Appendix J:
Reservoir Tests and Reservoir Calculations

Brushy Canyon Drillstem Test (DST) Summary

The Brushy Canyon zone between 5023 and 5288 ft was tested on November 6, 2007. The zone was considered as a secondary target to the Lower Bone Springs, but the drill stem test ultimately ruled this possibility out. The attached set of documents from Schlumberger shows a good mechanical test of the zone that included a good packer seal above the zone of interest, but very little flow into the tool, indicating poor permeability. In addition, the fluid sample that was recovered showed high traces of nitrates which had been placed in the drilling mud as markers. Since the nitrate level was high, it was an indication that all the recovered fluid was primarily mud or mud filtrate and not reservoir water.

Note: A similar DST was planned for the primary injection interval in the Lower Bone Springs, but the lost circulation problems that were encountered at 5950 ft (through TD of the hole) made the test impractical and unnecessary.

Schlumberger

Job Summary
DCP Midstream
OH DST

Linam AGI 1	Service Order Number : **11769506**
W/C	Test Date : **06-Nov-07**

Company Rep	Mr. R. Bentley	**SWS Rep**	R. Cherry Jr.

Test Information

Test Number	One	Formation	Brushy Canyon
		Interval (MD ft)	5012-5248

Well Location

Well	Linam AGI 1	Rig	JW #2
Field	W/C	State	Lea - NM

Wellbore Configuration

Total Depth (MD/TVD ft)	5248/5248	Wellbore Radius (ft)	
Casing / Liner ID (in)	8.835	Mud Weight (lb/gal)	9.7
Top of Liner (md- ft)	0-4212'	Mud Type	Salt Brine

Test String Configuration

Pipe Length (ft) / ID (in)	4088/3.826	Gauge Depth (MD)	5247
Pipe Length (ft) / ID (in)	306/2.875	Gauge Depth (TVD)	5247
Drill Collar Length (ft) / ID (in)	575/2.375	Test Valve Type	0.94"MFE
Packer Depths (ft MD)	5006 / 5012	Test Valve Depth (ft) (MD)	4974

Key Information

Initial Hydrostatic Pressure	2578	Final Shut In Pressure	1752
Init. Hyd Grad & Density	0.491 psi/ft / 9.45 lb/gal	FinalShut In Grad & Density	0.334 psi/ft / 6.42 lb/gal
Final Hydrostatic Pressure	2579	Final Flowing Pressure	245
Final Hyd Grad & Density	0.492 psi/ft / 9.45 lb/gal	Final Flow Rate ( )	
Bottom Hole Temp	107	Productivity Index ( )	

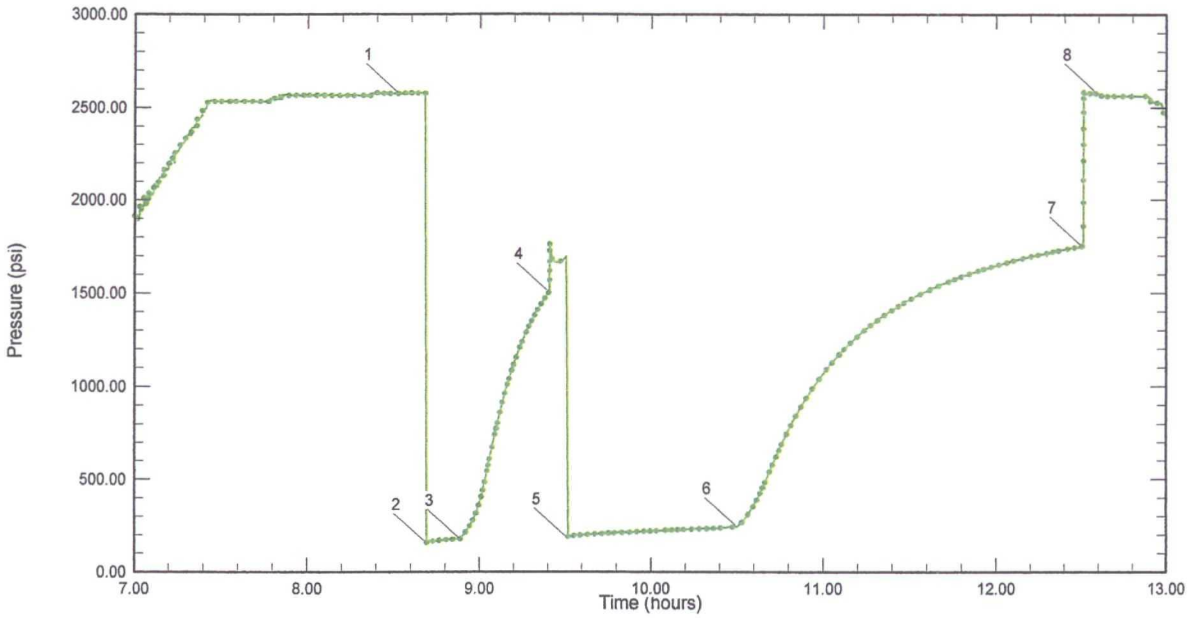
Job Description / Services Requested

This 8-3/4" open hole dst of the Brushy Canyon was mechanically successful. Twelve minute initial flow opened at 1" blow in bucket increasing to 8" before initial shutin of 30 min. Final flow opened w/2" blow building to 4" blow in 29 min, then decreasing to 2-3/4" at end of the 60 min. Recovered 212' of yellowish slick fluid w/ slight gas smell. Chlorides of recovered samples: pit sample: 99000 ppm, top: 92000 ppm, middle: 92000 ppm, bottom: 87000 ppm. Sampler contained 1800 cc's at 94000 ppm at 200 psi. Drlg mud was tagged w/ nitrates. Recovery fluid samples were taken to Cardinal Labs in Hobbs via client. Thank you for choosing Schlumberger Testing.

Schlumberger Crew

Roy Cherry Jr. 432 557-5258

Schlumberger	*Label Point Data* DCP Midstream OH DST	
Linam AGI 1 W/C		11769506 06-Nov-07



Label Point / Comments	Date (dd-mmm-yy)	Time (hh:mm:ss)	Gauge ET (hours)	BHP (psia)	Rate (0)
Label Point Summary					
1) Hydrostatic Pressure	05-Nov-07	22:20:27	8.524	2577.95	0
2) Start Flow	05-Nov-07	22:30:28	8.691	157.74	5
3) End Flow & Start Shut-in	05-Nov-07	22:42:11	8.886	180.23	0
4) End Shut-in	05-Nov-07	23:13:11	9.403	1503.58	0
5) Start Flow	05-Nov-07	23:19:33	9.509	187.18	5
6) End Flow & Start Shut-in	06-Nov-07	0:19:03	10.501	245.01	0
7) End Shut-in	06-Nov-07	2:19:05	12.501	1751.90	0
8) Hydrostatic Pressure	06-Nov-07	2:24:24	12.590	2578.70	0

