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UIC PERMIT RENEWAL APPLICATION

PILLAR ENERGY, LLC

2019

UIC PERMIT#

UIC2D0930081

NESTOR B-1

Prepared by: Blake Jones

Precision Oil and Gas, INC.

5/20/19

CHECKLIST FOR FILING A UIC PERMIT APPLICATION

Please utilize this checklist to ensure you have prepared, completed, and enclosed all required documentation and payment to ensure a timely review of your submittal.

Operator	PILLAR ENERGY, LLC		
Existing UIC Permit ID Number	UIC2D0930081	UIC Well API Number	47-093-00081

Office of Oil and Gas Office Use Only	
Permit Reviewer	DAN
Date Received	7/1/19
Administratively Complete Date	10/24/19
Approved Date	
Permit Issued	

Please check the fees and payment included.

Fees		Payment Type	
UIC Permit Fee: $500	✓	Check	✓
Groundwater Protection Plan (GPP) Fee: $50.00	✓	Electronic	
		Other	

Please check the items completed and enclosed. V# 32074

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- ✓ Checklist
- ✓ UIC-1
  - ✓ Section 1 – Facility Information
  - ✓ Section 2 – Operator Information
  - ✓ Section 3 – Application Information
  - ✓ Section 4 – Applicant/Activity Request and Type
  - ✓ Section 5 – Brief description of the Nature of the Business
  - ✓ CERTIFICATION
- ✓ Section 6 – Construction
  - ✓ Appendix A Injection Well Form
  - ✓ Appendix B Storage Tank Inventory
- ✓ Section 7 – Area of Review - USDW Testing Results to be Submitted
  - ✓ Appendix C Wells Within the Area of Review

dep

- [x] Appendix D Public Service District Affidavit
- [x] Appendix E Water Sources
- [N/A] Appendix F Area Permit Wells - N/A
- [x] Section 8 – Geological Data on Injection and Confining Zones
- [x] Section 9 – Operating Requirements / Data
  - [x] Appendix G Wells Serviced by Injection Well
- [x] Section 10 – Monitoring
- [x] Section 11 – Groundwater Protection Plan (GPP)
  - [x] Appendix H Groundwater Protection Plan (GPP)
- [x] Section 12 – Plugging and Abandonment
- [x] Section 13 – Additional Bonding
- [x] Section 14 – Financial Responsibility
  - [x] Appendix I Financial Responsibility
- [N/A] Section 15 – Site Security Plan - N/A
  - [N/A] Appendix J Site Security for Commercial Wells - N/A
- [x] Section 16 – Additional Information
  - [x] Appendix K Other Permit Approvals

NOTE: For all 2D wells an additional bond in the amount of $5,000 is required.

Reviewed by (Print Name): Blake E. Jones

Reviewed by (Sign): Blake E. Jones

Date Reviewed: 6/25/19

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UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 1 - 5

UIC-1 FORM

FACILITY INFORMATION

OPERATOR INFORMATION

APPLICATION INFORMATION

APPLICANT/ACTIVITY REQUEST

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

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UIC-1
(4/25)

WEST VIRGINIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
601 57th Street, SE
Charleston, WV 25304
(304) 926-0450
www.dep.wv.gov/oil-and-gas

UNDERGROUND INJECTION CONTROL (UIC) PERMIT APPLICATION

UIC PERMIT ID # UIC2D0930081 API # 47-093-00081 WELL # NESTOR B-1

Section I. Facility Information

Facility Name: NESTOR B-1

Address: 1642 HORSESHOE RUN RD.

City: PARSONS State: WV Zip: 26287

Saint George District & 7.5 Quad

County: TUCKER

Location description:

TRAVELING SOUTH ON WV-72, TURN LEFT ONTO CR-5 (.4 miles), TURN RIGHT TO STAY ON HOLLY MEADOWS RD (3.0 miles), TURN LEFT ON HORSESHOE RUN RD (1.7 miles), 1642 HORSESHOE RUN ROAD ON THE RIGHT.

Location of well(s) or approximate center of field/project in UTM NAD 83 (meters):

Northing: 4336179.5 Easting: 618482.9 39.166773 -79.628511

Environmental Contact Information:

Name: Eric Anderson Title: Project Manager

Phone: 304-542-4195 Email: eric.anderson@pillar-energy.com

Section 2. Operator Information

Operator Name: PILLAR ENERGY, LLC

Operator ID: 494495012

Address: P.O. BOX 2682

City: CHARLESTON State: WV Zip: 25330

County: KANAWHA

Contact Name: Ezra Schoolcraft Contact Title:

Contact Phone: 304-419-2932 Contact Email: ezra.schoolcraft@pillar-energy.com

Promoting a healthy environment.

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Section 3. Applicant Information

Ownership Status: ■ PRIVATE ☐ PUBLIC ☐ FEDERAL ☐ STATE
☐ OTHER (explain):

SIC code: ■ 1311 (2D, 2H, 2R) ☐ 1479 (3S) ☐ OTHER (explain):

Section 4. Applicant / Activity Request and Type:

A. Apply for a new UIC Permit: ☐ 2D ☐ 2H ☐ 2R ☐ 3S
B. Reissue existing UIC Permit: ■ 2D ☐ 2H ☐ 2R ☐ 3S
C. Modify existing UIC Permit: ☐ 2D ☐ 2H ☐ 2R ☐ 3S
(Submit only documentation pertaining to the modification request)
2D COMMERCIAL FACILITY: ☐ YES ■ NO

Section 5. Briefly describe the nature of business and the activities to be conducted:

Water produced from Pillar Energy, LLC wells within the area to be injected/disposed into the Huntersville Chert Formation (3,528' to 3,548'). This is a Non-Commercial Disposal Well and disposes of Class II compliant fluids.

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CERTIFICATION

All permit applications must be signed by a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, or by a principal executive or ranking elected official for a public agency, or a [1]duly authorized representative in accordance with 47CSR13-13.11.b.

A. Name and title of person applying for permit:

Print Name: Jeff Isner

Print Title: CEO

B. Signature and Date.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature:

Date: 6-18-19

[1] A person is a duly authorized representative if:

The authorization is made in writing by a person described in subdivision 47CSR13-13.11.a.

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of the plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility.

The written authorization is submitted to the Director.

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 6

CONSTRUCTION

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 6

1. SEE ATTACHED MAP - The attached Figure No. 1 is an aerial map showing the wellsite of the Nestor B-1 Disposal Well.

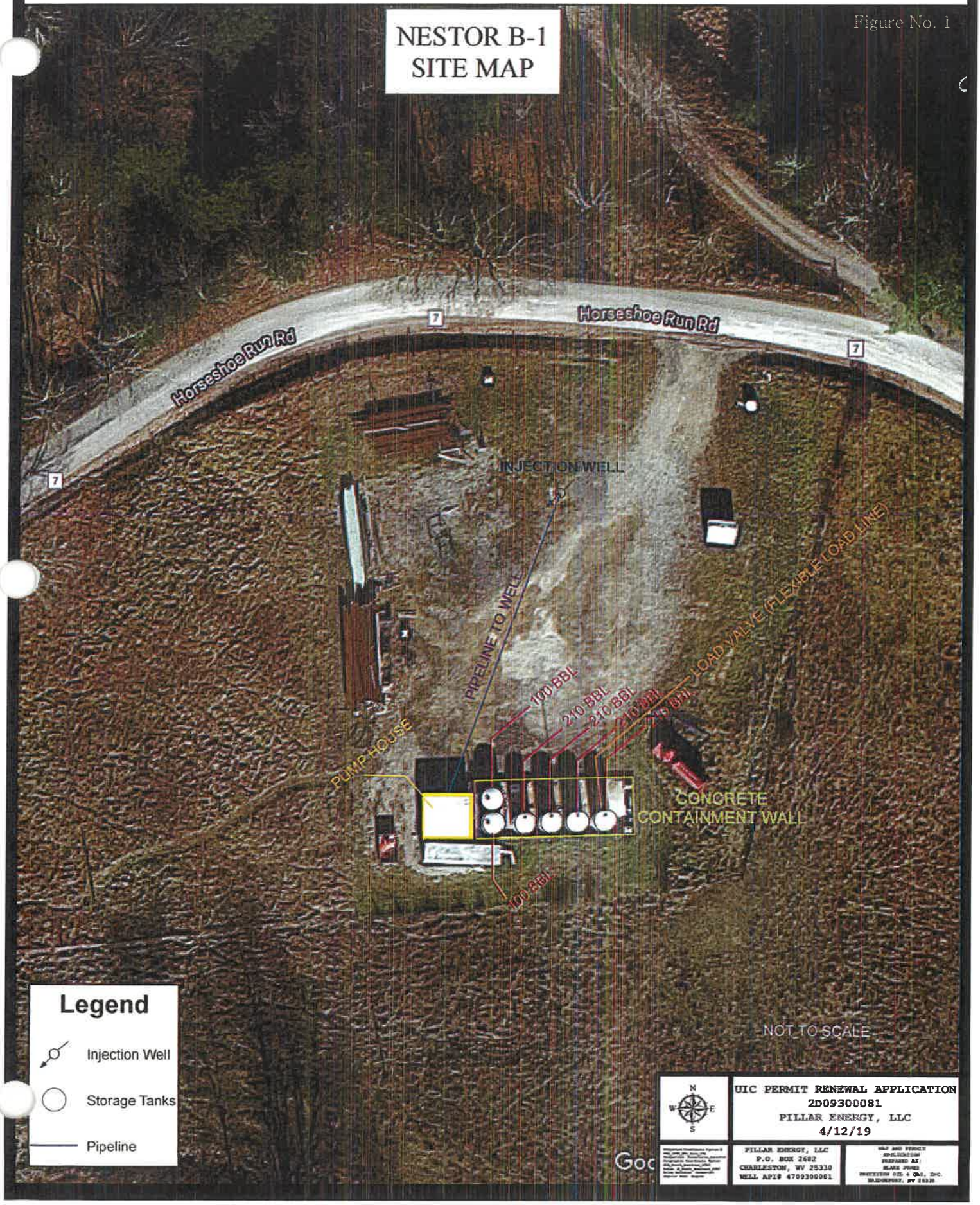
2. SEE ATTACHED Figure No. 2: Well Schematic

3. SEE ATTACHED APPENDIX A AND APPENDIX B

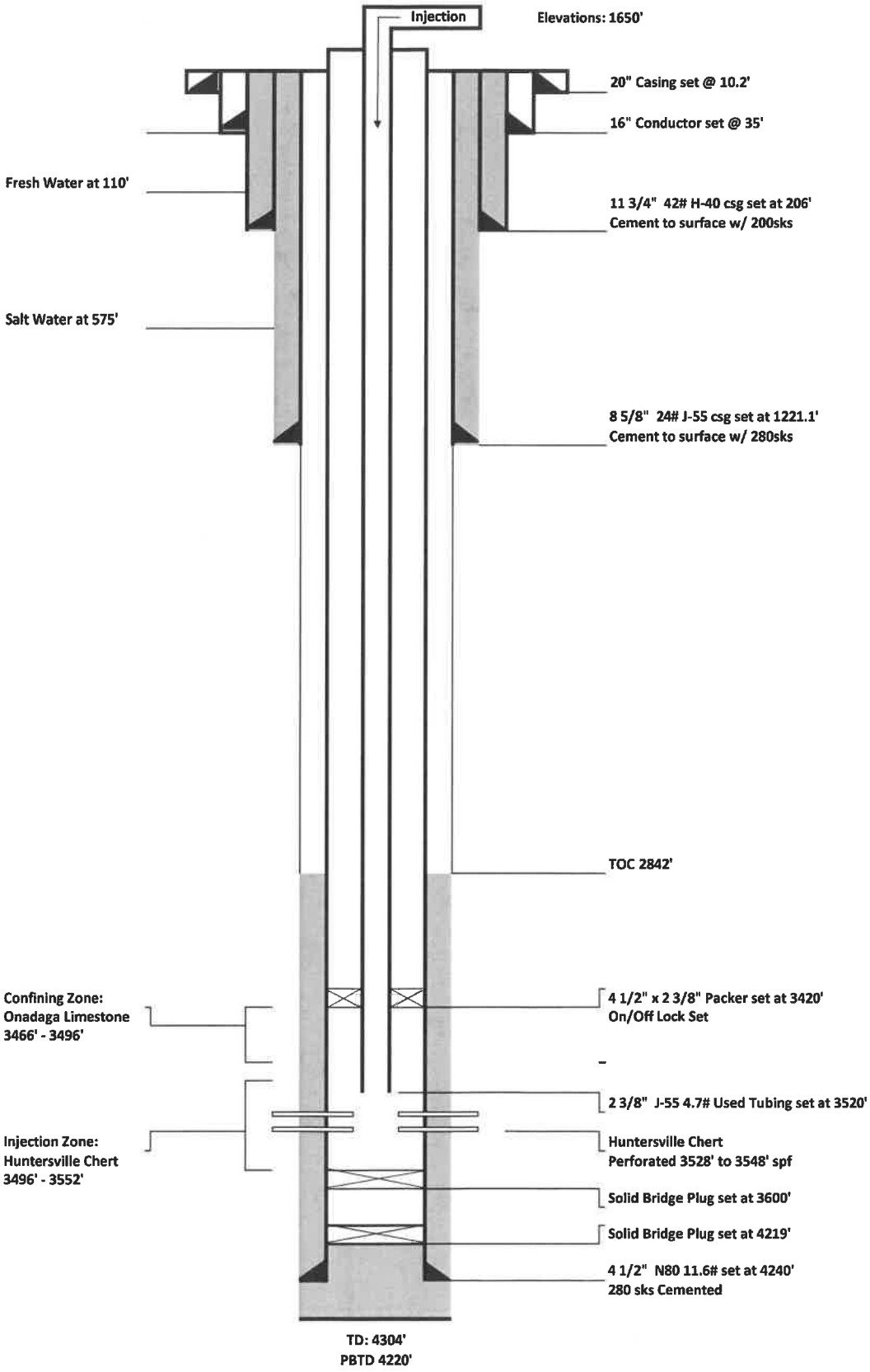
4. SEE ATTACHED Figure No. 3 - All E-Logs, including cement bond log, gamma ray, litho-density, etc., that could be found have been attached in permit.

PILLAR ENERGY, LLC UIC PERMIT - 2D093000081

Figure No. 1



Nestor B-1
API 47-093-00081



APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION: HUNTERSVILLE CHERT

Depth: 3496 Feet (top) 3552 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 4304 Feet

3) Approximate water strata depths: Fresh 110 Feet Salt 575 est Feet

4) Approximate coal seam depths: N/A

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 0 psig Source TESTED BEFORE STIMULATION

7) Estimated reservoir fracture pressure 3500 psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour)	
Injection volume (bbl/day)	590
Injection pressure (psig)	1142
Bottom hole pressure (psig)	1294

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

FORMATION WATER FROM ORISKANY, HUNTERSVILLE CHERT, AND TUSCARORA FORMATIONS

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

NONE

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"				10.2	10.2	
Fresh Water	16"	X			35'	35'	
Coal	11-3/4"	X	H-40	42	206'	206'	200 sks
Intermediate 1	8-5/8"	X	J-55	24	1221.1'	1221.1'	280 sks
Intermediate 2	4-1/2"	X	N-80	11.6	4240'	4240'	280 sks
Production							
Tubing	2-3/8"	X	J-55	4.7		3520'	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Solid Bridge Plug	Solid Bridge Plug	Packer	
Sizes:				
Depths Set:	3600'	4219'	3420'	

0081

WR-35
Rev (5-01)

WR-35

DATE: August 29, 2005
API # : 47-093-00081

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas

Brine disposal well

Well Operator's Report of Well Work

Farm name: Nestor, Marshall A. Operator Well No.: Nestor B-1

LOCATION: Elevation: 1650' Quadrangle: Saint George 7.5'

District: Saint George County: Tucker
Latitude: 10 Feet South of 39 Deg. 10 Min. 0 Sec.
Longitude 1100 Feet West of -79 Deg. 37 Min. 30 Sec.

Company: MegaEnergy Operating, Inc.

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: 9085 E. Mineral Cir, Ste 270	20" csg	10.2'	10.2'	
Englewood, CO 80112	16" csg	35'	35'	Sanded in
Agent: Carry Ranson	11-3/4" H40	206'	206'	200 sxs
Inspector: Craig Duckworth	8-5/8" J55	1221.1'	1221.1'	280 sxs
Date Permit Issued: 3-14-2001	4-1/2" N80	4240'	4240'	280 sxs
Date Well Work Commenced: 3-22-2001				
Date Well Work Completed: 5-11-2001				
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary Rig: SW Jack Rig #7				
Total Depth (feet): 4304				
Fresh Water Depth (ft.): 110				
Salt Water Depth (ft.):				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.):				

OPEN FLOW DATA

Producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure 0 psig (surface pressure) after _____ Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

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NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: _____
By: J. Scott Hornafius
Date: August 29, 2005

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Nestor B-1: 47-093-00081

Operator: MegaEnergy Operating, Inc.
County: Tucker, WV

KB Elevation:	1660'
GL Elevation:	1650'
T/Tully:	3150'
T/Onondaga:	3466'
T/Huntersville:	3496'
T/Oriskany:	3652'
T/Helderberg:	3802'

Final Rock Pressure: 0 psig, fluid level at 300'

Huntersville Chert

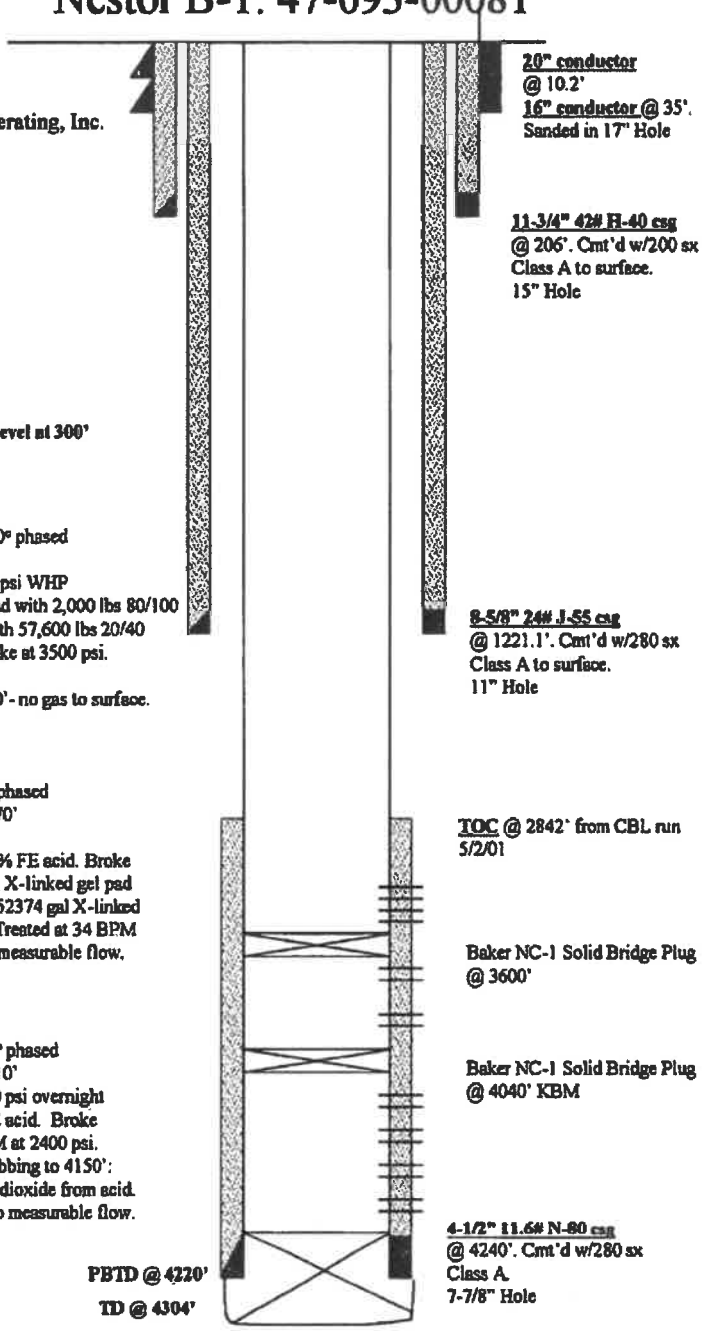
Perforated w/ 3-1/8" HSC, 3 SPF, 120° phased
3528'- 3548'
Pre frac rate – no measurable flow, 0 psi WHP
Frac Job – 11,760 gal X-linked gel pad with 2,000 lbs 80/100 mesh plus 22,000 gal X-linked gel with 57,600 lbs 20/40 mesh sand with 200 SCF/bbl N2. Broke at 3500 psi.
Treated at 26.5 BPM to 3150 psi.
Post frac job - Swabbed brine to 1800'- no gas to surface.

Oriskany

Perforated w/ 3-1/8" HC 4 SPF, 90° phased
3672'-3676', 3738'-3742', 3757'-3770'
Pre frac job – no measurable flow
Acid/Frac Job - pumped 5040 gal 15% FE acid. Broke down at 2950 psi. Pumped 10,000 gal X-linked gel pad with 4500 lb 80/100 Mesh sand plus 52374 gal X-linked gel with 63,000 lb20/40 mesh sand. Treated at 34 BPM @ 2200 psi. Swabbed to 3700' – no measurable flow.

Helderberg Limestone

Perforated w/ 3-1/8" HSC 4 SPF, 90° phased
4060'-4064', 4067'-4072', 4106'-4110'
Pre acid job – no measureable flow, 0 psi overnight
Acid Job - pumped 7500 gal 15% FE acid. Broke down at 3900 psi, treated at 13.5 BPM at 2400 psi.
Post acid job – 8.5 MCFPD after swabbing to 4150': gas would not burn; probably carbon dioxide from acid.
Fluid level after 12 hours at 3000'; no measurable flow.



