

**Rio Blanco 4 Fed #1**

**Devonian DST Results - Discovery Interval**

Extrapolated Reservoir Pressure (psi)	6136	6136	
Permeability (md)	2.5	27.8	
Skin (total)	88.4	87.2	due to partial reservoir penetration
Skin (mechanical)	51	51	due to partial reservoir penetration
Pressure drop due to Skin (psi)	1128	1113	due to partial reservoir penetration
Reservoir Thickness (ft)	200	18	
Radius of investigation (ft)	100	334	
Effective drainage (acres)	0.72	8.05	

See attached Schlumberger DST Report for further details.

**Conclusions:**

The Devonian has reasonable calculated permeability.

The Devonian was found to be gas productive and water free.

Based on this DST, the Rio Blanco 4-1 calculates to have extremely small drainages.

Current State-Wide Field Rules at 320 acres should remain in effect for this pool.

BEFORE THE  
OIL CONSERVATION DIVISION  
Case 13085 Exhibit No. **16**  
Submitted By:  
Devon Energy Production Co.  
Hearing Date: October 2, 2003

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10588630

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TEST DATE:

10-Sep-03

S T A R

Schlumberger

## Schlumberger Transient Analysis Report

Based on Model Verified Interpretation  
Of Schlumberger Well Test Data

<b>COMPANY : EGL RESOURCES (DEVON ENERGY)</b>		<b>WELL: RIO BLANCO 4 FED #1</b>	
<b>TEST IDENTIFICATION</b>		<b>WELL LOCATION</b>	
Test Type .....	DST	Field .....	NORTH BELL LAKE
Test No. ....	ONE	County .....	LEA
Formation .....	DEVONIAN	State .....	NEW MEXICO
Test Interval (ft) .....	14,488-14,590	Location .....	
<b>SAMPLE CHAMBER DATA</b>		<b>TEST STRING CONFIGURATION</b>	
Recovered Gas (c.f.) .....	N/A	Open Hole Size (in) .....	4.125
Recovered Oil (c.c.) .....	N/A	Gauge Depth (ft) .....	14,351
Recovered Water (c.c.) .....	N/A	DC Length (ft)/I.D. (in) .....	439/1.5
Recovered Mud (c.c.) .....	N/A	DP Length Size (in) .....	9,683/2.764
Sample Chamber Pressure (psig) .....	N/A	DP Length Size (in) .....	4,198/2.323
Rec. Mud Filtrate .....	NOT REPORTED	<b>TEST CONDITIONS</b>	
Rec. Water Filtrate .....	N/A	Tbg / Wellhead Pressure (psi) .....	
Oil API Gravity .....	48.3 @ 60 deg F	<b>ROCK / FLUID / WELLBORE PROPERTIES</b>	
<b>INTERPRETATION RESULTS</b>		Gas Gravity (Deg API) .....	0.6148
Model of Behavior .....	DUAL POROSITY	Viscosity (cp) .....	0.02491
Fluid Type Used for Analysis .....	GAS	Total Compressibility (1/psi) .....	8.39E-05
Ext. Reservoir Pressure (psi) .....	6,136 @ GAUGE	Porosity (%) .....	5
Transmissibility (md.ft/cp) .....	20,040	Reservoir Temperature (F) .....	212
Permeability (md) .....	2.5	Water Saturation (%) .....	20
Skin .....	88.4	Net Pay (ft) (Case 1) .....	200
Pressure Drop Skin (psi) .....	1,128	Net Pay (ft) (Case 2) .....	18
Radius of Investigation (ft) .....	100		
Omega .....	0.04		
Lambda .....	0.000239		

**PRODUCTION RATE DURING TEST: 2,974 MSCF/D (Well Testing Report)****SUMMARY:**

This report contains the analysis of the data acquired during a Drill Stem Test of the Devonian zone conducted on the EGL Resources Rio Blanco 4 Fed #1 well in Lea County, New Mexico. This test was performed by Schlumberger's Hobbs New Mexico Testing District (505 393 4107). The zone was isolated from 14,488 feet to 14,590 feet with drill stem test tools and the data was acquired using tandem electronic pressure gauges.