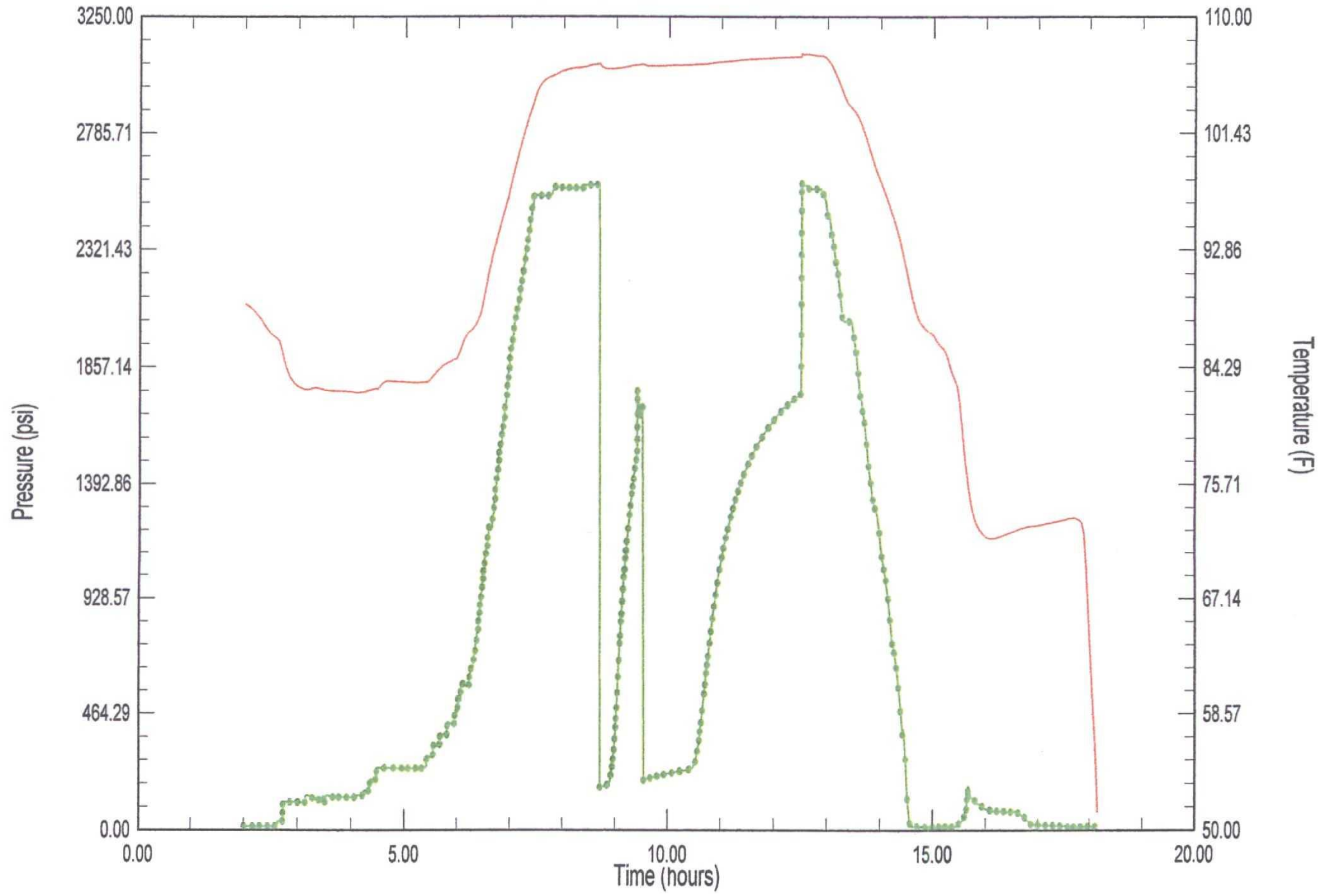
Schlumberger

TESTING SERVICES REPORT

Report Number
11769506
Test Date
06-Nov-07
Report Date
06-Nov-07

DCP Midstream

OH DST
Linam AGI - 1
W/C
Rig : JW #2
Lea - NM



Report Contents

Job Summary, Comments Page, Sequence of Events, Label Point Information, Plots, Summary Data Printout, Distribution

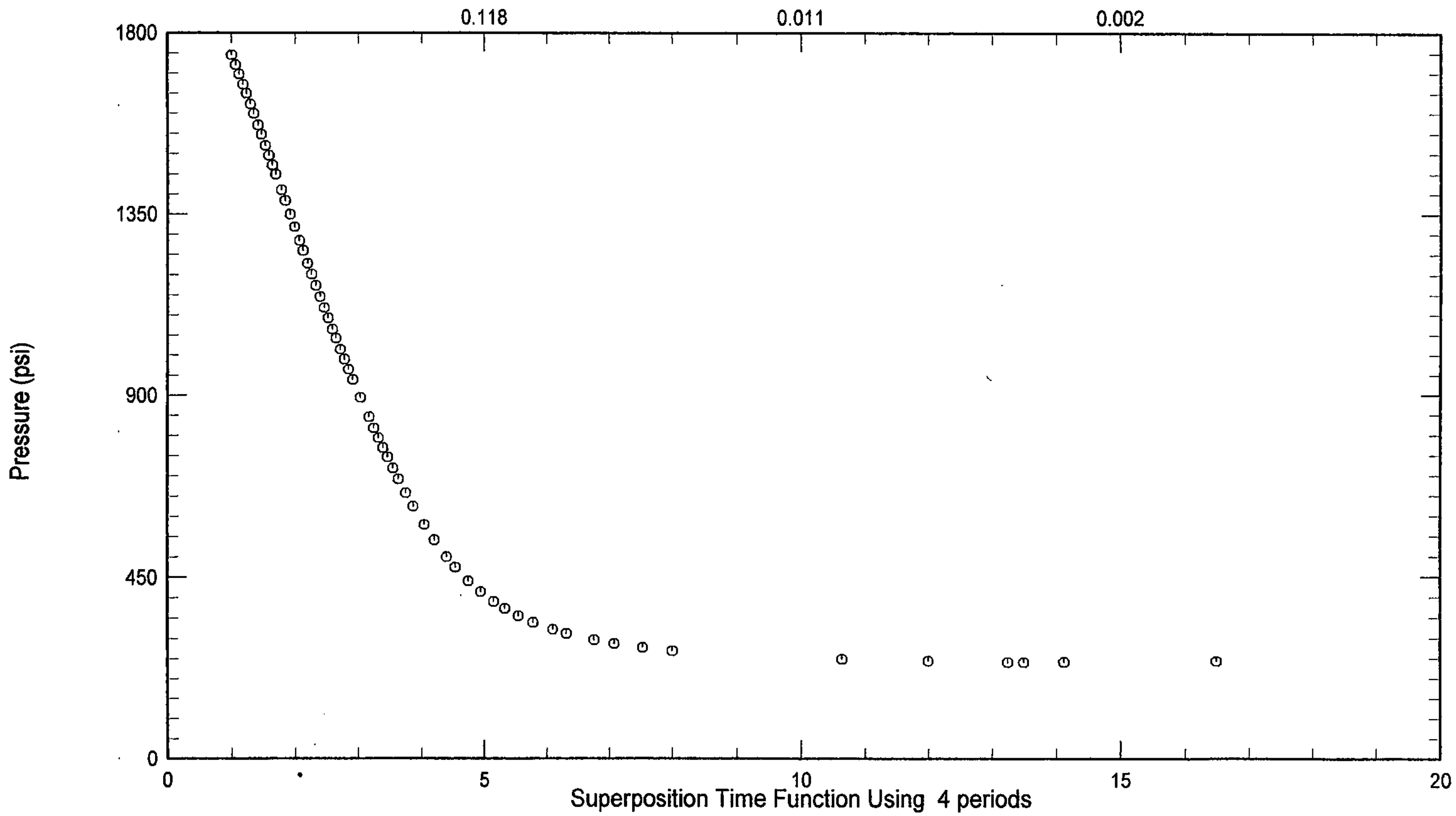
Schlumberger Testing Services
R.Cherry Jr. 432-557-5258

