

ORIGINAL

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KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
October 2008  
Form Must Be Typed

8/3/12

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 4767  
Name: Ritchie Exploration, Inc.  
Address 1: P.O. Box 783188  
Address 2: \_\_\_\_\_  
City: Wichita State: KS Zip: 67278 + 3118  
Contact Person: John Niernberger  
Phone: ( 316 ) 691-9500  
CONTRACTOR: License # 30606  
Name: Murfin Drilling Company, Inc.  
Wellsite Geologist: Mike Engelbrecht  
Purchaser: \_\_\_\_\_

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Designate Type of Completion:  
 New Well  Re-Entry  Workover  
 Oil  SWD  SIOW  
 Gas  ENHR  SIGW  
 CM (Coal Bed Methane)  Temp. Abd.  
 Dry  Other \_\_\_\_\_  
(Core, WSW, Expl., Cathodic, etc.)

If Workover/Re-entry: Old Well Info as follows:  
Operator: \_\_\_\_\_  
Well Name: \_\_\_\_\_  
Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_  
 Deepening  Re-perf.  Conv. to Enhr.  Conv. to SWD  
 Plug Back: \_\_\_\_\_ Plug Back Total Depth \_\_\_\_\_  
 Commingled Docket No.: \_\_\_\_\_  
 Dual Completion Docket No.: \_\_\_\_\_  
 Other (SWD or Enhr.?) Docket No.: \_\_\_\_\_  
4/27/10 5/6/10 5/7/10  
Spud Date or Date Reached TD Completion Date or Recompletion Date

API No. 15 - 109-20900-0000  
Spot Description: 85' S & 50' E of  
E/2 SE NW Sec. 36 Twp. 13 S. R. 32  East  West  
2065' Feet from  North /  South Line of Section  
2360' Feet from  East /  West Line of Section  
Footages Calculated from Nearest Outside Section Corner:  
 NE  NW  SE  SW  
County: Logan  
Lease Name: Nuss Unit Well #: 1  
Field Name: \_\_\_\_\_  
Producing Formation: \_\_\_\_\_  
Elevation: Ground: 2918 Kelly Bushing: 2928  
Total Depth: 4650 Plug Back Total Depth: \_\_\_\_\_  
Amount of Surface Pipe Set and Cemented at: 212 Feet  
Multiple Stage Cementing Collar Used?  Yes  No  
If yes, show depth set: \_\_\_\_\_ Feet  
If Alternate II completion, cement circulated from: \_\_\_\_\_  
feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan PANJ 8-13-10  
(Data must be collected from the Reserve Pit)  
Chloride content: 11300 ppm Fluid volume: 600 bbls  
Dewatering method used: evaporation  
Location of fluid disposal if hauled offsite: \_\_\_\_\_  
Operator Name: \_\_\_\_\_  
Lease Name: \_\_\_\_\_ License No. KCC WICHITA  
Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West  
County: \_\_\_\_\_ Docket No.: \_\_\_\_\_

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**INSTRUCTIONS:** An original and two copies of this form shall be filed with the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, Kansas 67202, within 120 days of the spud date, recompletion, workover or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. Information of side two of this form will be held confidential for a period of 12 months if requested in writing and submitted with the form (see rule 82-3-107 for confidentiality in excess of 12 months). One copy of all wireline logs and geologist well report shall be attached with this form. ALL CEMENTING TICKETS MUST BE ATTACHED. Submit CP-4 form with all plugged wells. Submit CP-111 form with all temporarily abandoned wells.

All requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Signature: \_\_\_\_\_  
Title: Production Manager Date: 8/3/10  
Subscribed and sworn to before me this 3<sup>rd</sup> day of August  
20 10  
Notary Public: Debra K Phillips  
Date Commission Expires: 5-4-11

**KCC Office Use ONLY**  
 Letter of Confidentiality Received 8/3/10 - 8/3/12  
If Denied, Yes  Date: \_\_\_\_\_  
 Wireline Log Received  
 Geologist Report Received  
\_\_\_\_\_  
UIC Distribution

DEBRA K. PHILLIPS  
Notary Public - State of Kansas  
My Appt. Expires 5-4-11

Operator Name: Ritchie Exploration, Inc. Lease Name: Nuss Unit Well #: 1  
 Sec. 36 Twp. 13 S. R. 32  East  West County: Logan

**INSTRUCTIONS:** Show important tops and base of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed. Attach copy of all Electric Wireline Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Electric Log Run <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(Submit Copy)</i>  List All E. Logs Run: <b>Dual Induction Log</b> <b>Compensated Density/Neutron Log</b>	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input checked="" type="checkbox"/> Sample Name Top Datum  SEE ATTACHED  <div style="text-align: right;"> <b>RECEIVED</b>  <b>AUG 04 2010</b>  <b>KCC WICHITA</b> </div>
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CASING RECORD <input checked="" type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12-1/4	8-5/8	23	212	Common	175	3%cc, 2%gel

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	#Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

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Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD: Size: _____ Set At: _____ Packer At: _____		Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of First, Resumed Production, SWD or Enhr. _____		Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain) _____	
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls. Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <input type="checkbox"/> Other (Specify) _____	PRODUCTION INTERVAL: _____ _____
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### #1 Nuss Unit

2065' FNL & 2360' FWL

85' S & 50' E of E/2 SE NW Section 36-13S-32W

Logan County, Kansas

API# 15-109-20900-0000

Elevation: GL: 2918', KB: 2928'

Sample Tops			Ref. Well
Anhydrite	2409'	+519	+1
B/Anhydrite	2430'	+498	+1
Heebner	3912'	-984	-8
Lansing	3952'	-1024	-7
Lansing "C"	3991'	-1063	-7
Lansing "D"	4005'	-1077	-9
Lansing "E"	4040'	-1112	-10
Muncie Shale	4114'	-1186	-12
Lansing "H"	4133'	-1205	-13
Lansing "I"	4159'	-1231	-13
Stark Shale	4204'	-1276	-15
Lansing "K"	4215'	-1287	-15
Hush.	4240'	-1312	-16
Lansing "L"	4252'	-1324	-15
BKC	4289'	-1361	-14
Pawnee	4407'	-1479	-13
Myric Station	4446'	-1518	-14
Fort Scott	4461'	-1533	-13
Cherokee Shale	4490'	-1562	-13
Johnson	4535'	-1607	-15
B/Johnson	4560'	-1632	-14
Morrow Sand	4583'	-1655	-7
Mississippian	4600'	-1672	+11
RTD	4650'	-1722	

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# ALLIED CEMENTING CO., LLC. 039293

REMIT TO P.O. BOX 31  
RUSSELL, KANSAS 67665

SERVICE POINT:  
Oakley

DATE <u>5-7-10</u>	SEC. <u>36</u>	TWP. <u>13</u>	RANGE <u>32</u>	CALLED OUT	ON LOCATION	JOB START <u>12:00pm</u>	JOB FINISH <u>1:00pm</u>
LEASE <u>Nuss unit</u>	WELL # <u>1</u>	LOCATION <u>Oakley</u>	<u>20s 2E 3 1/2 N</u>	COUNTY <u>Logan</u>	STATE <u>KS</u>		
OLD OR <u>(NEW)</u> (Circle one)		<u>1/2 W NINTO</u>					

CONTRACTOR <u>Murfin Drilling Rig 14</u>	OWNER <u>same</u>
TYPE OF JOB <u>PTA</u>	
HOLE SIZE <u>7 7/8</u>	T.D. <u>4650'</u>
CASING SIZE	DEPTH
TUBING SIZE	DEPTH
DRILL PIPE <u>4 1/2</u>	DEPTH <u>2410'</u>
TOOL	DEPTH
PRES. MAX	MINIMUM
MEAS. LINE	SHOE JOINT
CEMENT LEFT IN CSG.	
PERFS.	
DISPLACEMENT	

CEMENT		
AMOUNT ORDERED <u>220 sbs 60/40 490 gal</u>		
<u>1 1/4 Flo-seal</u>		
COMMON <u>132 sbs</u>	@ <u>15.45</u>	<u>2039.40</u>
POZMIX <u>88 sbs</u>	@ <u>8.00</u>	<u>704.00</u>
GEL <u>7 sbs</u>	@ <u>20.80</u>	<u>145.60</u>
CHLORIDE	@	
ASC	@	
	@	
	@	
<u>Flo-seal 55*</u>	@ <u>2.50</u>	<u>137.50</u>
	@	
	@	
	@	
	@	
	@	
HANDLING <u>229 sbs</u>	@ <u>2.40</u>	<u>549.60</u>
MILEAGE <u>10 1/2 sk/mile</u>		<u>458.00</u>
TOTAL		<u>4634.10</u>

**EQUIPMENT**

PUMP TRUCK	CEMENTER <u>Andrew</u>
# <u>423-281</u>	HELPER <u>Larene</u>
BULK TRUCK	
# <u>377</u>	DRIVER <u>Wil</u>
BULK TRUCK	
#	DRIVER

**REMARKS:**

25 sbs @ 2410'  
100 sbs @ 1492'  
40 sbs @ 264'  
10 sbs @ 40'  
15 sbs mouse hole  
30 sbs Rat hole  
thank you

**SERVICE**

DEPTH OF JOB <u>2410'</u>	
PUMP TRUCK CHARGE	<u>1185.00</u>
EXTRA FOOTAGE	@
MILEAGE <u>20 miles</u>	@ <u>7.00</u> <u>140.00</u>
MANIFOLD	@
	@
	@
TOTAL	<u>1325.00</u>

CHARGE TO: Ritchie  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**PLUG & FLOAT EQUIPMENT**

<u>8 5/8</u>	
<u>10 1/2 hole plug</u>	@ <u>40.00</u>
	@
	@
	@
	@
TOTAL	<u>40.00</u>

To Allied Cementing Co., LLC.  
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

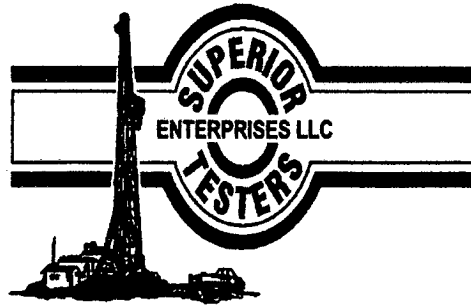
PRINTED NAME Craig Church  
 SIGNATURE Craig Church

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES \_\_\_\_\_  
 DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS

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**KCC WICHITA**

*Handwritten initials*



## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**  
8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.04.30 @ 16:11:00

End Date: 2010.04.30 @ 22:31:00

Job Ticket #: 16201                      DST #: 1

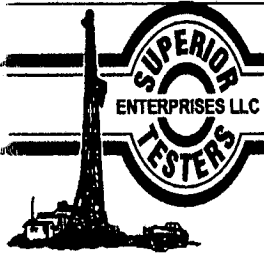
Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

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KCC WICHITA

Printed: 2010.04.30 @ 23:05:27

RITCHIE EXPLORATION INC      NUSS UNIT #1      36-13-32W LOGAN      DST # 1      LANSING "D"      2010.04.30





# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

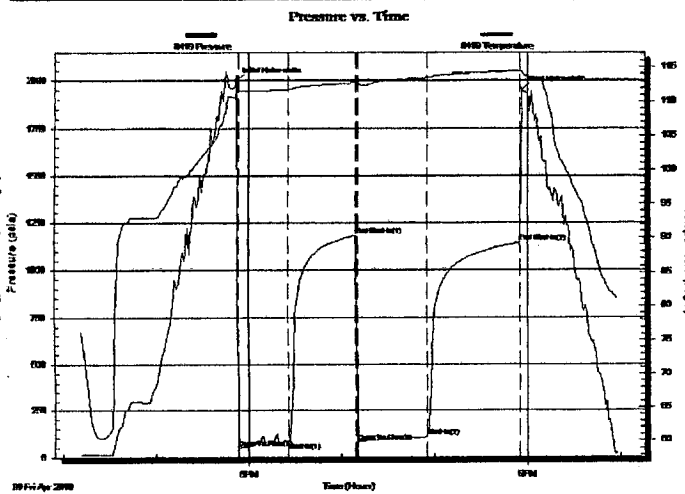
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16201      DST#: 1  
 Test Start: 2010.04.30 @ 16:11:00

## GENERAL INFORMATION:

Formation: **LANSING "D"**  
 Deviated: No      Whipstock:      ft (KB)  
 Time Tool Opened: 17:53:30  
 Time Test Ended: 22:31:00  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320- 70-SCOTT CITY  
 Interval: **3974.00 ft (KB) To 4015.00 ft (KB) (TVD)**  
 Total Depth: 4015.00 ft (KB) (TVD)  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 Hole Diameter: 6.88 inches      Hole Condition: Poor  
 KB to GR/CF: 10.00 ft

**Serial #: 8419**      **Outside**  
 Press@RunDepth: 1142.72 psia @ 4012.00 ft (KB)      Capacity: 5000.00 psia  
 Start Date: 2010.04.30      End Date: 2010.04.30      Last Calif.: 2010.04.30  
 Start Time: 16:11:00      End Time: 21:58:30      Time On Btm: 2010.04.30 @ 17:52:00  
 Time Off Btm: 2010.04.30 @ 20:56:30

**TEST COMMENT:** 30/INITIAL OPEN:WEAK BUILDING BLOW BUILT 2 INCHES INTO WATER IN 30 MINUTES  
 45/INITIAL SHUT IN:NO BLOW BACK  
 45/FINAL OPEN:VERY WEAK SURGE BUILT 1 1/4 INCH INTO WATER IN 45 MINUTES  
 60/FINAL SHUT IN: NO BLOW BACK

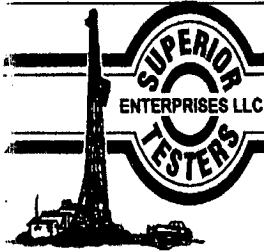


PRESSURE SUMMARY			
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1997.92	110.79	Initial Hydro-static
2	48.62	111.42	Open To Flow (1)
34	78.10	111.73	Shut-In(1)
78	1180.98	112.77	End Shut-In(1)
79	82.46	112.47	Open To Flow (2)
124	108.69	113.45	Shut-In(2)
184	1142.72	114.50	End Shut-In(2)
185	1952.23	114.51	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
90.00	SG O C M 10%G 15%O 75 %M	0.44
90.00	SGO & W C M 5%G 5%O	0.44

Gas Rates			
	Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)





# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

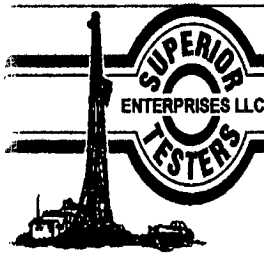
NUSS UNIT #1  
**36-13-32W LOGAN**  
 Job Ticket: 16201      DST#: 1  
 Test Start: 2010.04.30 @ 16:11:00

## Tool Information

Drill Pipe:	Length: 3382.00 ft	Diameter: 3.80 inches	Volume: 47.44 bbl	Tool Weight:	10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose:	80000.00 lb
			<b>Total Volume: 50.29 bbl</b>	Tool Chased	8.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial	77000.00 lb
Depth to Top Packer:	3974.00 ft			Final	77000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	41.00 ft				
Tool Length:	62.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: TOOL CHASED 8 FEET TO BOTTOM, CHLORIDES 31,000

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3954.00	
Shut-In Tool	5.00			3959.00	
Hydraulic Tool	5.00			3964.00	
Packer	5.00			3969.00	21.00      Bottom Of Top Packer
Packer	5.00			3974.00	
Perforations	36.00			4010.00	
Recorder	1.00	8405	Inside	4011.00	
Recorder	1.00	8419	Outside	4012.00	
Bullnose	3.00			4015.00	41.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>62.00</b>				



# DRILL STEM TEST REPORT

**FLUID SUMMARY**

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16201      **DST#: 1**  
 Test Start: 2010.04.30 @ 16:11:00