The data was modeled using a two porosity reservoir model with changing wellbore storage and skin. Both semi log and log log type curve matching techniques were used to interpret this data. Agreement between parameters calculated using both methods was excellent. An accurate net pay could not be obtained, therefore a range of net pay values were used to calculate a range of analysis results. The permeability was calculated to be between 2.5 md, using a thickness of 200 feet and 27.8 md, using a thickness of 18 feet. The skin was calculated to be between 88.4 and 87.2 with a pressure drop of 1,128 psi and 1,113 psi respectively. The reservoir pressure was extrapolated from the type curve to be 6,136 psi, at gauge depth, for both cases.

For further discussion of this analysis, please refer to the interpretation discussion on page two of this report. If you have any questions, please call Marc Percy or Angie Fenton at 405 840 2781.

**EGL Resources Rio Blanco 4 Fed #1 Interpretation Discussion:**

This report contains the analysis of the data acquired during a Drill Stem Test of the Devonian zone conducted on the EGL Resources Rio Blanco 4 Fed #1 well in Lea County, New Mexico. This test was performed by Schlumberger's Hobbs New Mexico Testing District (505 393 4107).

The data was taken using slickline conveyed, electronic pressure gauges. The zone was isolated from 14,488 feet to 14,590 feet with drill stem test tools and a standard drill stem test procedure was followed consisting of two flow periods and two shut in periods.

The data was modeled using a two porosity reservoir model with changing wellbore storage and skin. A two porosity model assumes the reservoir consists of two permeability systems, one with of much greater permeability than the other. The fluid is stored in the lower permeability matrix system and flows through the higher permeability to the wellbore.

The radial flow regime was reached after approximately 6 minutes of build up time and continued for approximately 0.5 hours. The radial flow regime is indicated by the constant pressure derivative on the plot of log-log pressure and pressure derivative versus shut in time (using the psuedopressure function).

An accurate net pay could not be obtained, therefore a range of net pay values were used to calculate a range of analysis results. Two cases were performed, Case 1 using 200 feet and Case 2 using 18 feet. These results are presented in the table below.

	Case 1	Case 2
Thickness	200 feet	18 feet
Permeability	2.5 md	27.8 md
Skin	88.4	87.2
Reservoir Pressure	6,136 psi	6,136 psi

The plots for each of these analysis are presented in the body of this report.

Due to the higher permeability system being the primary conduit to the wellbore, a two porosity reservoir in it's natural state, has a skin of negative 3.5. The skin calculated in both cases on this test would then indicate a highly damaged wellbore.

Deviation from the model after 0.5 hours of buildup is likely caused by changing wellbore storage and phase behavior in the wellbore. This behavior is impossible to predict and difficult to model, however it does not affect the validity of this interpretation.

In order to validate the results of this analysis, a simulation of the test sequence was made using the model constructed from this interpretation. The measured data was then plotted on the same scale as the simulated data. Agreement between the measured data and simulated data is excellent. These plots are presented in the body of this report.

If you have any questions, please call Marc Percy or Angie Fenton at 405 840 2781.