Schlumberger

Quicklook Plots
DCP Midstream
OH DST

Linam AGI 1 | **11769506**
W/C | **06-Nov-07**

Semi-log Plot - Second Shutin Period



Gauge Depth : 5247 ft TVD - 5247 ft MD
Gauge ID : SLSR 1407

Schlumberger

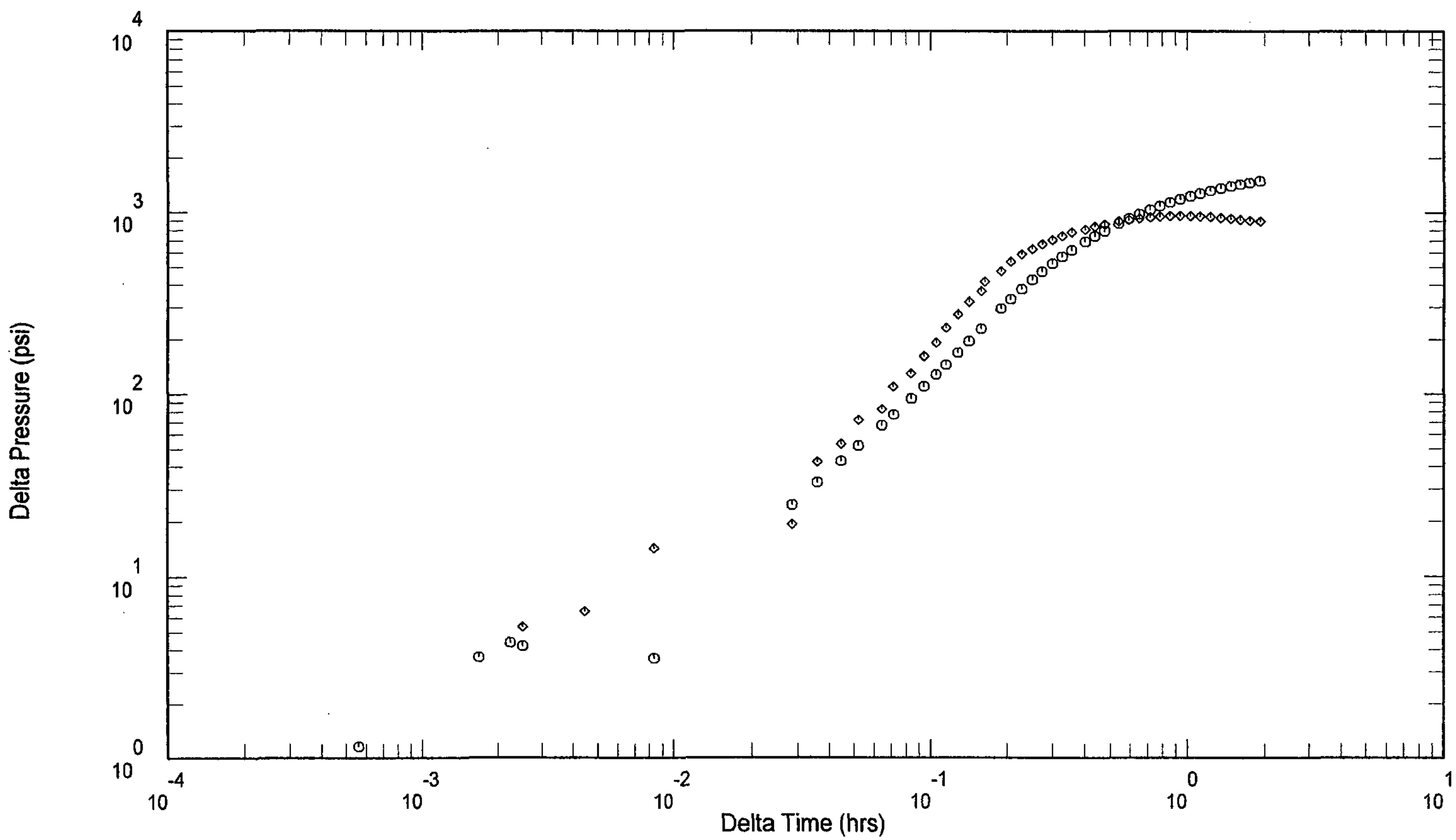
Quicklook Plots

DCP Midstream

OH DST

Linam AGI 1	11769506
W/C	06-Nov-07

Log-log Plot - Second Shutin Period



Gauge Depth : 5247 ft TVD - 5247 ft MD

Gauge ID : SLSR 1407

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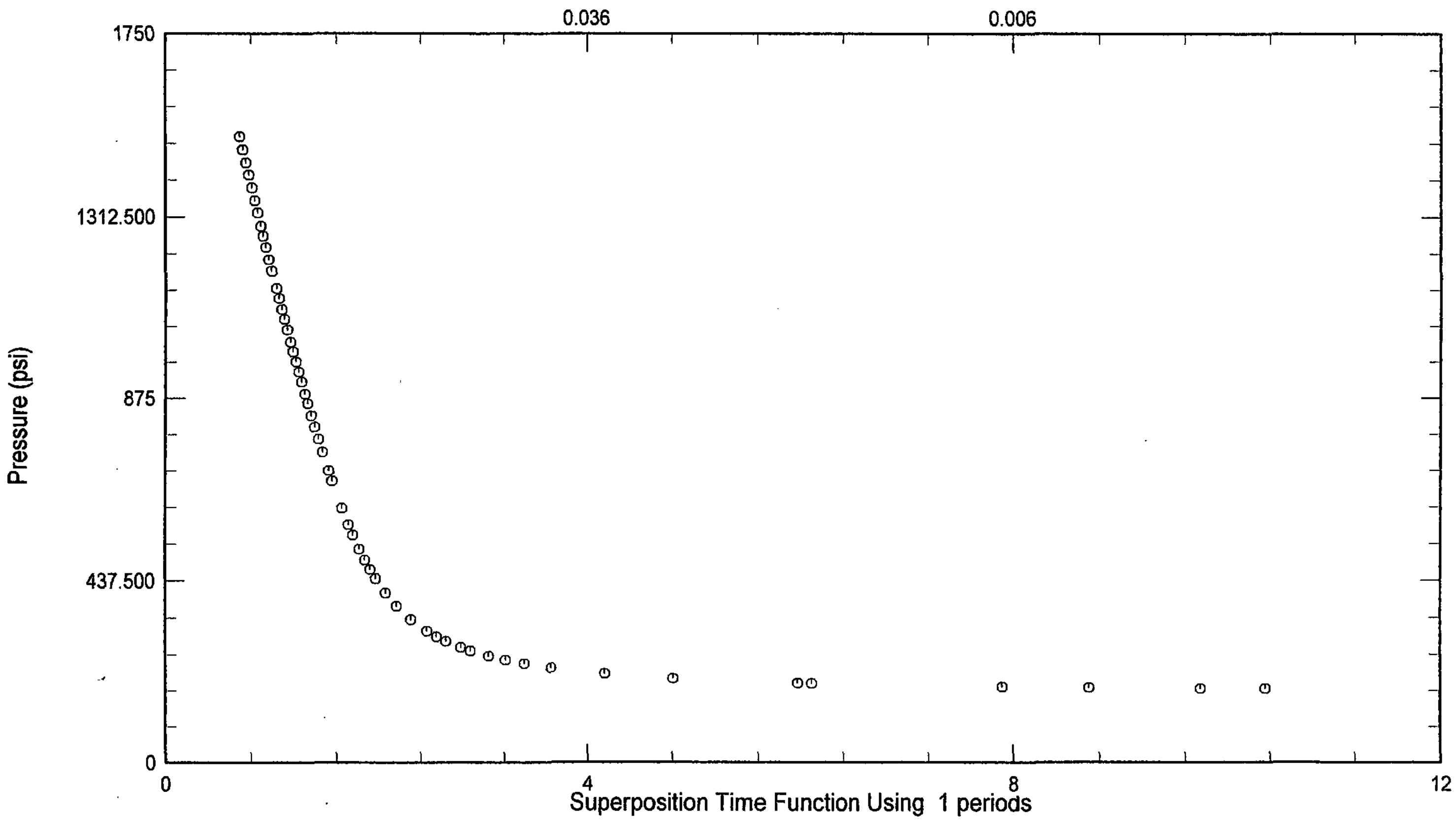
Quicklook Plots
DCP Midstream
OH DST

Linam AGI 1	11769506
W/C	06-Nov-07

Semi-log Plot - Initial Shutin Period



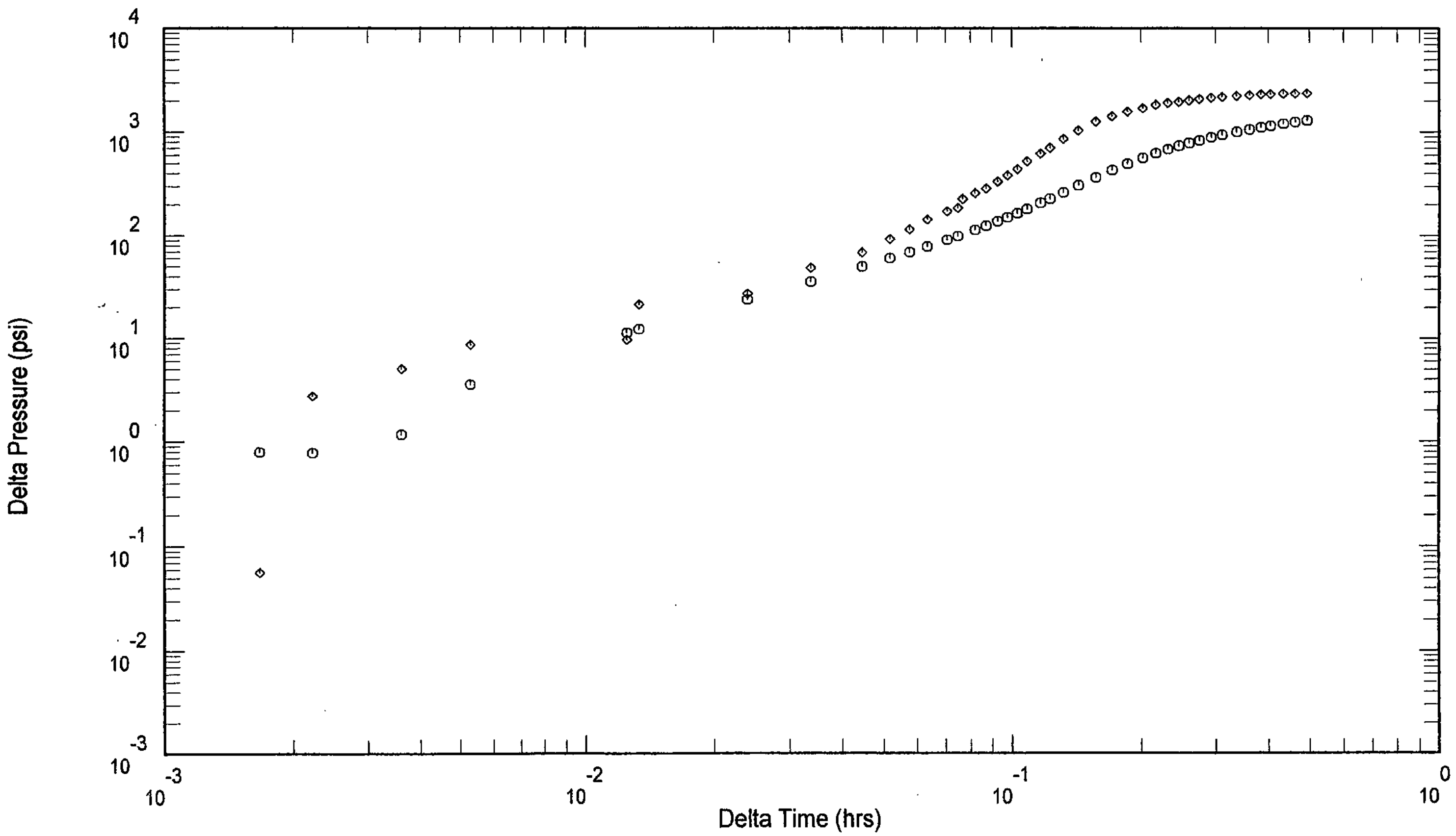
Gauge Depth : 5247 ft TVD - 5247 ft MD
Gauge ID : SLSR 1407