## Mud and Cushion Information

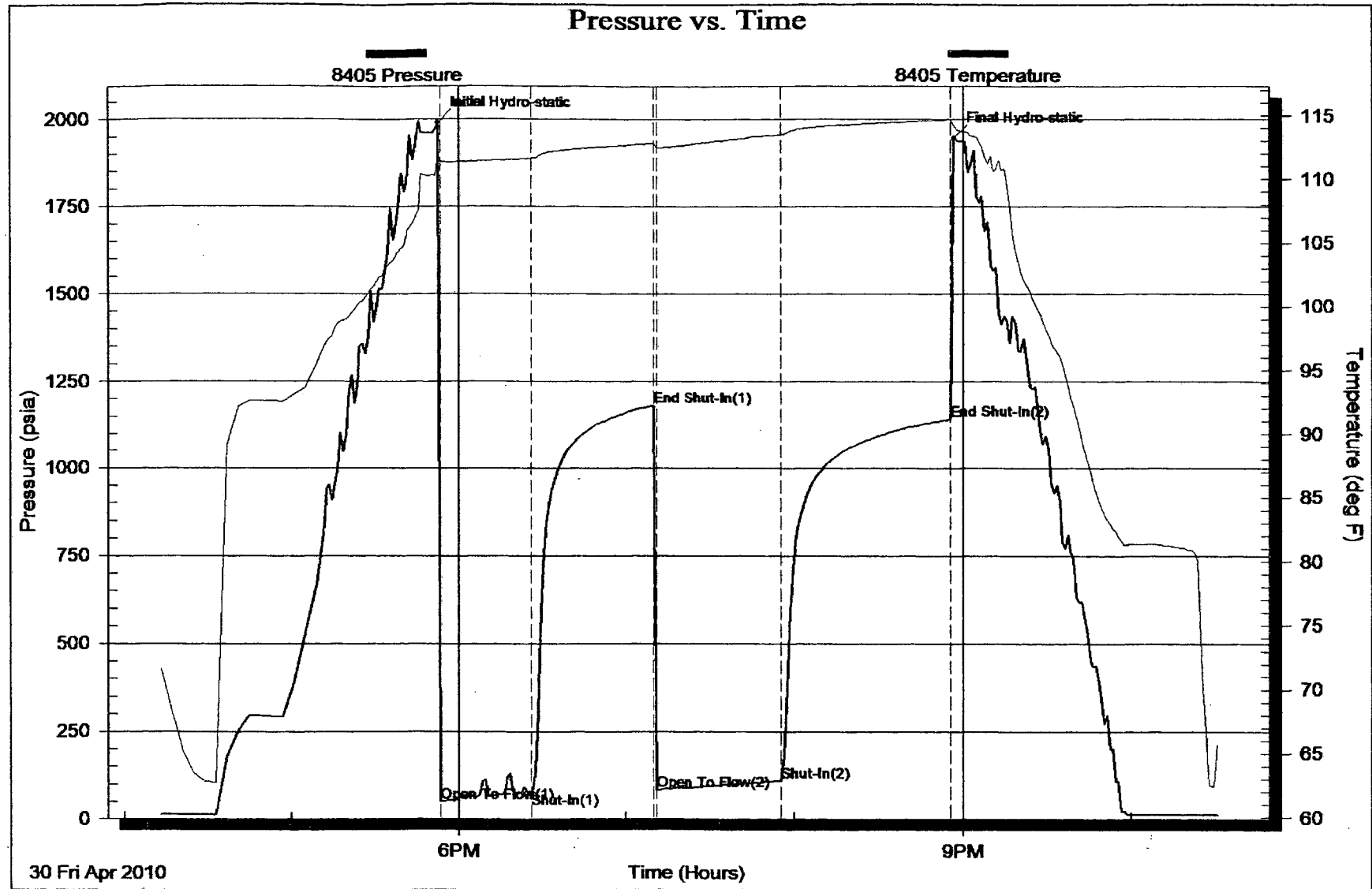
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 49.00 sec/qt	Cushion Volume: bbl		
Water Loss: 8.00 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 2000.00 ppm			
Filter Cake: 1.00 inches			

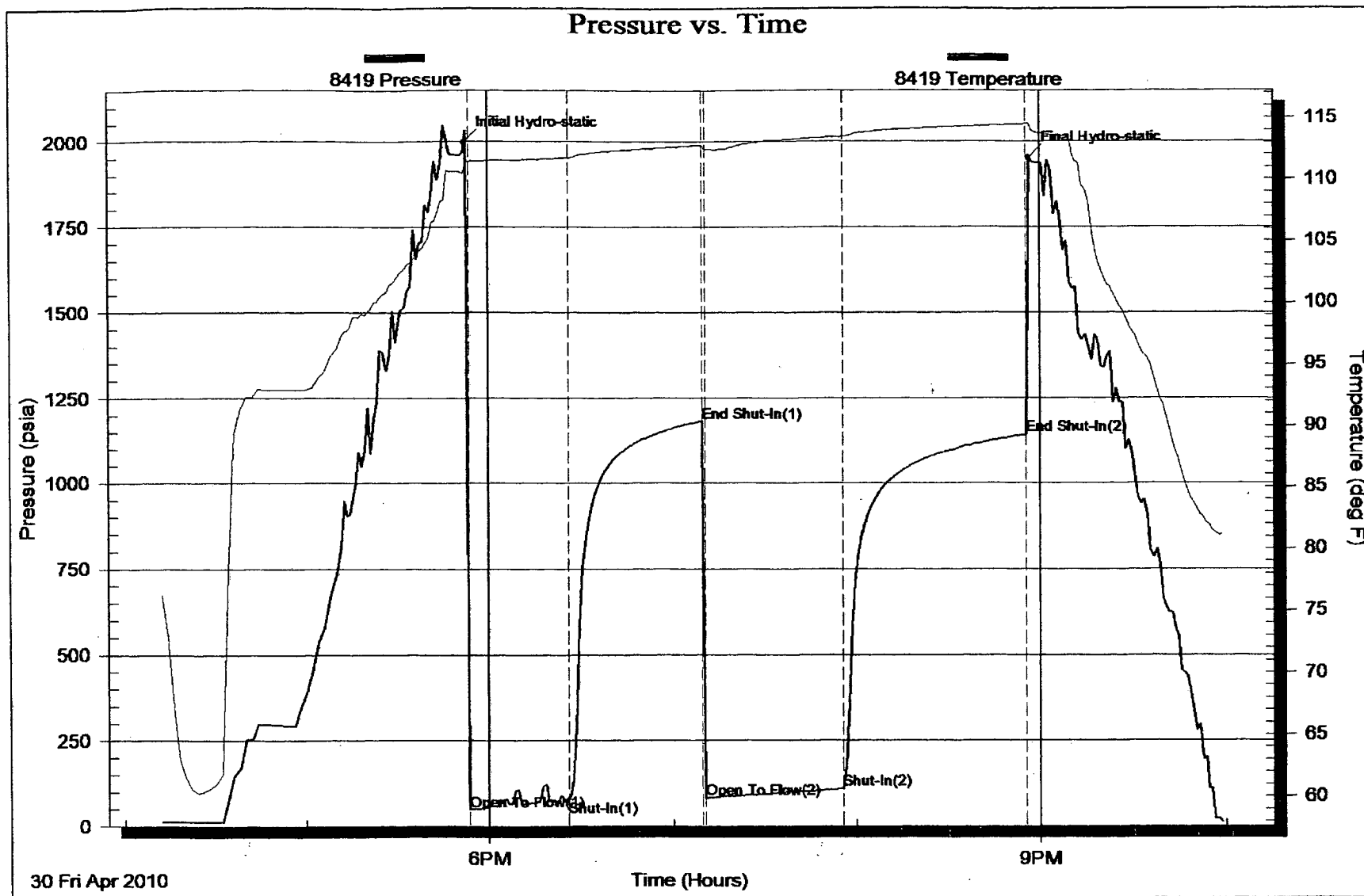
## Recovery Information

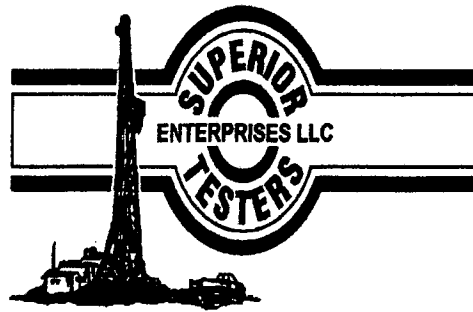
Recovery Table

Length ft	Description	Volume bbl
90.00	SG O C M 10%G 15%O 75 %M	0.443
90.00	SGO &WC M 5%G 5%O	0.443

Total Length: 180.00 ft      Total Volume: 0.886 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: CHLORIDES 31,000







## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**  
8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.01 @ 05:23:00

End Date: 2010.05.01 @ 11:05:30

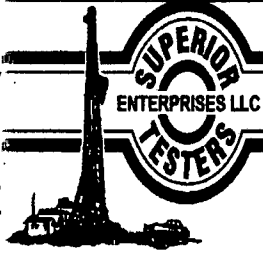
Job Ticket #: 16202                      DST #: 2

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 14:05:07

RITCHIE EXPLORATION INC  
NUSS UNIT #1  
36-13-32W LOGAN  
DST # 2  
LANSING "E"  
2010.05.01





# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

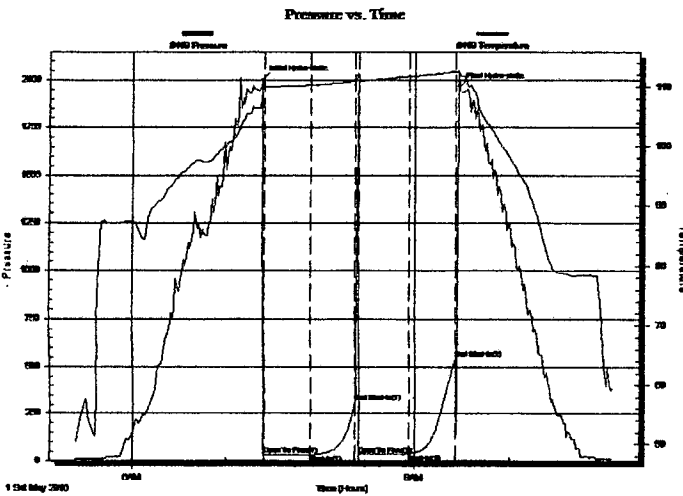
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16202      **DST#: 2**  
 Test Start: 2010.05.01 @ 05:23:00

## GENERAL INFORMATION:

Formation: **LANSING "E"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 07:23:30  
 Time Test Ended: 11:05:30  
 Interval: **4030.00 ft (KB) To 4048.00 ft (KB) (TVD)**  
 Total Depth: **4048.00 ft (KB) (TVD)**  
 Hole Diameter: **6.88 inches** Hole Condition: **Poor**  
 Test Type: **Conventional Bottom Hole (Initial)**  
 Tester: **JARED SCHECK**  
 Unit No: **3320-SCOTT CITY-70**  
 Reference Elevations: **2928.00 ft (KB)**  
**2918.00 ft (CF)**  
 KB to GR/CF: **10.00 ft**

**Serial #: 8419**      **Outside**  
 Press@RunDepth: **545.18 psia @ 4045.00 ft (KB)**      Capacity: **5000.00 psia**  
 Start Date: **2010.05.01**      End Date: **2010.05.01**      Last Calib.: **2010.05.01**  
 Start Time: **05:24:00**      End Time: **11:06:00**      Time On Btm: **2010.05.01 @ 07:23:00**  
 Time Off Btm: **2010.05.01 @ 09:28:00**

TEST COMMENT: 30/INITIAL OPEN:VERY WEAK SURFACE BLOW STAYED STEADY THROUGHOUT OPEN  
 30/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN:NO BLOW FLUSHED TOOL WEAK SURGE DID NOT BUILD  
 30/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2003.15	109.83	Initial Hydro-static
1	34.53	109.91	Open To Flow (1)
31	35.17	110.27	Shut-in(1)
59	312.64	110.96	End Shut-in(1)
62	36.79	110.97	Open To Flow (2)
94	39.78	111.71	Shut-in(2)
123	545.18	112.60	End Shut-in(2)
125	1964.78	112.05	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	MUD	0.02

## Gas Rates

Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHEE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16202      **DST#: 2**  
 Test Start: 2010.05.01 @ 05:23:00

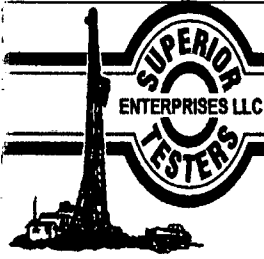
## Tool Information

Drill Pipe:	Length: 3447.00 ft	Diameter: 3.80 inches	Volume: 48.35 bbl	Tool Weight:	10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 51.20 bbl</u>	Tool Chased	3.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial	77000.00 lb
Depth to Top Packer:	4030.00 ft			Final	77000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	18.00 ft				
Tool Length:	39.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: FLUSHED TOOL ON 2ND OPEN

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4010.00	
Shut-In Tool	5.00			4015.00	
Hydrolic Tool	5.00			4020.00	
Packer	5.00			4025.00	21.00      Bottom Of Top Packer
Packer	5.00			4030.00	
Perforations	13.00			4043.00	
Recorder	1.00	8405	Inside	4044.00	
Recorder	1.00	8419	Outside	4045.00	
Bullnose	3.00			4048.00	18.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>39.00</b>				





# DRILL STEM TEST REPORT

FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

NUSS UNIT #1  
36-13-32W LOGAN  
Job Ticket: 16202      DST#: 2  
Test Start: 2010.05.01 @ 05:23:00

## Mud and Cushion Information

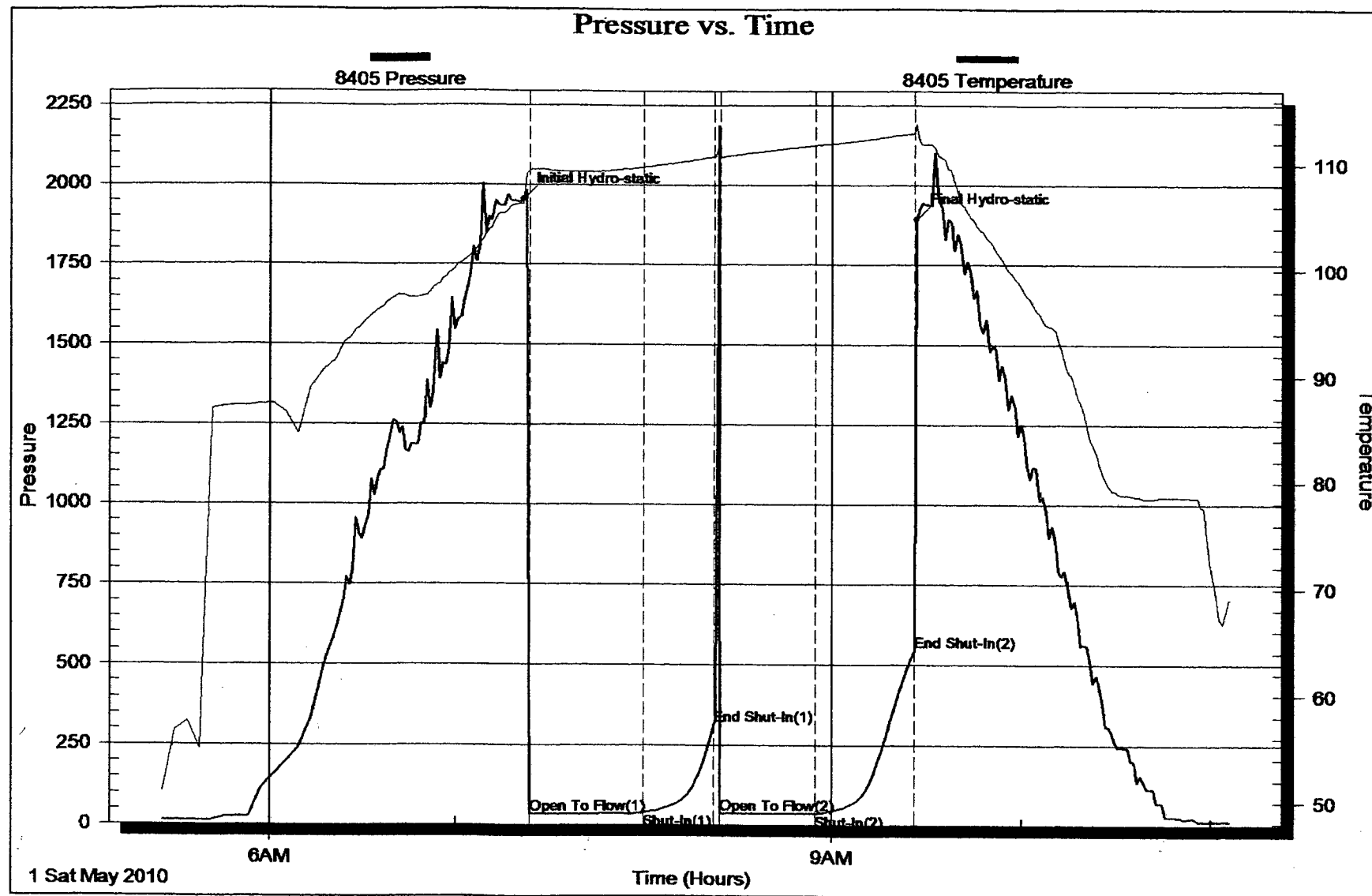
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 49.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.98 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 200.00 ppm			
Filter Cake: 1.00 inches			