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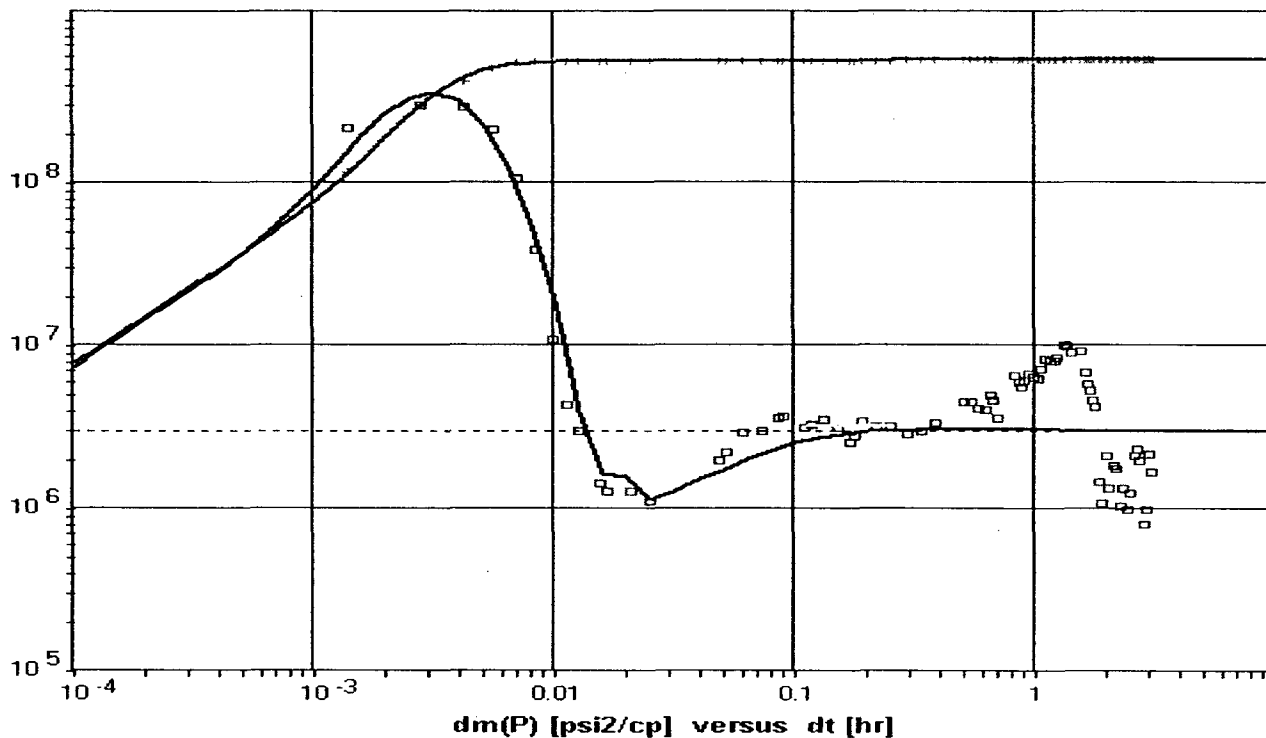
## INTERPRETATION PLOTS