Schlumberger

Quicklook Plots
DCP Midstream
OH DST

Linam AGI 1	**11769506**
W/C	**06-Nov-07**

Log-log Plot - Initial Shutin Period



Gauge Depth : 5247 ft TVD - 5247 ft MD
Gauge ID : SLSR 1407

DCP Midstream
Linam AGI #1

Evaluation of Lower Bone Springs
Injection and Falloff Test

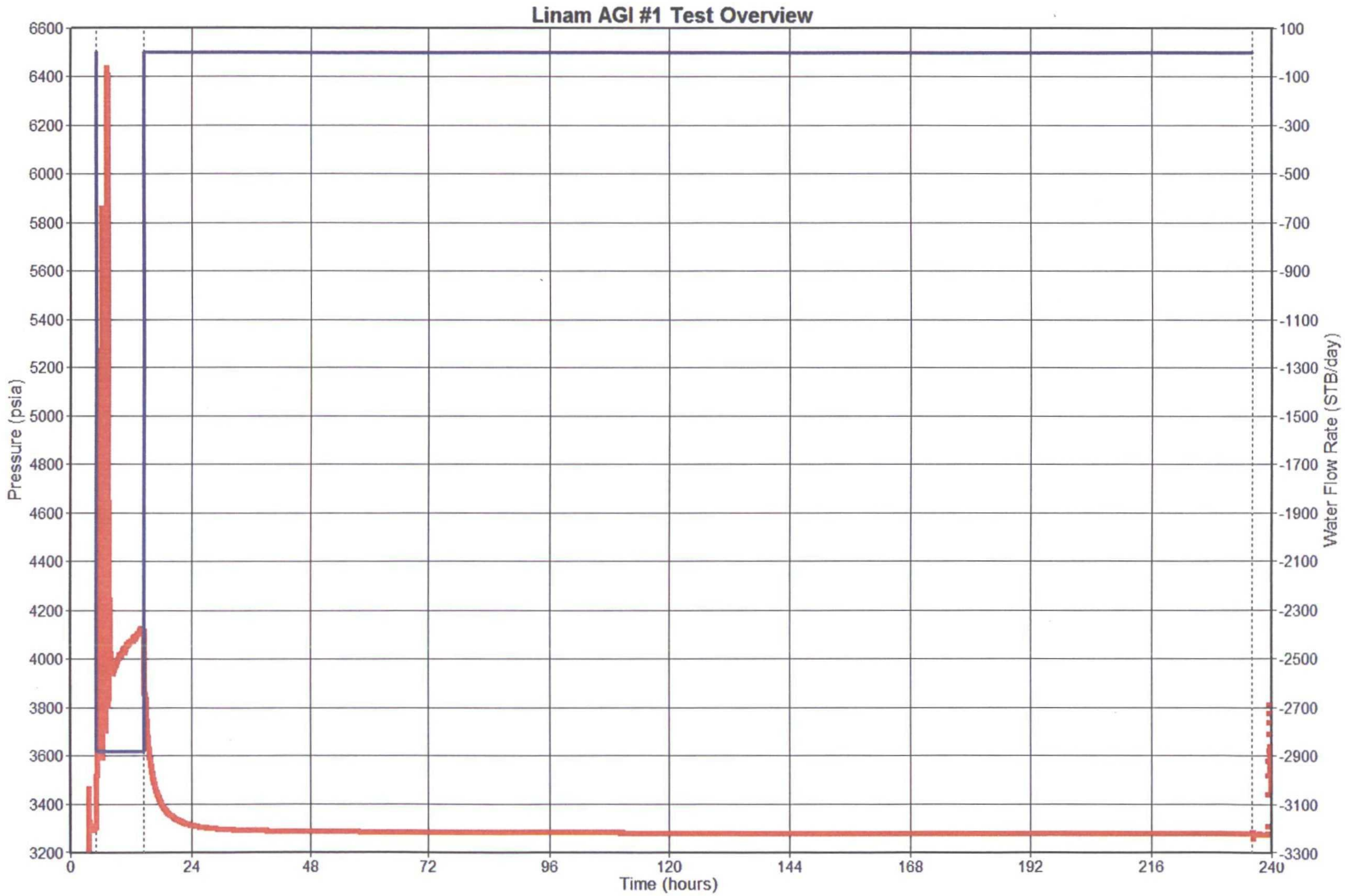
January 4, 2008 MHA Petroleum Consultants

Lower Bone Springs Injection Test

- 9.5 hour injection at 2 BPM (2880 BPD) followed by 221 hour falloff
- Test mechanically successful
- Flow capacity 2100 to 2220 md-ft
- Still a small mechanical skin (+1 to +2.2)
- Initial reservoir pressure 3,271 psia @ 8660 ft (3,376 psia at 8,898 mid-perf)

Lower Bone Springs Injection Test

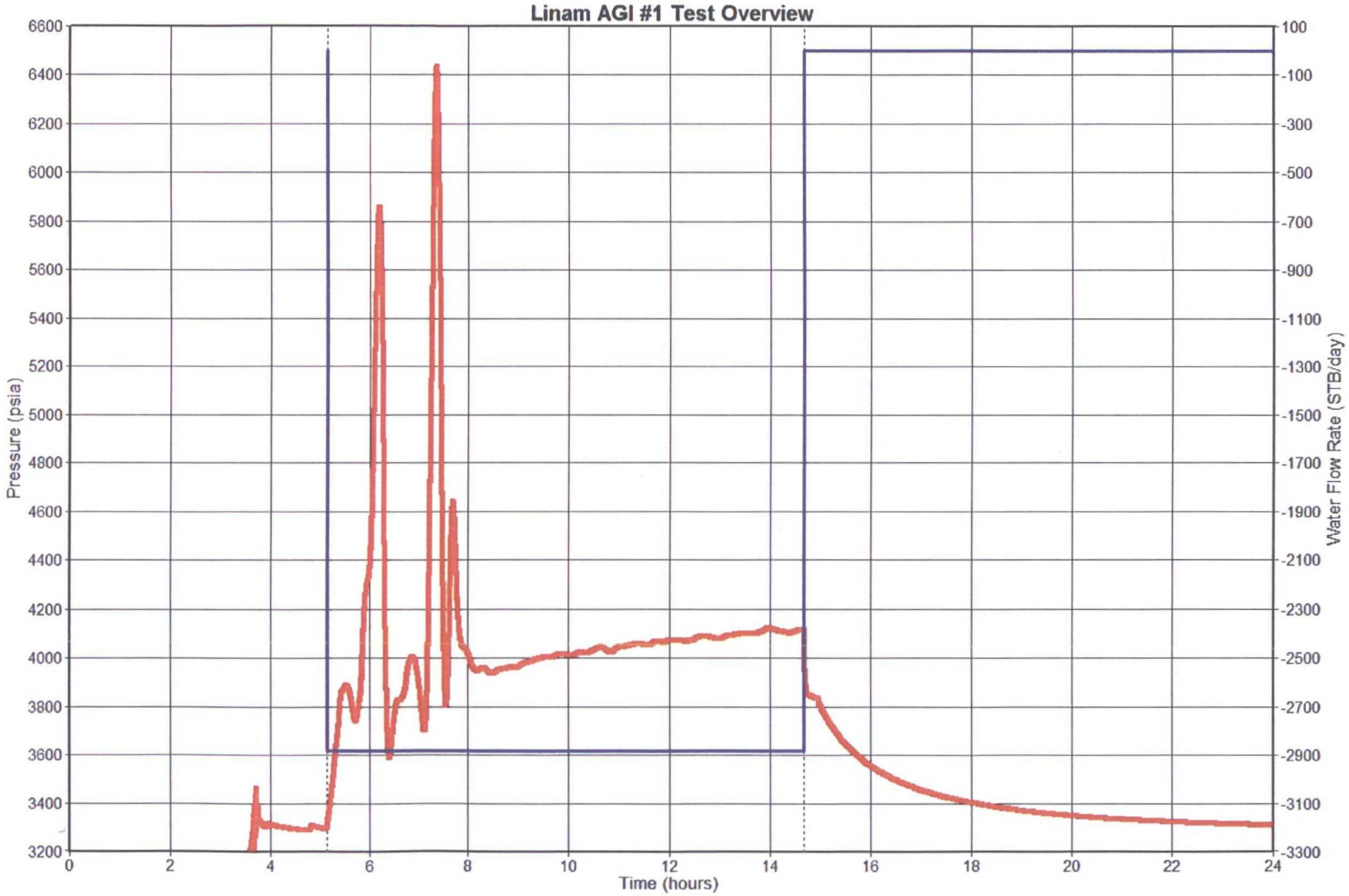
- Two barriers identified during buildup
- Distance dependent on permeability
- 2220 md-ft, h = 111 ft k = 20 md
  - Assumes all net pay open
  - Barriers at 900 and 1220 from well (intersecting at 90 degrees)
- 2100 md-ft h = 28 ft k = 75 md
  - Assumes interval 8945-75 open
  - Barriers at 1800 and 2000 ft (intersecting at 90 degrees)
- Need injection profile to determine how much interval is taking fluid