FORM WW 6

0081

NESTOR UNIT
164 OF 320 ACRES±

WELL NO. B-1

LONG. 79°37'44.3" — 1,100'

LATITUDE 39°10'00"

LONGITUDE 79°37'30" — 1,100'

LAT. 39°09'59.9"

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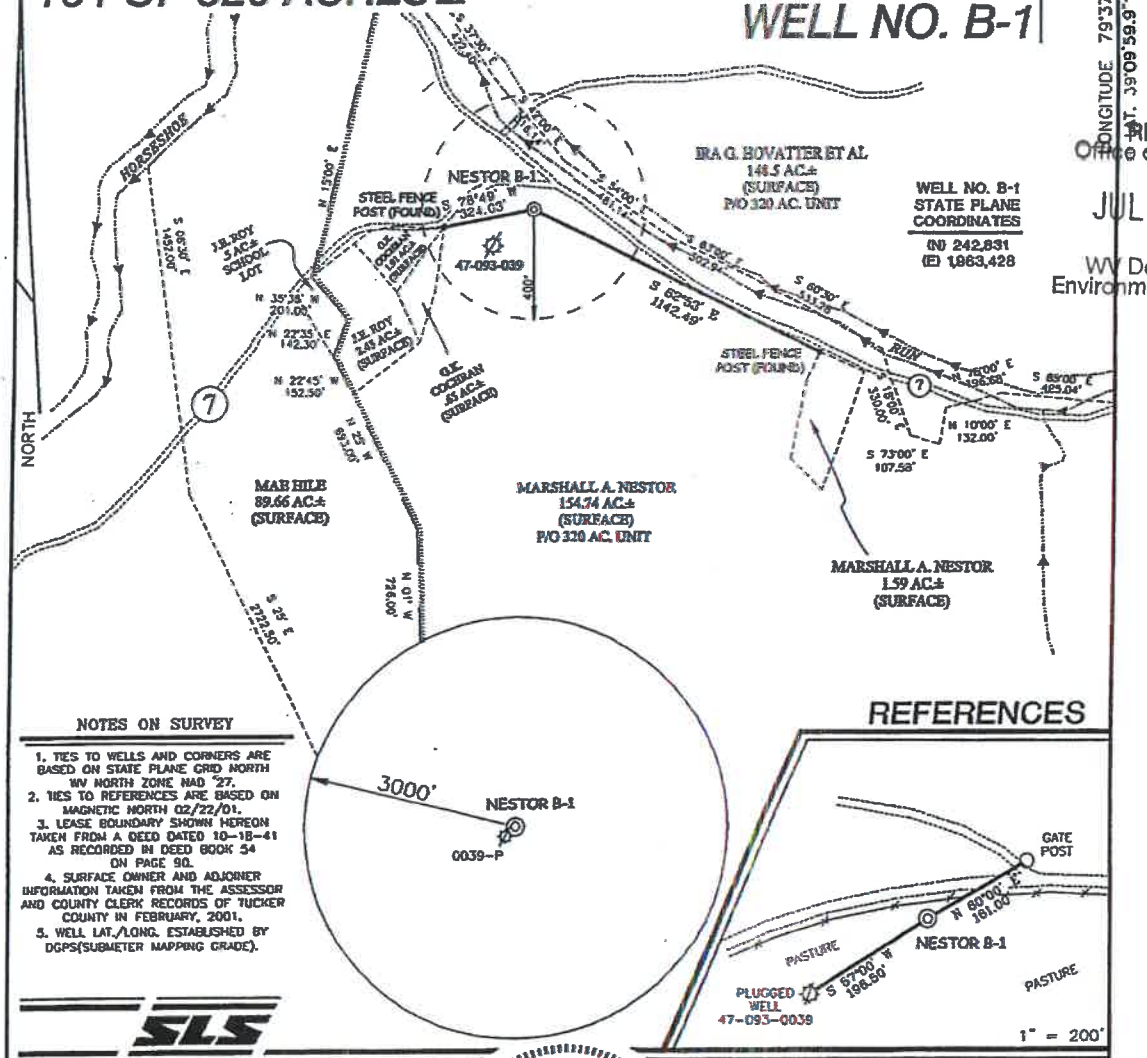

NOTES ON SURVEY

1. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
2. TIES TO REFERENCES ARE BASED ON MAGNETIC NORTH 02/22/01.
3. LEASE BOUNDARY SHOWN HEREON TAKEN FROM A DEED DATED 10-18-41 AS RECORDED IN DEED BOOK 54 ON PAGE 90.
4. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF TUCKER COUNTY IN FEBRUARY, 2001.
5. WELL LAT./LONG. ESTABLISHED BY DGPS(SUBMETER MAPPING GRADE).

REFERENCES

SLS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

P.S. 677 Gregory A. Smith

GREGORY A. SMITH LICENSED No. 677 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE FEBRUARY 23, 20 01

OPERATORS WELL NO. NESTOR B-1

API WELL NO. 47 (STATE) - 93 (COUNTY) - 00081 (PERMIT)

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 4647PB1 (99-25)

SCALE 1" = 500'

PROVEN SOURCE OF ELEVATION JUNCTION OF ROADS ELEVATION 1647'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ X SHALLOW ___

LOCATION :
ELEVATION 1650' WATERSHED HORSESHOE RUN
DISTRICT ST. GEORGE COUNTY TUCKER QUADRANGLE ST. GEORGE 7.5'
SURFACE OWNER MARSHALL A. NESTOR ACREAGE 154.74
ROYALTY OWNER MARSHALL A. NESTOR LEASE ACREAGE 164 OF 320 UNIT
PROPOSED WORK : LEASE NO. ___
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD
FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION ORISKANY
ESTIMATED DEPTH 4200'

COUNTY NAME

PERMIT

WELL OPERATOR MEGAENERGY OPERATING, INC. DESIGNATED AGENT CARRY RANSON
ADDRESS 8501 E. DRY CREEK PLACE, ENGLEWOOD, CO 80112 ADDRESS 900 CORE ROAD PARKERSBURG, WV 26101

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APPENDIX B
Storage Tank Inventory

API #	Tank ID (AST#)	Tank Location (UTM NAD 83 Meters)		Installation Date	Tank Age (Months)	Construction Material (Steel, plastic, etc.)	Capacity (gallons)	Type of Fluid Stored	Volume of Fluid Stored (gallons)	Tank Type Single/Double Wall
		Northing	Easting							
47-093-00081	047-00000075	4336179.5	618482.9			PLASTIC	8820	DISPOSAL WATER		
47-093-00081	047-00000076	4336179.5	618482.9			PLASTIC	8820	DISPOSAL WATER		
47-093-00081	047-00000077	4336179.5	618482.9			PLASTIC	8820	DISPOSAL WATER		
47-093-00081	047-00000078	4336179.5	618482.9			PLASTIC	4200	DISPOSAL WATER		
47-093-00081	047-00000079	4336179.5	618482.9			PLASTIC	4200	DISPOSAL WATER		
47-093-00081	047-00000080	4336179.5	618482.9			PLASTIC	8820	DISPOSAL WATER		

Pillar Energy, LLC UIC Permit: UIC2D0930081

Calculations for Concrete Containment (vertical walls, 90 deg corners)

Dimensions of containment: 74 ft x 24 ft, 26in vertical wall
Volume of containment: **3836.16 cubic ft** (74 ft x 24 ft x 2.16 ft)
Volume of one 210 bbl tank (Tank 1): **1179.234 cf** (210 bbl x 42 gal/bbl x 0.1337 cf/gal)
Volume of 110% of one 210 bbl tank: **1297.1574 cf** (1179.234 cf x 1.10)
Base area of three 210 bbl tanks (3 x 53.79 sf): **161.37 sf** (Tanks in containment not connected to subject tank) (Tank 2 +Tank 3+ Tank 4) or (53.79 sf + 53.79 sf + 53.79 sf)
Volume excluded by Tank 2 + Tank 3+ Tank 4: **348.5592 cf** (161.37 sf x 2.16 ft depth)
Effective volume of containment: **3135.56 cf** (3836.16 cf - (348.56 cf + 352.04 cf))
Ratio of effective containment volume to 110% tank volume: **242%** (3135.56 cf / 1297.1574 cf)

Base area of two 100 bbl tanks (2 x 81.49 sf): **162.98 sf** (Tanks in containment not connected to subject tank) (Tank 5 + Tank 6) or (81.49 sf + 81.49 sf)
Volume excluded by Tank 5 + Tank 6: **352.04 cf** (162.98 sf x 2.16 ft depth)
Total Volume excluded from all Tanks: 700.6 cf

110%	Cont Vol	%
1297.16	**3135.6**	**242%**

After calculating the volume of the Concrete Containment Area for the subject injection well's aboveground storage tanks, it is found that the containment area is capable of containing **242%** of a 210bbl storage tank. The largest storage tank found in the containment area is 210bbl, therefore, secondary containment for the subject injection well meets the WVDEP requirements.

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Figure No. 3

Weeks Wireline Services

GAMMA RAY CCL CEMENTBOND VDL

Company MEGAENERGY OPERATING INC

Well NESTOR B-1

Field LEADMINE

County TUCKER State/Prv WV

Location 47-930-0081 Other Services PERFORATE

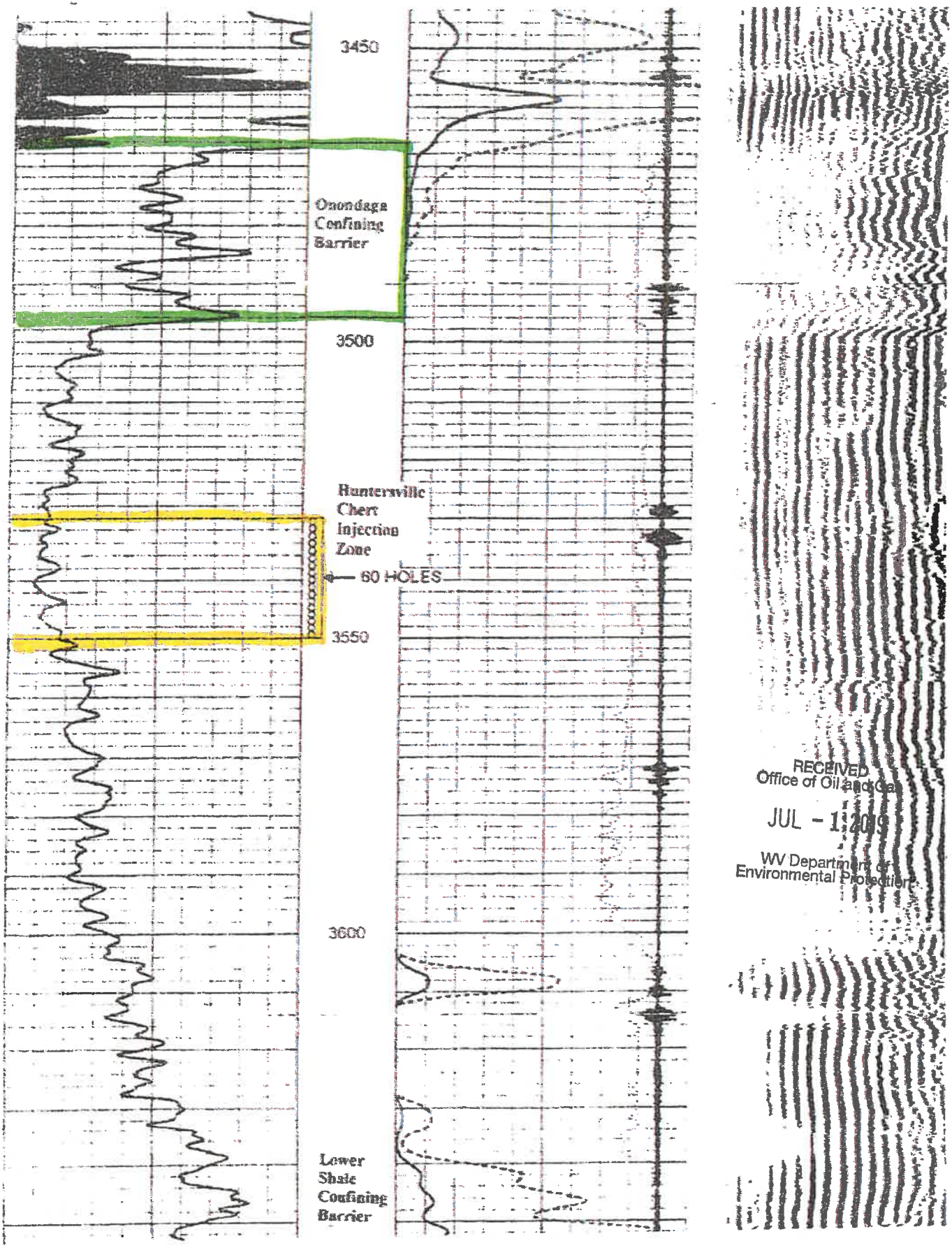
Company					
Well					
Field					
County					
State/Prv					
Permanent Datum	G.L.	Elevation	1650'	Elevation	K.B. 1660'
Log Measured From	G.L.				D.F. 1659'
Drilling Measured From	K.B.				G.L. 1650'
Date	05/02/201				
Run Number	ONE				
Depth Driller	4300'				
Depth Logger	4220'				
Bottom Logged Interval	4215'				
Top Log Interval	SURFACE				
Open Hole Size					
Type Fluid	WATER				
Density / Viscosity					
Max. Recorded Temp.					
Estimated Cement Top	2847				
Time Well Ready					
Time Logger on Bottom					
Equipment Number	05				
Location	BRIDGEPORT				
Recorded By	D.RIFFLE				
Witnessed By	MR. HOOVER				

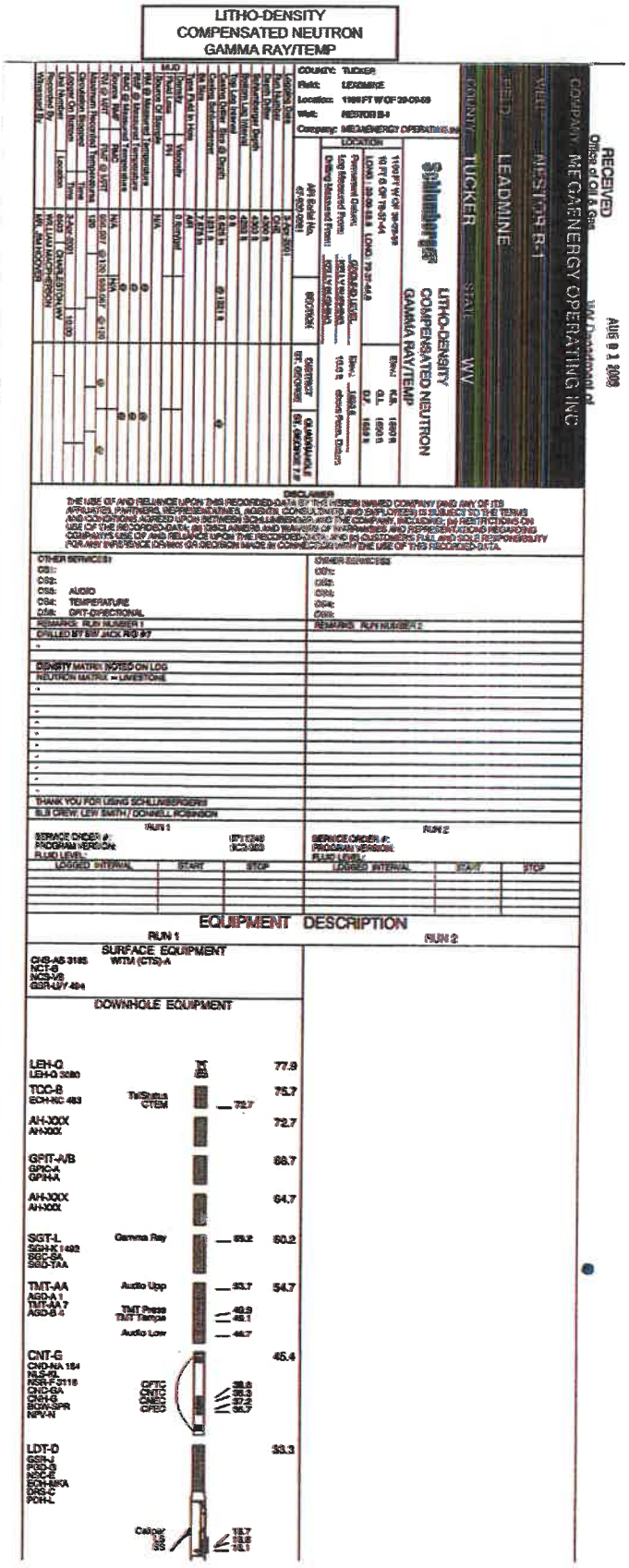
Borehole Record				Tubing Record			
Run Number	Bit From	To	Size	Weight	From	To

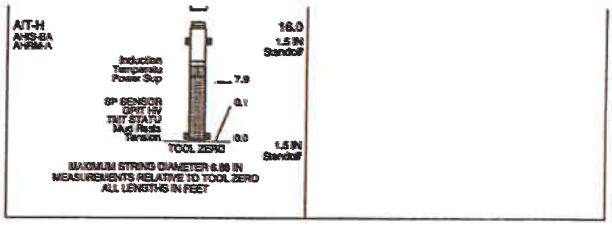
Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String				
Prod String				
Production String	4.5"	11.6 N/80	SURFACE	

Comments

CORRECTED LOG 20'
CREW
D.RIFFLE
D. HINZMAN
E. BUTCHER
K. SPROUSE







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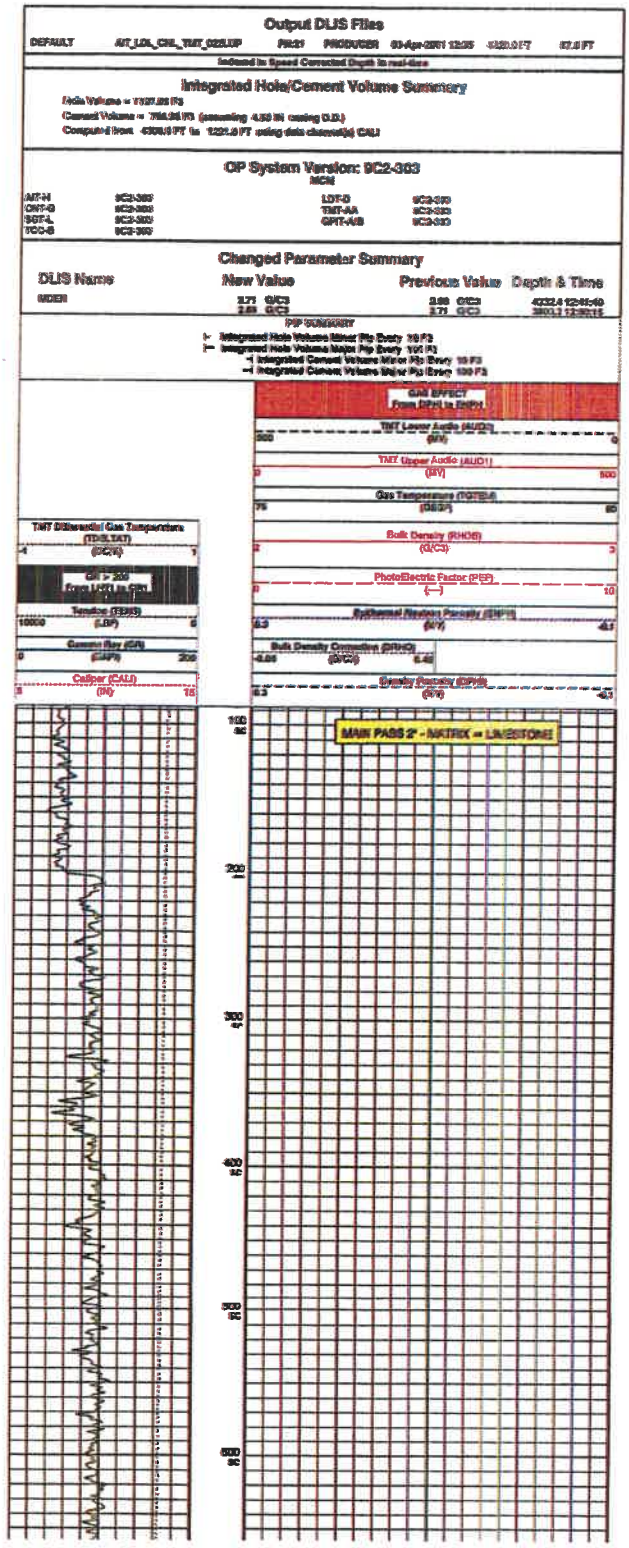