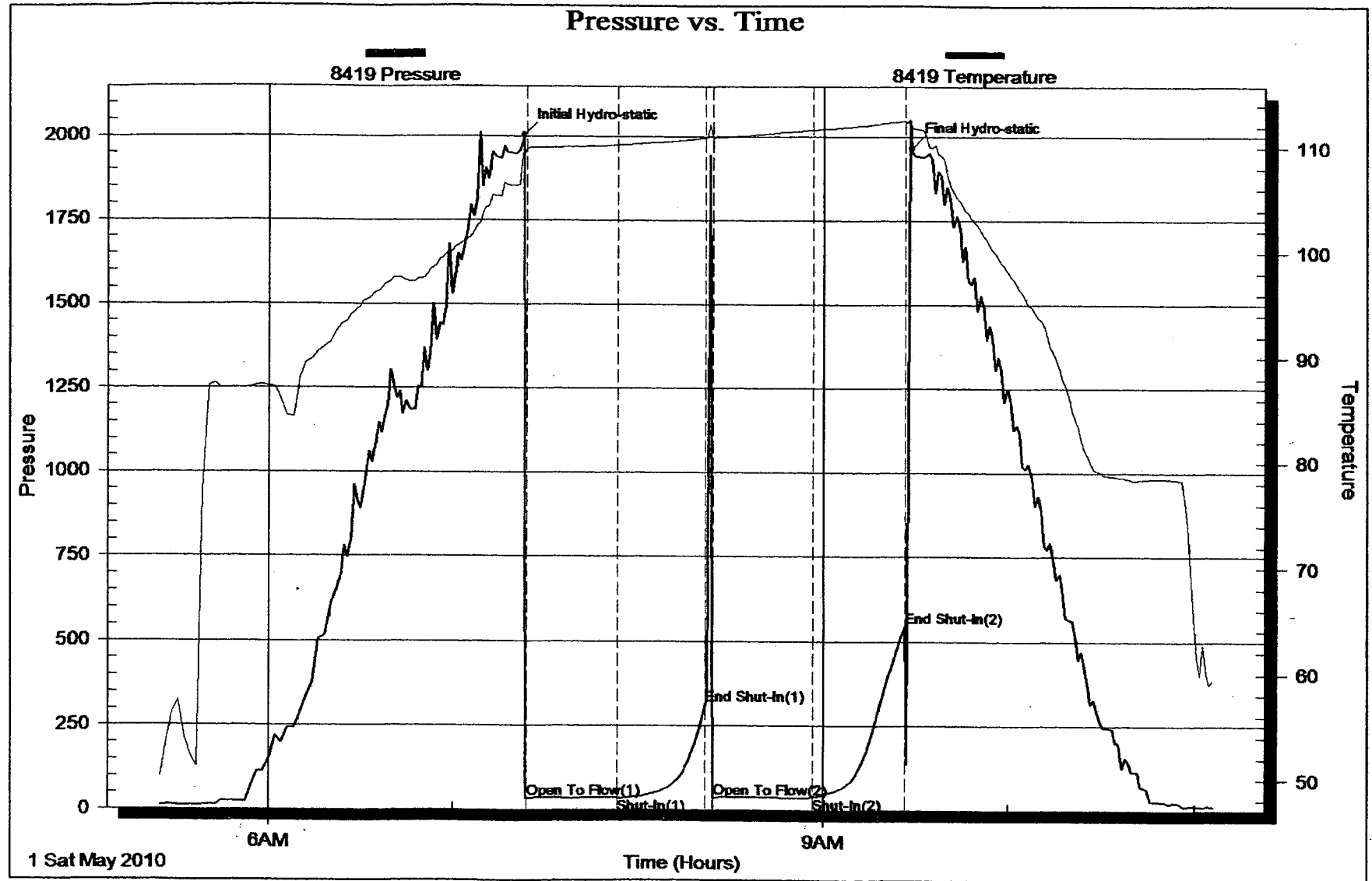
## Recovery Information

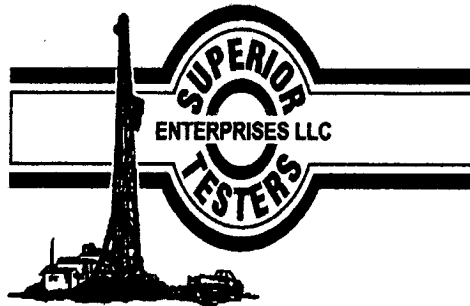
Recovery Table

Length ft	Description	Volume bbl
5.00	MUD	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments: FLUSHED TOOL ON 2ND OPEN







## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**

8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.01 @ 21:43:00

End Date: 2010.05.02 @ 03:02:30

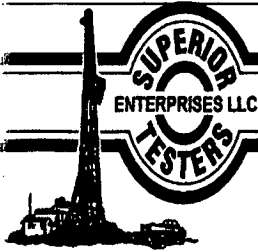
Job Ticket #: 16203                      DST #: 3

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 14:02:06

RITCHIE EXPLORATION INC    NUSS UNIT #1    36-13-32W LOGAN    DST # 3    LANSING " G & H "    2010.05.01





# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

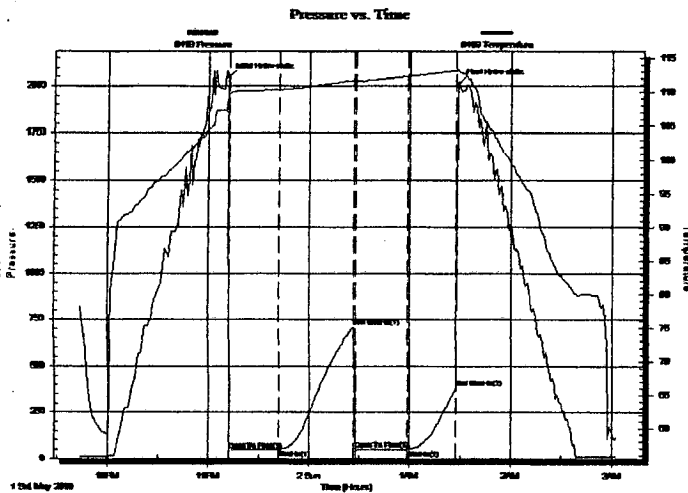
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16203      DST#: 3  
 Test Start: 2010.05.01 @ 21:43:00

## GENERAL INFORMATION:

Formation: **LANSING "G & H"**  
 Deviated: No      Whipstock:      ft (KB)  
 Time Tool Opened: 23:12:30  
 Time Test Ended: 03:02:30  
 Interval: **4100.00 ft (KB) To 4147.00 ft (KB) (TVD)**  
 Total Depth: **4147.00 ft (KB) (TVD)**  
 Hole Diameter: **6.88 inches**      Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320-SCOTT CITY -70  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8419      Outside**  
 Press@RunDepth: 385.24 psia @ 4144.00 ft (KB)      Capacity: 5000.00 psia  
 Start Date: 2010.05.01      End Date: 2010.05.02      Last Calib.: 2010.05.02  
 Start Time: 21:44:00      End Time: 03:03:00      Time On Btrr: 2010.05.01 @ 23:11:30  
 Time Off Btrr: 2010.05.02 @ 01:29:00

**TEST COMMENT:** 30/INITIAL OPEN:VERY WEAK BLOW BUILT 1/2 INCH INTO BUCKET IN 30 MINUTES  
 45/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN:VERY WEAK SURFACE BLOW DID NOT BUILD  
 30/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

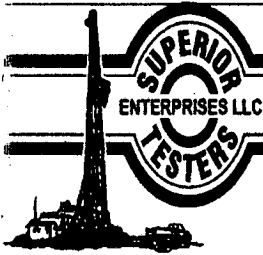
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2046.64	109.53	Initial Hydro-static
1	47.45	109.70	Open To Flow (1)
31	49.06	110.34	Shut-in(1)
75	710.36	111.68	End Shut-in(1)
76	50.29	111.53	Open To Flow (2)
107	51.63	112.32	Shut-in(2)
136	385.24	113.22	End Shut-in(2)
138	2014.26	112.99	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	MUD	0.02

## Gas Rates

Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16203      **DST#: 3**  
 Test Start: 2010.05.01 @ 21:43:00

## Tool Information

Drill Pipe:	Length: 3511.00 ft	Diameter: 3.80 inches	Volume: 49.25 bbl	Tool Weight: 10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 52.10 bbl</u>	Tool Chased 1.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 77000.00 lb
Depth to Top Packer:	4100.00 ft			Final 77000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.00 ft			
Tool Length:	68.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4080.00	
Shut-In Tool	5.00			4085.00	
Hydraulic Tool	5.00			4090.00	
Recorder	5.00			4095.00	
Packer	5.00			4100.00	21.00      Bottom Of Top Packer
Change Over Sub	0.75			4100.75	
Drill Pipe	31.50			4132.25	
Change Over Sub	0.75			4133.00	
Perforations	9.00			4142.00	
Recorder	1.00	8405	Inside	4143.00	
Recorder	1.00	8419	Outside	4144.00	
Bullnose	3.00			4147.00	47.00      Anchor Tool
<b>Total Tool Length:</b>	<b>68.00</b>				



# DRILL STEM TEST REPORT

## FLUID SUMMARY

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16203      **DST#: 3**  
 Test Start: 2010.05.01 @ 21:43:00

### Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 2800.00 ppm			
Filter Cake: 1.00 inches			