January 4, 2008

MHA Petroleum Consultants

Expanded Plot of First 24 Hours



January 4, 2008

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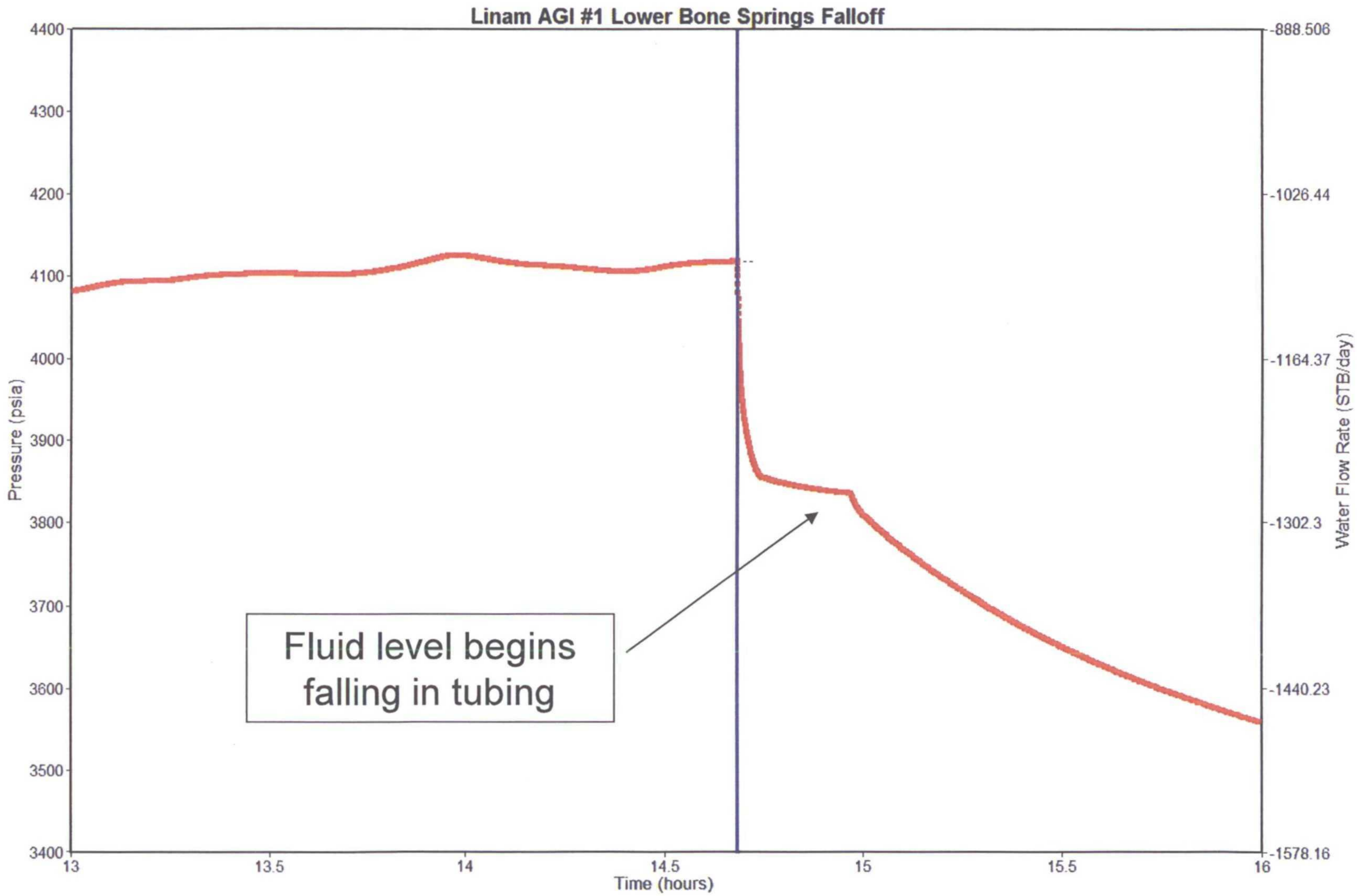
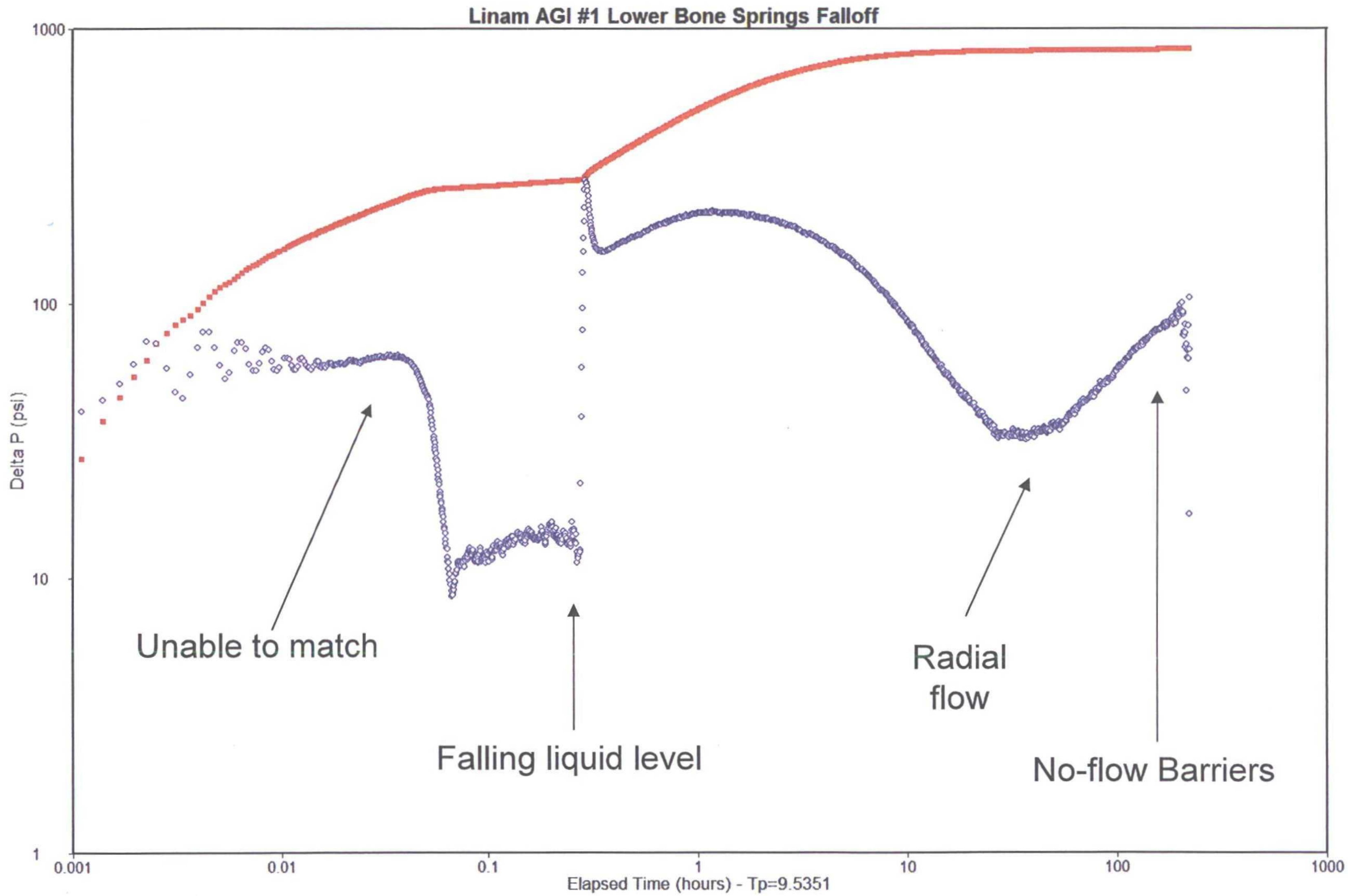
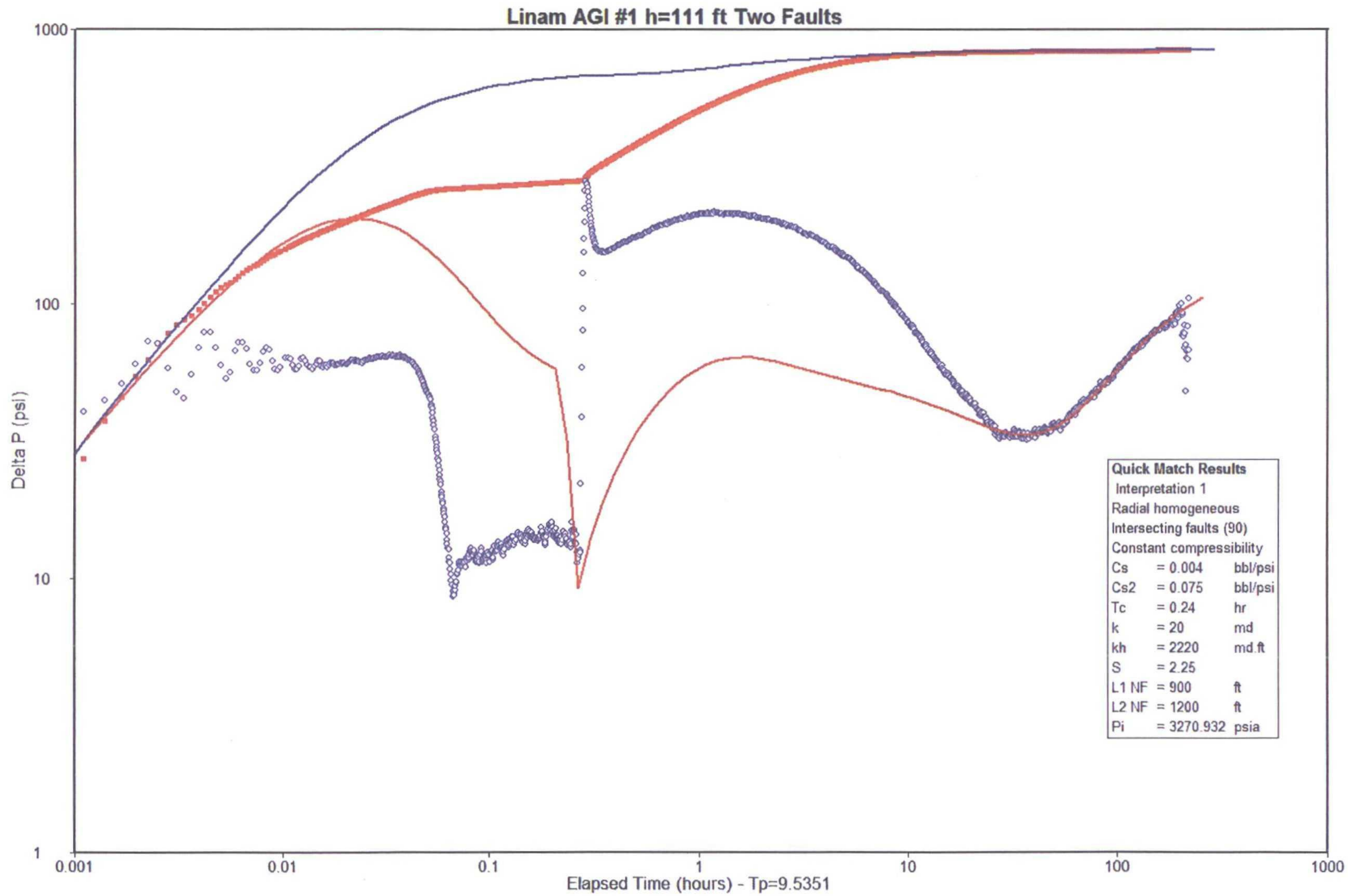