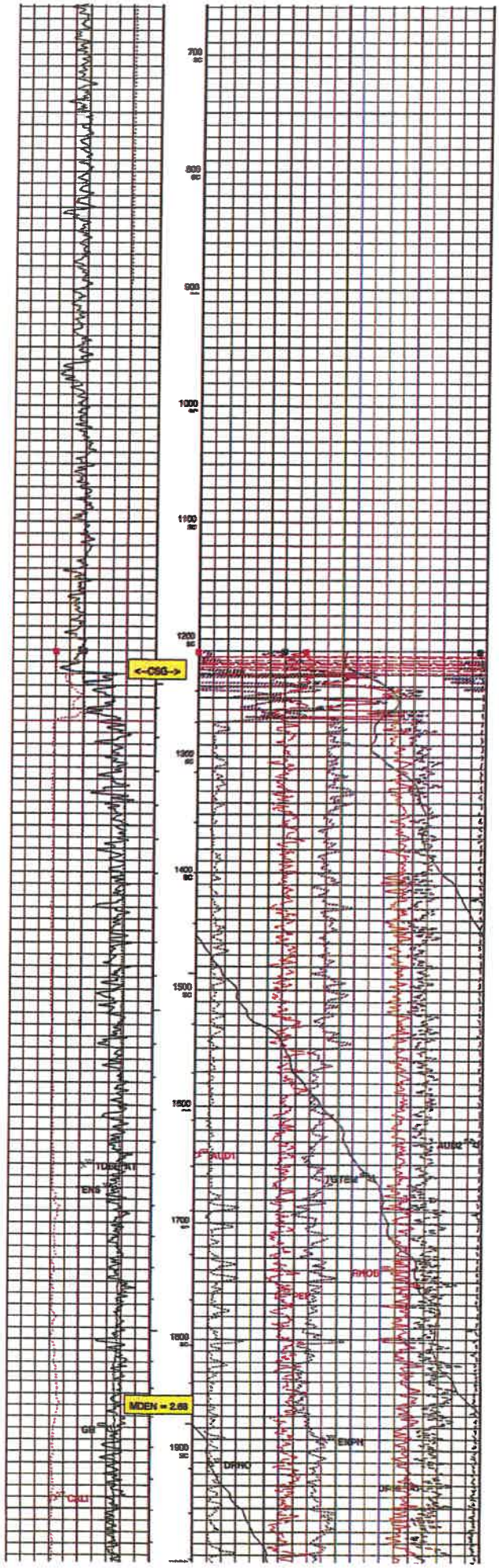

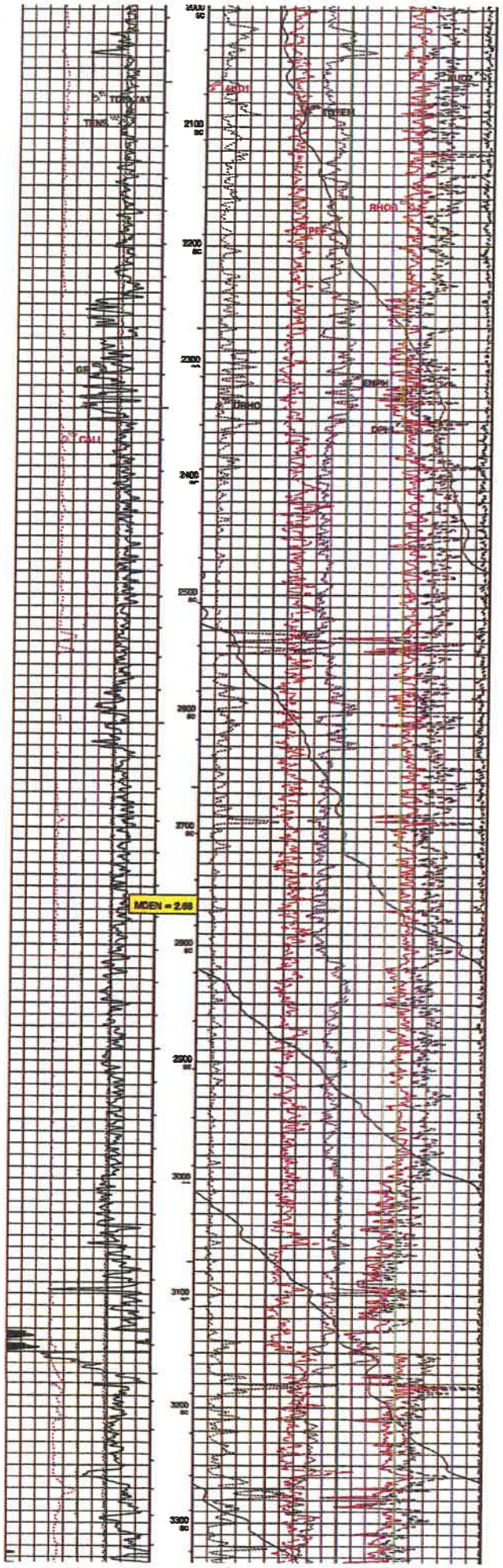

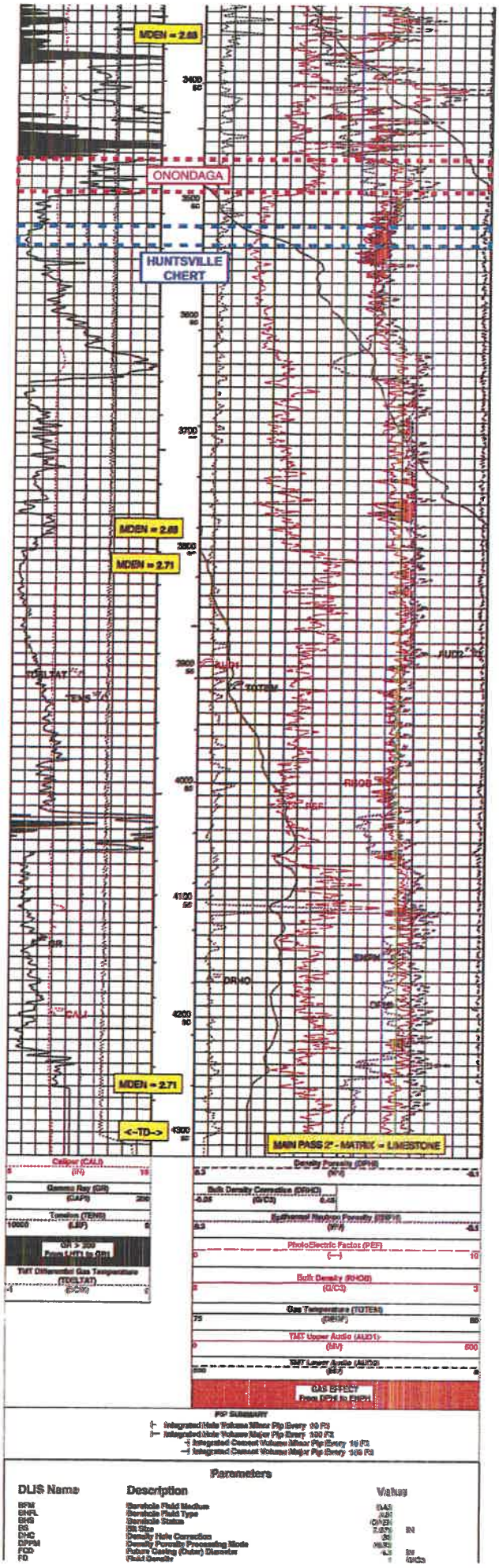

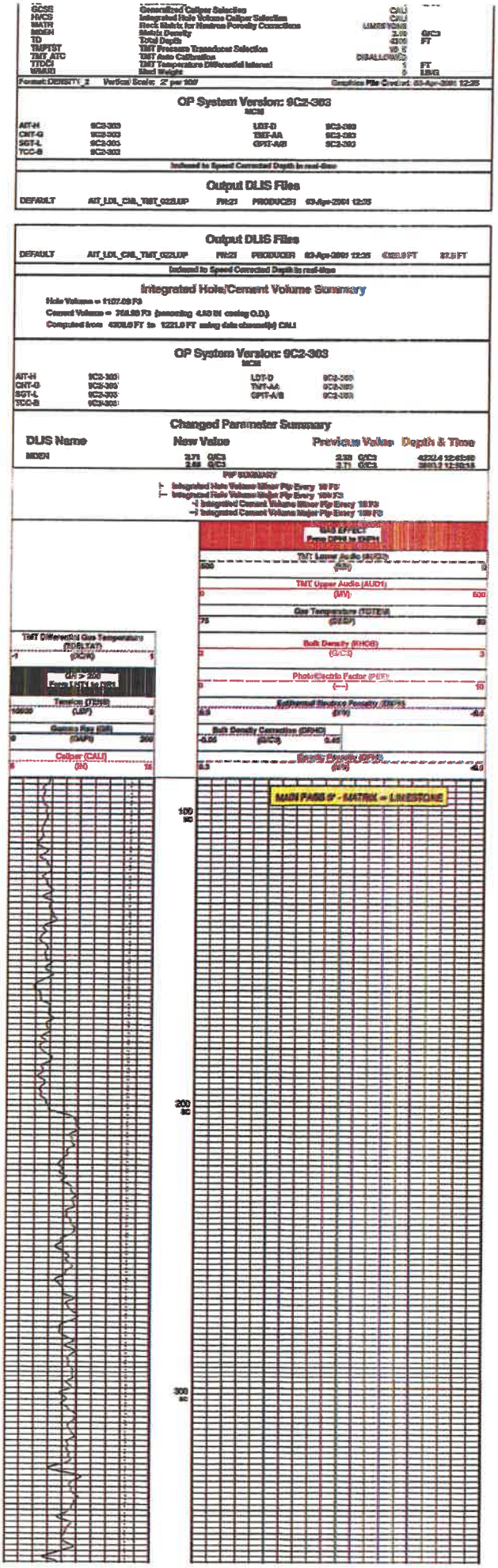

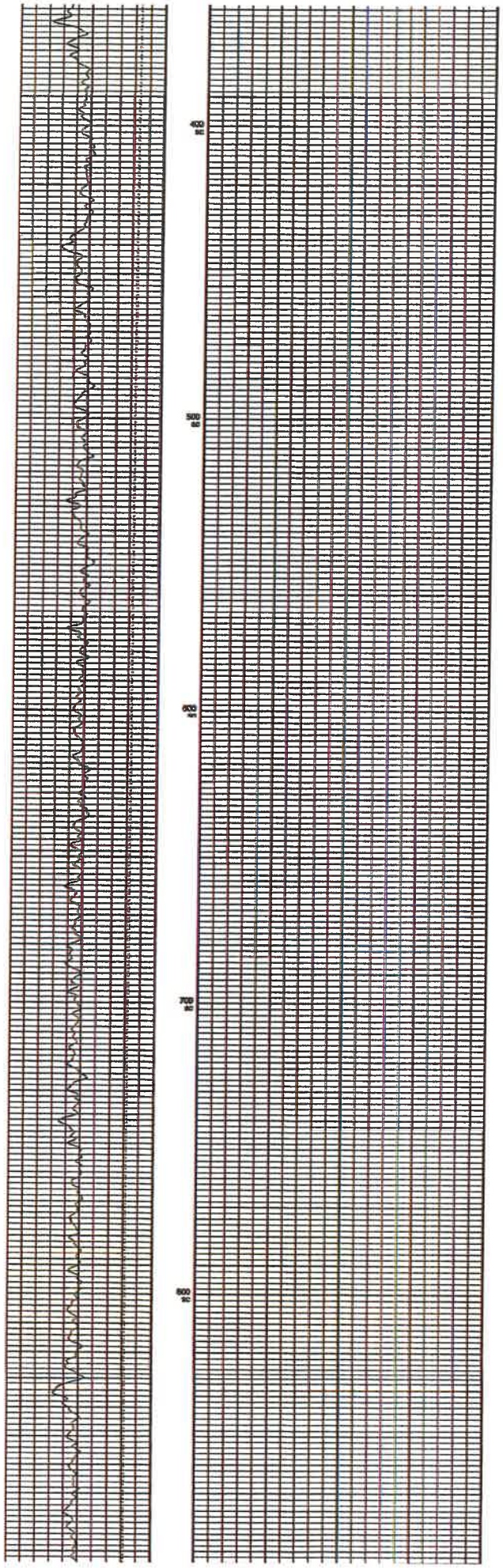

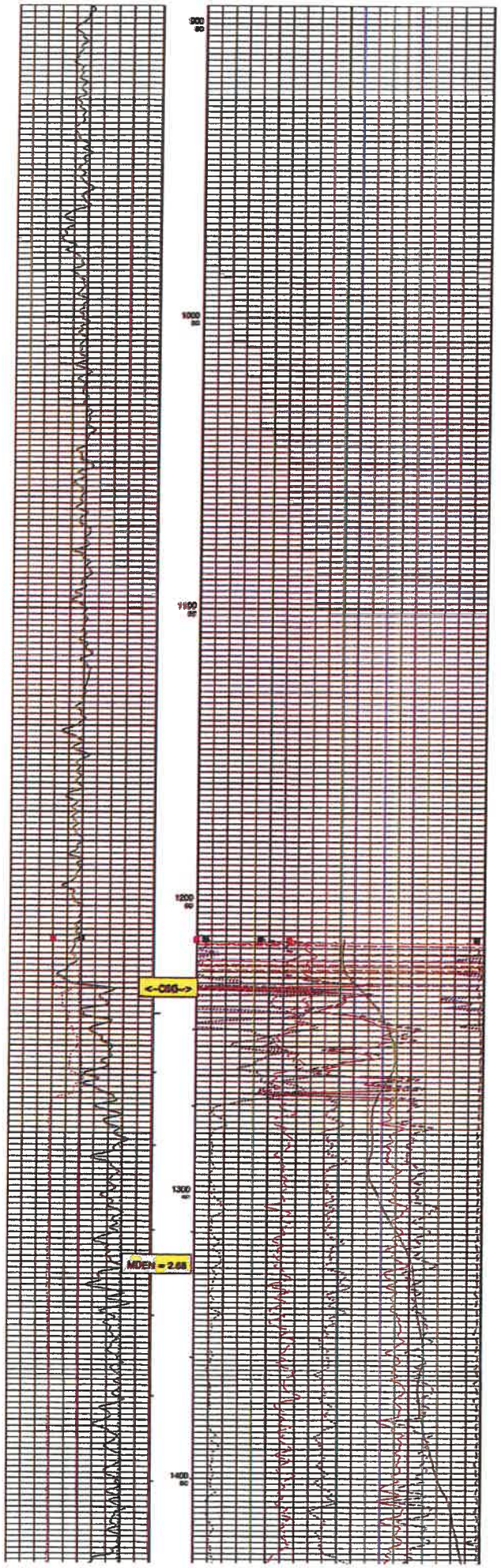

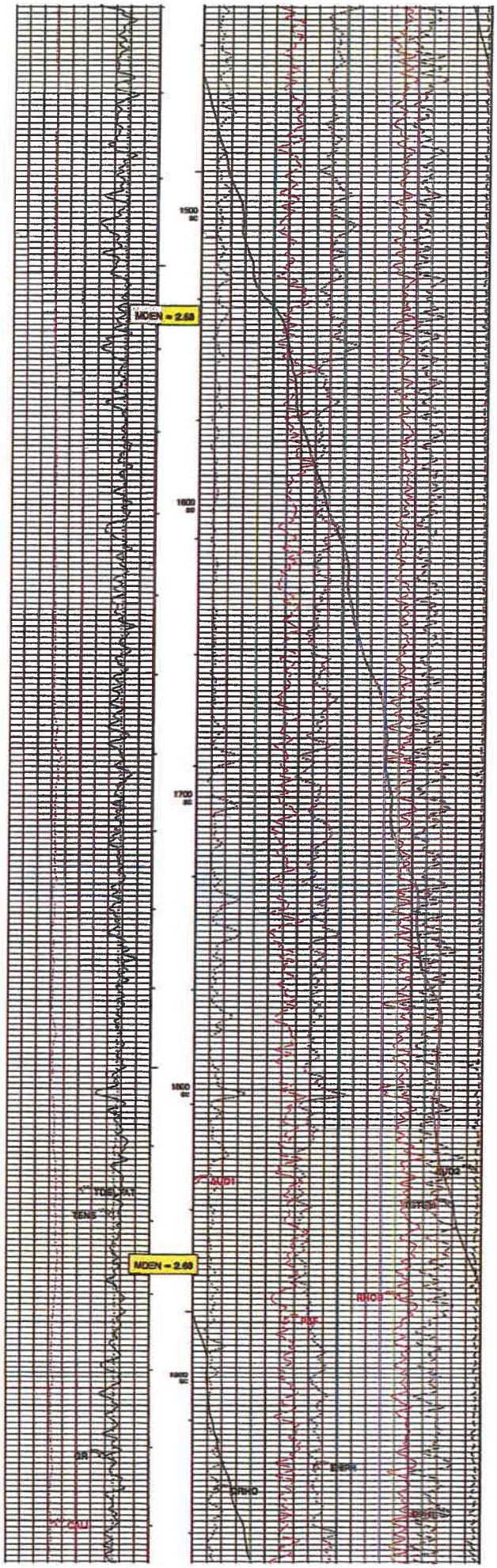

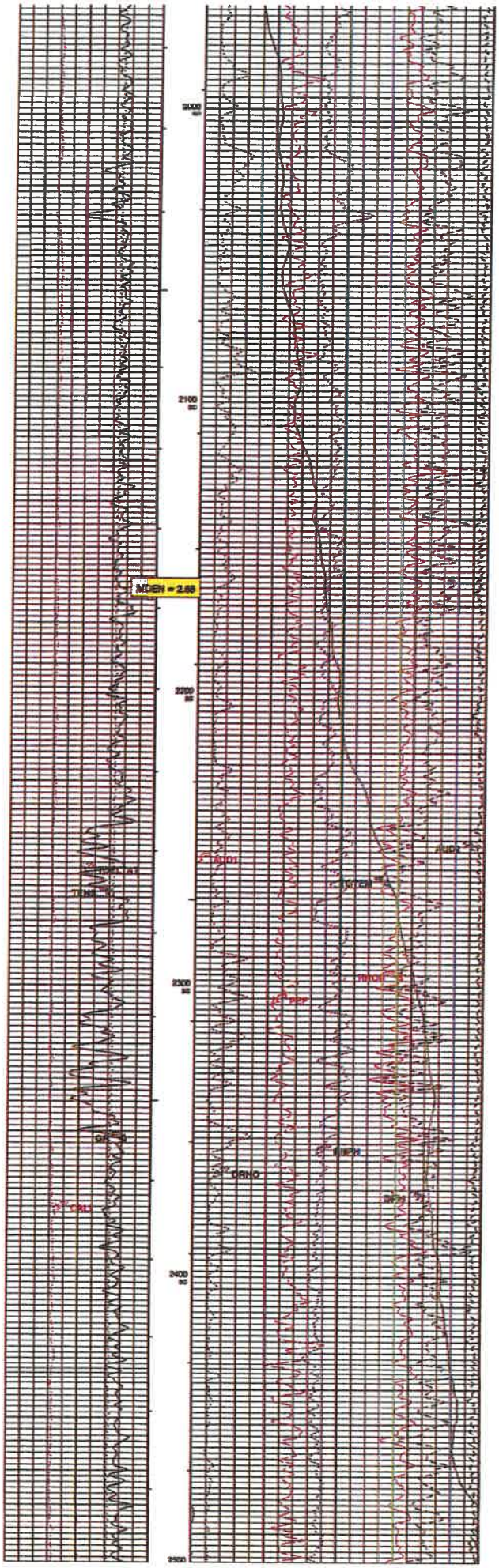

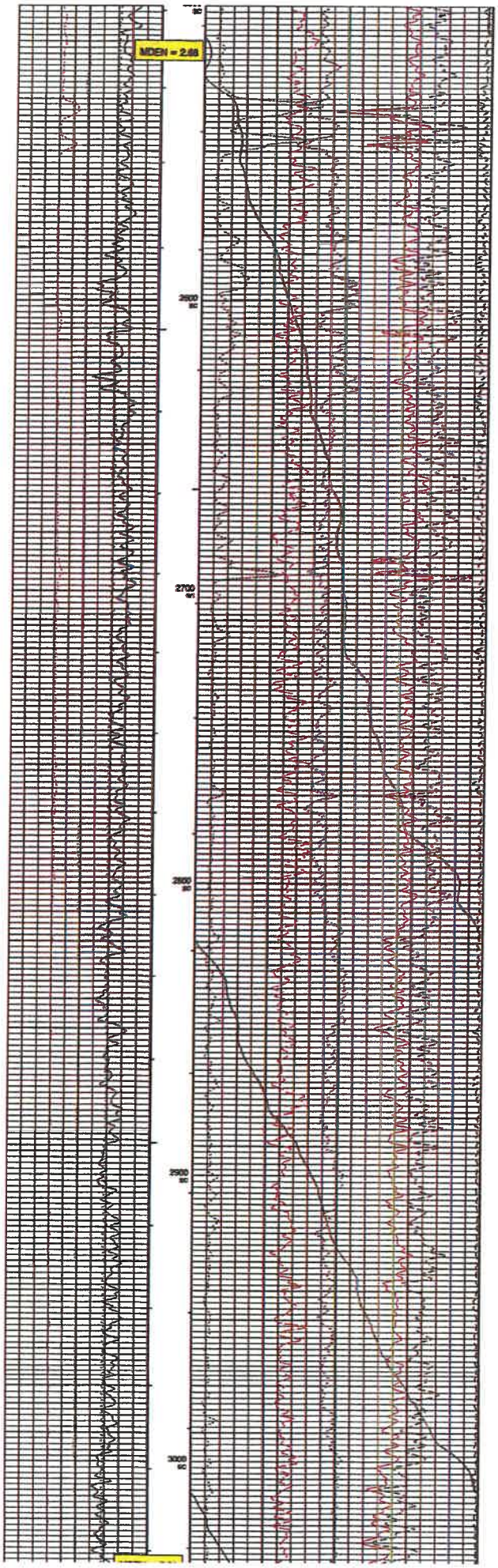

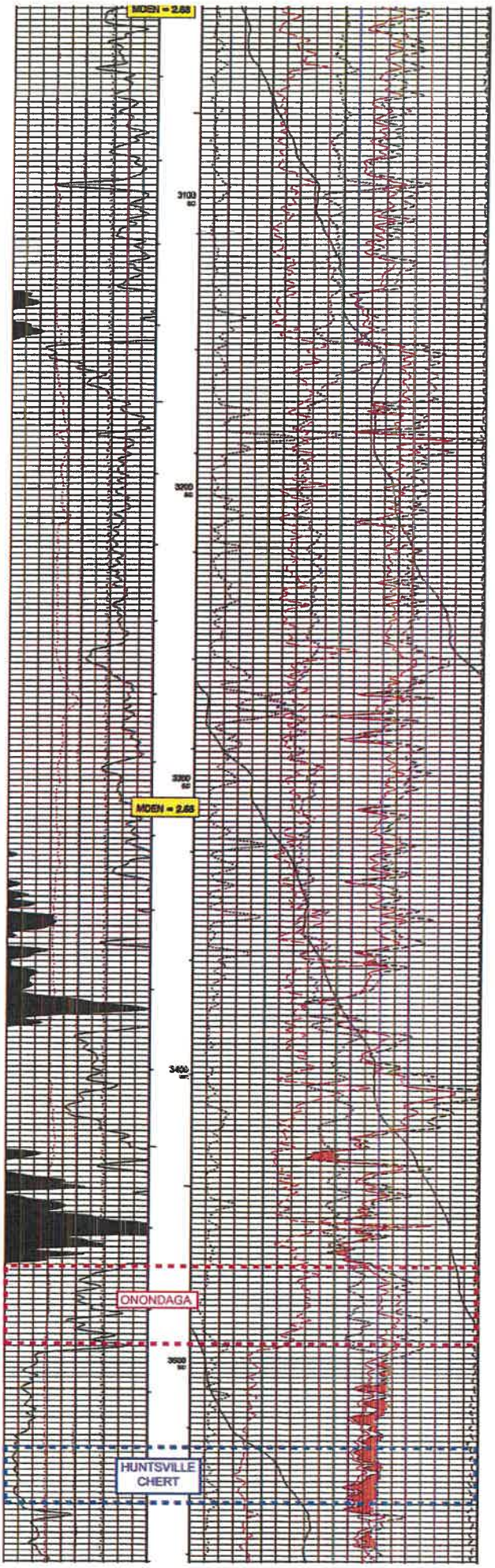

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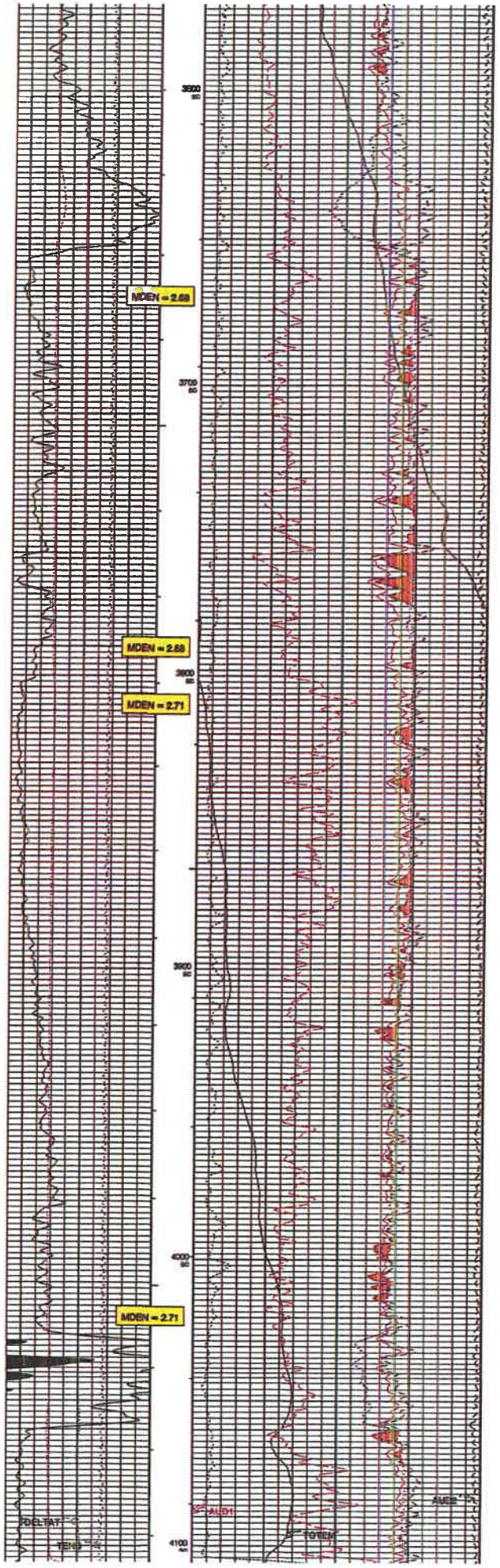
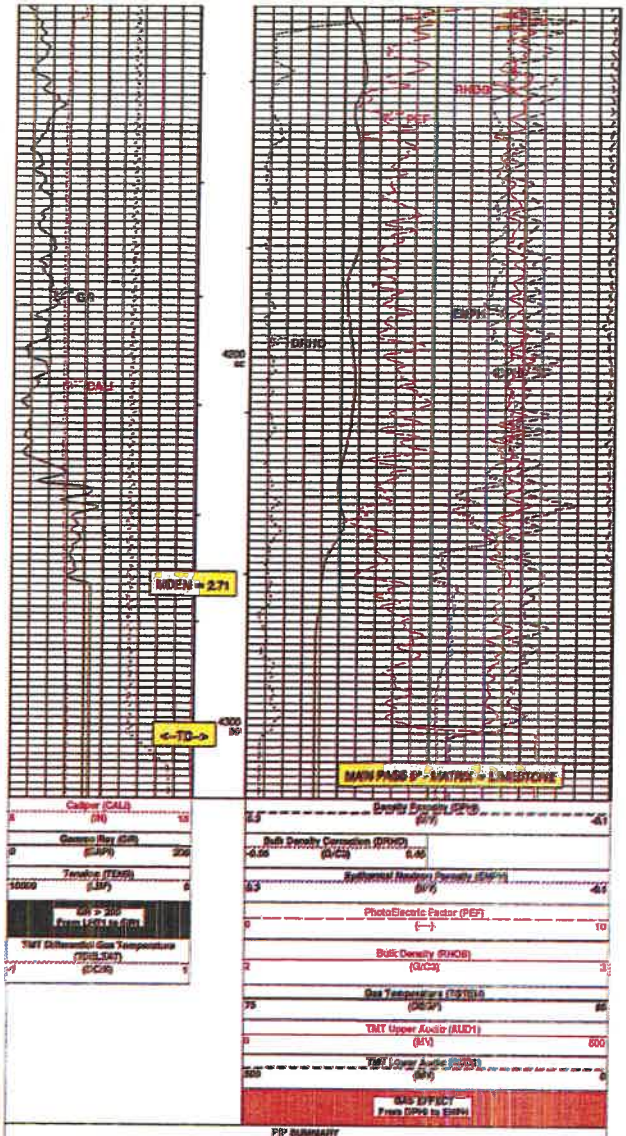




PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

Parameters

DLIS Name	Description	Value
DFM	Borehole Fluid Medium	
DFPL	Borehole Fluid Type	
DFS	Borehole Status	
EB	Bit Size	IN
EHC	Density Hole Correction	
EPPM	Density Porosity Processing Mode	
FCD	Future Casing (Outer) Diameter	IN
FD	Fluid Density	G/CC
GCSE	Gamma Ray Caliper Selection	
HVCS	Integrated Hole Volume Caliper Selection	
MATR	Rock Matrix for Neutron Porosity Correction	LIMESTONE
MDEN	Matrix Density	G/CC
TD	Total Depth	FT
TMPTST	TMT Pressure Transducer Selection	
TMT_ATC	TMT Auto Calibration	DISALLOWED
TTDCI	TMT Temperature Differential Interval	FT
WMUD	Mud Weight	LB/G

Format: DENSITY_II Vertical Scale: 5" per 100 Graphics File Created: 03-Apr-2001 12:36

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-D	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-AB	9C2-303
TCC-B	9C2-303		

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT	AIT_LDL_CNL_TMT_WZ2.LIP	FN:21	PRODUCER	03-Apr-2001 12:36	

Output DLIS Files

DEFAULT	AIT_LDL_CNL_TMT_WZ1.LIP	FN:20	PRODUCER	03-Apr-2001 12:14	4329.0 FT	3692.7 FT

Indexed to Speed Corrected Depth in real-time

Integrated Hole/Cement Volume Summary

Hole Volume = 207.33 F3
Cement Volume = 146.57 F3 (assuming 4.90 IN casing O.D.)
Computed from 4329.0 FT to 3692.0 FT using data channel(s) CALI

OP System Version: 9C2-303

MCM

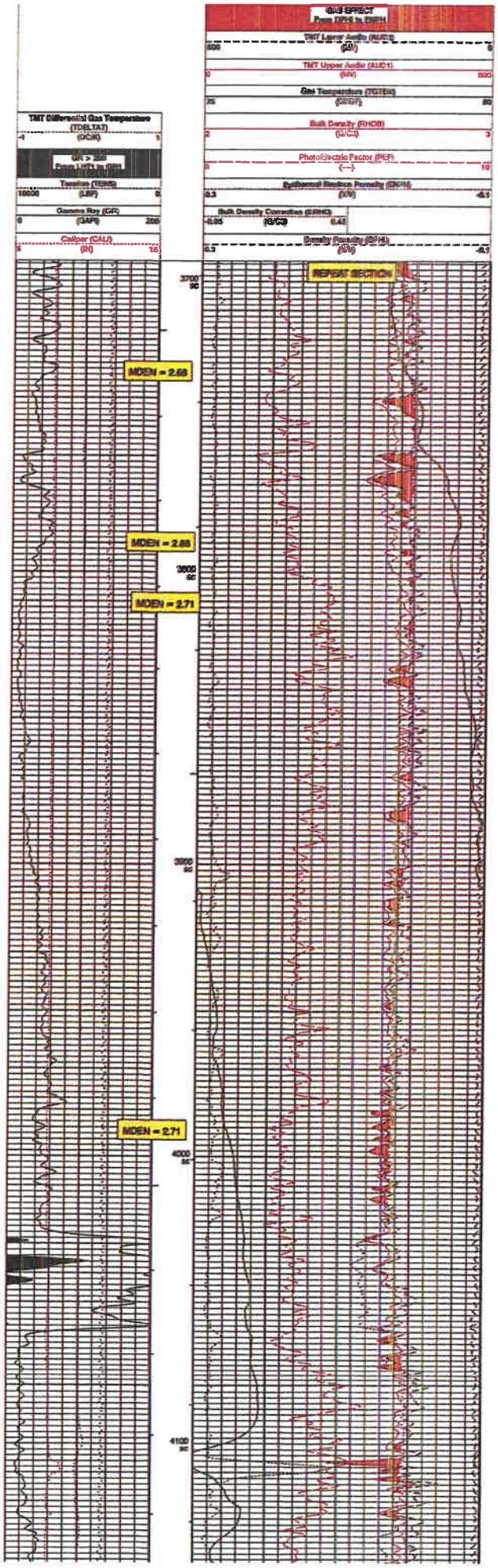
AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-AB	9C2-303
TCC-B	9C2-303		

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
MDEN	2.69 G/C3	2.71 G/C3	
	2.71 G/C3	2.69 G/C3	
	2.69 G/C3	2.71 G/C3	

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3



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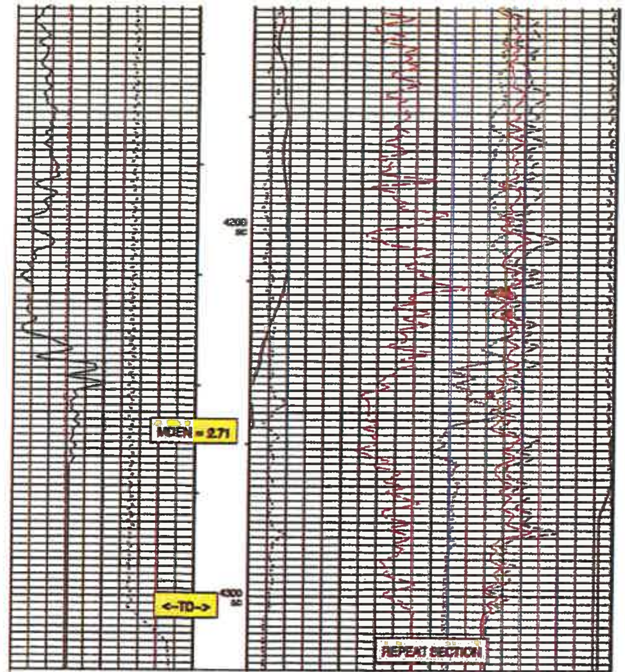


5	Caliper (CALI) (IN)	15
0	Gamma Ray (GR) (GAPI)	200
10000	Tension (TENS) (LBF)	0
	GR > 200 From LHT1 to GR1	
-1	TMT Differential Gas Temperature (TDELTAT) (DC/%)	1

0.3	Density Porosity (DPHI) (V/V)	-0.1
-0.05	Bulk Density Correction (DRHO) (G/C3)	0.45
0.3	Epithermal Neutron Porosity (ENPH) (V/V)	-0.1
0	PhotoElectric Factor (PEF) (----)	10
2	Bulk Density (RHOB) (G/C3)	3
75	Gas Temperature (TGTEM) (DEGF)	80
0	TMT Upper Audio (AUD1) (MV)	500
500	TMT Lower Audio (AUD2) (MV)	0
	GAS EFFECT From DPHI to ENPH	

PIP SUMMARY
Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

Parameters

DLIS Name	Description	Value	
BFM	Borehole Fluid Medium	GAS	
BHFL	Borehole Fluid Type	AIR	
BHS	Borehole Status	OPEN	
BS	Bit Size	7.875	IN
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HRES	
FCD	Future Casing (Outer) Diameter	4.5	IN
FD	Fluid Density	1	G/C3
GCSE	Generalized Caliper Selection	CALI	
HVCS	Integrated Hole Volume Caliper Selection	CALI	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MDEN	Matrix Density	2.71	G/C3
TD	Total Depth	[illegible]	FT
TMPTST	TMT Pressure Transducer Selection	[illegible]	
TMT_ATC	TMT Auto Calibration	DISALLOWED	
TTDCI	TMT Temperature Differential Interval	1	FT
WMUD	Mud Weight	0	LB/G

Format: DENSITY_5 Vertical Scale: 5" per 100' Graphics File Created: 03-Apr-2001 12:18

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_021LUP FN:20 PRODUCER 03-Apr-2001 12:18

Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_022LUP FN:21 PRODUCER 03-Apr-2001 12:35

Indexed to Speed Corrected Depth in real-time

Speed Corrected Depth Log

OP System Version: 9C2-303

MCM

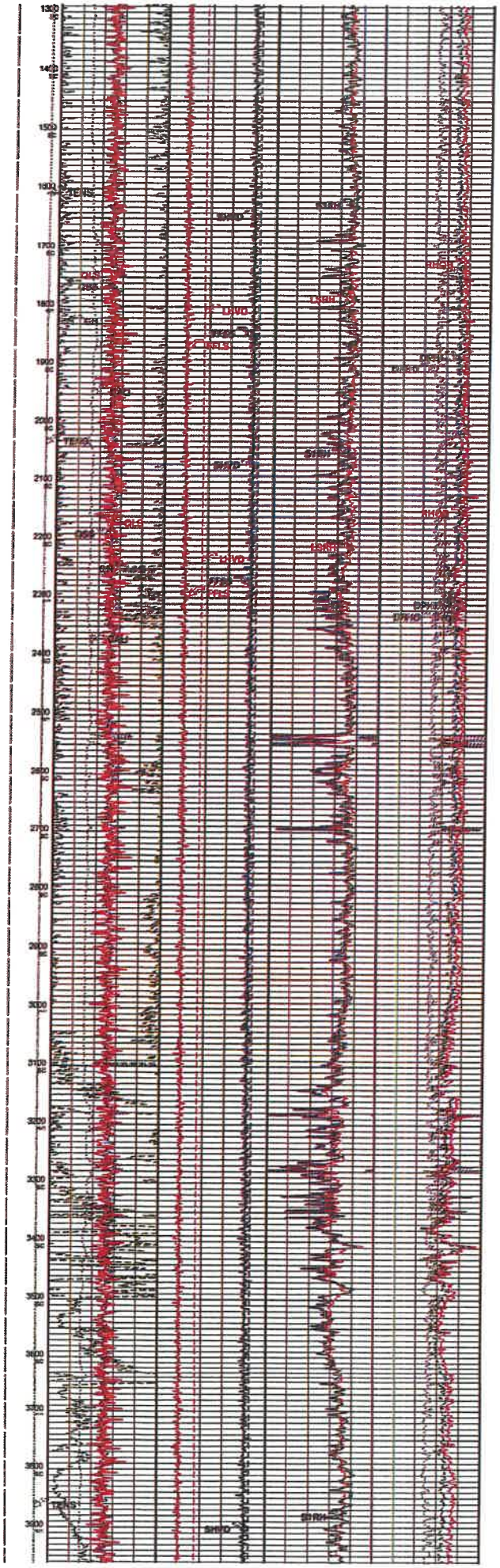
AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

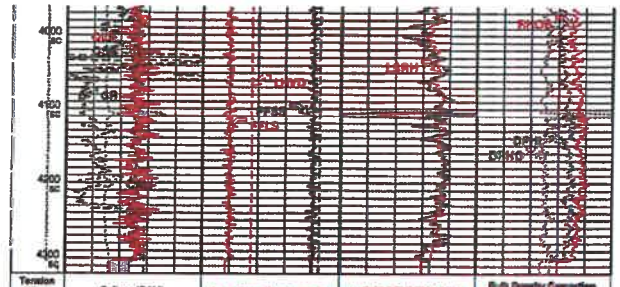
Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
MDEN	2.71 G/C3	2.68 G/C3	[illegible] 12:01:[illegible]
	2.68 G/C3	2.71 G/C3	[illegible] 12:[illegible]

PIP SUMMARY
Time Mark Every 60 S

-0.25	Quality LS (QLS) (G/C3)	0.25
-0.25	Quality SS (QSS) (G/C3)	0.25
0	Gamma Ray (GR) (GAPI)	150
5	Caliper (CALI) (IN)	15
10000	Tension (TENS) (LBF)	0
1600	Short Downhole HV (SHVD) (V)	1100
1100	Long Downhole HV (LHVD) (V)	1600
-1.6	Short Form Factor (FFSS) (----)	0.4
-0.4	Long Form Factor (FFLS) (----)	1.6
1.95	SS1 RHO DENSITY (SSRH) (G/C3)	2.95
1.95	LS RHO DENSITY (LSRH) (G/C3)	2.95
1.95	Bulk Density (RHOB) (G/C3)	2.95
0.4	Density Porosity (DPHI) (V/V)	-0.2
-0.25	Bulk Density Correction (DRHO) (G/C3)	0.25