BUILD UP

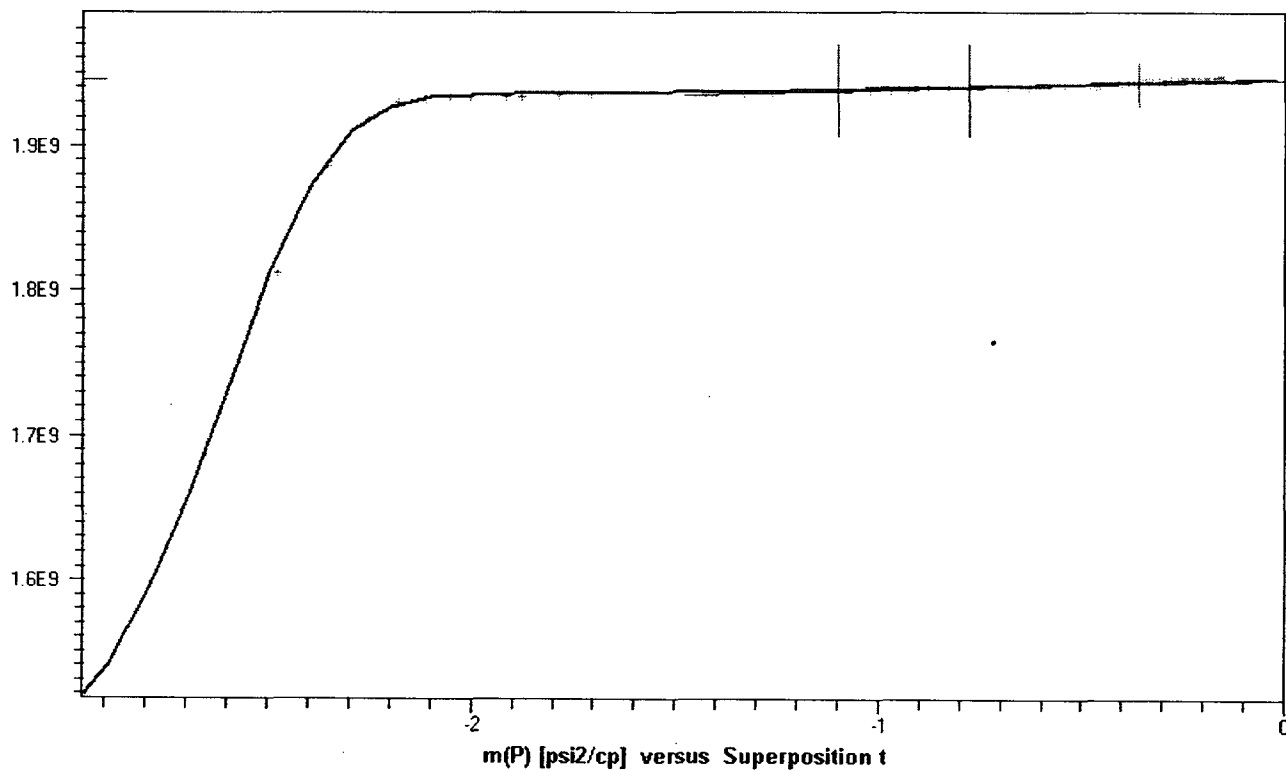
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LOG LOG DIAGNOSTIC PLOT

THICKNESS: 200 FEET



SEMI LOG PLOT  
THICKNESS: 200 FEET



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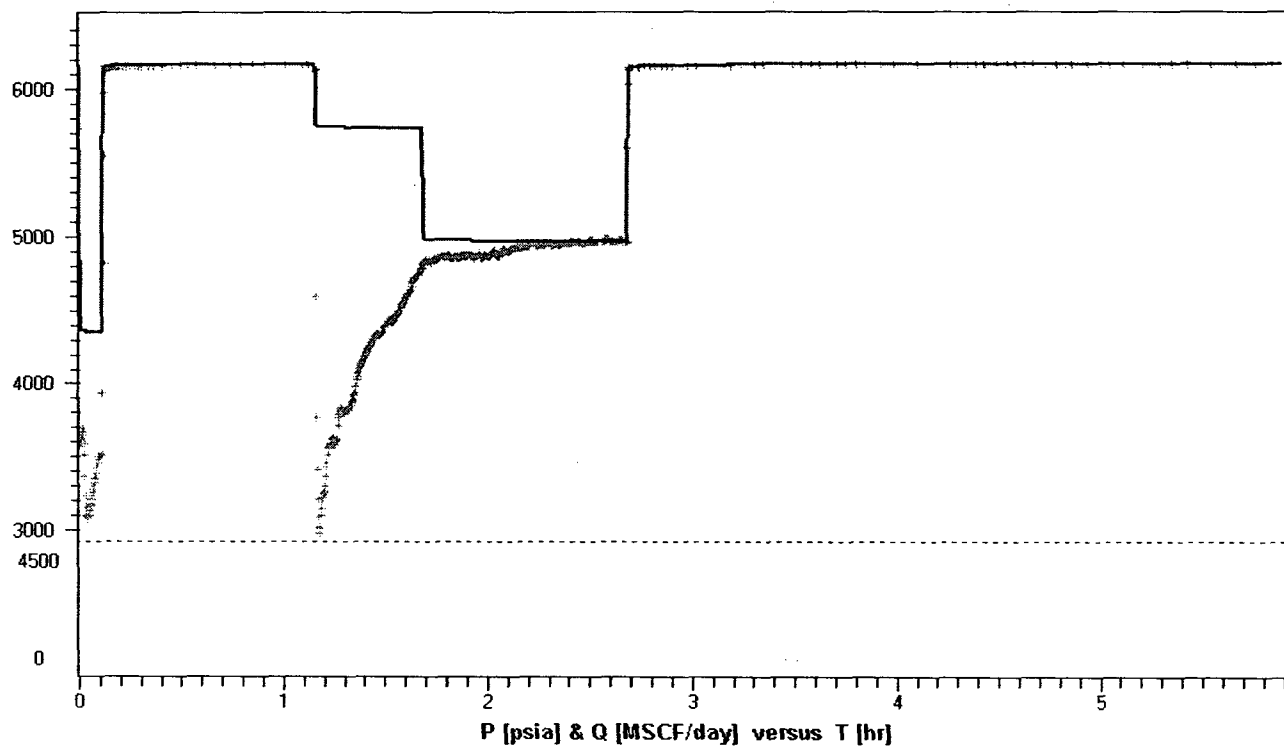
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## INTERPRETATION PLOTS