January 4, 2008 MHA Petroleum Consultants



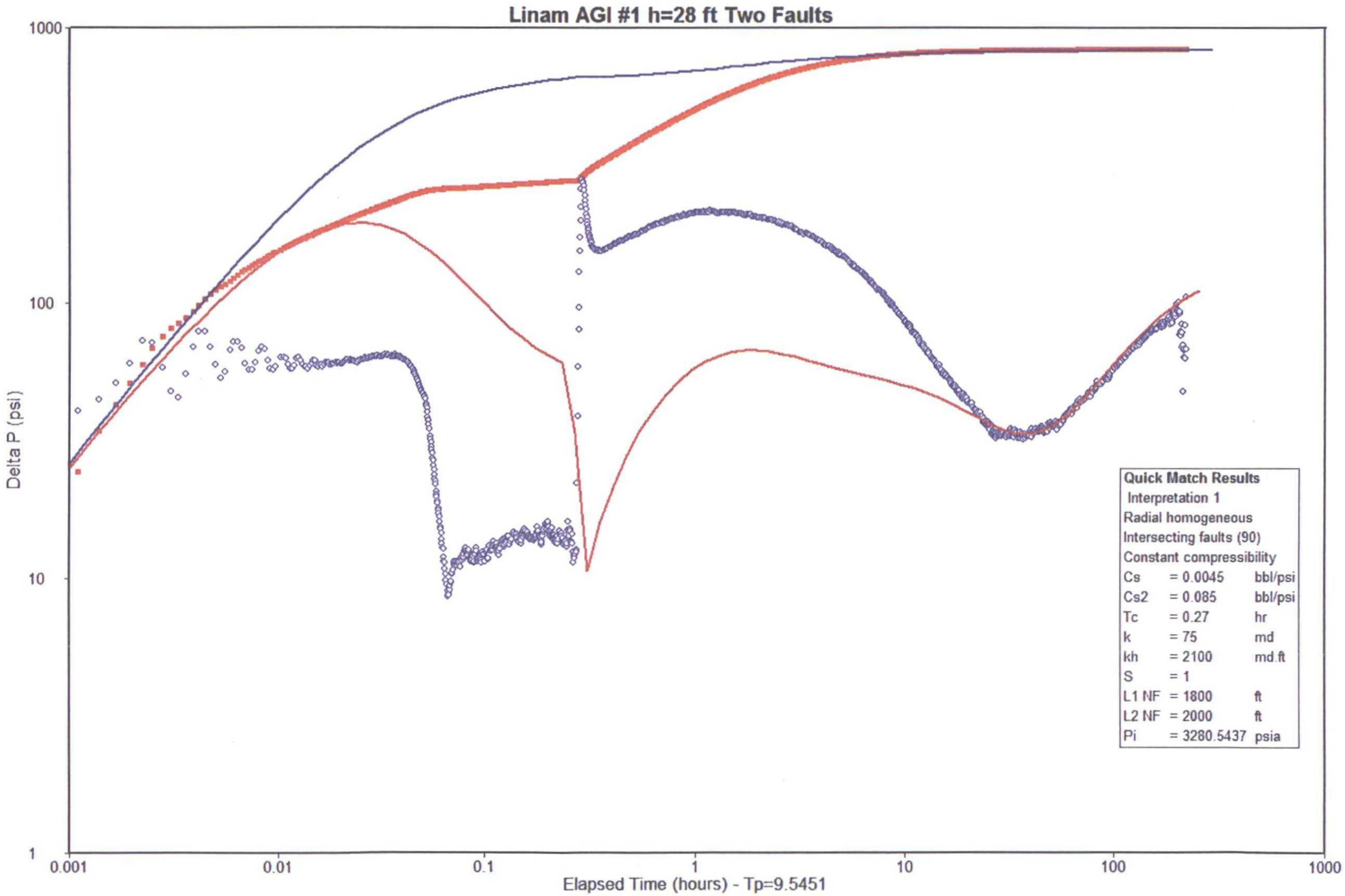
January 4, 2008

MHA Petroleum Consultants



January 4, 2008

MHA Petroleum Consultants



January 4, 2008

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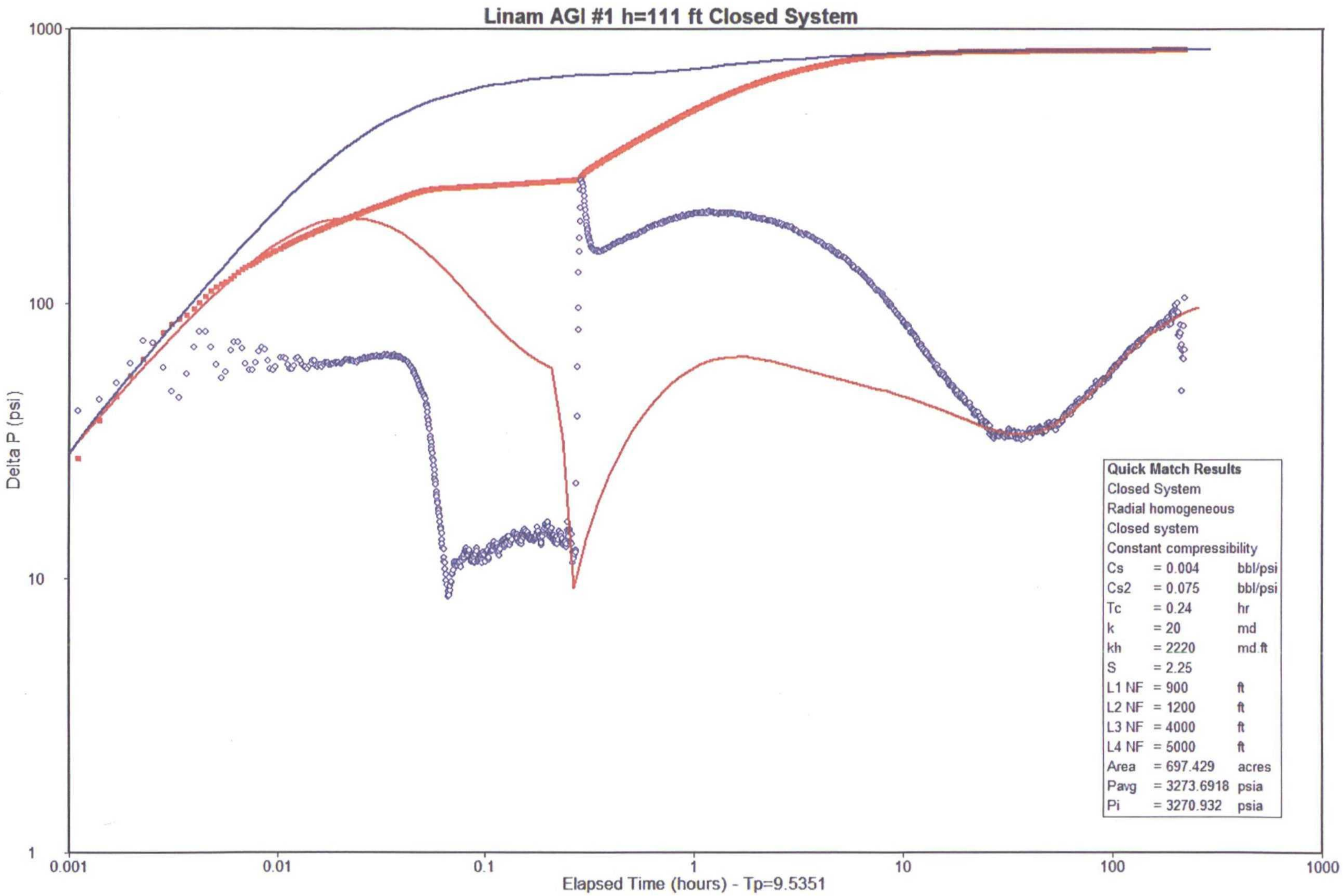
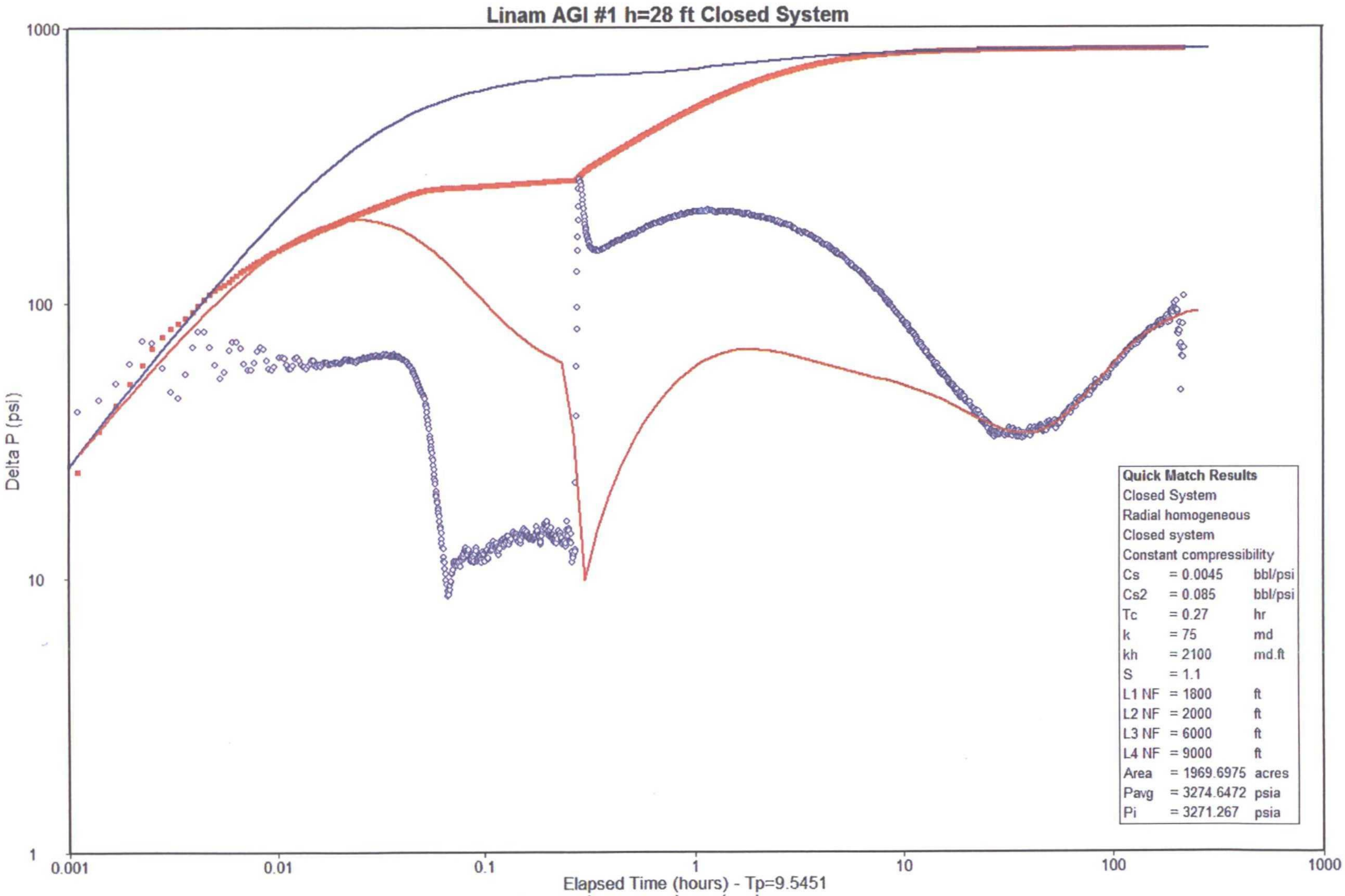
Estimating Distance to Remaining Boundaries