Tension (TENS)	Caliper (CALI)	Long Form Factor (TFLD)	LS RHO DENSITY (LSRH)
		Short Form Factor (TFSD)	SS1 RHO DENSITY (SS1RH)
	Gamma Ray (GR)		Density Porosity (DPHI)
	Quality SS (QSS)	Long Downhole HV (LSHV)	Bulk Density (RHOB)
	Quality LS (QLS)	Short Downhole HV (SSHV)	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BFNS	Borehole Fluid Medium	SALT
BS	Bit Size	7.875 IN
DHC	Density Hole Correction	BC
DPPM	Density Porosity Processing Mode	NPRS
FD	Fluid Density	1 G/C3
MDEN	Matrix Density	2.65 G/C3
MWUD	Mud Weight	0 LB/G

Format: LOTD_LOG Vertical Scale: 1" per 100' Graphics File Created: 03-Apr-2001 12:35

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-D	9C2-303	TNT-AA	9C2-303
SGT-A	9C2-303	CPT-A/B	9C2-303
TCC-B	9C2-302		

Speed Corrected Depth Log

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT AIT_LDL_CNL_TNT_023.UP FN:21 PRODUCER 03-Apr-2001 12:35

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Before: 1-Apr-2001 8:31							
Thru Cal Magnitude - 0	0	N/A	0.0438	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	N/A	1.781	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	N/A	0.0039	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	N/A	0.7405	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	N/A	1.269	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	N/A	0.507	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	N/A	0.015	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	N/A	1.499	N/A	N/A	N/A	V
Phase - 0	0	N/A	86.78	N/A	N/A	N/A	DEG
Phase - 1	0	N/A	68.60	N/A	N/A	N/A	DEG
Phase - 2	0	N/A	61.63	N/A	N/A	N/A	DEG
Phase - 3	0	N/A	61.68	N/A	N/A	N/A	DEG
Phase - 4	0	N/A	86.88	N/A	N/A	N/A	DEG
Phase - 5	0	N/A	62.89	N/A	N/A	N/A	DEG
Phase - 6	0	N/A	62.75	N/A	N/A	N/A	DEG
Phase - 7	0	N/A	46.84	N/A	N/A	N/A	DEG
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Auxiliary							
Before: 1-Apr-2001 8:31							
Array Induction EPA Plus	955.6	N/A	956.6	N/A	N/A	N/A	MV
Array Induction EPA Zero	0	N/A	-0.2536	N/A	N/A	N/A	MV
Array Induction Temperature Pj	0.9150	N/A	0.9251	N/A	N/A	N/A	V
Array Induction Temperature Zo	0	N/A	-0.0009479	N/A	N/A	N/A	V
Litho Density - D Wellsite Calibration - Background Measurement							
Master: 2-Mar-2001 14:43 Before: 31-Mar-2001 19:26							
LL Background	35.00	15.73	18.95	N/A	N/A	1.000	CPS
LU Background	78.00	65.45	69.89	N/A	N/A	1.000	CPS
LS Background	67.00	53.62	60.36	N/A	N/A	1.000	CPS
UTH Background	5.000	8.301	8.230	N/A	N/A	0.2000	CPS
857 Background	16.00	14.87	15.00	N/A	N/A	0.2000	CPS
583 Background	11.00	10.23	10.21	N/A	N/A	0.2000	CPS
Litho Density - D Wellsite Calibration - Tool Quality Control Information HV							
Master: 2-Mar-2001 14:43 Before: 31-Mar-2001 19:26							
LSHV Background	1500	1379	1378	N/A	N/A	N/A	V
SSHV Background	1500	1173	1174	N/A	N/A	N/A	V
Litho Density - D Wellsite Calibration - Detectors Resolution From SNG Measurement							
Master: 2-Mar-2001 14:43 Before: 31-Mar-2001 19:26							
LS Resolution Background	6.000	5.830	5.489	N/A	N/A	N/A	
SS Resolution Background	6.000	5.649	5.897	N/A	N/A	N/A	
Litho Density - D Wellsite Calibration - Caliper Calibration							
Before: 31-Mar-2001 19:27							
Caliper Small Ring	6.000	N/A	6.755	N/A	N/A	N/A	IN
Caliper Large Ring	12.50	N/A	12.51	N/A	N/A	N/A	IN
Compensated Neutron - G Wellsite Calibration - Zero Measurement							
Master: 18-Feb-2001 8:53 Before: 31-Mar-2001 19:22							
CNTC Background	1.000	0	0	N/A	N/A	N/A	CPS
CFTC Background	0	0	0	N/A	N/A	N/A	CPS
CNEC Background	1.000	0	0	N/A	N/A	N/A	CPS
CFEC Background	0	0	0	N/A	N/A	N/A	CPS
Compensated Neutron - G Wellsite Calibration - Jig Measurement							
Master: 18-Feb-2001 8:53 Before: 31-Mar-2001 19:46							
CNTC Jig	2331	2331	2346	N/A	N/A	N/A	CPS
CFTC Jig	1478	1478	1456	N/A	N/A	N/A	CPS
CNTC/CFTC (Jig)	1.564	1.564	2.010	N/A	N/A	N/A	
CNEC Jig	695.0	695.0	692.6	N/A	N/A	N/A	CPS
CFEC Jig	575.9	575.9	583.1	N/A	N/A	N/A	CPS
CNEC/CFEC (Jig)	0.9841	0.9841	0.9901	N/A	N/A	N/A	
General Purpose Inclinometer Wellsite Calibration - CARTRIDGE ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 31-Mar-2001 19:20							
TEMPERATURE REFERENCE :	N/A	N/A	66	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	94	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	7	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	450	N/A	N/A	N/A	
General Purpose Inclinometer Wellsite Calibration - EPS MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 31-Mar-2001 19:20							
TEMPERATURE REFERENCE :	N/A	N/A	212	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	98	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	10	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	70	N/A	N/A	N/A	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 68.0 DEGF.
Thermal Housing Size 3.375 IN.
Epithermal Housing Size 3.375 IN.