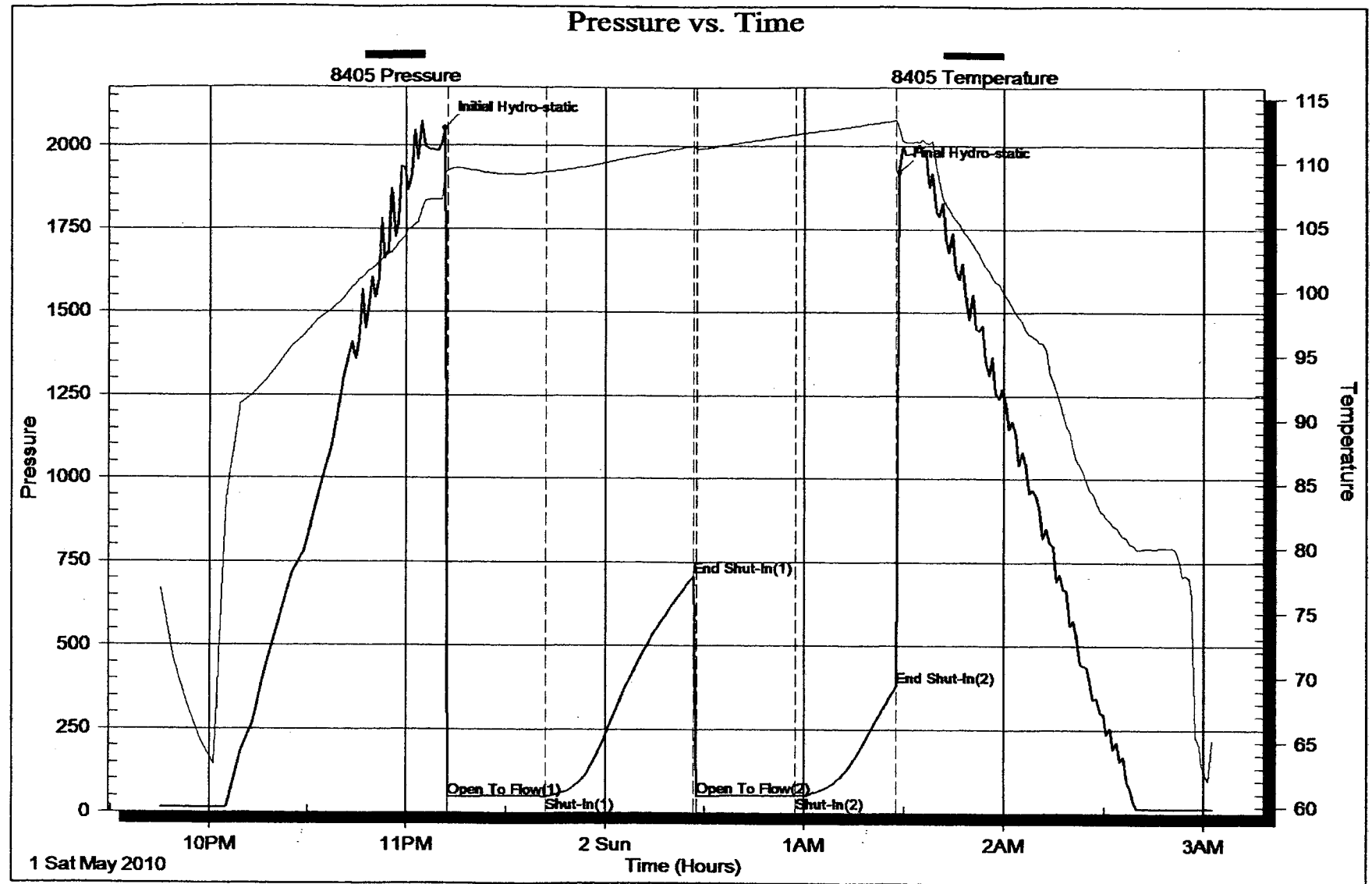
### Recovery Information

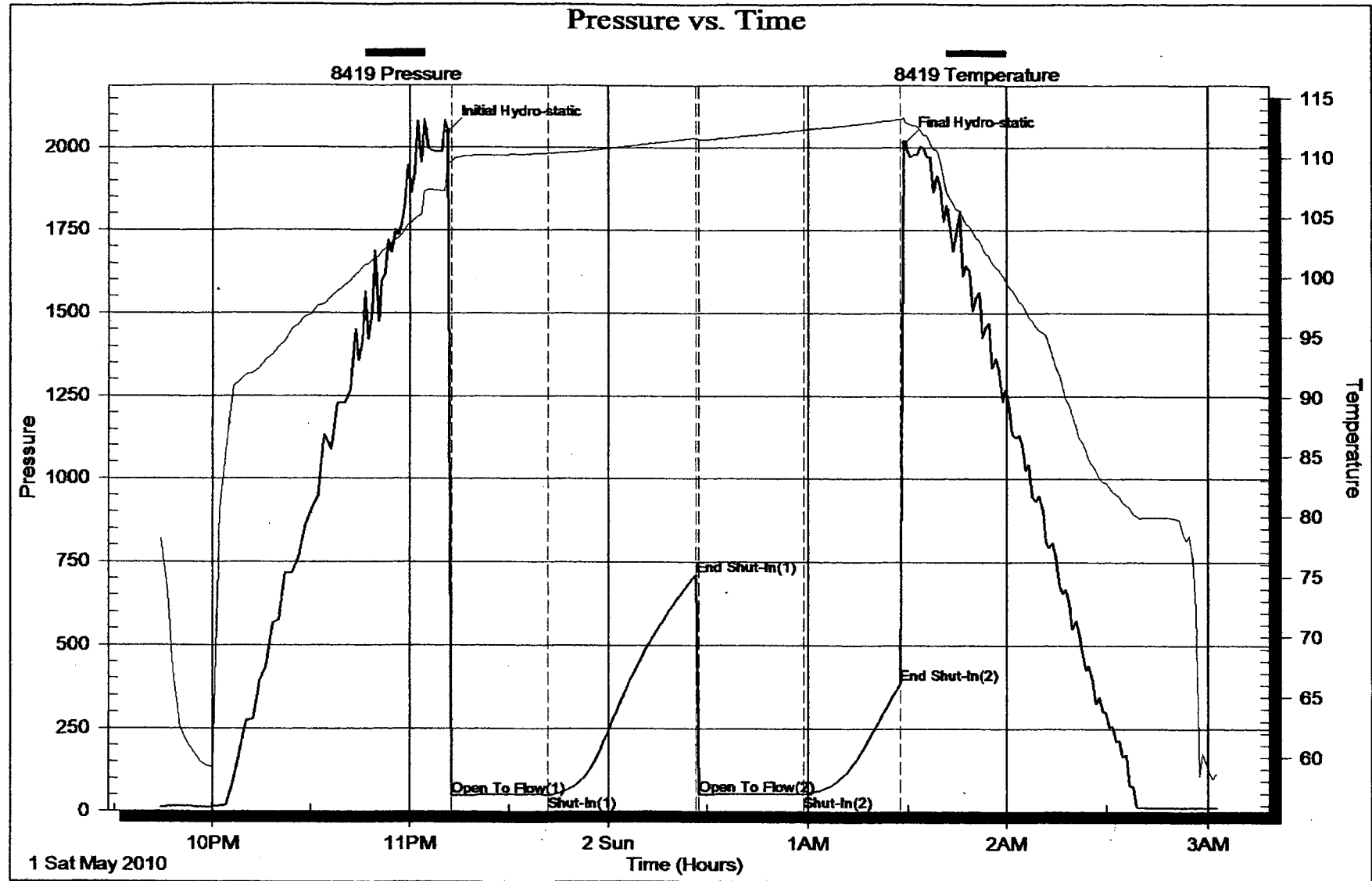
Recovery Table

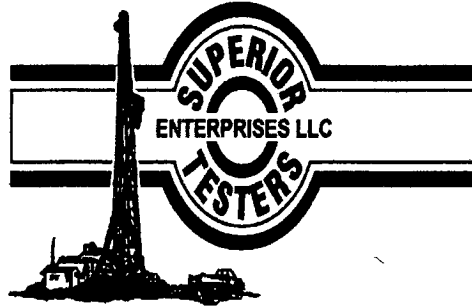
Length ft	Description	Volume bbl
5.00	MUD	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**

8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.02 @ 14:54:00

End Date: 2010.05.02 @ 20:23:00

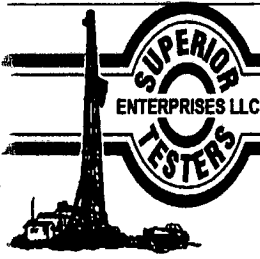
Job Ticket #: 16204                      DST #: 4

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 13:58:12

RITCHIE EXPLORATION INC    NUSS UNIT #1    36-13-32W LOGAN    DST # 4    LANSING " J "    2010.05.02





# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

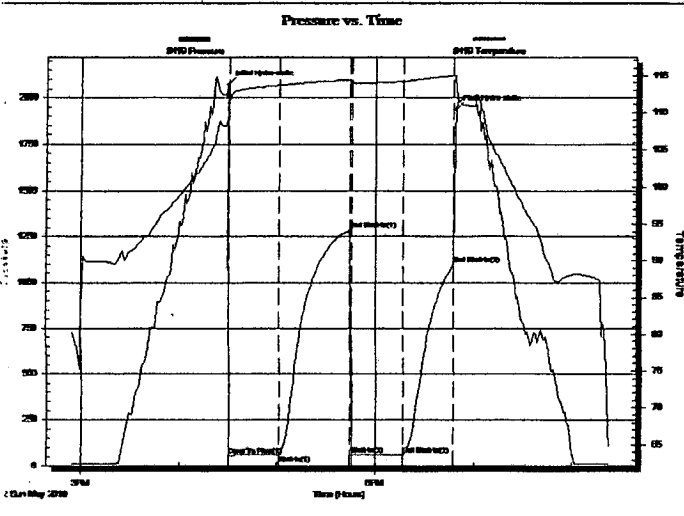
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16204      DST#: 4  
 Test Start: 2010.05.02 @ 14:54:00

## GENERAL INFORMATION:

Formation: **LANSING " J "**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 16:30:30  
 Time Test Ended: 20:23:00  
 Interval: **4171.00 ft (KB) To 4200.00 ft (KB) (TVD)**  
 Total Depth: 4200.00 ft (KB) (TVD)  
 Hole Diameter: 6.88 inches  
 Hole Condition:  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320 - SCOTT CITY -  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8419      Outside**  
 Press@RunDepth: 1097.41 psia @ 4197.00 ft (KB)  
 Start Date: 2010.05.02      End Date: 2010.05.02  
 Start Time: 14:55:00      End Time: 20:23:00  
 Capacity: 5000.00 psia  
 Last Calib.: 2010.05.02  
 Time On Btm: 2010.05.02 @ 16:29:30  
 Time Off Btm: 2010.05.02 @ 18:49:00

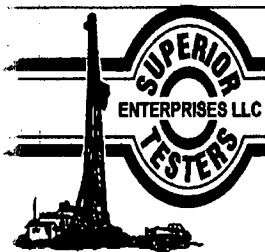
**TEST COMMENT:** 30/INITIAL OPEN:VERY WEAK SURFACE BLOW BUILT 1 1/4 INTO WATER IN 30 MINUTES  
 45/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN:VERY WEAK SURGE DID NOT BUILT  
 30/FINAL SHUT IN:NO BLOW BACK



PRESSURE SUMMARY			
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2072.61	109.13	Initial Hydro-static
1	58.32	111.31	Open To Flow (1)
32	60.37	113.60	Shut-In(1)
75	1289.08	114.31	End Shut-In(1)
76	60.65	113.98	Shut-In(2)
108	61.26	114.17	End Shut-In(2)
138	1097.41	114.95	End Shut-In(3)
140	1937.03	113.03	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
20.00	MUD	0.10

Gas Rates			
	Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

NUSS UNIT #1  
 36-13-32W LOGAN  
 Job Ticket: 16204 DST#: 4  
 Test Start: 2010.05.02 @ 14:54:00

## Tool Information

Drill Pipe:	Length: 3574.00 ft	Diameter: 3.80 inches	Volume: 50.13 bbl	Tool Weight: 10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 52.98 bbl</u>	Tool Chased 12.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 77000.00 lb
Depth to Top Packer:	4171.00 ft			Final 77000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	29.00 ft			
Tool Length:	50.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: TOOL CHASED 12 FEET TO BOTTOM

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4151.00	
Shut-In Tool	5.00			4156.00	
Hydraulic Tool	5.00			4161.00	
Packer	5.00			4166.00	21.00 Bottom Of Top Packer
Packer	5.00			4171.00	
Perforations	24.00			4195.00	
Recorder	1.00	8405	Inside	4196.00	
Recorder	1.00	8419	Outside	4197.00	
Bullnose	3.00			4200.00	29.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>50.00</b>				



# DRILL STEM TEST REPORT

FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

NUSS UNIT #1  
36-13-32W LOGAN  
Job Ticket: 16204      DST#: 4  
Test Start: 2010.05.02 @ 14:54:00

## Mud and Cushion Information

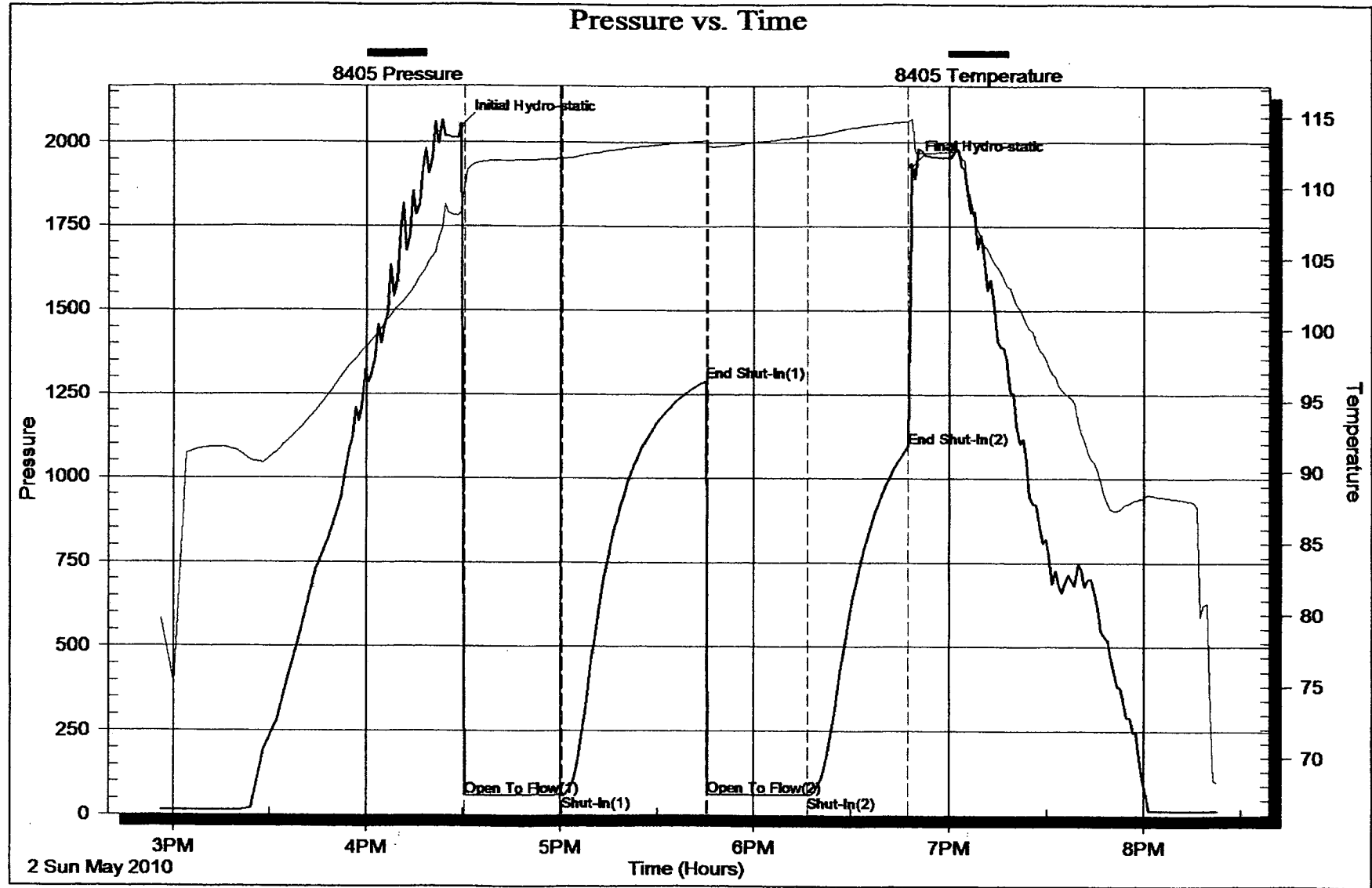
Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	10.39 in <sup>3</sup>	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psia		
Salinity:	3500.00 ppm				
Filter Cake:	1.00 inches				

## Recovery Information

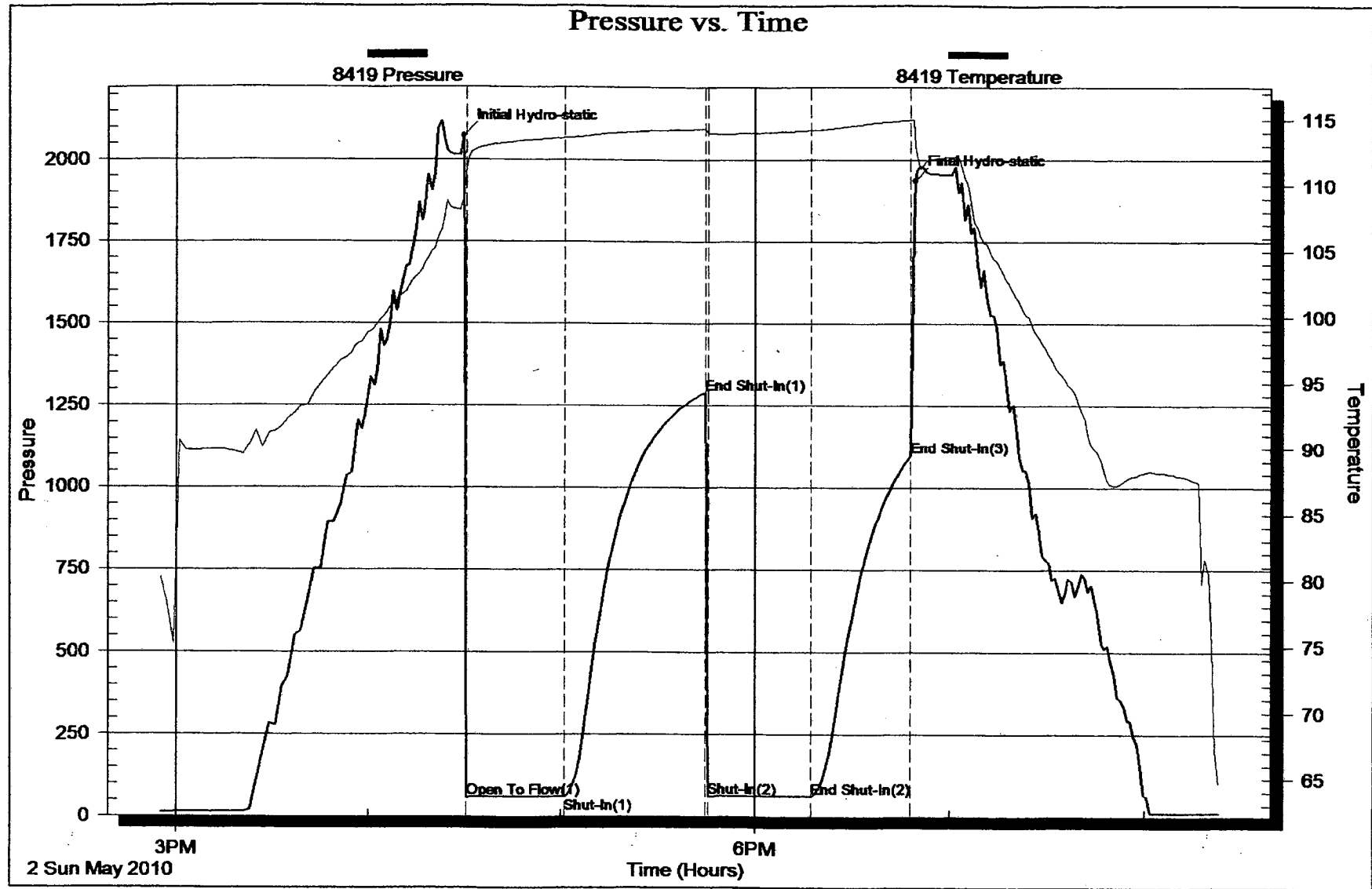
Recovery Table

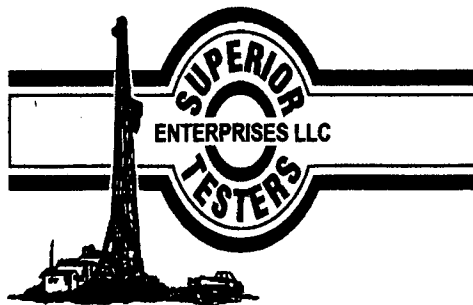
Length ft	Description	Volume bbl
20.00	MUD	0.098

Total Length: 20.00 ft      Total Volume: 0.098 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments: TOOL CHASED 12 FEET TO BOTTOM









## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**  
8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