- Set System to closed rectangle
- Set distances to 3rd and 4th boundaries
- Iterate until derivative shape remains unchanged
- Sets minimum distances



January 4, 2008 MHA Petroleum Consultants



Linam AGI #1 h=28 ft Closed System
1000
100
10
1
Delta P (psi)
0.001
0.01
0.1
1
10
100
1000
Elapsed Time (hours) - Tp=9.5451
Quick Match Results
Closed System
Radial homogeneous
Closed system
Constant compressibility
Cs = 0.0045 bbl/psi
Cs2 = 0.085 bbl/psi
Tc = 0.27 hr
k = 75 md
kh = 2100 md.ft
S = 1.1
L1 NF = 1800 ft
L2 NF = 2000 ft
L3 NF = 6000 ft
L4 NF = 9000 ft
Area = 1969.6975 acres
Pavg = 3274.6472 psia
Pi = 3271.267 psia

Stabilized Injectivity

- Assumptions
  - Gas permeability at Swir = 0.15*Brine Perm
  - Gas Viscosity 0.076 cp, z factor 0.5
  - Mechanical skin reduced to zero
- BHP at 5000 Mscfd injection is 3,465 psi assuming current reservoir pressure (3,376 psi)

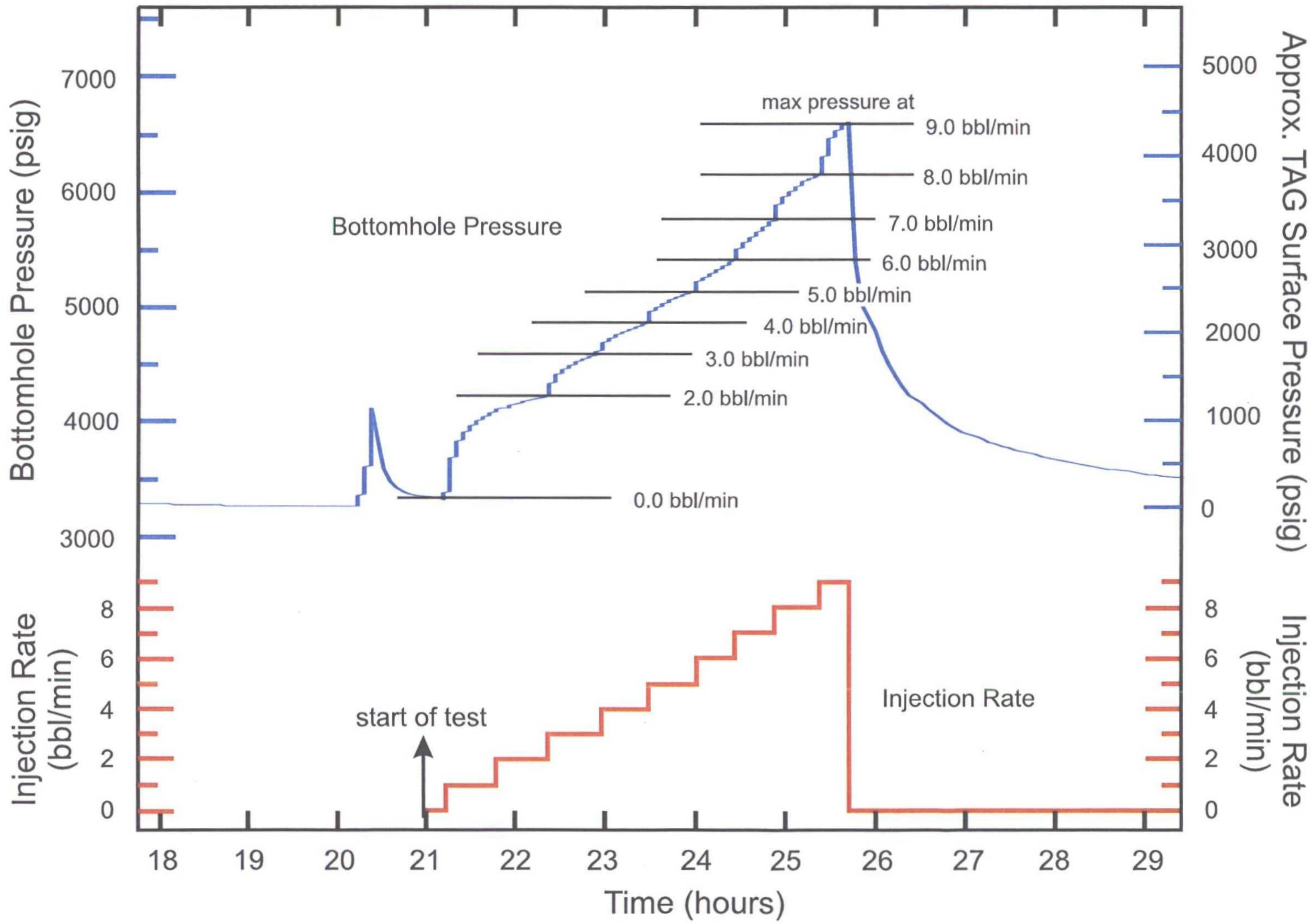
Long Term Injection Performance

- Minimum pore volumes determined from test range from 47 to 55 MM bbl.
- Estimate 14.2 MM bbl of injection over 20 years
  - 5000 Mcfd * 0.39 bbl/Mscf
- Need 235 MM bbl to limit reservoir pressure increase to 1000 psi over 20 yrs
- Will require remaining barriers to be 10,000 – 25,000 feet from the well depending on thickness of interval taking injection
- System size will ultimately be found only by long-term injection performance