Array Induction Tool - H / Equipment Identification

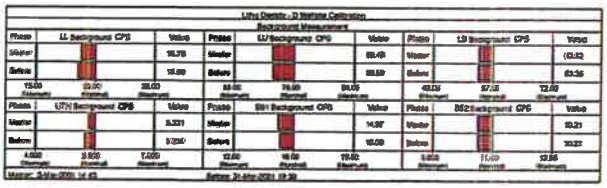
Primary Equipment:
Rm/SP Bottom Hose: AHRM - A
Array Induction Sonde: AIMS - BA

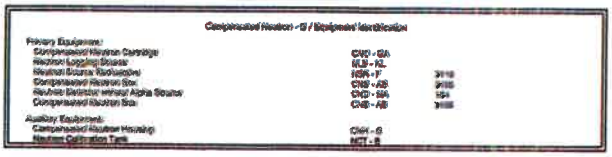
Auxiliary Equipment:

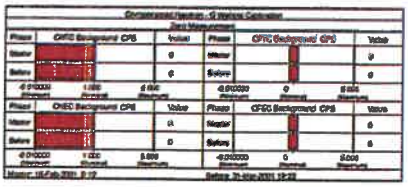
Array Induction Tool - H Wellsite Calibration

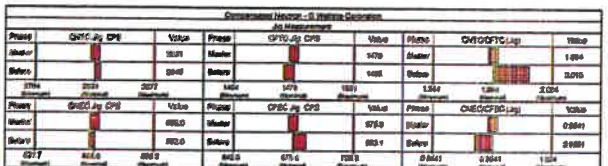
Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Before	0.0438	[redacted]	0.0000	86.78	[redacted]	71.00
1	Before	1.781	[redacted]	1.270	68.60	[redacted]	70.00
2	Before	0.0039	[redacted]	0.0230	61.63	[redacted]	66.00









COMPANY	MEGAENERGY OPERATING INC
WELL	NESTOR B-1
FIELD	LEADMINE
COUNTY	TUCKER
STATE	WV

BOTTOM LOG INTERVAL	4212 ft
SCHLUMBERGER DEPTH	4303 ft
DEPTH DRILLER	4300 ft
KELLY BUSHING	1923 ft
DRILL FLOOR	1923 ft
GROUND LEVEL	1850 ft

Schlumberger

UTHO-DENSITY
COMPENSATED NEUTRON
GAMMA RAY/TEMP

ARRAY INDUCTION GAMMA RAY

COMPANY: MEGAENERGY OPERATING INC
WELL: NESTOR B-1
FIELD: LEADMINE
COUNTY: TUCKER STATE: WV

Schlumberger
ARRAY INDUCTION
GAMMA RAY

COUNTY: TUCKER
Field: LEADMINE
Location: 1100 FT W OF 39-09-59
Well: NESTOR B-1
Company: MEGAENERGY OPERATING IN

LOCATION
1100 FT W OF 39-09-59
10 FT S OF 79-37-44
LONG: 39-09-59.0 LONG: 79-37-44.0

Permanent Datum: GROUND LEVEL — Elev.: K.B. 1659 ft
Log Measured From: KELLY BUSHING — G.L. 1650 ft
Drilling Measured From: KELLY BUSHING — 10.0 ft above Perm. Datum — D.F. 1659 ft

Logging Date	3-Apr-2001		
Run Number	ONE		
Depth Driller	4300 ft		
Schlumberger Depth	4303 ft		
Bottom Log Interval	4292 ft		
Top Log Interval	0 ft		
Casing Driller Size @ Depth	8.625 in	@ 1221 ft	
Casing Schlumberger	1231 ft		
Bit Size	7.875 in		
Type Fluid In Hole	AIR		
MUD Density	0 lbm/gal		
Viscosity			
Fluid Loss			
PH			
Source Of Sample	N/A		
RM @ Measured Temperature	@	@	@
RMF @ Measured Temperature	@	@	@
RMC @ Measured Temperature	@	@	@
Source RMF / RMC	N/A / N/A		
RM @ MRT / RMF @ MRT / RMC	658.097 @ 120 / 658.097 @ 120 /		
Maximum Recorded Temperatures	120		
Circulation Stopped — Time			
Logger On Bottom — Time	10:00		
Unit Number — Location	8503 / CHARLESTON,WV		
Recorded By	WILLIAM MACPHERSON		
Witnessed By	MR. JIM HOOVER		

SECTION | DISTRICT: ST. GEORGE | QUADRANGLE: ST. GEORGE 7.5'

API Serial No. 47-989-0661

OTHER SERVICES1
OS1: CNL / LDT
OS2: GAMMA RAY
OS3: AUDIO
OS4: TEMPERATURE
OS5: GPIT-DIRECTIONAL

REMARKS: RUN NUMBER 1
DRILLED BY SW JACK RIG #7
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DENSITY MATRIX NOTED ON LOG
NEUTRON MATRIX = LIMESTONE
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THANK YOU FOR USING SCHLUMBERGER!!!
SLB CREW: LEW SMITH / DONNELL ROBINSON

OTHER SERVICES2
OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 2

RUN 1
SERVICE ORDER #: 6711248
PROGRAM VERSION: 9C2-303
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

RUN 2
SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

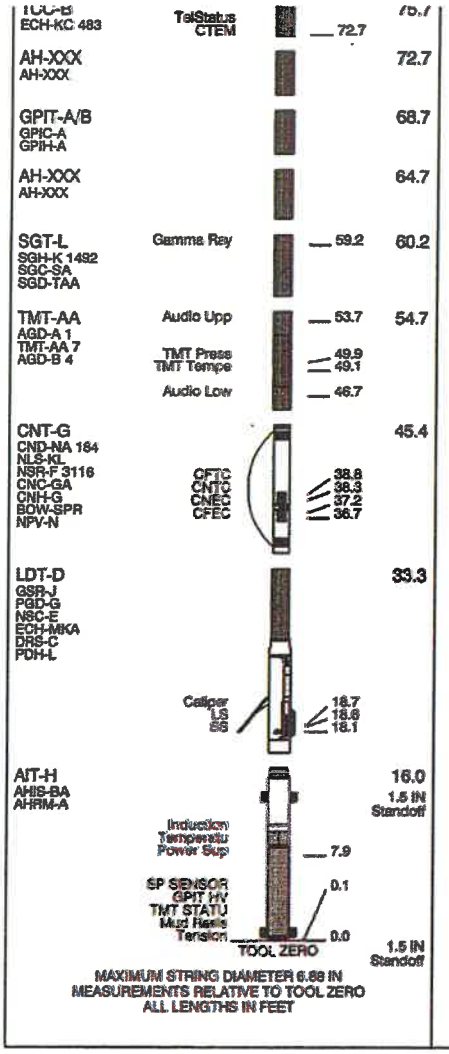
RUN 1

SURFACE EQUIPMENT
CNB-AB 3185 WITM (CTS)-A
NCT-B
NCS-VB
GSR-U/Y 494

DOWNHOLE EQUIPMENT

LEH-Q 77.9
LEH-Q 3080

RUN 2



Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_022LUP FN:21 PRODUCER 03-Apr-2001 12:35

Indexed to Speed Corrected Depth in real-time

OP System Version: 9C2-303

MCM

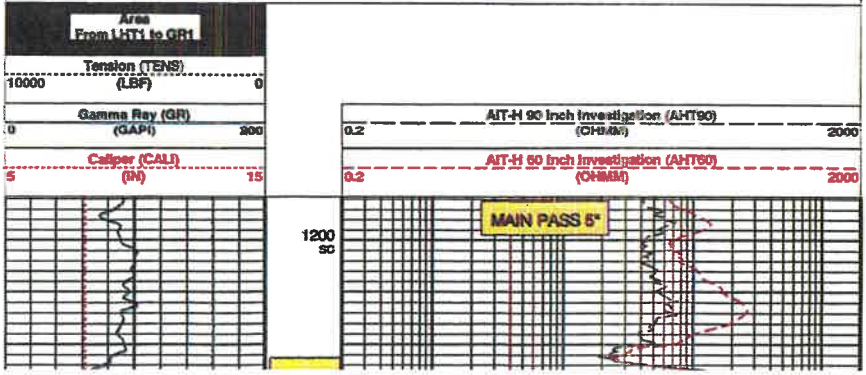
AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

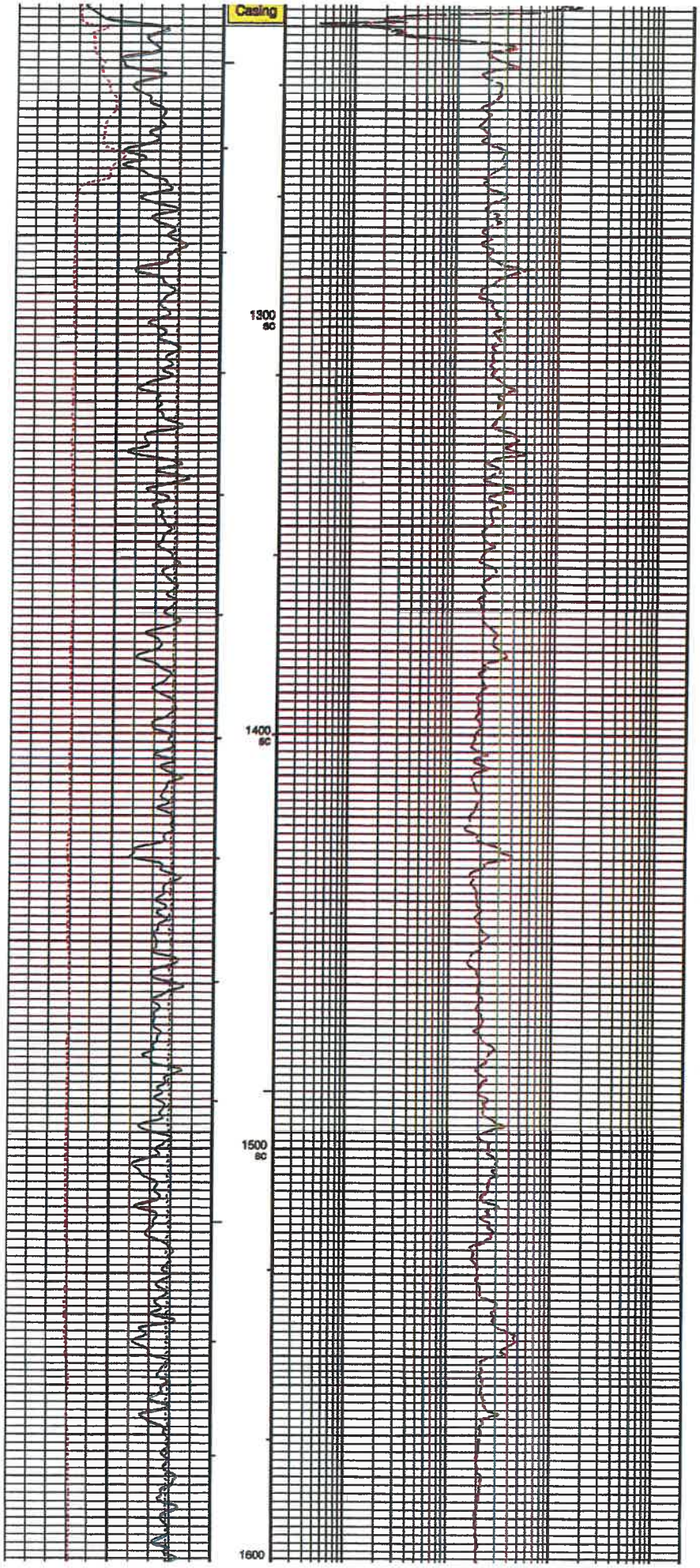
Changed Parameter Summary

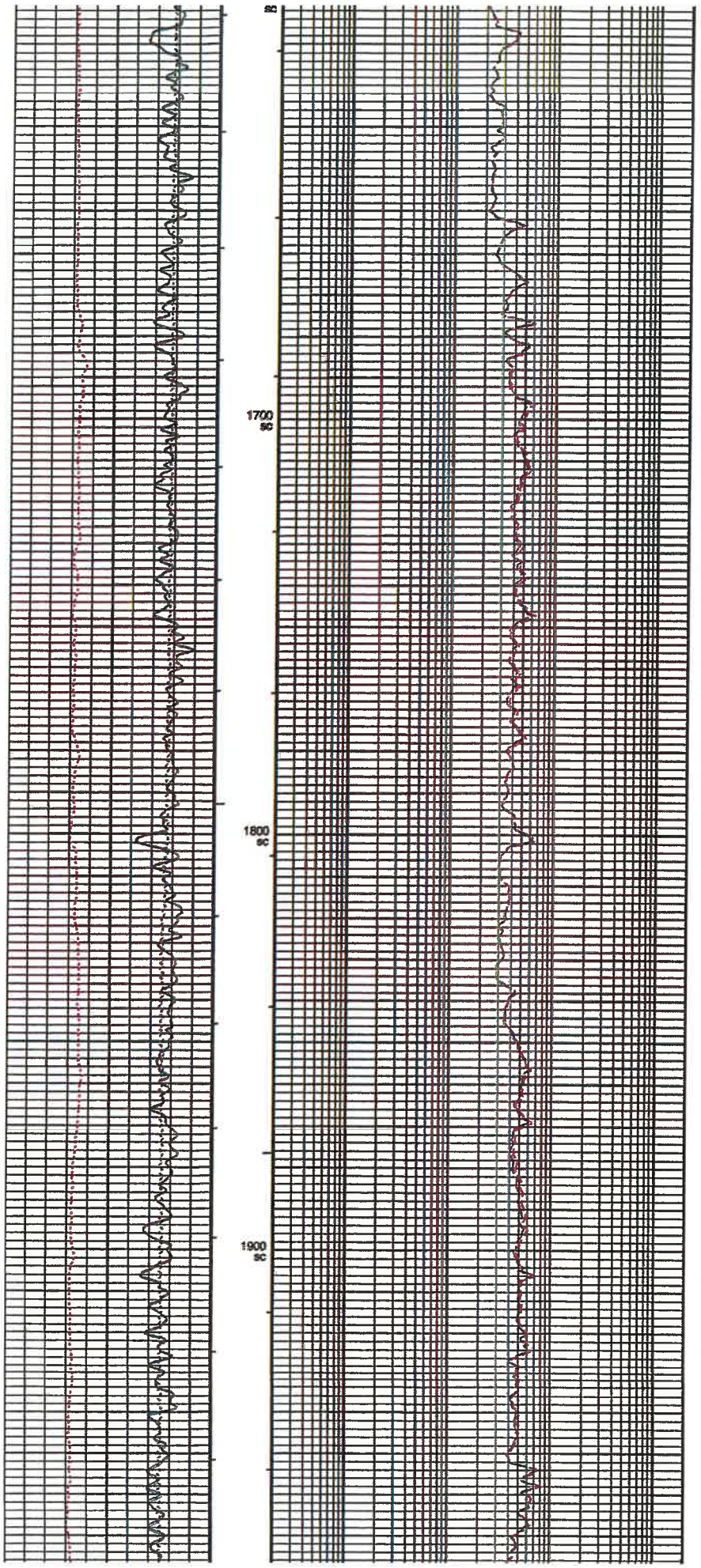
DLIS Name	New Value	Previous Value	Depth & Time
BHT	120 DEGF	100 DEGF	4279.9 12:40:43

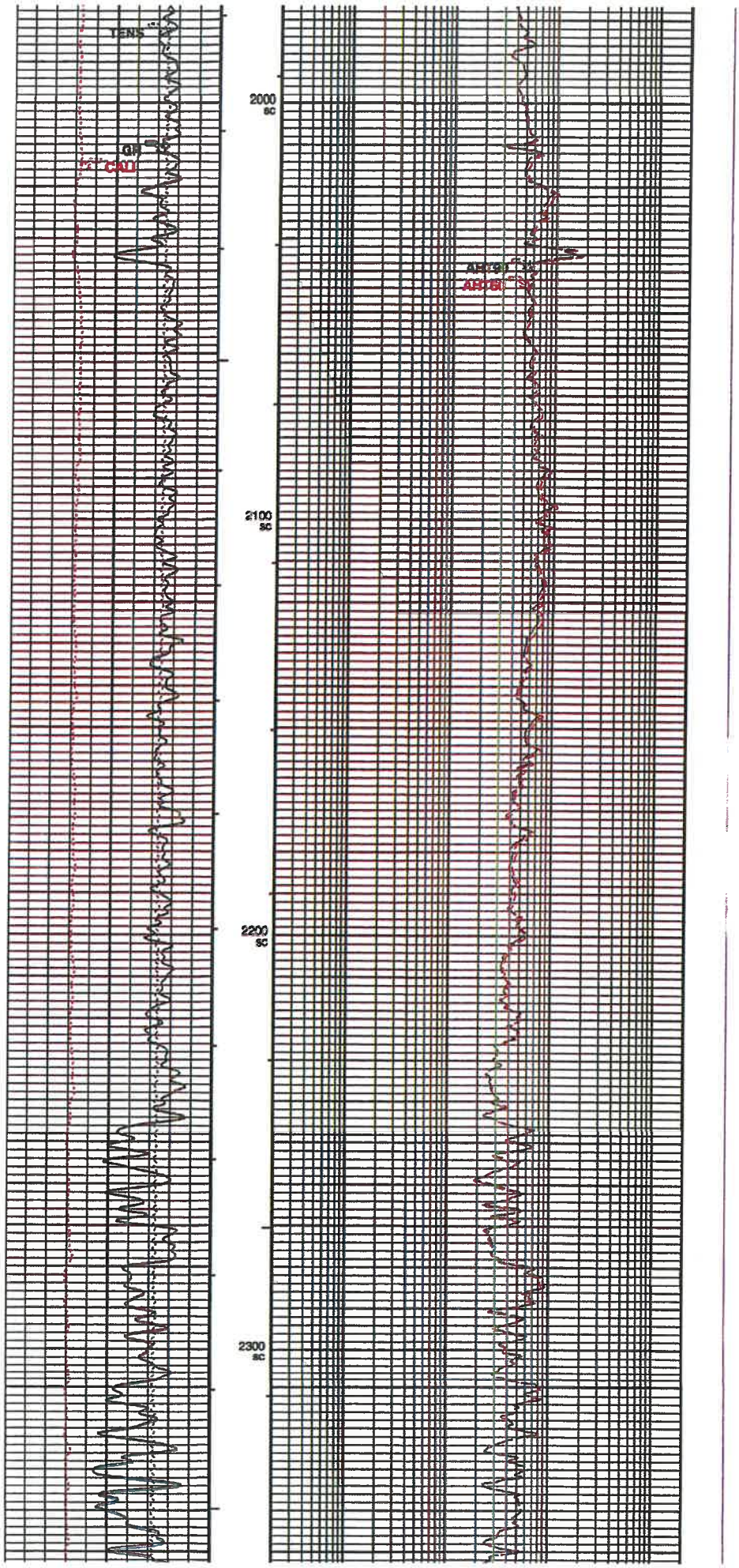
PIP SUMMARY

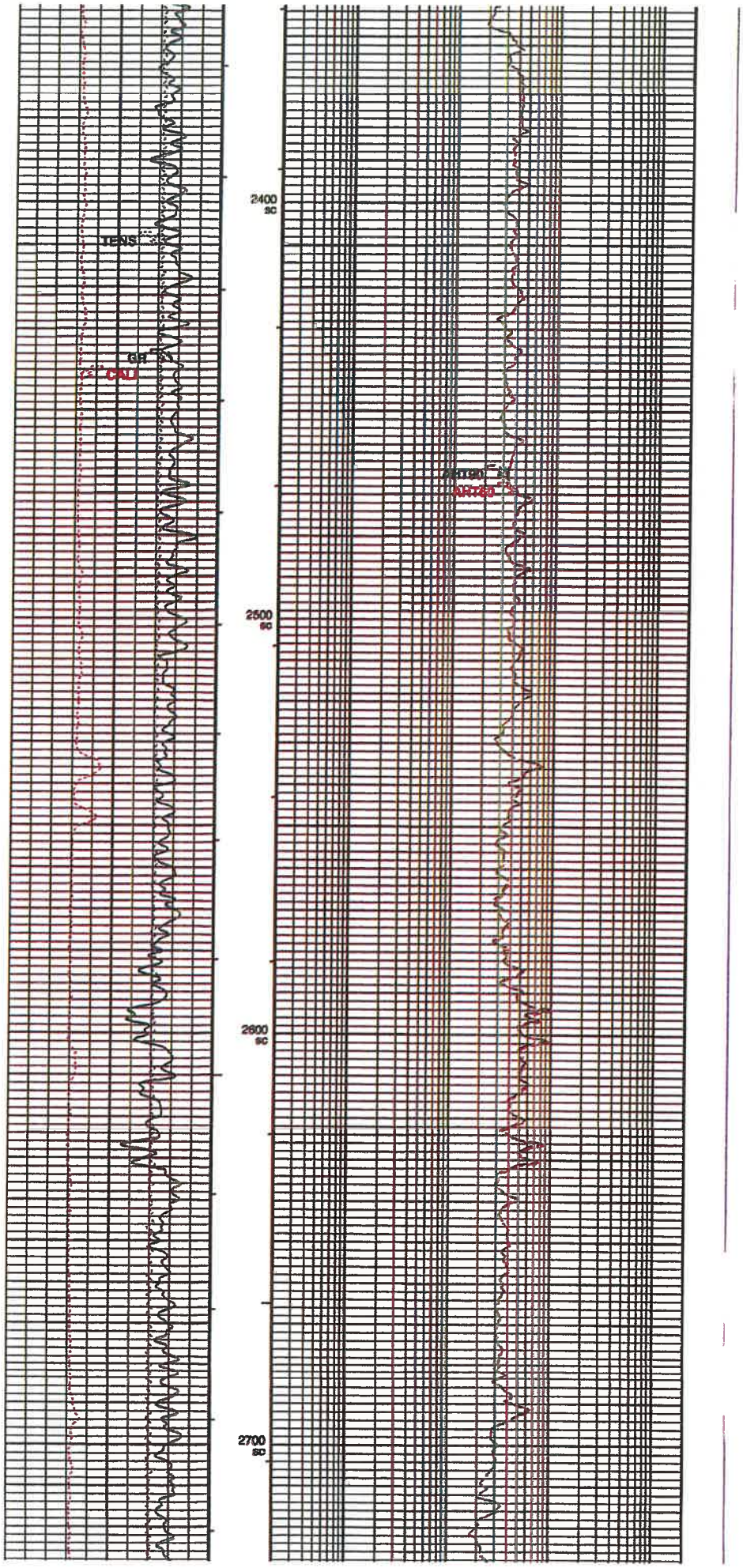
Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