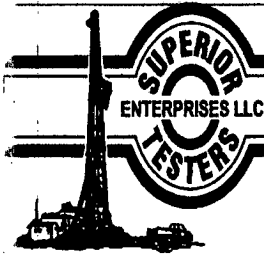
**NUSS UNIT #1**

Start Date: 2010.05.03 @ 08:23:00  
End Date: 2010.05.03 @ 14:17:30  
Job Ticket #: 16205                      DST #: 5

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 13:49:10

RITCHIE EXPLORATION INC  
NUSS UNIT #1  
36-13-32W LOGAN  
DST # 5  
LANSING " K & L "  
2010.05.03



# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

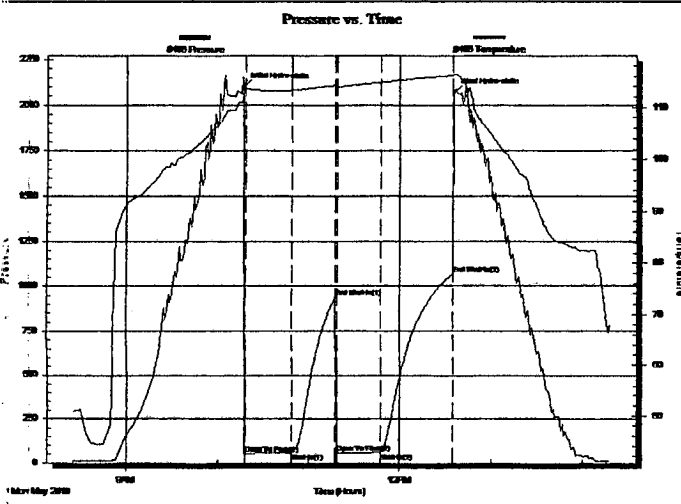
NUSS UNIT #1  
 36-13-32W LOGAN  
 Job Ticket: 16205 DST#: 5  
 Test Start: 2010.05.03 @ 08:23:00

## GENERAL INFORMATION:

Formation: **LANSING " K & L "**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 10:18:00  
 Time Test Ended: 14:17:30  
 Interval: **4226.00 ft (KB) To 4285.00 ft (KB) (TVD)**  
 Total Depth: 4285.00 ft (KB) (TVD)  
 Hole Diameter: 6.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320- SCOTT CITY -70  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8405** Inside  
 Press@RunDepth: 59.82 psia @ 4281.00 ft (KB)  
 Start Date: 2010.05.03 End Date: 2010.05.03 Capacity: 5000.00 psia  
 Start Time: 08:25:00 End Time: 14:17:30 Last Calib.: 2010.05.03  
 Time On Btm: 2010.05.03 @ 10:17:00  
 Time Off Btm: 2010.05.03 @ 12:35:30

TEST COMMENT: 30/INITIAL OPEN:VERY WEAK BLOW BUILT 1/4 INCH INTO WATER IN 30 MINUTES  
 30/INITIAL SHUT IN : NO BLOW BACK  
 30/FINAL OPEN:VERY WEAK SURGE DID NOT BUILD  
 45/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2099.75	112.92	Initial Hydro-static
1	53.67	113.43	Open To Flow (1)
32	59.28	113.23	Shut-In(1)
61	939.08	114.21	End Shut-In(1)
62	58.73	113.92	Open To Flow (2)
90	59.82	114.66	Shut-In(2)
138	1067.29	116.10	End Shut-In(2)
139	2068.24	116.32	Final Hydro-static

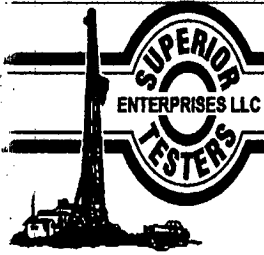
## Recovery

Length (ft)	Description	Volume (bbl)
5.00	MJD	0.02

## Gas Rates

Choke (Inches)	Pressure (psia)	Gas Rate (Mcf/d)





# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

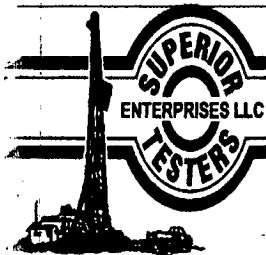
NUSS UNIT #1  
 36-13-32W LOGAN  
 Job Ticket: 16205      DST#: 5  
 Test Start: 2010.05.03 @ 08:23:00

## Tool Information

Drill Pipe:	Length: 3637.00 ft	Diameter: 3.80 inches	Volume: 51.02 bbl	Tool Weight:	10000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose:	100000.0 lb
			<u>Total Volume: 53.87 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	78000.00 lb
Depth to Top Packer:	4226.00 ft			Final	78000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	59.00 ft				
Tool Length:	80.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4206.00	
Shut-In Tool	5.00			4211.00	
Hydraulic Tool	5.00			4216.00	
Recorder	5.00			4221.00	
Packer	5.00			4226.00	21.00      Bottom Of Top Packer
Change Over Sub	0.75			4226.75	
Drill Pipe	31.50			4258.25	
Change Over Sub	0.75			4259.00	
Perforations	21.00			4280.00	
Recorder	1.00	8405	Inside	4281.00	
Recorder	1.00	8419	Outside	4282.00	
Bullnose	3.00			4285.00	59.00      Anchor Tool
<b>Total Tool Length:</b>	<b>80.00</b>				



# DRILL STEM TEST REPORT

FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

NUSS UNIT #1  
36-13-32W LOGAN  
Job Ticket: 16205      DST#: 5  
Test Start: 2010.05.03 @ 08:23:00

## Mud and Cushion Information

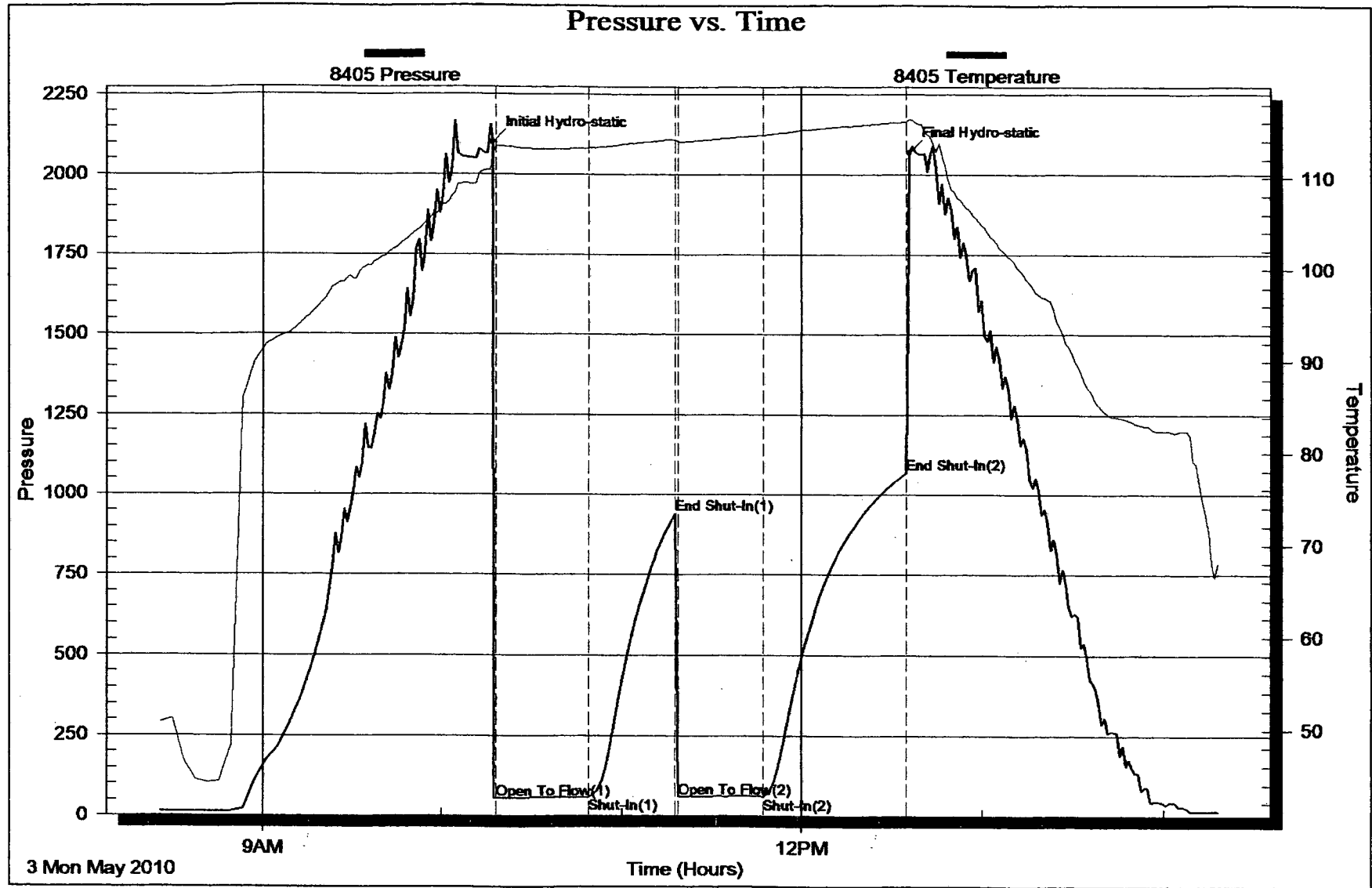
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 58.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 3000.00 ppm			
Filter Cake: 1.00 inches			

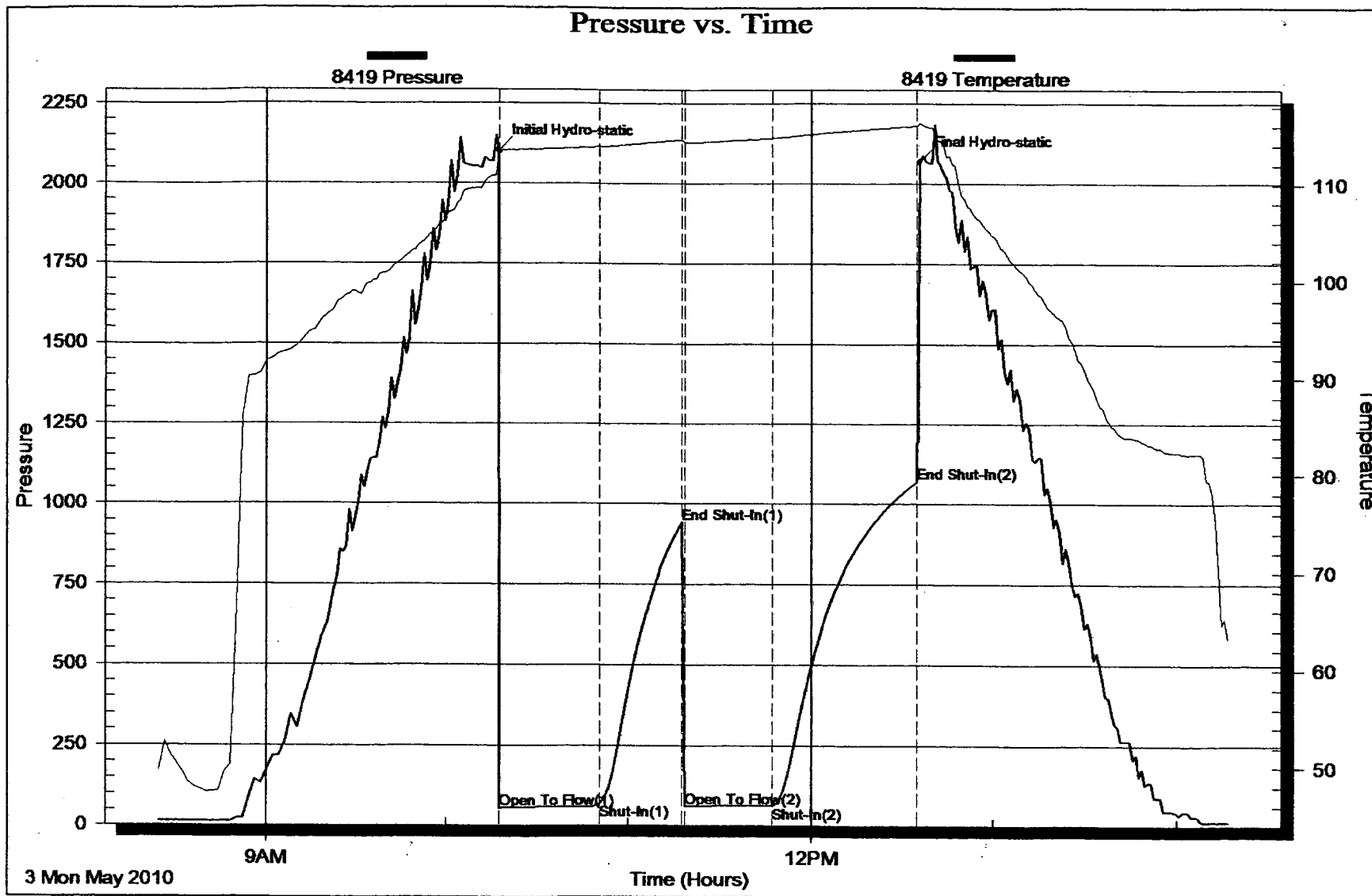
## Recovery Information

Recovery Table

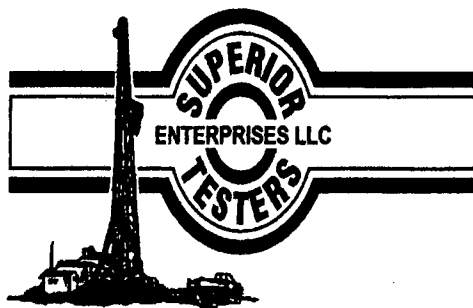
Length ft	Description	Volume bbl
5.00	MUD	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**  
8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.04 @ 12:40:00

End Date: 2010.05.04 @ 18:27:00

Job Ticket #: 16206                      DST #: 6

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 13:48:48

RITCHIE EXPLORATION INC

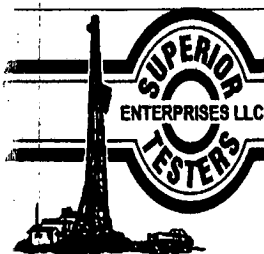
NUSS UNIT #1

36-13-32W LOGAN

DST # 6

CHEROKEE, LIME STON

2010.05.04



# DRILL STEM TEST REPORT

RITCHE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

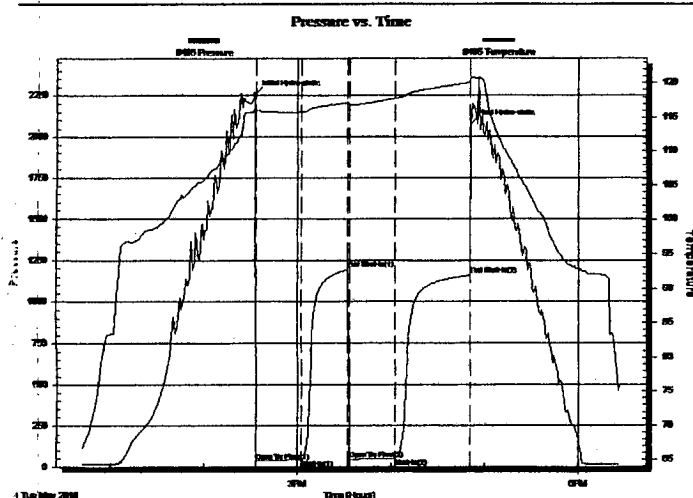
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16206      DST#: 6  
 Test Start: 2010.05.04 @ 12:40:00

## GENERAL INFORMATION:

Formation: **CHEROKEE, LIMESTON**  
 Deviated: No Whipstock:      ft (KB)  
 Time Tool Opened: 14:33:30  
 Time Test Ended: 18:27:00  
 Interval: **4484.00 ft (KB) To 4511.00 ft (KB) (TVD)**  
 Total Depth: **4511.00 ft (KB) (TVD)**  
 Hole Diameter: **6.88 inches** Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320-SCOTT CITY -70  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8405**      Inside  
 Press@RunDepth: 53.61 psia @ 4507.00 ft (KB)      Capacity: 5000.00 psia  
 Start Date: 2010.05.04      End Date: 2010.05.04      Last Calib.: 2010.05.04  
 Start Time: 12:42:00      End Time: 18:27:00      Time On Btm: 2010.05.04 @ 14:32:30  
 Time Off Btm: 2010.05.04 @ 16:51:30