Recommendations

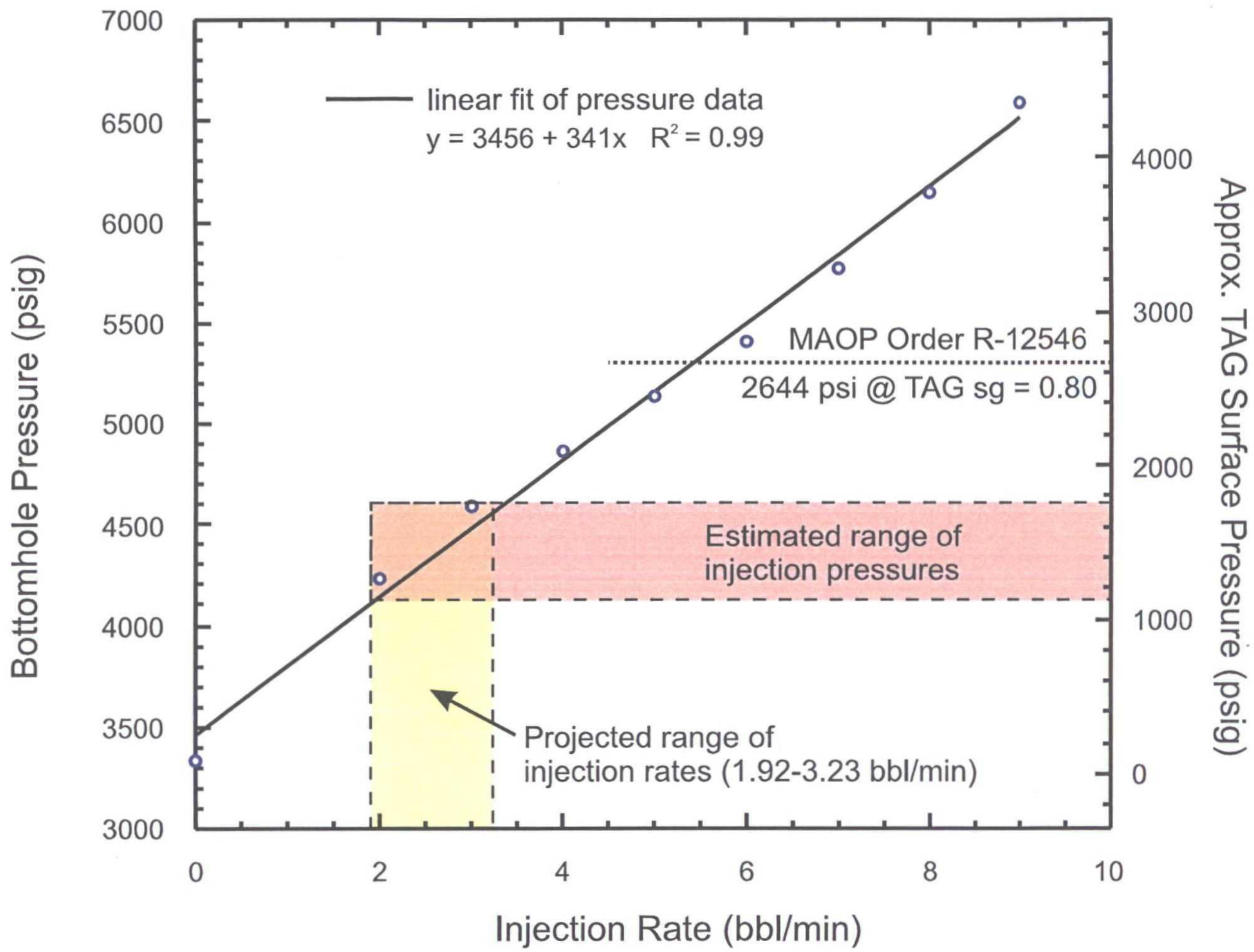
- Run injection profile following 2 BPM injection test to identify open intervals
- Obtain geologic opinion regarding possible distances to remaining limits
- Temporarily abandon well without testing Upper Bone Springs

Results of Linam AGI #1 Step Rate Test January 3-4, 2008



Note: Approx. TAG Surface Pressure is calculated using the initial reservoir pressure (3262 psi) and the ave. specific gravity of TAG (0.69)

Results of Linam AGI #1 Step Rate Test January 3-4, 2008



Note: Approx. TAG Surface Pressure is calculated using the initial reservoir pressure (3262 psi) and the ave. specific gravity of TAG (0.69)

TableJ1: Pressure and Volume Calculations for TAG, Linam under Current Maximum Plant Capacity of 156 MMCFD and Measured Inlet Gas Concentrations

PROPOSED INJECTION STREAM CHARACTERISTICS

TAG	H_2S	CO_2	H_2S	CO_2	TAG
Gas vol MMSCFD	conc. mol %	conc. mol %	inject rate lb/day	inject rate lb/day	inject rate lb/day
4.6	18.4	81.6	80343	460103	540445

CONDITIONS AT WELL HEAD

Well Head Conditions		TAG							
Temp F	Pressure psi	Gas vol MMSCFD	Comp CO_2:H_2S	Inject Rate lb/day	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
104	1150	4.6	82:18	540445	339.96	0.34	2.84	25452	4533

CONDITIONS AT BOTTOM OF WELL

Injection Zone Conditions					TAG				
Temp F	Pressure[3] psi	$Depth_{top}$ ft	$Depth_{bottom}$ ft	Thickness[4] ft	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
104	3376	8710	9100	280.00	879.04	0.88	7.34	9844	1753

CONDITIONS IN RESERVOIR AT EQUILIBRIUM

Injection Reservoir Conditions					TAG				
Temp[5] F	Pressure[3] psi	Ave. Porosity[6] %	Swr	Porosity ft	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
124	3376	6.0	0.45	9.2	809.02	0.81	6.76	10696	1905

CONSTANTS

	SCF/mol	
Molar volume at STD	0.7915	
	g/mol	lb/mol
Molar weight of H_2S	34.0809	0.0751
Molar weight of CO_2	44.0096	0.0970
Molar weight of H_2O	18.015	0.0397

CALCULATION OF MAXIMUM INJECTION PRESSURE LIMITATION

SG_{TAG}	0.61	
$PG = 0.2 + 0.433\ (1.04-SG_{TAG})$	0.386	psi/ft
$IP_{max} = PG * Depth$	3366	psi

Where: SG_{TAG} is specific gravity of TAG; PG is calculated pressure gradient; and IP_{max} is calculated maximum injection pressure.

[1] Density calculated using AQUAlibrium software
[2] Specific gravity calculated assuming a constant density for water
[3] PP is taken from well tests of Linam AGI #1
[4] Thickness is the net thinckness of the perforated intervals
[5] Reservoir temp. is extrapolated from bottomhole temp. measured in logs
[6] Porosity is estimated using geophysical logs from nearby wells

CALCULATION OF 30 YEAR AREA OF INJECTION

Cubic Feet/day (5.6146 ft^3/bbl)	10696	ft^3/day
Cubic Feet/30 years	117196499	ft^3/30 years
Area = V/Net Porosity (ft)	12722872	ft^2/30 years
Area = V/Net Porosity (ft) (43560 ft^2/acre)	292.1	acres/30 years
Radius =	2012	ft
Radius =	0.38	miles

Note that total Mass of H2S remains constant -- for this reason ROE in H2S Contingency Plan Remains the Same

TableJ2: Pressure and Volume Calculations for TAG, Linam under Proposed Plant Capacity of 225 MMCFD and Measured Inlet Gas Concentrations

PROPOSED INJECTION STREAM CHARACTERISTICS

TAG Gas vol MMSCFD	H_2S conc. mol %	CO_2 conc. mol %	H_2S inject rate lb/day	CO_2 inject rate lb/day	TAG inject rate lb/day
7	18.4	81.6	122260	700156	822416

CONDITIONS AT WELL HEAD

Well Head Conditions		TAG							
Temp F	Pressure psi	Gas vol MMSCFD	Comp CO_2:H_2S	Inject Rate lb/day	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
104	1150	7	82:18	822416	339.96	0.34	2.84	38732	6898

CONDITIONS AT BOTTOM OF WELL

Injection Zone Conditions					TAG				
Temp F	Pressure[3] psi	$Depth_{top}$ ft	$Depth_{bottom}$ ft	Thickness[4] ft	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
104	3376	8710	9100	280.00	879.04	0.88	7.34	14979	2668

CONDITIONS IN RESERVOIR AT EQUILIBRIUM

Injection Reservoir Conditions					TAG				
Temp[5] F	Pressure[3] psi	Ave. Porosity[6] %	Swr	Porosity ft	Density[1] kg/m^3	SG[2]	density lb/gal	volume ft^3	volume bbl
124	3376	6.0	0.45	9.2	809.02	0.81	6.76	16276	2899

CONSTANTS

	SCF/mol	
Molar volume at STD	0.7915	
	g/mol	lb/mol
Molar weight of H_2S	34.0809	0.0751
Molar weight of CO_2	44.0096	0.0970
Molar weight of H_2O	18.015	0.0397

CALCULATION OF MAXIMUM INJECTION PRESSURE LIMITATION

SG_{TAG}	0.61
PG = 0.2 + 0.433 (1.04-SG_{TAG})	0.386 psi/ft
IP_{max} = PG *Depth	3366 psi

Where: SG_{TAG} is specific gravity of TAG; PG is calculated pressure gradient; and IP_{max} is calculated maximum injection pressure.

[1] Density calculated using AQUAlibrium software
[2] Specific gravity calculated assuming a constant density for water
[3] PP is taken from well tests of Linam AGI #1
[4] Thickness is the net thinckness of the perforated intervals

[5] Reservoir temp. is extrapolated from bottomhole temp. measured in logs
[6] Porosity is estimated using geophysical logs from nearby wells

CALCULATION OF 30 YEAR AREA OF INJECTION

Cubic Feet/day (5.6146 ft^3/bbl)	16276 ft^3/day
Cubic Feet/30 years	178342498 ft^3/30 years
Area = V/Net Porosity (ft)	19360892 ft^2/30 years
Area = V/Net Porosity (ft) (43560 ft^2/acre)	444.5 acres/30 years
Radius =	2482 ft
Radius =	0.47 miles

Note that total Mass of H2S remains constant -- for this reason ROE in H2S Contingency Plan Remains the Same