BUILD UP - CONTINUED

PRESSURE SIMULATION

THICKNESS: 200 FEET



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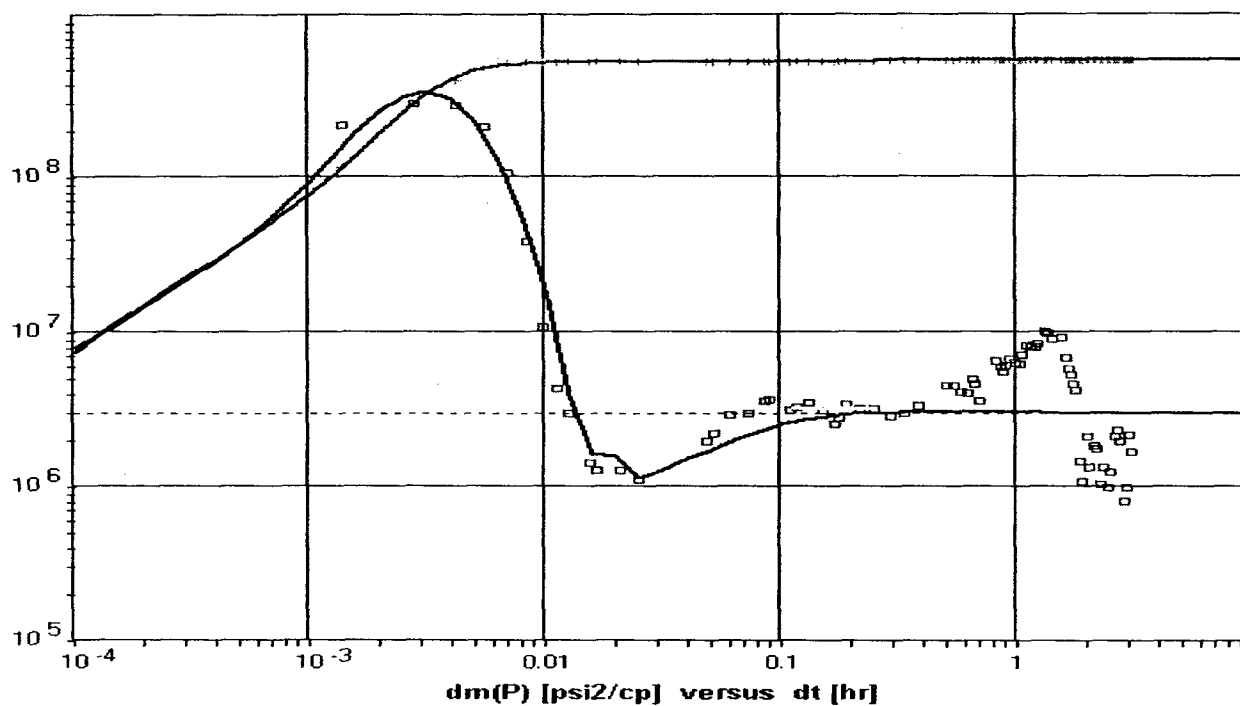
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## INTERPRETATION PLOTS