TEST COMMENT: 30/INITIAL OPEN:VERY WEAK SURFACE BLOW BUILT 1/2 INCH INTO WATER IN30 MINUTES  
 30/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN :VERY WEAK SURGE DID NOT BUILD FLUSHED TOOL GOOD SURGE DID NOT BUILD  
 45/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

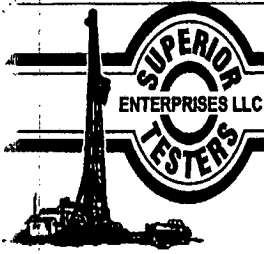
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2259.94	116.41	Initial Hydro-static
1	36.85	115.91	Open To Flow (1)
30	43.95	115.78	Shut-in(1)
60	1193.84	117.18	End Shut-in(1)
61	45.92	116.78	Open To Flow (2)
91	53.61	117.77	Shut-in(2)
138	1160.46	120.09	End Shut-in(2)
139	2076.03	120.89	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
20.00	MUD SPOT OIL 1%OIL 99%MUD	0.10

## Gas Rates

Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

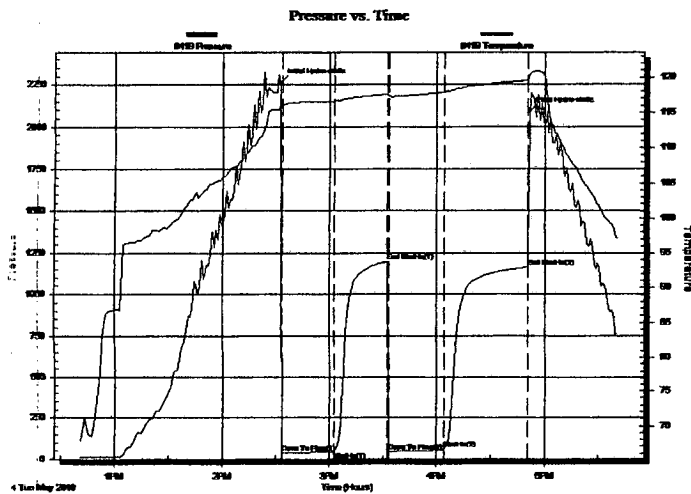
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16206      DST#: 6  
 Test Start: 2010.05.04 @ 12:40:00

## GENERAL INFORMATION:

Formation: **CHEROKE , LIMESTON**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:33:30  
 Time Test Ended: 18:27:00  
 Interval: **4484.00 ft (KB) To 4511.00 ft (KB) (TVD)**  
 Total Depth: 4511.00 ft (KB) (TVD)  
 Hole Diameter: 6.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: JARED SCHECK  
 Unit No: 3320-SCOTT CITY -70  
 Reference Elevations: 2928.00 ft (KB)  
 2918.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8419      Outside**  
 Press@RunDepth: 1161.57 psia @ 4508.00 ft (KB)      Capacity: 5000.00 psia  
 Start Date: 2010.05.04      End Date: 2010.05.04      Last Calib.: 2010.05.04  
 Start Time: 12:41:00      End Time: 17:41:00      Time On Btm: 2010.05.04 @ 14:32:30  
 Time Off Btm: 2010.05.04 @ 16:51:30

**TEST COMMENT:** 30/INITIAL OPEN:VERY WEAK SURFACE BLOW BUILT 1/2 INCH INTO WATER IN30 MINUTES  
 30/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN :VERY WEAK SURGE DID NOT BUILD FLUSHED TOOL GOOD SURGE DID NOT BUILD  
 45/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

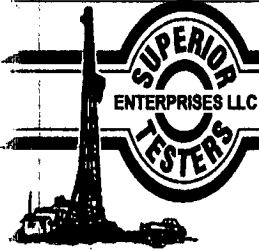
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2259.51	116.08	Initial Hydro-static
1	37.08	115.92	Open To Flow (1)
30	45.25	116.58	Shut-In(1)
60	1195.05	117.62	End Shut-In(1)
61	46.23	117.30	Open To Flow (2)
92	62.81	117.91	Shut-In(2)
138	1161.57	119.55	End Shut-In(2)
139	2088.35	120.39	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
20.00	MUD SPOT OIL 1%OIL 99%MUD	0.10

## Gas Rates

Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

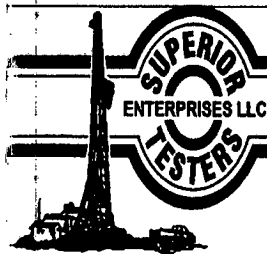
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16206      **DST#: 6**  
 Test Start: 2010.05.04 @ 12:40:00

## Tool Information

Drill Pipe:	Length: 3891.00 ft	Diameter: 3.80 inches	Volume: 54.58 bbl	Tool Weight: 10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose: 85000.00 lb
		Total Volume: 57.43 bbl		Tool Chased 1.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 79000.00 lb
Depth to Top Packer:	4484.00 ft			Final 79000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	27.00 ft			
Tool Length:	48.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4464.00	
Shut-In Tool	5.00			4469.00	
Hydrolic Tool	5.00			4474.00	
Packer	5.00			4479.00	21.00 Bottom Of Top Packer
Packer	5.00			4484.00	
Perforations	22.00			4506.00	
Recorder	1.00	8405	Inside	4507.00	
Recorder	1.00	8419	Outside	4508.00	
Bullnose	3.00			4511.00	27.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>48.00</b>				



# DRILL STEM TEST REPORT

FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

NUSS UNIT #1  
36-13-32W LOGAN  
Job Ticket: 16206      DST#: 6  
Test Start: 2010.05.04 @ 12:40:00

## Mud and Cushion Information

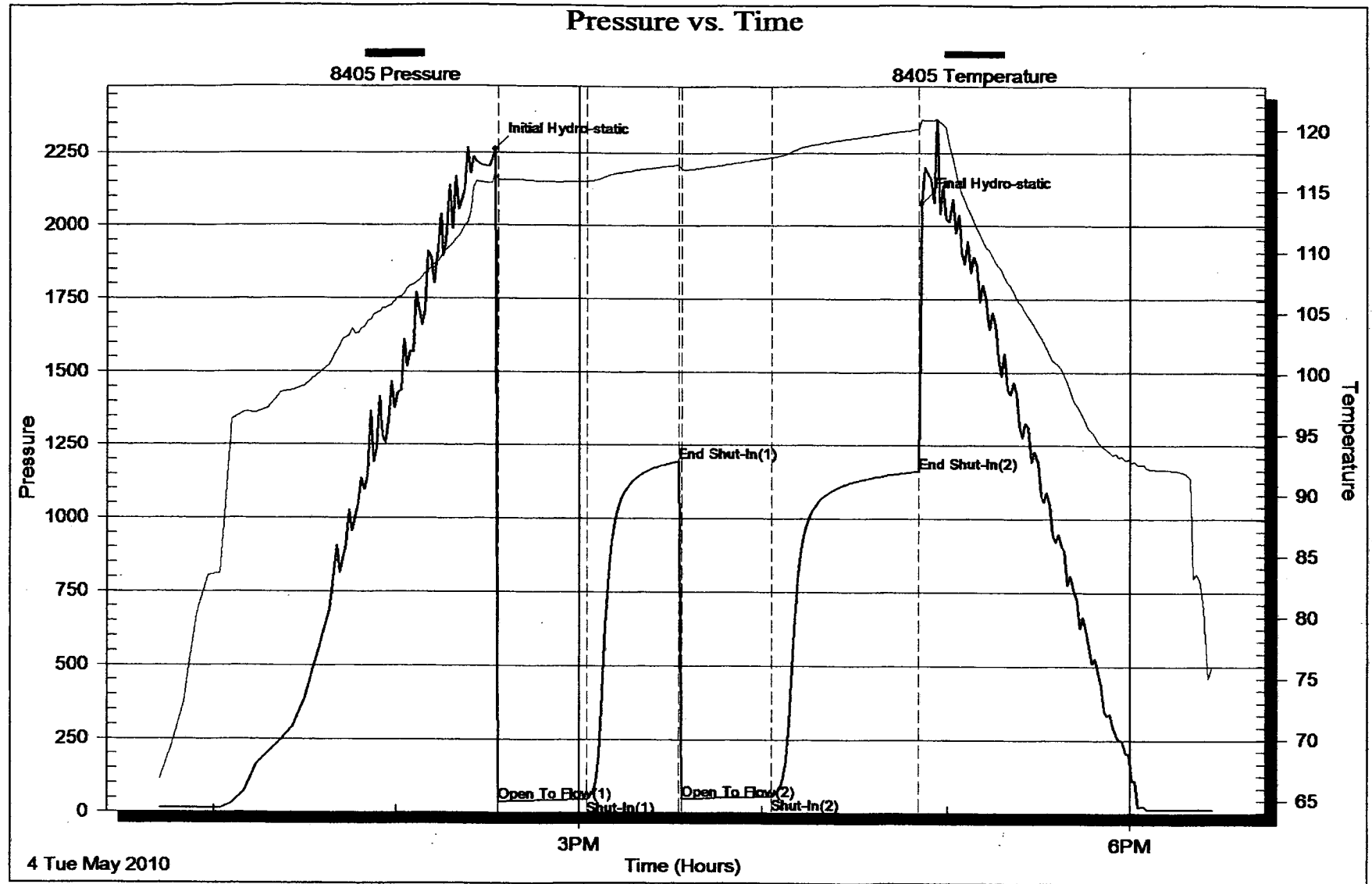
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 54.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.99 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 3000.00 ppm			
Filter Cake: 1.00 inches			

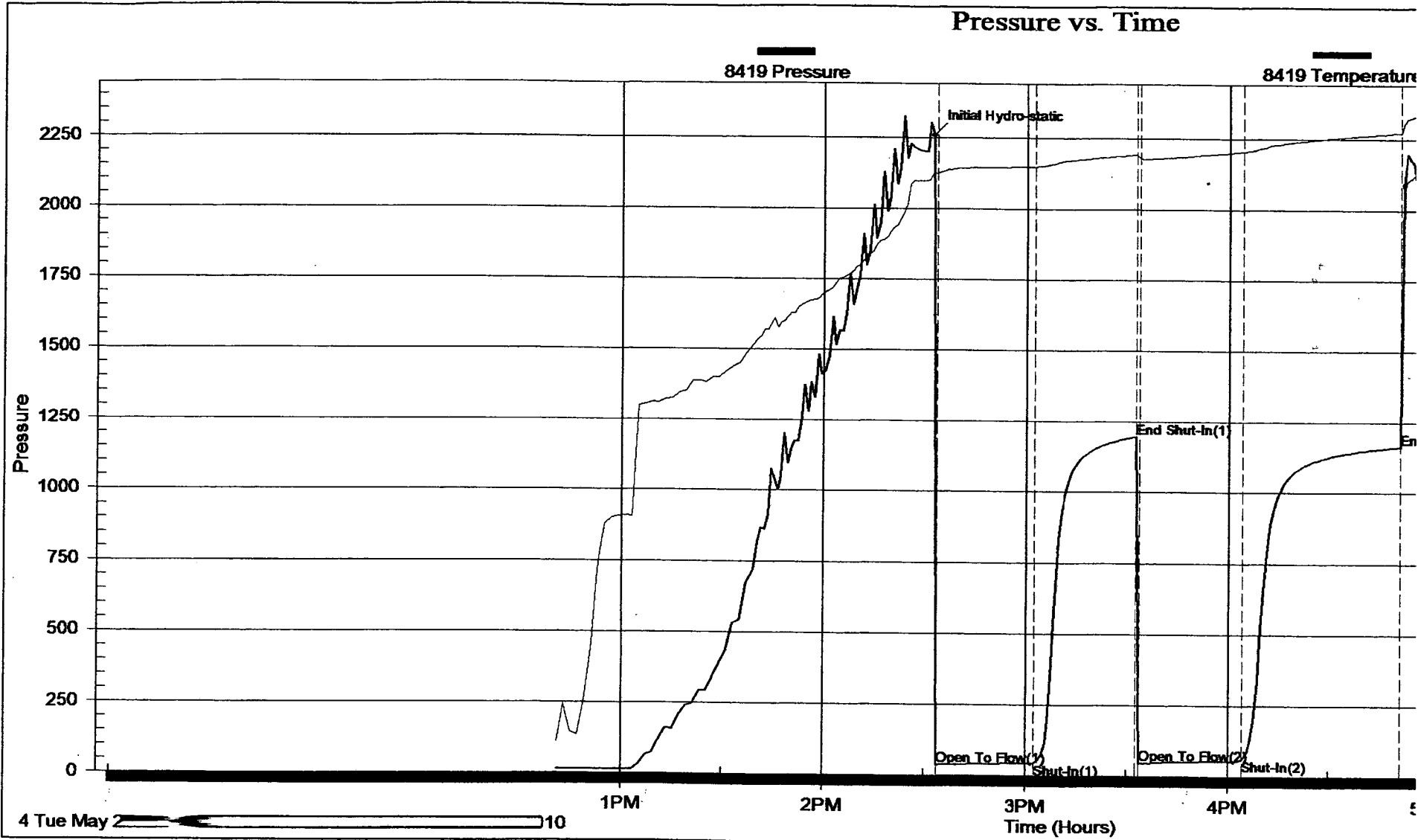
## Recovery Information

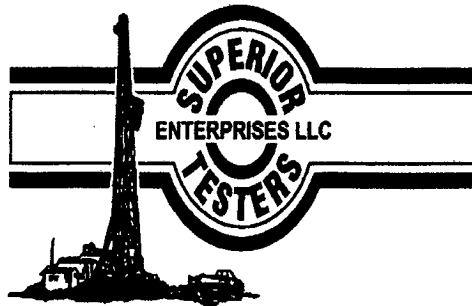
Recovery Table

Length ft	Description	Volume bbl
20.00	MUD SPOT OIL 1%OIL 99%MUD	0.098

Total Length: 20.00 ft      Total Volume: 0.098 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**

8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.05 @ 03:23:00

End Date: 2010.05.05 @ 09:42:00

Job Ticket #: 16207                      DST #: 7

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 14:00:35

RITCHIE EXPLORATION INC

NUSS UNIT #1

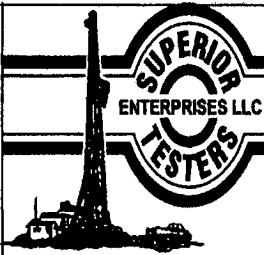
36-13-32W LOGAN

DST # 7

JOHNSON

2010.05.05





# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

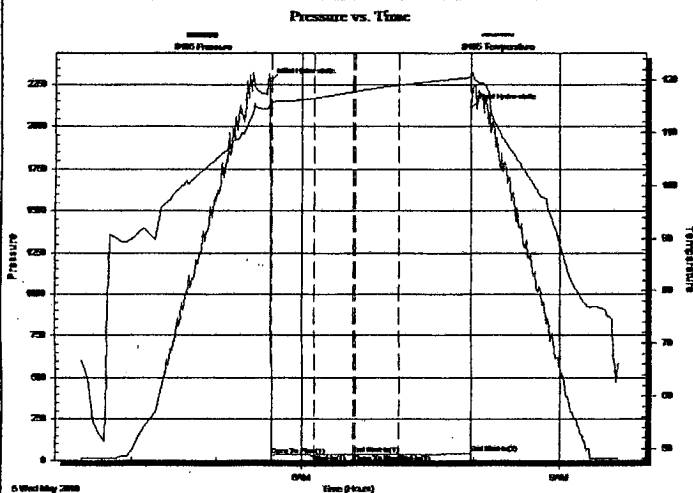
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16207      **DST#: 7**  
 Test Start: 2010.05.05 @ 03:23:00