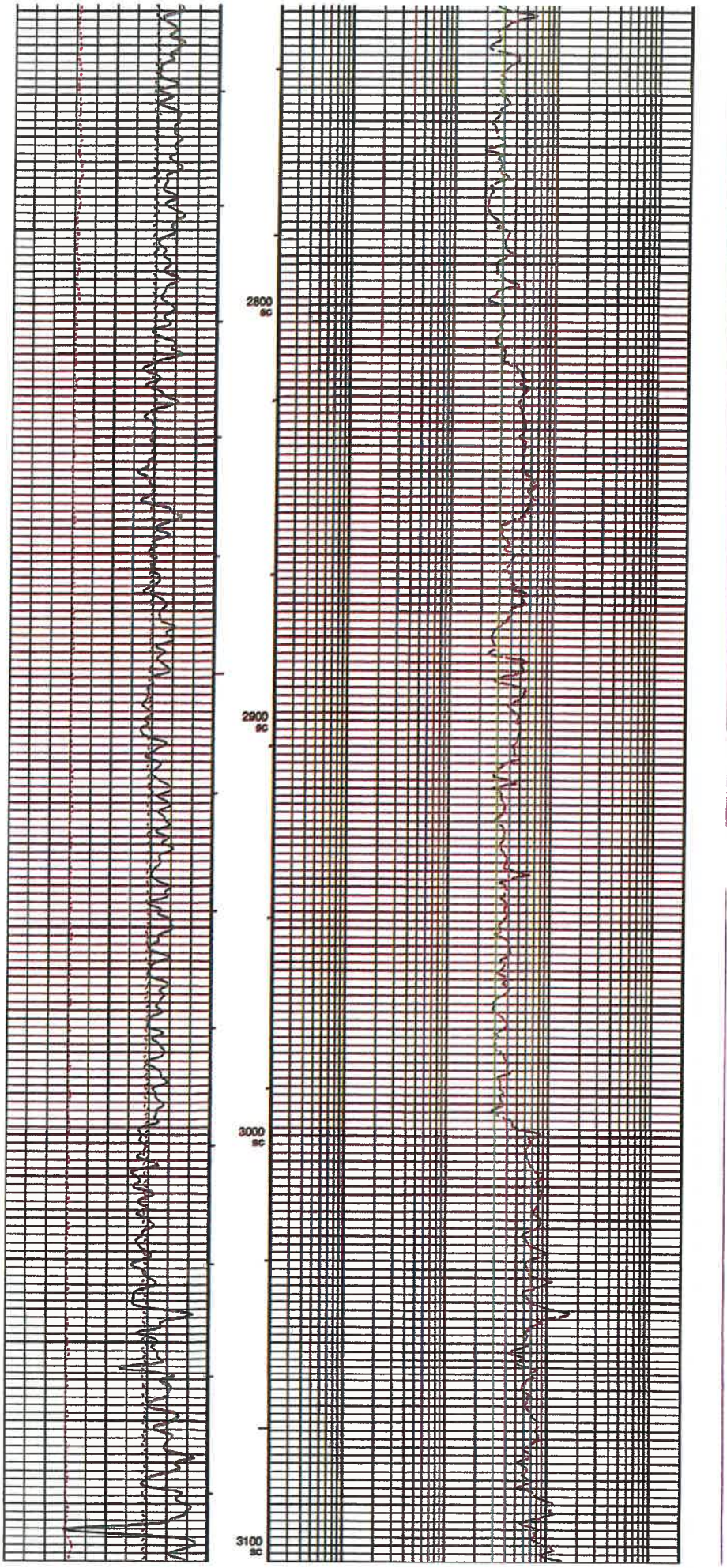


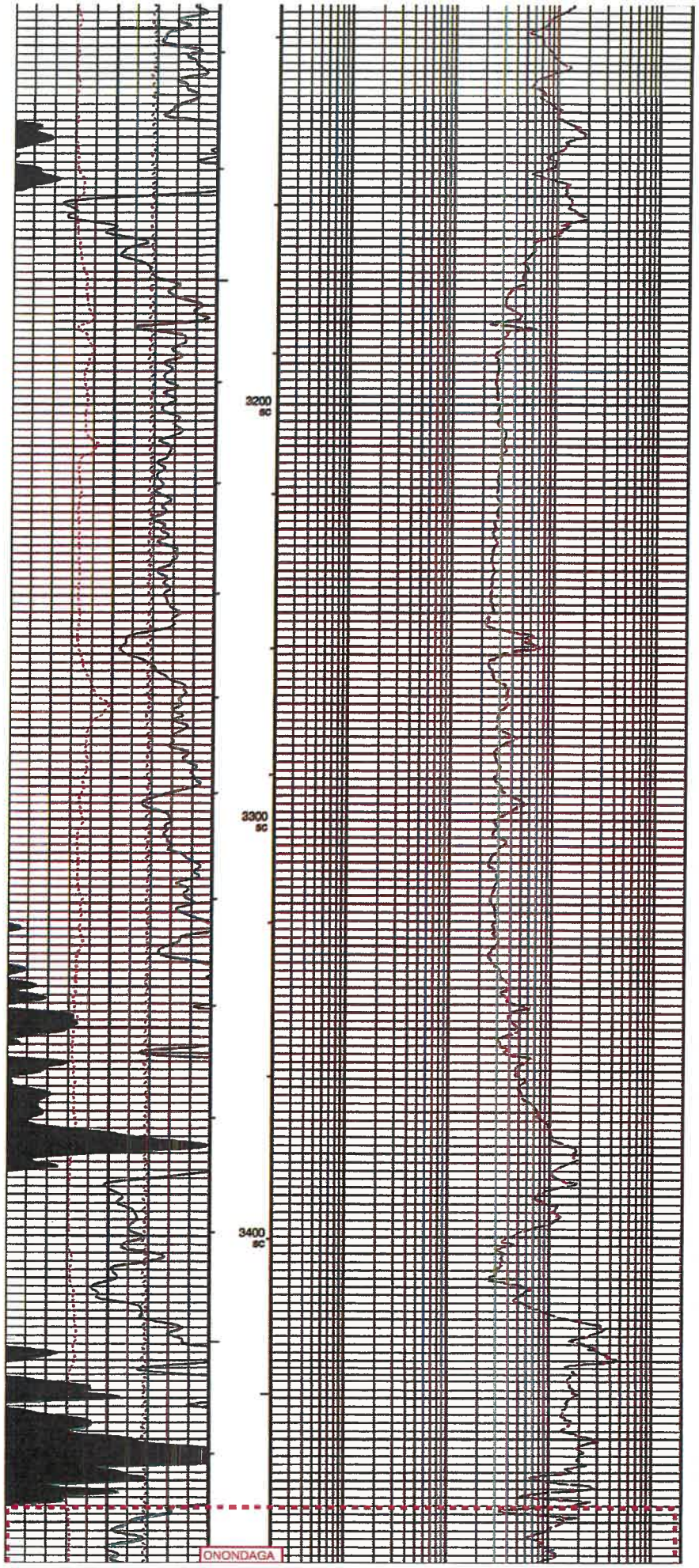


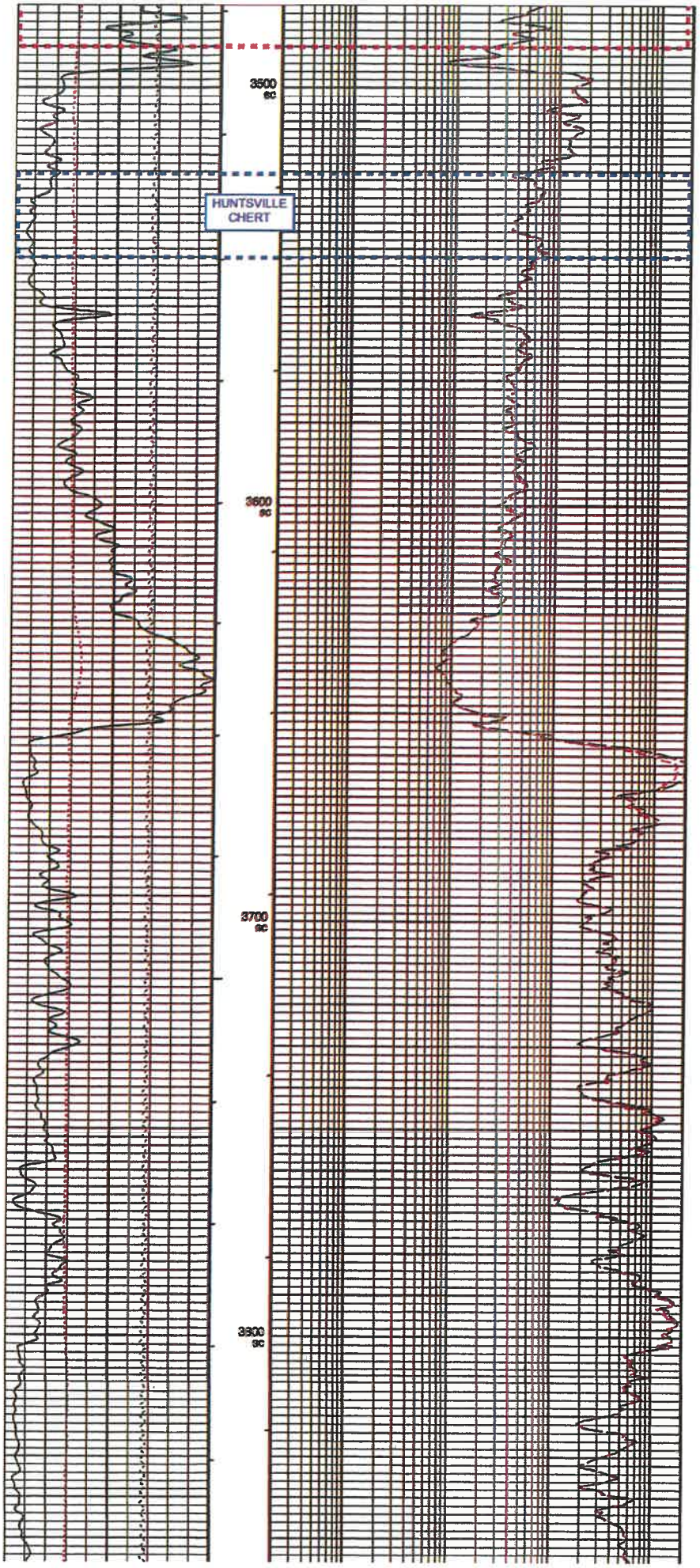


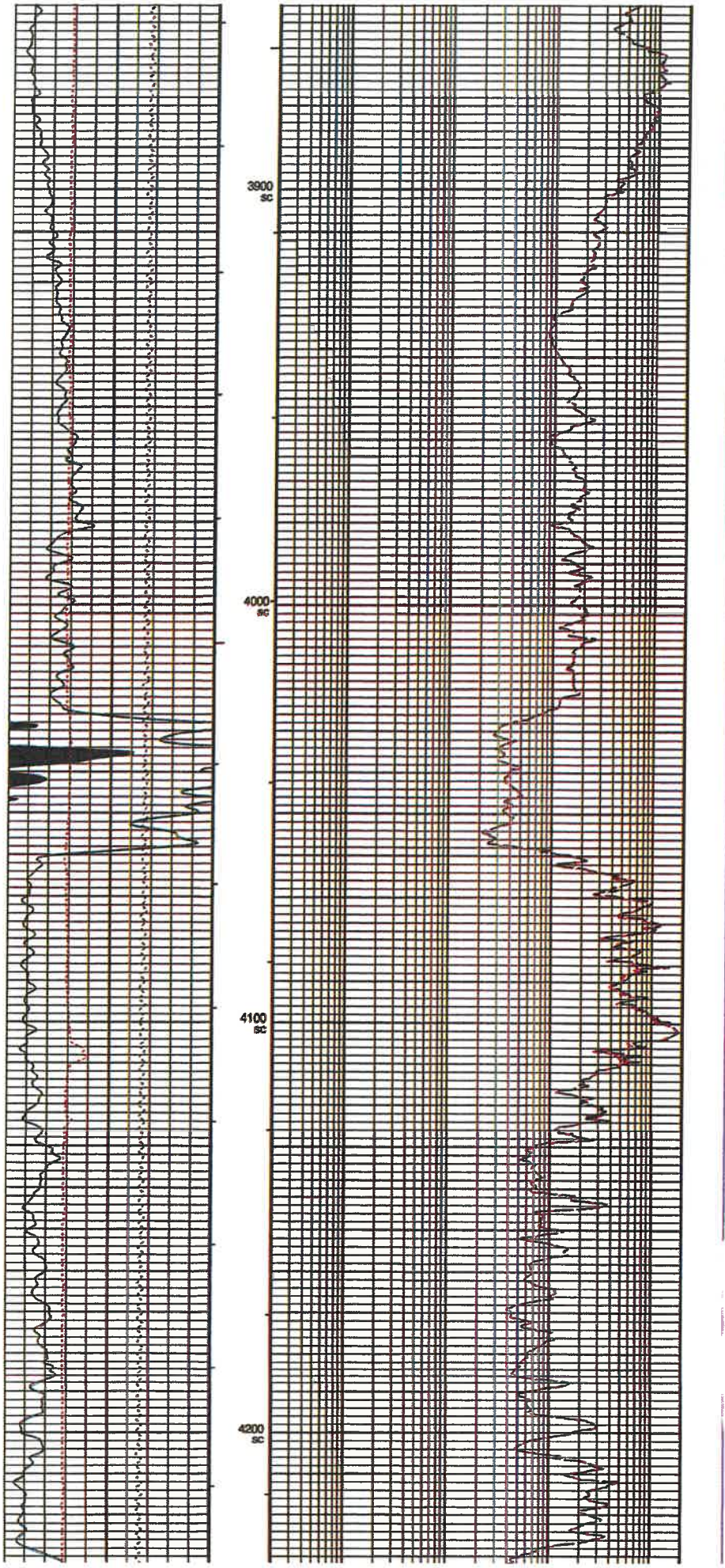


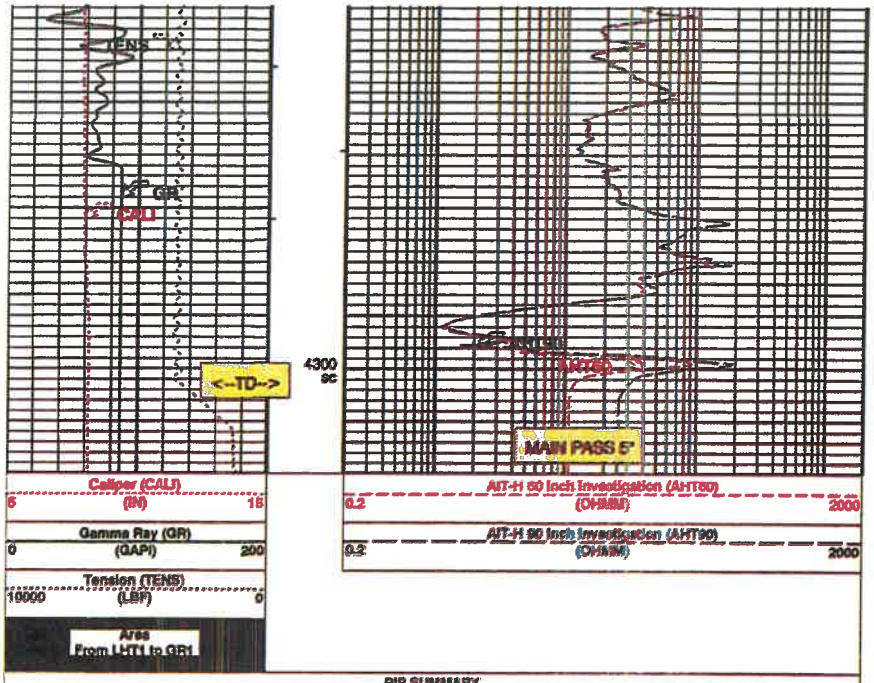












PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 Ft
- Integrated Hole Volume Major Pip Every 100 Ft
- Integrated Cement Volume Minor Pip Every 10 Ft
- Integrated Cement Volume Major Pip Every 100 Ft

AIT-H Answer Product Processing Summary. Data taken with Tool # 216 (AHTNO)

***** Borehole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT-H Answer Product Processing *****

Caliper (GCSE): CALI Mud Resistivity (GRSE): GEN_9 Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHI

***** Other Parameters used by AIT-H Answer Product Processing *****

Mud Sample Resistivity (RMS)	-50000.000 OHMM	Mud Sample Temperature (MST)	-50000.000 DEGF
Surface Hole Temperature (SHT)	50.000 DEGF	Bottom Temperature (BHT)	100.000 DEGF
Total Depth (TD)	4300.000 FT		

***** AIT-H Answer Product Processing Control Parameters *****

(AHAPL): 2_BholeCorr_Basic.cps
(AHBHM): 2_ComputeStandoff (AHELM): 6_One_Two_and_Four
(AHBPO): Standard_Processing

Parameters

DLIS Name	Description	Value	
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBHV	Array Induction Borehole Correction Code Version Number	870	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHBLV	Array Induction Basic Logs Code Version Number	984	
AHBPO	Array Induction Basic Logs Processing Option	Standard_Processing	
AHCDE	Array Induction Casing Detection Enable	No	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	Array Induction Casing Shoe Estimated Depth	-50000	FT
AHFRSV	Array Induction Response Set Version for Four ft Resolution	32.56.23.11	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	32.56.23.11	
AHRFV	Array Induction Radial Profiling Code Version Number	700	
AHRPV	Array Induction Radial Parameterization Code Version Number	214	
AHSTA	Array Induction Tool Standoff	0.5	IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	32.56.23.11	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	9.00	LB/G
FCD	Future Casing (Outer) Diameter	4.5	IN
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	CALI	
MST	Mud Sample Temperature	-50000.00	DEGF
SHT	Surface Hole Temperature	50	DEGF
TD	Total Depth	4300	FT

Format: AIT_MAIN Vertical Scale: 5" per 100' Graphics File Created: 03-Apr-2001 12:35

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

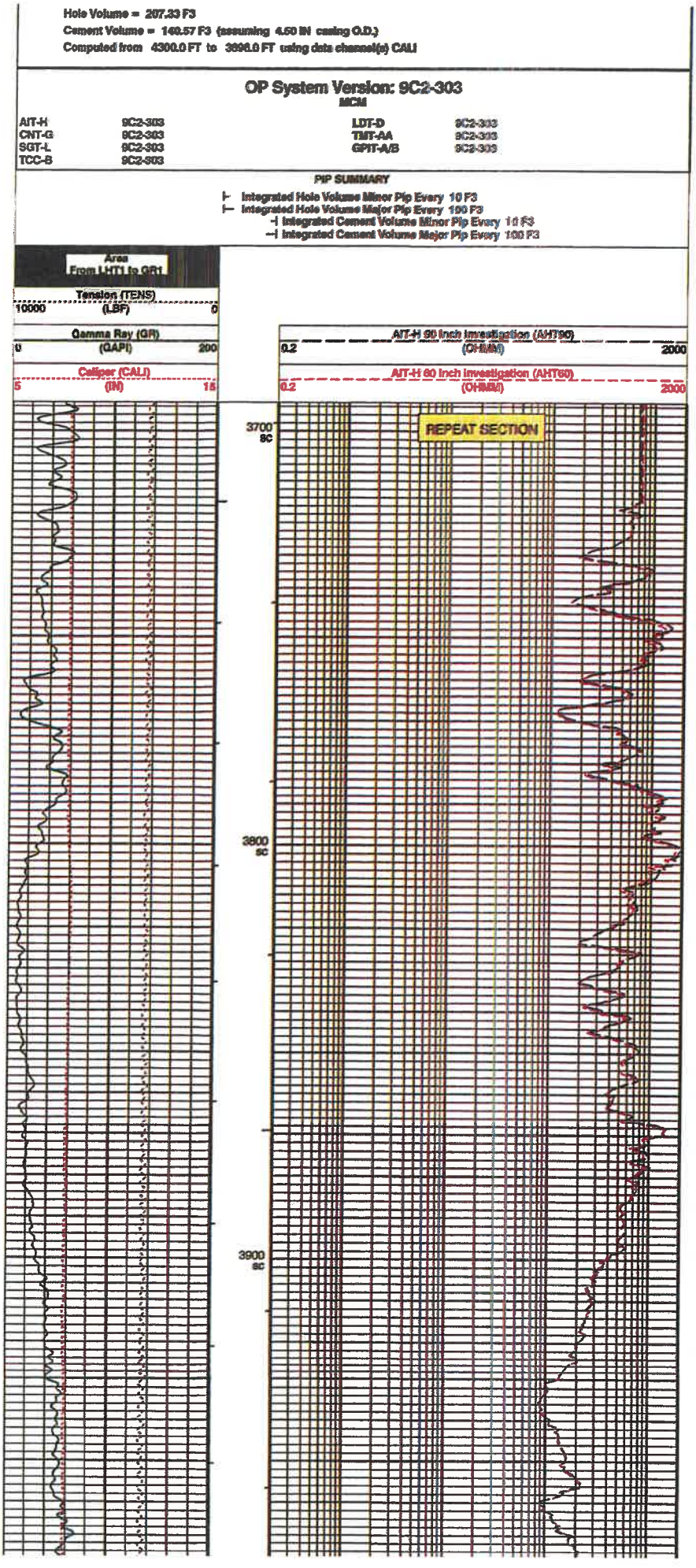
DEFAULT	AIT_LDL_CNL_TMT_022LUP	FN:21	PRODUCER	03-Apr-2001 12:35		