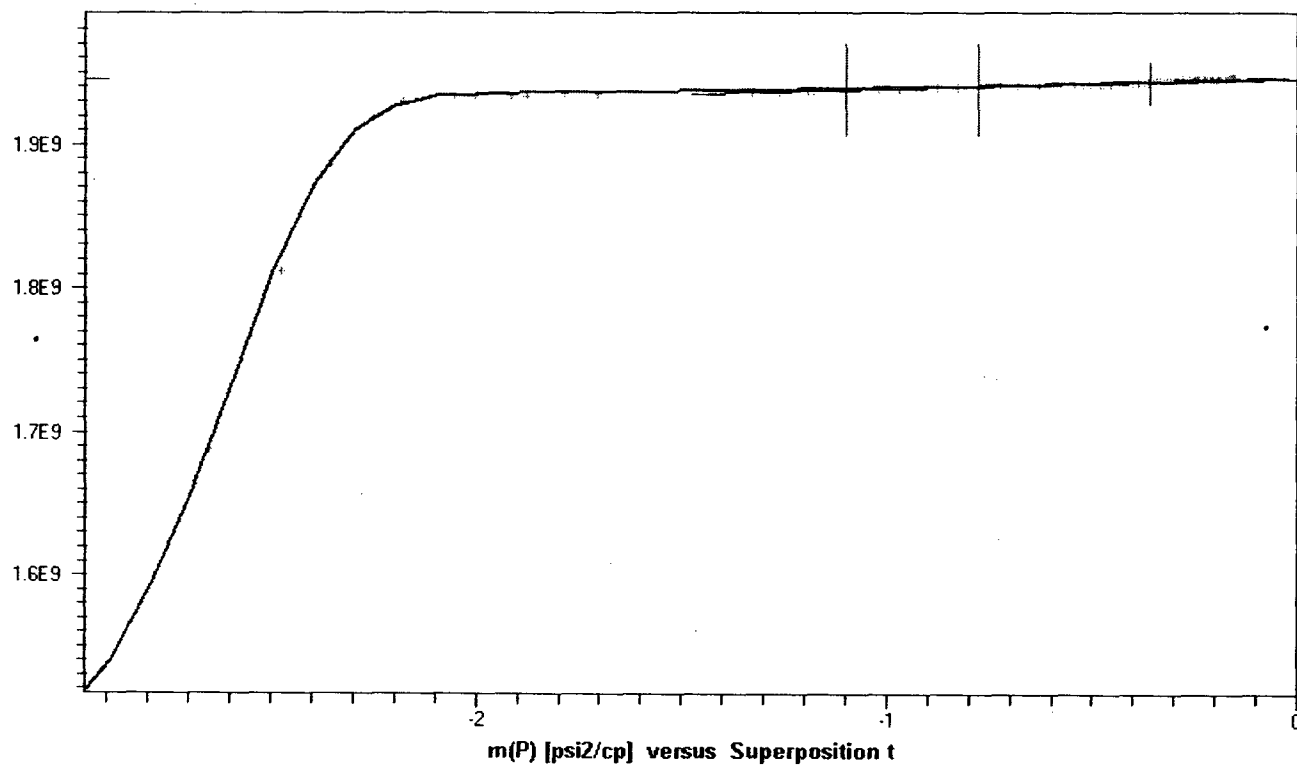
BUILD UP - CONTINUED

LOG LOG DIAGNOSTIC PLOT

THICKNESS: 18 FEET



SEMI LOG PLOT  
THICKNESS: 18 FEET



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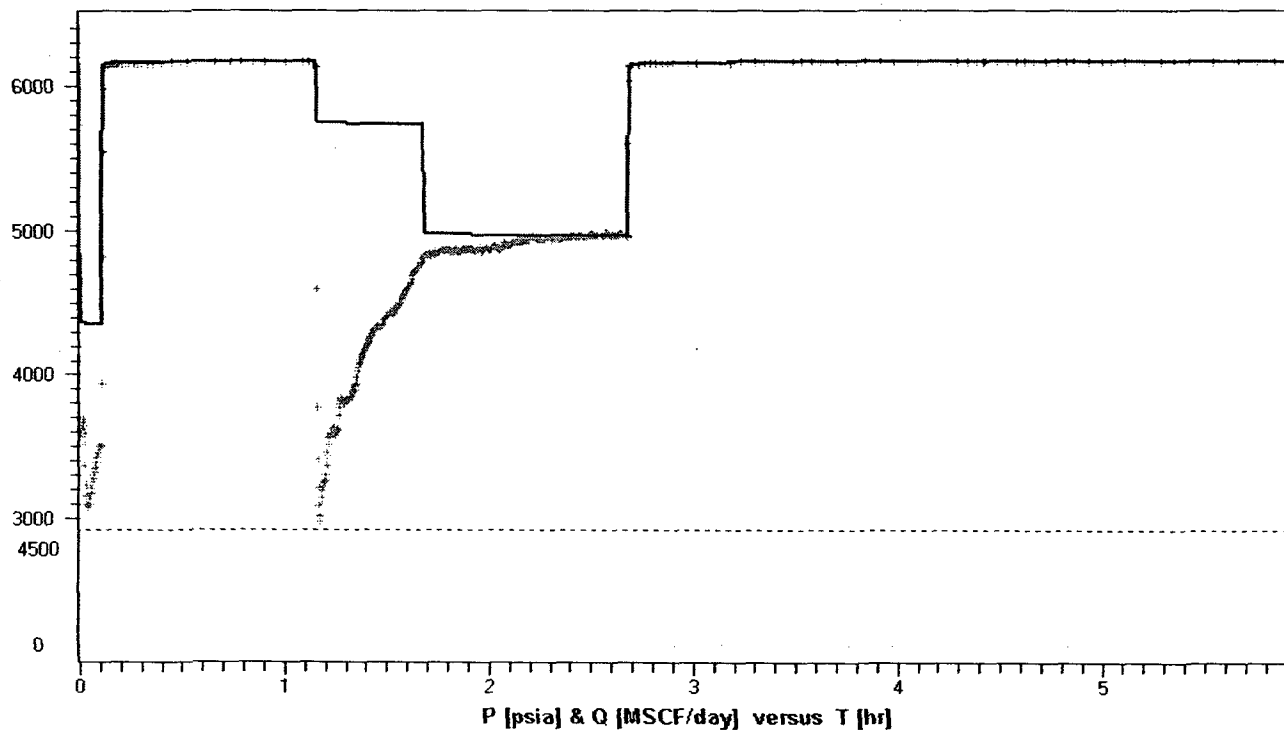
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## INTERPRETATION PLOTS

BUILD UP - CONTINUED

PRESSURE SIMULATION  
THICKNESS: 18 FEET



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**FLOWRATE HISTORY****Schlumberger****Flow Period  
Duration (hrs)****Flow Period  
Production Rate (MSCFD)**

0.10968

4500

1.04583

0

0.52778

1083

1

2974

3.25371

0

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