.093		1.686	
				14	.096		1.687	
				15	.098		1.688	
				16	.100		1.689	1279.9
				17	.102			
				18	.105			
				19	.108			
				20	.110			
				21	.112	83.1		
				22				
				23				
				24				
				25				
				26				
				27				

1	1.632	1237.017
2	1.664	1261.139
3	1.672	1267.169
4	1.676	1270.183
5	1.68	1273.198
6	1.683	1275.459
7	1.685	1276.966
8	1.687	1278.473
9	1.688	1279.227

J - 1292.0

F - ~~1291.5~~ 1291.8

1	1.645	1246.817
2	1.659	1257.37
3	1.669	1264.908
4	1.673	1267.922
5	1.678	1271.691
6	1.68	1273.198
7	1.681	1273.952
8	1.682	1274.705
9	1.683	1275.459
10	1.684	1276.213
11	1.685	1276.966
12	1.686	1277.72
13	1.687	1278.473
14	1.688	1279.227
15	1.689	1279.981

C - 10

A25 - 39

D1 . . D24

CRA - 26.2

1	0.022	16.28
2	0.029	21.46
3	0.034	25.16
4	0.038	28.12
5	0.042	31.08336
6	0.044	32.56704

1	0.096	71.23776
2	0.085	63.04238
3	0.083	61.55322
4	0.08	59.32
5	0.078	57.8305
6	0.08	59.32
7	0.082	60.80874
8	0.083	61.55322
9	0.085	63.04238
10	0.086	63.78706
11	0.087	64.53182
12	0.09	66.7665
13	0.093	69.00182
14	0.096	71.23776
15	0.098	72.72874
16	0.1	74.22
17	0.102	75.71229
18	0.105	77.9513
19	0.108	80.19101
20	0.11	81.68453
21	0.112	83.17837

MUD PROPERTIES-BEFORE DST:

Weight:	9.3 lbs/gal.
Viscosity:	37 cp/sec.
Filtrate:	13.6 cc
LCM:	0 lbs/bbl.
Chloride Content:	6,000 p.p.m.

DST PRESSURES-OFFICE READINGS:

IHP:	1618.4 p.s.i.
IFP:	87.6-73.4 p.s.i.
ISIP:	1057.4 p.s.i.
FFP:	104.8-168.0 p.s.i.
FSIP:	1022.6 p.s.i.
FHP:	1606.2 p.s.i.

Bottom Hole Temperature: 116 Degrees F

DST No. 2

Kansas City "G-H" Zones
Conventional Open Hole Test
3,429'-3,485'
56' Anchor
15"-30"-30"-60"

FLOW PERIODS & SURFACE OBSERVATIONS:

Initial Flow Period: Very weak surface blow building to 3 inch blow.

Final Flow Period: Weak 1/4 inch blow building to 4 inch blow.

Shut in periods: No blow.

Mud Level Changes During Test: None

DRILL STEM RECOVERY:

Total Gas In Pipe:	None
Total Fluid Recovery:	130 feet
Type Recovery:	130 feet Muddy Saltwater.
Resistivity of Recovery on DST :	0.21 @ 66.4 Degrees F
Chloride Content-Recovery:	36,000 p.p.m.
Mud Pit Sample Resistivity:	NA
Chloride Content-Mud System:	8,000 p.p.m.

MUD PROPERTIES-BEFORE DST:

Weight:	9.0 lbs/gal.
Viscosity:	41 cp/sec.
Water Loss:	9.8 cc/30 min.
LCM:	0 lbs/bbl.
Chloride Content:	8,000 p.p.m.

KCC
JUN 13
CONFIDENTIAL

RELEASED
JUL 26 1995
FROM CONFIDENTIAL

RECEIVED
STATE CORPORATION COMMISSION
JUN 16 1994
CONSERVATION DIVISION
Wichita, Kansas

DST PRESSURES-OFFICE READINGS:

IHP:	1643.4 p.s.i.
IFP:	66.7-65.2 p.s.i.
ISIP:	1182.7 p.s.i.
FFP:	95.1-107.8 p.s.i.
FSIP:	1181.2 p.s.i.
FHP:	1695.6 p.s.i.

Bottom Hole Temperature: 104 Degrees F

DST No. 3

Arbuckle Formation
Conventional Open Hole Test
3,730'-3,738'
8' Anchor
15"-30"-15"-30"

FLOW PERIODS & SURFACE OBSERVATIONS:

Initial Flow Period: Very weak surface blow building to 1/4 inch.

Final Flow Period: Weak surface blow building to 1/4 inch.

Shut in periods: No return blow.

Mud Level Changes During Test: None

DRILL STEM RECOVERY:

Total Gas In Pipe:	None
Total Fluid Recovery:	15 feet
Type Recovery:	5 feet of Clean Oil
	15 feet Slightly Oil Cut Watery Mud
	(20% water, 75% mud, 5% gas)

Resistivity of Recovery on DST :	Rw 0.65 ohms at 81 degrees F
Chloride Content-Recovery:	8,200 p.p.m.
Mud Pit Sample Resistivity:	NA
Chloride Content-Mud System:	8,000 p.p.m.

MUD PROPERTIES-BEFORE DST:

Weight:	9.2 lbs/gal.
Viscosity:	49 cp/sec.
Water Loss:	10.4 cc/30 min.
LCM:	0 lbs/bbl.
Chloride Content:	8,000 p.p.m.

DST PRESSURES-OFFICE READINGS:

IHP:	1,890.2 p.s.i.
IFP:	29.6-22.2 p.s.i.
ISIP:	1,271.6 p.s.i.
FFP:	37.0-24.4 p.s.i.
FSIP:	1,267.9 p.s.i.

FHP: 1,808.8 p.s.i.

Bottom Hole Temperature: 114 Degrees F

DST No. 4

Arbuckle Formation
Conventional Open Hole Test
3,730'-3,746'
16' Anchor
15"-30"-60"-90"

FLOW PERIODS & SURFACE OBSERVATIONS:

Initial Flow Period: Weak 1/4 inch blow building to 3 inches.

Final Flow Period: Weak 1/4 inch blow building to 4 inches.

Shut in periods: No return blow.

Mud Level Changes During Test: None

DRILL STEM RECOVERY:

Total Gas In Pipe:	90 feet
Total Fluid Recovery:	150 feet
Type Recovery:	130 feet of Gassy Oil (30% gas, 70% oil)
	20 feet Heavy Oil Cut Mud
	(25% oil, trace water, 75% mud)

* Note: Pressure charts indicate good permeability and significant formation damage.

Resistivity of Recovery on DST :	Oil
Chloride Content-Recovery:	NA
Mud Pit Sample Resistivity:	NA
Chloride Content-Mud System:	9,000 p.p.m.

MUD PROPERTIES-BEFORE DST:

Weight:	9.2 lbs/gal.
Viscosity:	49 cp/sec.
Water Loss:	10.4 cc/30 min.
LCM:	0 lbs/bbl.
Chloride Content:	9,000 p.p.m.

DST PRESSURES-OFFICE READINGS:

IHP:	1,826.4 p.s.i.
IFP:	16.1-32.5 p.s.i.
ISIP:	1279.9 p.s.i.
FFP:	71.2-83.1 p.s.i.
FSIP:	1279.9 p.s.i.
FHP:	1743.9 p.s.i.

Bottom Hole Temperature: 112 Degrees F