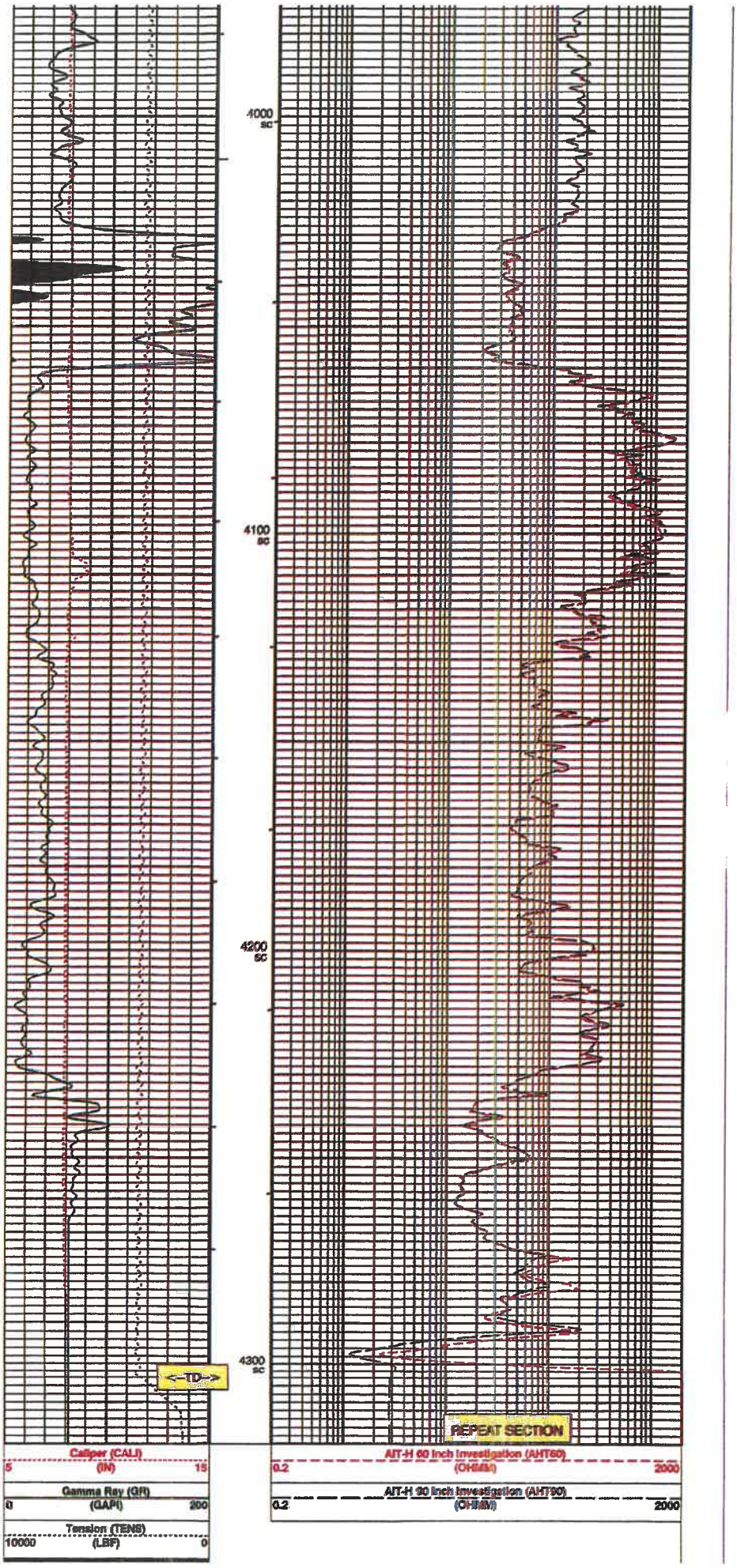
Output DLIS Files

DEFAULT	AIT_LDL_CNL_TMT_021LUP	FN:20	PRODUCER	03-Apr-2001 12:16	4320.0 FT	3692.7 FT

Indexed to Speed Corrected Depth in real-time

Integrated Hole/Cement Volume Summary





Area
From LHTN to GR1

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3

AIT-H Answer Product Processing Summary. Data taken with Tool # 218 (AHTNC)

***** Borehole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT-H Answer Product Processing *****

Caliper (GCSE): CALI Mud Resistivity (GRSE): GEN_9 Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHI

***** Other Parameters used by AIT-H Answer Product Processing *****

Mud Sample Resistivity (RMS)	-50000.000 OHMM	Mud Sample Temperature (MST)	-50000.000 DEGF
Surface Hole Temperature (SHT)	50.000 DEGF	Bottom Temperature (BHT)	100.000 DEGF
Total Depth (TD)	4300.000 FT		

***** AIT-H Answer Product Processing Control Parameters *****

(AHAPL): 2_BholeCorr_BasicLogs
(AHBHM): 2_ComputeStandoff (AHBLM): 6_One_Two_and_Four
(AHBPO): Standard_Processing

Parameters

DLIS Name	Description	Value	
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBHV	Array Induction Borehole Correction Code Version Number	870	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHBLV	Array Induction Basic Logs Code Version Number	964	
AHBPO	Array Induction Basic Logs Processing Option	Standard_Processing	
AHCDE	Array Induction Casing Detection Enable	No	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	Array Induction Casing Shoe Estimated Depth	-50000	FT
AHFRSV	Array Induction Response Set Version for Four ft Resolution	32.66.23.11	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	32.66.23.11	
AHRFV	Array Induction Radial Profiling Code Version Number	700	
AHRPV	Array Induction Radial Parameterization Code Version Number	214	
AHSTA	Array Induction Tool Standoff	0.5	IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	32.66.23.11	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	0.00	LB/G
FCD	Future Casing (Outer) Diameter	4.5	IN
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	CALI	
MST	Mud Sample Temperature	-50000.00	DEGF
SHT	Surface Hole Temperature	50	DEGF
TD	Total Depth	4300	FT

Format: AIT_MAIN Vertical Scale: 5" per 100' Graphics File Created: 03-Apr-2001 12:16

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_021.LUP FN:20 PRODUCER 03-Apr-2001 12:16

Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_022.LUP FN:21 PRODUCER 03-Apr-2001 12:35

Indexed to Speed Corrected Depth in real-time

Speed Corrected Depth Log

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BHT	120 DEGF	100 DEGF	4279.9 12:40:43

AIT-H Boosted Borehole Corrected Average Conductivities

Average performed from depth 4220.00 ft/ 1286.26 m with 12778 samples

A1: 100.690 A2: -149.923 A3: 16.596 A4: 34.589

A5: 33.623 A6: 24.745 A7: 24.033 A8: 23.757

PIP SUMMARY

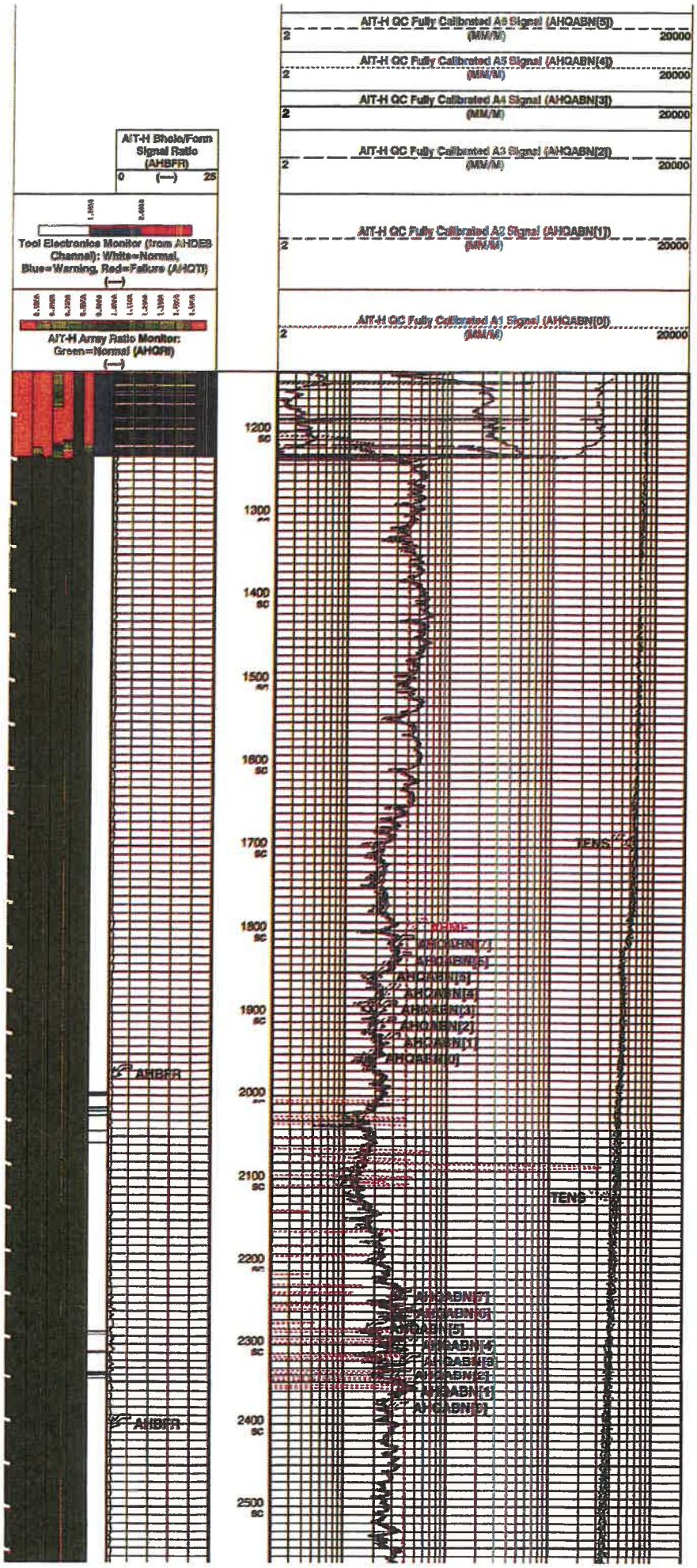
Time Mark Every 60 S

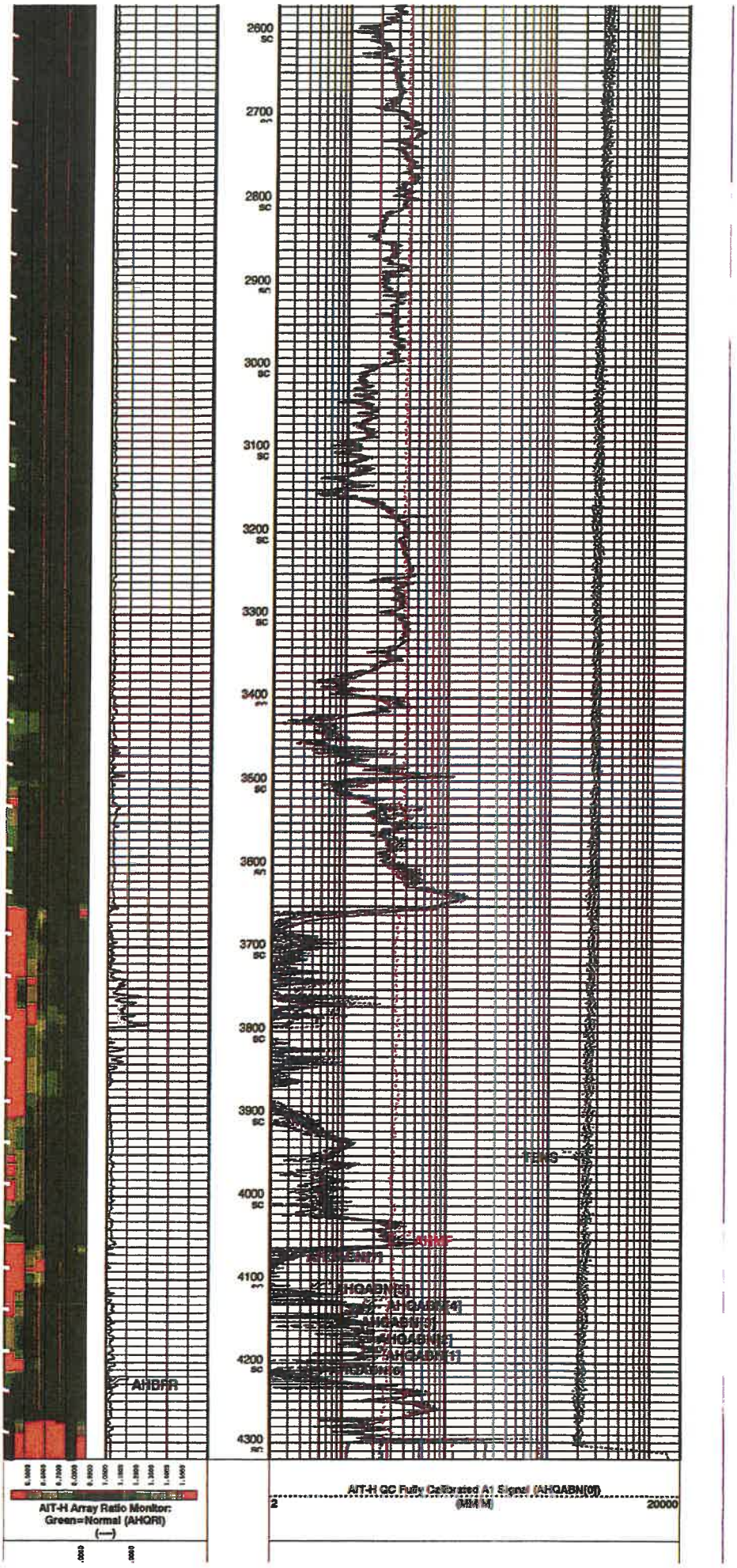
Tension (TENS)
6000 (LBF) 1000

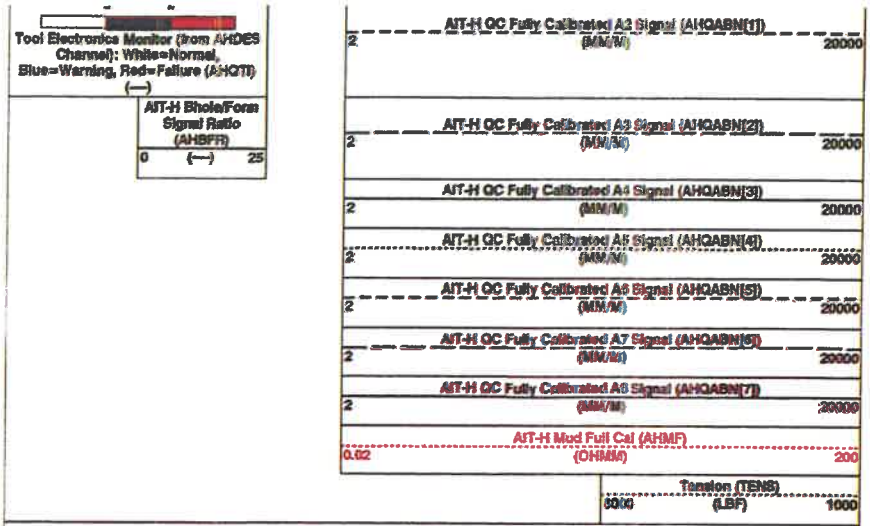
AIT-H Mud Full Cal (AHMF)
0.02 (OHMM) 200

AIT-H QC Fully Calibrated A6 Signal (AHQABN[7])
2 (MMHO) 20000

AIT-H QC Fully Calibrated A7 Signal (AHQABN[8])
2 (MMHO) 20000







PIP SUMMARY

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with Tool # 215 (AHTNO)

***** Borehole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT-H Answer Product Processing *****

Caliper (GCSE): CALI Mud Resistivity (GRSE): GEN_9 Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHI

***** Other Parameters used by AIT-H Answer Product Processing *****

Mud Sample Resistivity (RMS)	-50000.000 OHMM	Mud Sample Temperature (MST)	-50000.000 DEGF
Surface Hole Temperature (SHT)	50.000 DEGF	Bottom Temperature (BHT)	100.000 DEGF
Total Depth (TD)	4300.000 FT		

***** AIT-H Answer Product Processing Control Parameters *****

(AHAPL): 2_BholeCorr_BasicLogs

(AHBHM): 2_ComputeStandoff (AHBLM): 6_One_Two_and_Four

(AHDPO): Standard_Processing

Parameters

DLIS Name	Description	Value	
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHCEN	Array Induction Tool Centering Flag (In Borehole)	Eccentered	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHSTA	Array Induction Tool Standoff	0.5	IN
BHT	Bottom Hole Temperature (used in calculations)	100	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	0.00	LB/G
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MST	Mud Sample Temperature	-50000.00	DEGF
SHT	Surface Hole Temperature	50	DEGF
TD	Total Depth	4300	FT

Format: AIT_LOC Vertical Scale: 1" per 100' Graphics File Created: 03-Apr-2001 12:35

OP System Version: 9C2-303

MCM

AIT-H	9C2-303	LDT-D	9C2-303
CNT-G	9C2-303	TMT-AA	9C2-303
SGT-L	9C2-303	GPIT-A/B	9C2-303
TCC-B	9C2-303		

Speed Corrected Depth Log

Indexed to Speed Corrected Depth in real-time

Output DLIS Files

DEFAULT AIT_LDL_CNL_TMT_022LUP FH:21 PRODUCER 03-Apr-2001 12:35

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Before: 1-Apr-2001 8:31							
Thru Cal Magnitude - 0	0	N/A	0.6433	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	N/A	1.321	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	N/A	0.6559	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	N/A	0.7403	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	N/A	1.369	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	N/A	2.007	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	N/A	2.016	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	N/A	1.438	N/A	N/A	N/A	V
Phase - 0	0	N/A	56.73	N/A	N/A	N/A	DEG
Phase - 1	0	N/A	65.80	N/A	N/A	N/A	DEG
Phase - 2	0	N/A	61.83	N/A	N/A	N/A	DEG
Phase - 3	0	N/A	61.05	N/A	N/A	N/A	DEG
Phase - 4	0	N/A	54.68	N/A	N/A	N/A	DEG
Phase - 5	0	N/A	52.80	N/A	N/A	N/A	DEG
Phase - 6	0	N/A	52.75	N/A	N/A	N/A	DEG
Phase - 7	0	N/A	48.94	N/A	N/A	N/A	DEG
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Auxiliary							
Before: 1-Apr-2001 8:31							
Array Induction SPA Plus	990.5	N/A	995.8	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	N/A	-0.3594	N/A	N/A	N/A	MV

Array Induction Temperature Zt	0	N/A	-0.0003479	N/A	N/A	N/A	V

Litho Density - D Wellsite Calibration - Background Measurement
Master: 3-Mar-2001 14:43 Before: 31-Mar-2001 19:30

LL Background	20.00	18.76	18.56	N/A	N/A	1.000	CPS
LU Background	78.00	69.48	69.59	N/A	N/A	1.000	CPS
LS Background	57.00	53.52	53.35	N/A	N/A	1.000	CPS
LTH Background	5.500	5.331	5.230	N/A	N/A	0.3000	CPS
SS1 Background	16.00	14.97	15.09	N/A	N/A	0.5000	CPS
SS2 Background	11.00	10.21	10.21	N/A	N/A	0.5000	CPS

Litho Density - D Wellsite Calibration - Tool Quality Control Information HV
Master: 3-Mar-2001 14:43 Before: 31-Mar-2001 19:30

LSHV Background	1500	1276	1276	N/A	N/A	N/A	V
SSHV Background	1500	1173	1174	N/A	N/A	N/A	V

Litho Density - D Wellsite Calibration - Detectors Resolution From BKG Measurements
Master: 3-Mar-2001 14:43 Before: 31-Mar-2001 19:30

LS Resolution Background	8.000	8.530	8.488	N/A	N/A	N/A	
SS Resolution Background	8.000	8.540	8.597	N/A	N/A	N/A	

Litho Density - D Wellsite Calibration - Caliper Calibration
Before: 31-Mar-2001 19:27

Caliper Small Ring	8.000	N/A	8.764	N/A	N/A	N/A	IN
Caliper Large Ring	12.00	N/A	12.91	N/A	N/A	N/A	IN

Compensated Neutron - G Wellsite Calibration - Zero Measurement
Master: 15-Feb-2001 9:12 Before: 31-Mar-2001 19:22

CNTC Background	1.000	0	0	N/A	N/A	N/A	CPS
CFTC Background	0	0	0	N/A	N/A	N/A	CPS
CNEC Background	1.000	0	0	N/A	N/A	N/A	CPS
CFEC Background	0	0	0	N/A	N/A	N/A	CPS

Compensated Neutron - G Wellsite Calibration - Jig Measurement
Master: 15-Feb-2001 9:51 Before: 31-Mar-2001 19:45

CNTC Jig	2931	2931	2946	N/A	N/A	N/A	CPS
CFTC Jig	1478	1478	1465	N/A	N/A	N/A	CPS
CNTC/CFTC (Jig)	1.984	1.984	2.010	N/A	N/A	N/A	
CNEC Jig	585.0	585.0	582.0	N/A	N/A	N/A	CPS
CFEC Jig	575.8	575.8	583.1	N/A	N/A	N/A	CPS
CNEC/CFEC (Jig)	0.9841	0.9841	0.9981	N/A	N/A	N/A	

General Purpose Inclinometer Wellsite Calibration - CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY
Before: 31-Mar-2001 19:20

TEMPERATURE REFERENCE :	N/A	N/A	68	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	94	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	7	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	460	N/A	N/A	N/A	

General Purpose Inclinometer Wellsite Calibration - EPS MAGNETOMETER PROM HAS BEEN READ CORRECTLY
Before: 31-Mar-2001 19:20

TEMPERATURE REFERENCE :	N/A	N/A	212	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	98	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	10	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	70	N/A	N/A	N/A	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 65.0 DEGF.
Thermal Housing Size 3.375 IN.
Epithermal Housing Size 3.375 IN.