## GENERAL INFORMATION:

Formation: **JOHNSON**  
 Deviated: No      Whipstock:      ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 05:38:30      Tester: JARED SCHECK  
 Time Test Ended: 09:42:00      Unit No: 3320-70-SCOTT CITY  
 Interval: **4519.00 ft (KB) To 4543.00 ft (KB) (TVD)**  
 Reference Elevations: 2928.00 ft (KB)  
 Total Depth: 4543.00 ft (KB) (TVD)      2918.00 ft (CF)  
 Hole Diameter: 6.88 inches      Hole Condition: Fair      KB to GRVCF: 10.00 ft

**Serial #: 8405**      **Inside**  
 Press@RunDepth: 39.60 psia @ 4539.00 ft (KB)      Capacity: 5000.00 psia  
 Start Date: 2010.05.05      End Date: 2010.05.05      Last Calib.: 2010.05.05  
 Start Time: 03:25:00      End Time: 09:42:00      Time On Btm: 2010.05.05 @ 05:37:30  
 Time Off Btm: 2010.05.05 @ 07:58:30

**TEST COMMENT:** 30/INITIAL OPEN:VERY WEAK SURFACE BLOW DID NOT BUILD  
 30/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN:WEAK SURGE DID NOT BUILD FLUSHED TOOL GOOD SURGE DID NOT BUILD  
 45/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

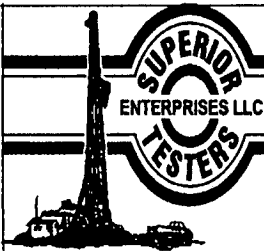
Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2269.12	115.97	Initial Hydro-static
1	36.10	115.70	Open To Flow (1)
31	36.44	116.49	Shut-in(1)
59	39.57	117.72	End Shut-in(1)
60	37.14	117.76	Open To Flow (2)
90	39.60	118.94	Shut-in(2)
141	43.79	120.45	End Shut-in(2)
141	2113.84	121.62	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	MJD	0.05

## Gas Rates

Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

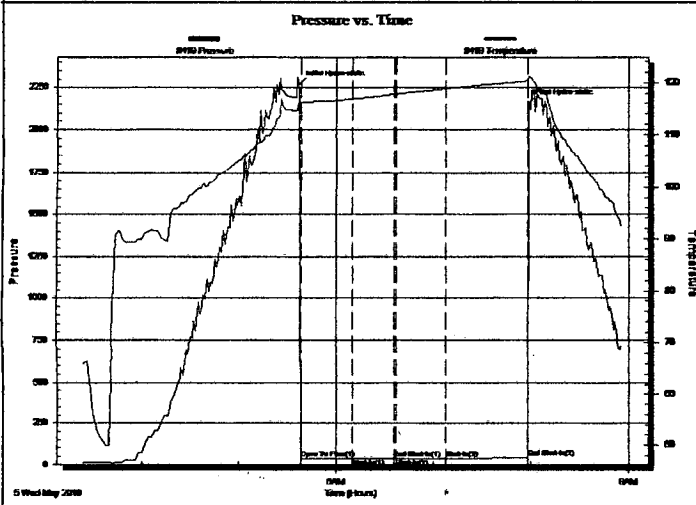
**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16207 **DST#: 7**  
 Test Start: 2010.05.05 @ 03:23:00

## GENERAL INFORMATION:

Formation: **JOHNSON**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 05:38:30  
 Time Test Ended: 09:42:00  
 Interval: **4519.00 ft (KB) To 4543.00 ft (KB) (TVD)**  
 Total Depth: **4543.00 ft (KB) (TVD)**  
 Hole Diameter: **6.88 inches** Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: **JARED SCHECK**  
 Unit No: **3320-70-SCOTT CITY**  
 Reference Elevations: **2928.00 ft (KB)**  
**2918.00 ft (CF)**  
 KB to GR/CF: **10.00 ft**

**Serial #: 8419** Outside  
 Press@RunDepth: **44.10 psia @ 4540.00 ft (KB)** Capacity: **5000.00 psia**  
 Start Date: **2010.05.05** End Date: **2010.05.05** Last Calib.: **2010.05.05**  
 Start Time: **03:24:00** End Time: **08:55:30** Time On Btm: **2010.05.05 @ 05:37:30**  
 Time Off Btm: **2010.05.05 @ 07:58:30**

TEST COMMENT: 30/INITIAL OPEN:VERY WEAK SURFACE BLOW DID NOT BUILD  
 30/INITIAL SHUT IN:NO BLOW BACK  
 30/FINAL OPEN:WEAK SURGE DID NOT BUILD FLUSHED TOOL GOOD SURGE DID NOT BUILD  
 45/FINAL SHUT IN:NO BLOW BACK



## PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2271.00	116.41	Initial Hydro-static
1	36.33	116.15	Open To Flow (1)
33	36.85	116.88	Shut-In(1)
59	40.14	117.78	End Shut-In(1)
60	37.76	117.81	Shut-In(2)
90	40.10	118.85	Shut-In(3)
141	44.10	120.30	End Shut-In(2)
141	2163.50	121.32	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	MJD	0.05

## Gas Rates

Choke (Inches)	Pressure (psia)	Gas Rate (Mcf/d)



# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16207      **DST#: 7**  
 Test Start: 2010.05.05 @ 03:23:00

## Tool Information

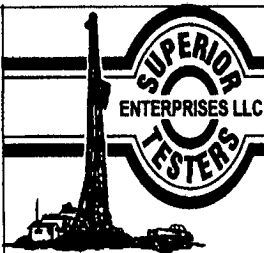
Drill Pipe:	Length: 3922.00 ft	Diameter: 3.80 inches	Volume: 55.02 bbl	Tool Weight: 10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose: 90000.00 lb
			<b>Total Volume: 57.87 bbl</b>	Tool Chased 1.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 79000.00 lb
Depth to Top Packer:	4519.00 ft			Final 79000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	24.00 ft			
Tool Length:	45.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: FLUSHED TOOL 2ND OPEN

## Tool Description

Length (ft)    Serial No.    Position    Depth (ft)    Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4499.00	
Shut-In Tool	5.00			4504.00	
Hydraulic Tool	5.00			4509.00	
Packer	5.00			4514.00	21.00      Bottom Of Top Packer
Packer	5.00			4519.00	
Perforations	19.00			4538.00	
Recorder	1.00	8405	Inside	4539.00	
Recorder	1.00	8419	Outside	4540.00	
Bullnose	3.00			4543.00	24.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>45.00</b>				



# DRILL STEM TEST REPORT

FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
Job Ticket: 16207      **DST#: 7**  
Test Start: 2010.05.05 @ 03:23:00

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 3400.00 ppm			
Filter Cake: 1.00 inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	MUD	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:

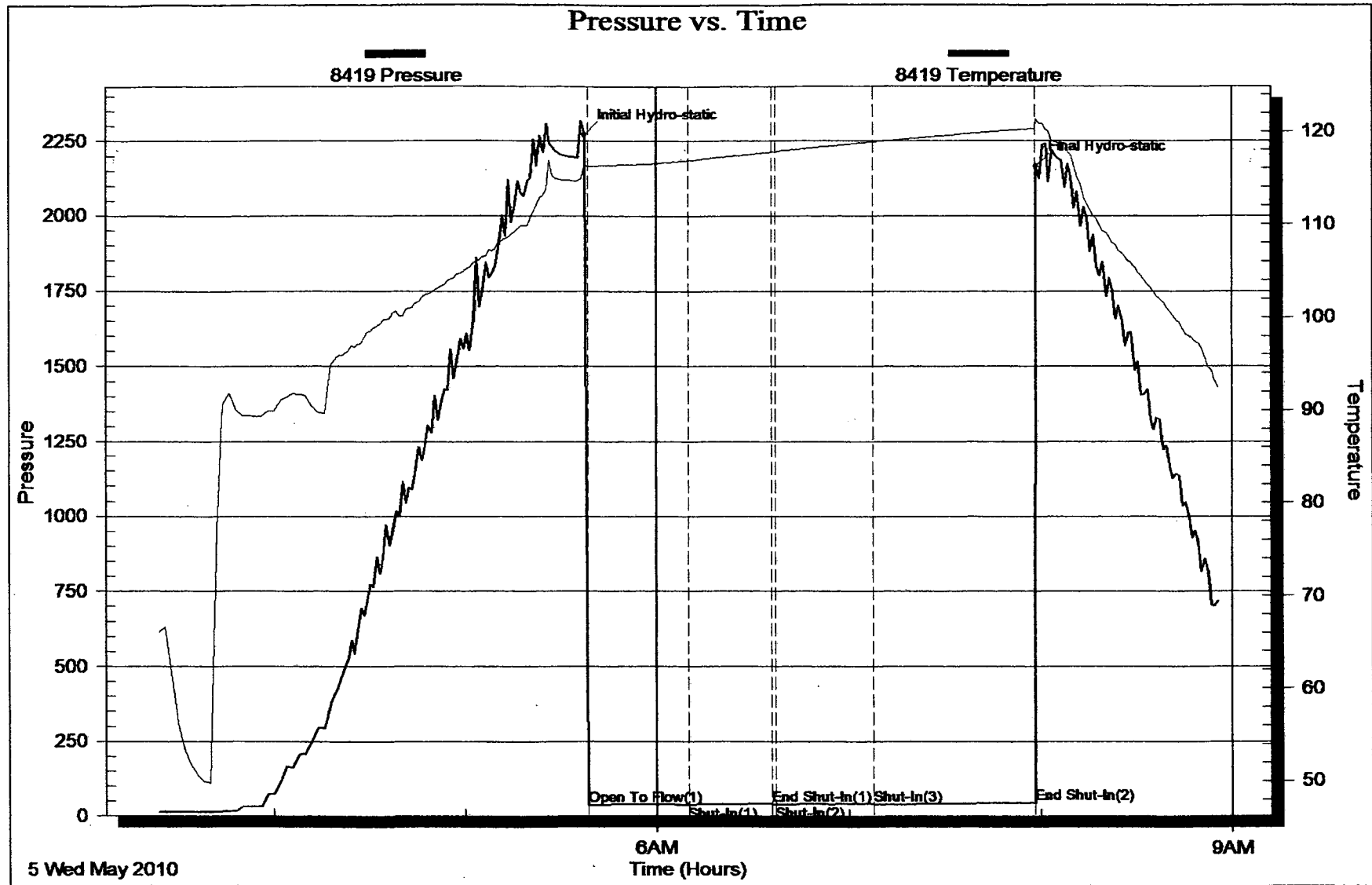


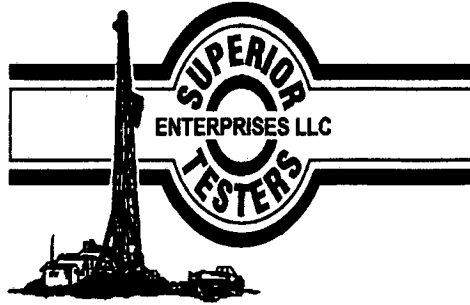
Serial #: 8419

Outside RITCHIE EXPLORATION INC

36-13-32W LOGAN

DST Test Number: 7





## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**

8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.05 @ 10:10:00

End Date: 2010.05.05 @ 16:25:00

Job Ticket #: 16208          DST #: 8

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.06 @ 13:48:36

RITCHIE EXPLORATION INC

NUSS UNIT #1

36-13-32W LOGAN

DST # 8

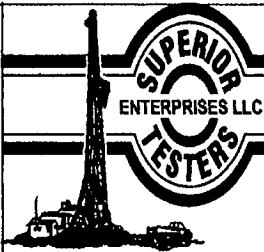
MORROW SAND

2010.05.05









# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16208      **DST#: 8**  
 Test Start: 2010.05.05 @ 10:10:00

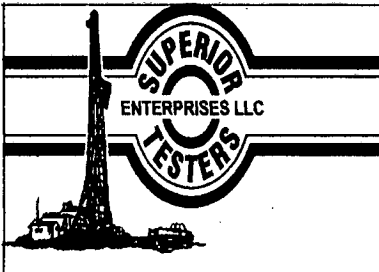
## Tool Information

Drill Pipe:	Length: 2986.00 ft	Diameter: 3.80 inches	Volume: 41.89 bbl	Tool Weight:	10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose:	90000.00 lb
			<u>Total Volume: 44.74 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial	80000.00 lb
Depth to Top Packer:	3555.00 ft			Final	80000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	45.00 ft				
Tool Length:	66.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3535.00	
Shut-In Tool	5.00			3540.00	
Hydrolic Tool	5.00			3545.00	
Packer	5.00			3550.00	21.00      Bottom Of Top Packer
Packer	5.00			3555.00	
Perforations	40.00			3595.00	
Recorder	1.00	8405	Inside	3596.00	
Recorder	1.00	8419	Outside	3597.00	
Bullnose	3.00			3600.00	45.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>66.00</b>				



# DRILL STEM TEST REPORT

## FLUID SUMMARY

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16208      **DST#: 8**  
 Test Start: 2010.05.05 @ 10:10:00

### Mud and Cushion Information

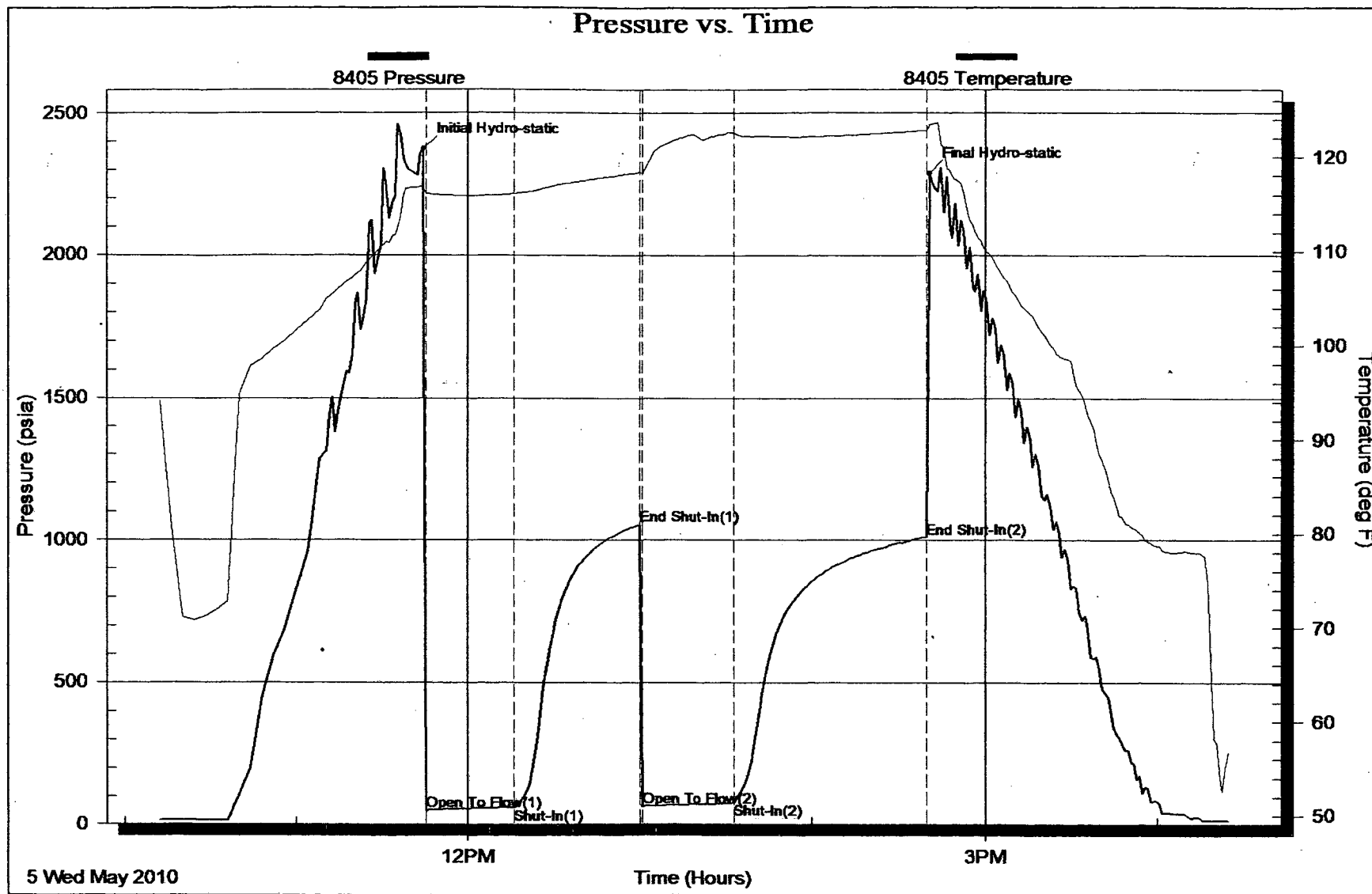
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.20 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 3400.00 ppm			
Filter Cake: 1.00 inches			

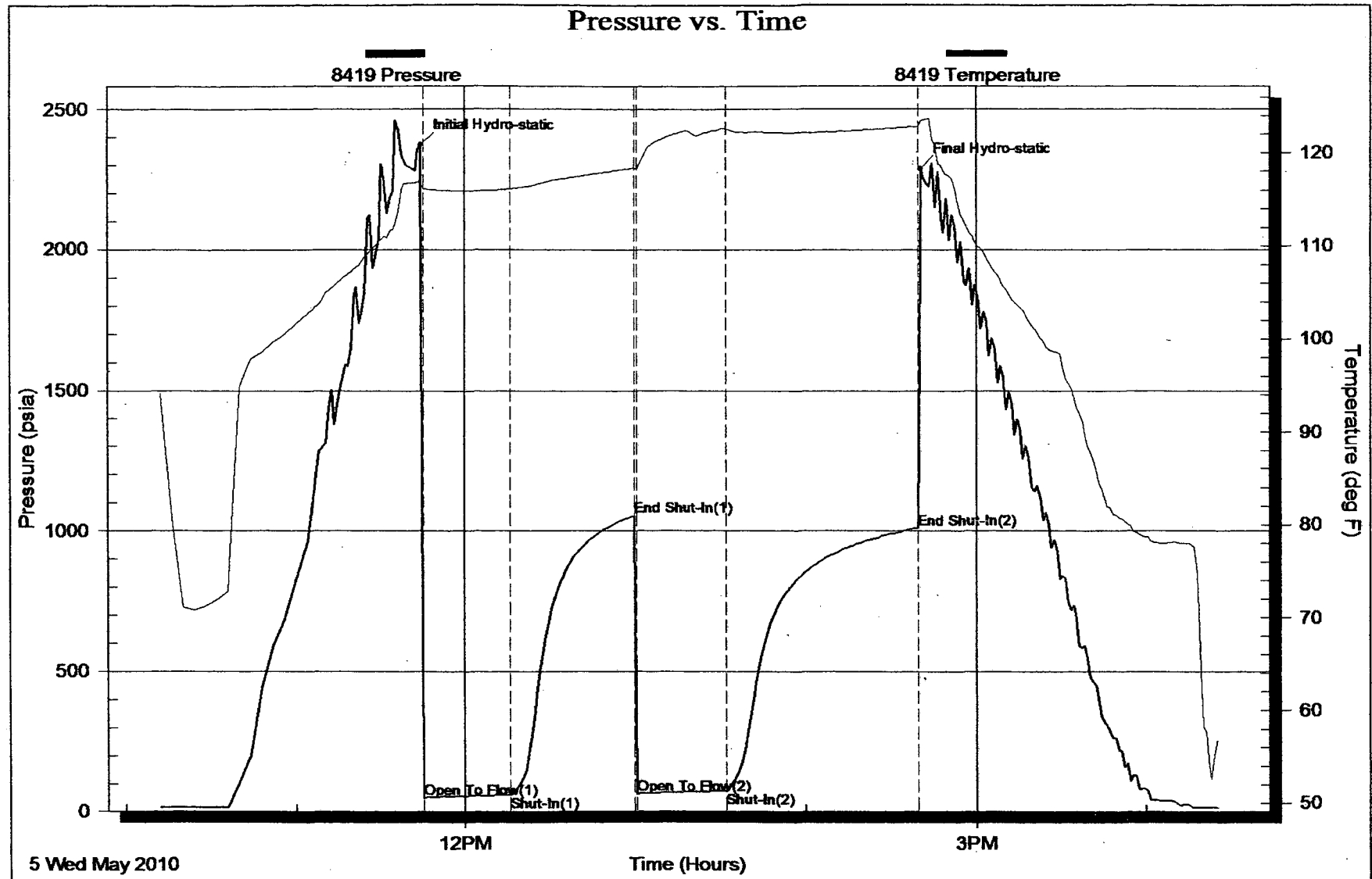
### Recovery Information

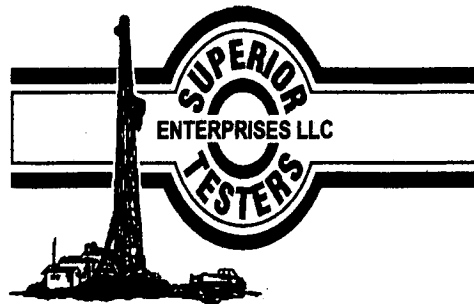
Recovery Table

Length ft	Description	Volume bbl
30.00	S G OIL CUT MUD 5%G 25%O 70%M	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **RITCHIE EXPLORATION INC**

8100 E 22ND ST N #700 BOX 783188

ATTN: MIKE ENGELBRECHT

**36-13-32W LOGAN**

**NUSS UNIT #1**

Start Date: 2010.05.06 @ 19:27:00

End Date: 2010.05.07 @ 02:55:30

Job Ticket #: 16209                      DST #: 9

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2010.05.07 @ 03:13:42

RITCHIE EXPLORATION INC

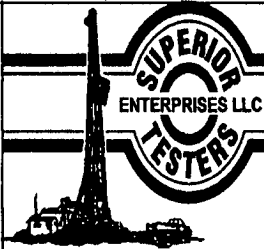
NUSS UNIT #1

36-13-32W LOGAN

DST # 9

MARROW - MISSISSIPPI

2010.05.06



# DRILL STEM TEST REPORT

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16209 **DST#: 9**  
 Test Start: 2010.05.06 @ 19:27:00

## GENERAL INFORMATION:

Formation: **MARROW - MISSISSIPPI**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:24:30

Time Test Ended: 02:55:30

Test Type: Conventional Straddle (Initial)

Tester: JARED SCHECK

Unit No: 3320-70-SCOTT CITY

Interval: **4553.00 ft (KB) To 4620.00 ft (KB) (TVD)**

Total Depth: 4650.00 ft (KB) (TVD)

Hole Diameter: 6.88 inches Hole Condition: Fair

Reference Elevations: 2928.00 ft (KB)

2918.00 ft (CF)

KB to GR/CF: 10.00 ft

**Serial #: 8405**

**Inside**

Press@RunDepth: 155.16 psia @ 4618.00 ft (KB)

Start Date: 2010.05.06

Start Time: 19:27:00

End Date:

End Time:

2010.05.07

02:55:30

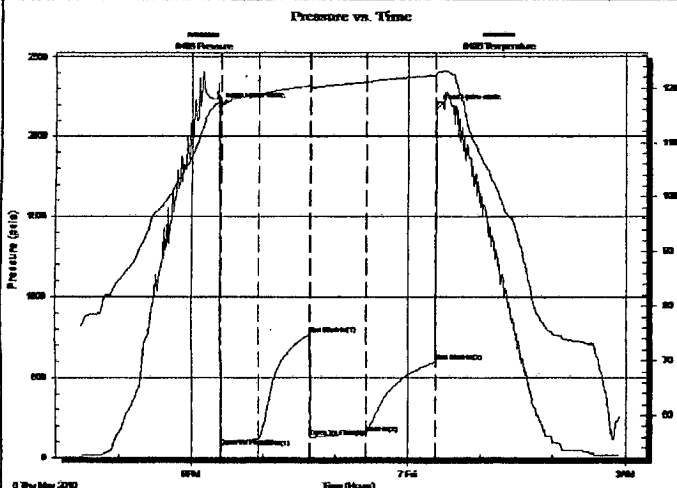
Capacity: 5000.00 psia

Last Calib.: 2010.05.07

Time On Btrr: 2010.05.06 @ 21:23:30

Time Off Btrr: 2010.05.07 @ 00:23:30

TEST COMMENT: 30/INITIAL OPEN:WEAK BUT BUILDING BLOW BUILT 6 INCHES INTO WATER IN 30 MINUTES  
 45/INITIAL SHUT IN:NO BLOW BACK  
 45/FINAL OPEN:WEAK BUT BUILDING BLOW BUILT 6 1/2 INCHES INTO WATER IN 45 MINUTES  
 60/FINAL SHUT IN NO BLOW BACK



## PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	2186.18	117.68	Initial Hydro-static
1	68.86	116.94	Open To Flow (1)
33	117.56	118.86	Shut-in(1)
75	766.13	120.41	End Shut-in(1)
76	127.31	120.15	Open To Flow (2)
122	155.16	121.14	Shut-in(2)
180	598.16	122.45	End Shut-in(2)
180	2175.18	122.97	Final Hydro-static

## Recovery

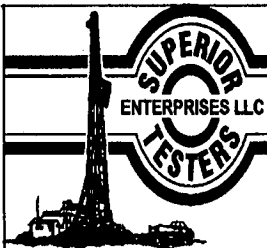
Length (ft)	Description	Volume (bbl)
10.00	SG MUD CUT OIL 5%G 35%M 60%O	0.05
95.00	SG OIL CUT MUD 15%G 35%O 50%M	0.47
95.00	SG OIL CUT MUD 20%G 30%O 50%M	0.47

## Gas Rates

	Choke (inches)	Pressure (psia)	Gas Rate (Mcf/d)







# DRILL STEM TEST REPORT

TOOL DIAGRAM

RITCHIE EXPLORATION INC  
 8100 E 22ND ST N #700 BOX 783188  
 ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
 Job Ticket: 16209 **DST#: 9**  
 Test Start: 2010.05.06 @ 19:27:00

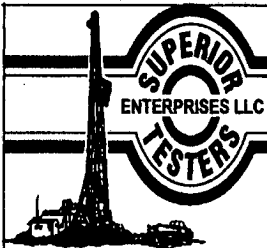
## Tool Information

Drill Pipe:	Length: 3989.00 ft	Diameter: 3.80 inches	Volume: 55.96 bbl	Tool Weight: 10000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 580.00 ft	Diameter: 2.25 inches	Volume: 2.85 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 58.81 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.50 ft			String Weight: Initial 80000.00 lb
Depth to Top Packer:	4553.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	4619.00 ft			
Interval between Packers:	66.00 ft			
Tool Length:	111.50 ft			
Number of Packers:	3	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
C.O. Sub	0.50			4538.00	
S.I. Tool	5.00			4543.00	
HYD S.I. Tool	5.00			4548.00	
Packer	5.00			4553.00	15.50 Bottom Of Top Packer
Packer	0.00			4553.00	
Perforations	5.00			4558.00	
C.O. Sub	0.75			4558.75	
DRILL PIPE	31.50			4590.25	
C.O. Sub	0.75			4591.00	
Anchor	26.00			4617.00	
Recorder	1.00	8405	Inside	4618.00	
Blank Off Sub	1.00			4619.00	66.00 Tool Interval
Packer	0.00			4619.00	
TAIL PIPE	24.00			4643.00	
Recorder	1.00	8419	Outside	4644.00	
Bullnose	5.00			4649.00	30.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>111.50</b>				



# DRILL STEM TEST REPORT

## FLUID SUMMARY

RITCHIE EXPLORATION INC  
8100 E 22ND ST N #700 BOX 783188  
ATTN: MIKE ENGELBRECHT

**NUSS UNIT #1**  
**36-13-32W LOGAN**  
Job Ticket: 16209      **DST#: 9**  
Test Start: 2010.05.06 @ 19:27:00

### Mud and Cushion Information

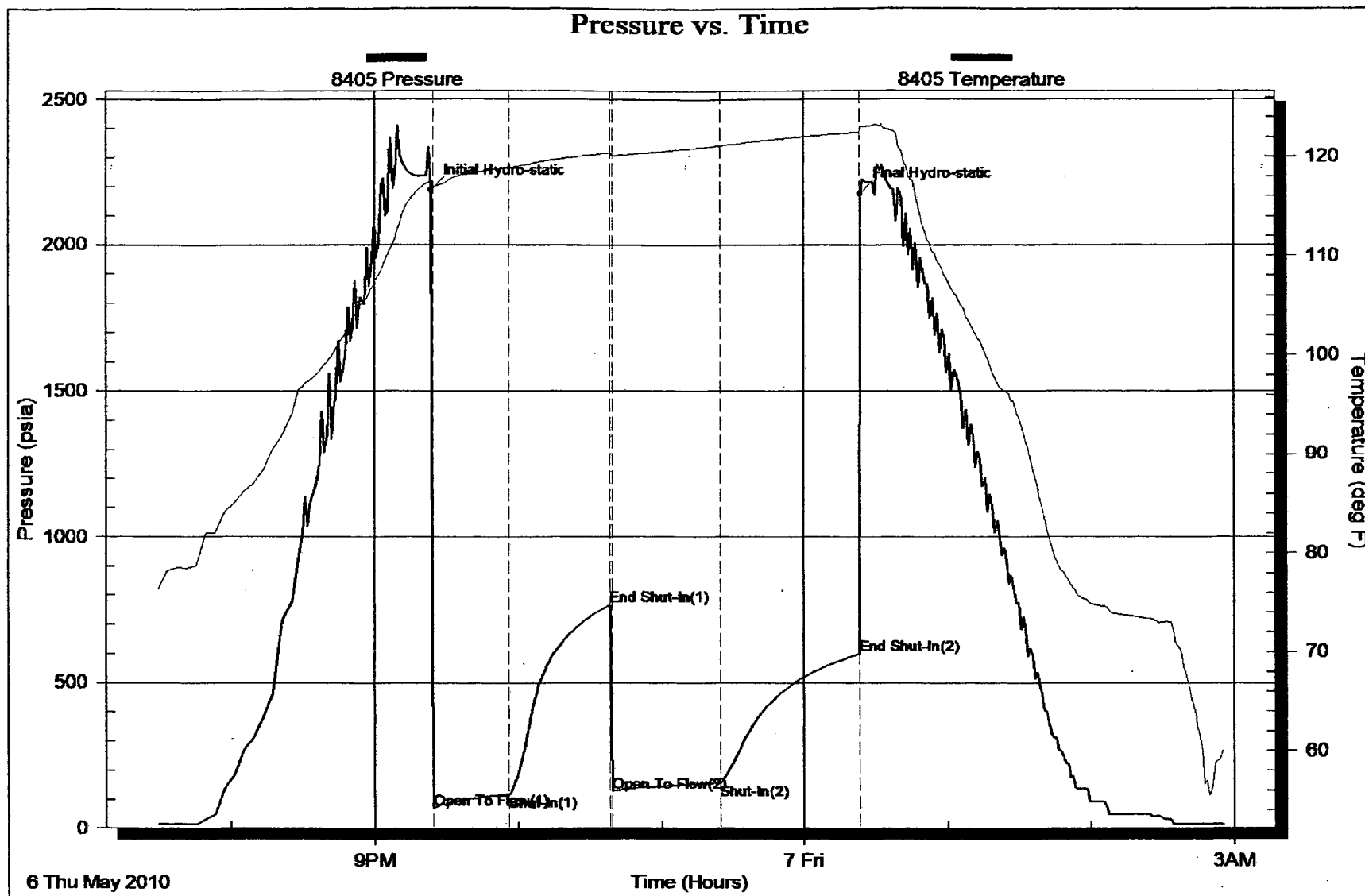
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 64.00 sec/qt	Cushion Volume: bbl		
Water Loss: 8.80 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psia		
Salinity: 4000.00 ppm			
Filter Cake: 1.00 inches			

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	SG MUD CUT OIL 5%G 35%M 60%O	0.049
95.00	SG OIL CUT MUD 15%G 35%O 50%M	0.467
95.00	SG OIL CUT MUD 20%G 30%O 50%M	0.467

Total Length: 200.00 ft      Total Volume: 0.983 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:



Serial #: 8419

Outside RITCHIE EXPLORATION INC

36-13-32W LOGAN

DST Test Number: 9