Array Induction Tool - H / Equipment Identification

Primary Equipment:	
Rm/GP Bottom Nose	AHRM - A
Array Induction Sonde	AHIS - BA
Auxiliary Equipment:	

Array Induction Tool - H Wellsite Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Before	0.6433		0.6050	69.73		71.00
1	Before	1.321		1.270	65.63		70.00
2	Before	0.6559		0.6230	61.63		59.00
3	Before	0.7405		0.7040	61.05		58.00
4	Before	1.389		1.337	54.85		53.00
5	Before	2.007		1.855	52.80		57.00
6	Before	2.016		1.868	52.76		57.00
7	Before	1.488		1.415	46.94		53.00
		60.00 % (Minimum)		140.0 % (Maximum)	Nom -60.00 (Minimum)		Nom + 60.00 (Maximum)

Before: 1-Apr-2001 8:31

Array Induction Tool - H Wellsite Calibration
Electronics Calibration Check - Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Before		995.8	Before		-0.3694
	941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)			-60.00 (Minimum) 0 (Nominal) 60.00 (Maximum)	
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Before		0.9224	Before		-0.0003479
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)			-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Before: 1-Apr-2001 8:31

Litho Density - D / Equipment Identification

Primary Equipment:	
Nuclear Services Cartridge	NSC - E
Powered Gamma Detector	PGD - G
Gamma Source Radioactive	GSR - J
Auxiliary Equipment:	
Density Resistivity Sonde	DRS - C
Electronics Cartridge Housing	ECH - MKA
Powered Detector Housing	PDH - I

Litho Density - D Wellsite Calibration
Background Measurement

Phase	LL Background CPS	Value	Phase	LU Background CPS	Value	Phase	LS Background CPS	Value
Master		18.76	Master		69.48	Master		53.52
Before		18.56	Before		69.59	Before		53.35
15.00	20.00	25.00	58.00	78.00	94.00	43.00	57.00	72.00

Phase	LITH Background CPS	Value	Phase	SS1 Background CPS	Value	Phase	SS2 Background CPS	Value
Master		5.331	Master		14.97	Master		10.21
Before		5.238	Before		15.09	Before		10.21
	4.000 (Minimum) 5.500 (Nominal) 7.500 (Maximum)			12.00 (Minimum) 16.00 (Nominal) 19.50 (Maximum)			8.000 (Minimum) 11.00 (Nominal) 13.50 (Maximum)	

Master: 3-Mar-2001 14:43 Before: 31-Mar-2001 19:30

Litho Density - D Wellsite Calibration
Detectors Resolution From BKG Measurments

Phase	LS Resolution Background	Value	Phase	SS Resolution Background	Value
Master		8.530	Master		8.540
Before		8.498	Before		8.537
	5.000 (Minimum) 8.000 (Nominal) 11.50 (Maximum)			5.000 (Minimum) 8.000 (Nominal) 11.50 (Maximum)	

Master: 3-Mar-2001 14:43 Before: 31-Mar-2001 19:30

Compensated Neutron - G / Equipment Identification

Primary Equipment:		
Compensated Neutron Cartridge	CNC - GA	
Neutron Logging Source	MLS - KL	
Neutron Source Radioactive	NSR - F	3118
Compensated Neutron Box	CNB - AB	3185
Neutron Detector without Alpha Source	CND - NA	184
Compensated Neutron Box	CNB - AB	3185
Auxiliary Equipment:		
Compensated Neutron Housing	CNH - G	
Neutron Calibration Tank	NCT - B	

Compensated Neutron - G Wellsite Calibration
Zero Measurment

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		0	Master		0
Before		0	Before		0
	-0.010000 (Minimum) 1.000 (Nominal) 5.000 (Maximum)			-0.010000 (Minimum) 0 (Nominal) 5.000 (Maximum)	
Phase	CNEC Background CPS	Value	Phase	CFEC Background CPS	Value
Master		0	Master		0
Before		0	Before		0
	-0.010000 (Minimum) 1.000 (Nominal) 5.000 (Maximum)			-0.010000 (Minimum) 0 (Nominal) 5.000 (Maximum)	

Master: 15-Feb-2001 9:12 Before: 31-Mar-2001 19:22

Compensated Neutron - G Wellsite Calibration
Jig Measurment

Phase	CNTC Jig CPS	Value	Phase	CFTC Jig CPS	Value	Phase	CNTC/CFTC (Jig)	Value
Master		2931	Master		1478	Master		1.984
Before		2945	Before		1485	Before		2.010
	2784 (Minimum) 2931 (Nominal) 3077 (Maximum)			1404 (Minimum) 1478 (Nominal) 1551 (Maximum)		1.944 (Minimum) 1.984 (Nominal) 2.024 (Maximum)		
Phase	CNEC Jig CPS	Value	Phase	CFEC Jig CPS	Value	Phase	CNEC/CFEC (Jig)	Value
Master		665.6	Master		675.8	Master		0.9841
Before		661.6	Before		663.1	Before		0.9931
	631.7 (Minimum) 665.0 (Nominal) 698.2 (Maximum)			642.6 (Minimum) 675.8 (Nominal) 708.5 (Maximum)		0.9441 (Minimum) 0.9891 (Nominal) 1.034 (Maximum)		

Master: 15-Feb-2001 9:51 Before: 31-Mar-2001 19:45

General Purpose Inclinometer / Equipment Identification

Primary Equipment:	
GPIT Cartridge - A	GPIC - A
Auxiliary Equipment:	
GPIT Housing	GPIH - A

COMPANY:	MEGAENERGY OPERATING INC	BOTTOM LOG INTERVAL	4292 ft
		SCHLUMBERGER DEPTH	4303 ft
WELL:	NESTOR B-1	DEPTH DRILLER	4300 ft
FIELD:	LEADMINE	KELLY BUSHING	1660 ft
COUNTY:	TUCKER	DRILL FLOOR	1659 ft
STATE:	WV	GROUND LEVEL	1650 ft

Schlumberger

ARRAY INDUCTION
GAMMA RAY

RECEIVED
Office of Oil and Gas

JUL - 1 2019

WV Department of
Environmental Protection

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 7

AREA OF REVIEW

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 7

1. SEE ATTACHED MAP - The attached Figure No. 4 is a topographic map showing the wellsite of the Nestor B-1 Disposal Well, with a ¼ mile AOR buffer area shown.

2. SEE ATTACHED MAP - The attached Figure No. 5 is a topographic map showing the wellsite of the Nestor B-1 Disposal Well, with a 1 mile buffer area shown.
   SEE ATTACHED WR-35
   SEE ATTACHED WR-38: PLUGGING AFFIDAVIT FOR WELL#0039
   SEE ATTACHED APPENDIX C

   There were no publically recorded water sources found within a 1 mile buffer of the Nestor B-1 Disposal Well. SEE APPENDIX D

3. Sampled USDW results will be submitted when received from lab. √ 7/22/19

4. There is 1 water well located with the AOR that could be tested.
   SEE ATTACHED MAP - Figure No. 6
   USDW analyses will be provided.

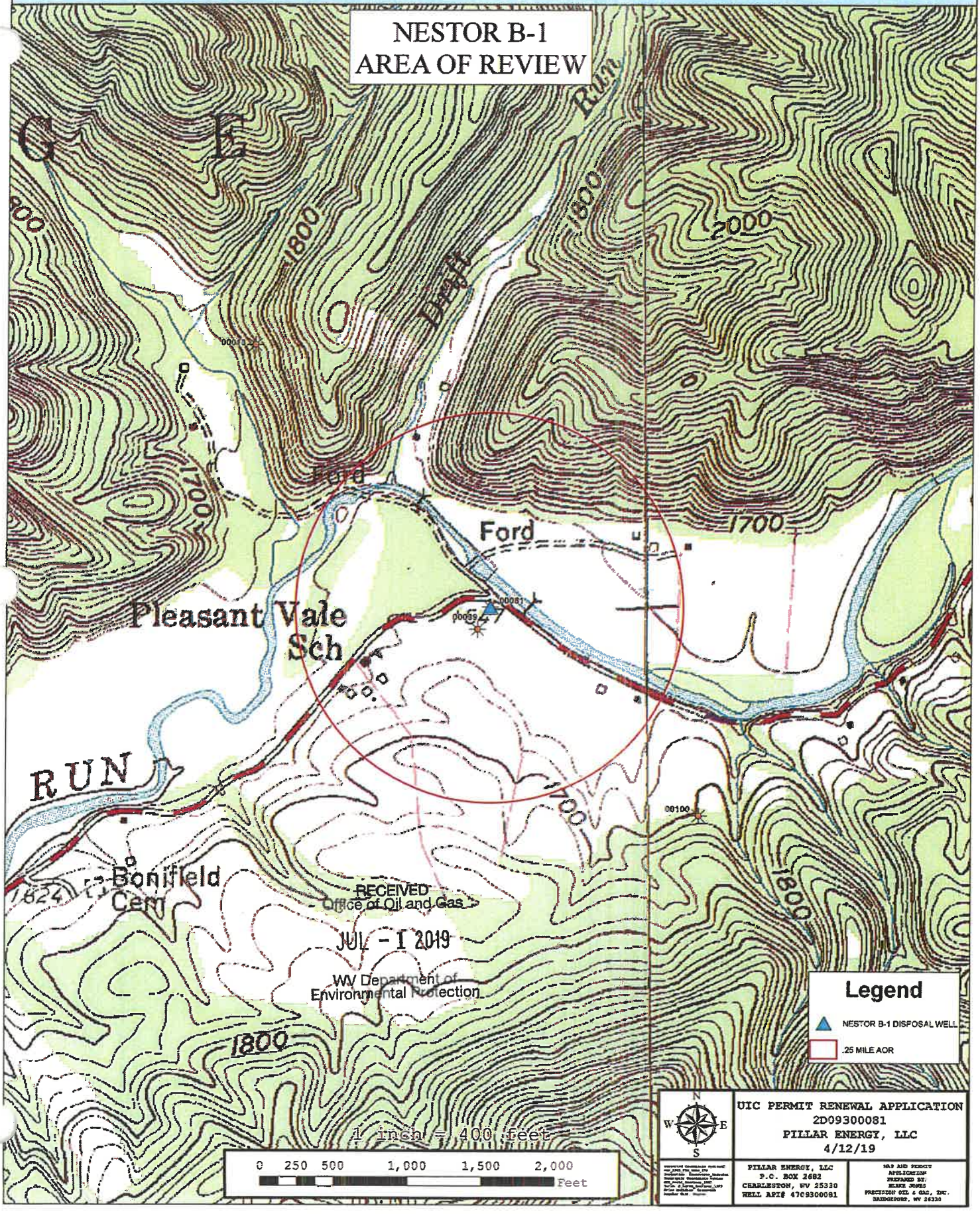
5. Samples shall be collected and analyzed in accordance with methods approved by the Chief or as set forth at 40 CFR Part 136.

6. There is no immediate threat of fluid migration from the subject disposal well. A monitoring plan may need to be developed to protect USDW's in the area.

7. Not Applicable

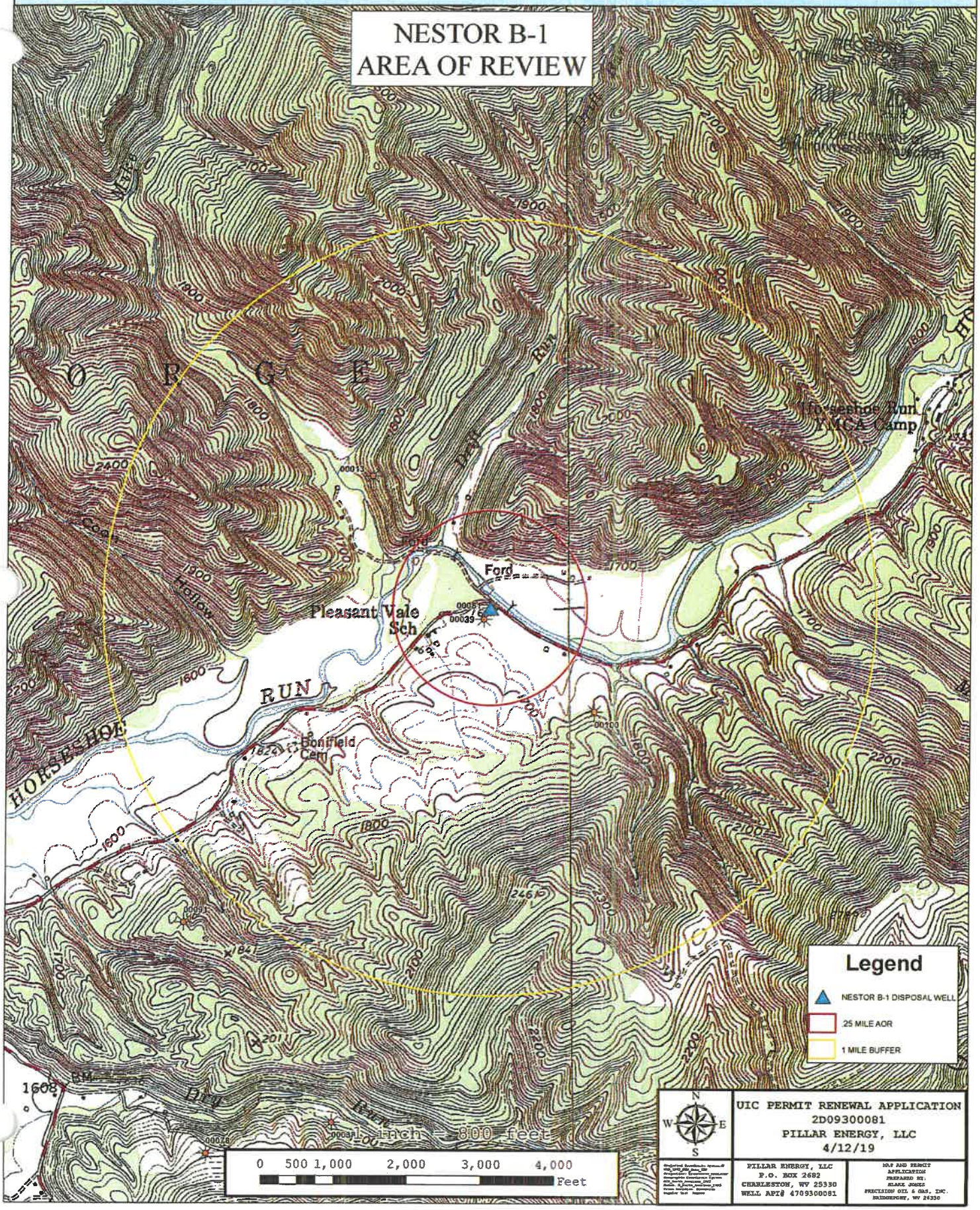
Figure No. 4

PILLAR ENERGY, LLC UIC PERMIT - 2D09300081



PILLAR ENERGY, LLC UIC PERMIT - 2D09300081

Figure No. 5



UIC PERMIT RENEWAL APPLICATION
2D09300081
PILLAR ENERGY, LLC
4/12/19

PILLAR ENERGY, LLC
P.O. BOX 2682
CHARLESTON, WV 25330
WELL API# 4709300081

MAP AND PERMIT APPLICATION PREPARED BY:
BLAKE JONES
PRECISION OIL & GAS, INC.
BRIDGEPORT, WV 26330

APPENDIX C

Wells within the Area of Review

API #	Well Type	Well Status (Active, Abandoned, Shut-in, Plugged)	Northing (UTM NAD 83 Meters)	Easting (UTM NAD 83 Meters)	Penetrate Injection Zone (Y or N)	Penetrate Confining Zone (Y or N)	Total Vertical Depth	Surface Elevation
47-093-0081	DISPOSAL WELL	ACTIVE	4336179.5	618482.9	Y	Y	4304	1650
47-093-0039	DRY HOLE	PLUGGED	4336133.6	618455.6	Y	Y	6836	1652

Make as many copies as necessary and include page numbers as appropriate.

0039

WR-38

RECEIVED
MAY 31 1972
OIL & GAS DIVISION
DEPT. OF MINES

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS WELLS DIVISION

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPLICATE, ONE COPY MAILED TO THE DEPARTMENT, ONE COPY TO BE OBTAINED BY THE WELL OPERATOR AND ONE THIRD COPY (AND EXTRA COPIES IF REQUIRED) DELIVERED AS WELL AS MAILED TO EACH COAL OPERATOR AT THEIR RESPECTIVE ADDRESSES

Gerald Nestor & Coal Heating H/W — COAL DEPARTMENT OWNER OR SURFACE
RFD. #2, Parsons, W. Va.
Texas Eastern Trans. Corp. — ADDRESS
1515 Four Gateway Center
Pittsburg, Pa. 15222 — ADDRESS
U. S. Geological Survey — COAL OPERATOR OR COAL OPERATOR ASSIGNEE
3227 GSA Bldg., Washington, D.C. 20242 — ADDRESS
N. Mae Hile & Albert S. Hile H/W
RFD #2, Parsons, W. Va. (See attached)
STATE INSPECTOR SUPERVISING PLUGGING Paul Thomas

Cities Service Oil Company — NAME OF WELL OPERATOR
Box 673, Charleston, W. Va. 25323 — COMPLETE ADDRESS
May 11, 19 72 — WELL AND LOCATION
St. George District
Tucker County
Well No. "A" #1, GM-1707
Gerald Nestor Farm

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Tucker } ss:

and

being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 12 day of May, 19 72, and that the well was plugged and filled in the following manner:

SAND OR ZONE RECORD		FILLING MATERIAL	PLUGS USED	CASING	
FORMATION		Filled hole w/6% Bentonite Mud	SIZE & KIND	CSG PULLED	CSG LEFT IN
Tuscarora		Cement 6786-6450'	Cement	4200'	700' - 9-5/8"
Helderberg		Cement 4904-4384'	Cement		
Helderberg		Cement 4154-4114'	Cement		1263' - 13-3/8"
Devonian		Cement 1273-1253'	Cement		105' - 20"
Devonian		30' to Surface	Cement		12 - 26"

COAL SEAMS	DESCRIPTION OF MONUMENT
(NAME)	Cities Service Oil Company
(NAME)	Nestor "A" #1
(NAME)	5/17/72
(NAME)	

and that the work of plugging and filling said well was completed on the 17 day of May, 19 72

And further deponents saith not.

Roger Schmidt
Robert Morgan

Sworn to and subscribed before me this 19 day of May, 1972

Notary Public.

My commission expires: September 6, 1975

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WV Department of
Environmental Protection

Permit No. Tuc-39-P

(4/25)

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Office of Oil and Gas

JUL - 1 2019

WV Department of
Environmental Protection

APPENDIX D

Public Service District Affidavit

Underground Injection Control Permit applicants must identify all publically recorded drinking water sources within a one (1) mile radius of the proposed injection well facility. If no drinking water sources are present within this radius a written affidavit shall be supplied by the local Public Service District (PSD) as ample verification.

"I certify under penalty of law that (state name of business)

Pillar Energy, LLC

has verified with the public service district (state name of PSD)

Hamrick PSD

that there are no such publically recorded sources.

Jason Lipscomb

(Signature of Authorized Representative)

Sworn and subscribed to before me this 20th day of June, 2019.

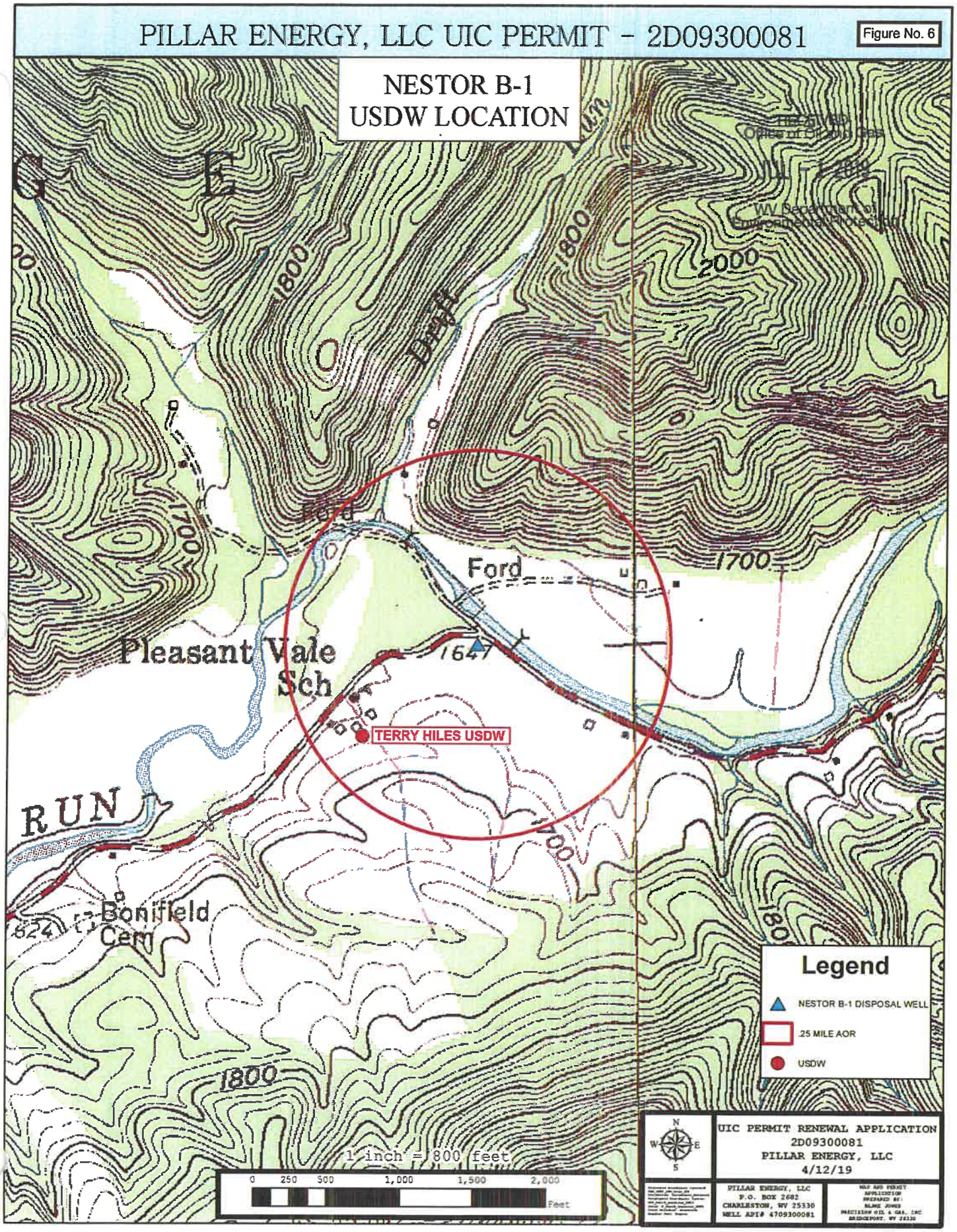
Gary A. Hall, my commission expires October 30, 2019

(Notary Signature) Gary A Hall.

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Gary A. Hall
Precision Oil and Gas
41 Devonwood Drive, Bridgeport, WV 26330
My Commission Expires October 30, 2022

PILLAR ENERGY, LLC UIC PERMIT - 2D09300081

Figure No. 6



(4/25)

APPENDIX E
Water Sources

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Office of Oil and Gas
JUL 22 2019
WV Department of
Environmental Protection

Operator: PILLAR ENERGY Year 2019 UIC Permit # UIC2D0930081

		Source # 1	Source #	Source #	Source #
Water Source Name		TERRY HILES			
Northing - DD		39.1644			
Easting - DD		-79.6325			
Parameter	Units				
TPH - GRO	mg/L	ND			
TPH - DRO	mg/L	ND			
TPH - ORO	mg/L	.21			
BTEX	mg/L	ND			
Chloride	mg/L	1.75			
Sodium	mg/L	.84			
Total Dissolved Solids (TDS)	mg/L	46			
Aluminum	mg/L	.05 J			
Arsenic	mg/L	UNDETECTABLE			
Barium	mg/L	.022 J			
Iron	mg/L	.07 J			
Manganese	mg/L	.016 J			
pH	SU	6.6			
Calcium	mg/L	3.71			
Sulfate	mg/L	3.07 J			
MBAS	mg/L	.02			
Dissolved Methane	mg/L	UNDECTED OR BELOW LAB QUANTITATION LIMIT			
Dissolved Ethane	mg/L	UNDECTED OR BELOW LAB QUANTITATION LIMIT			
Dissolved Butane	mg/L	UNDECTED OR BELOW LAB QUANTITATION LIMIT			
Dissolved Propane	mg/L	UNDECTED OR BELOW LAB QUANTITATION LIMIT			
Bacteria (Total Coliform)	c/100mL	PRESENT			

Sturm Environmental Services

JOHN W. STURM, PRESIDENT

COMPANY: PRECISION OIL & GAS, INC.

SAMPLE ID: USDW-T. HILES

SAMPLED BY: B. JONES

DATE/TIME SAMPLED:* 06-20-19 0800

DATE/TIME RECEIVED: 06-20-19 1120

LABORATORY ID: POG 190620-1

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	DATE/TIME ANALYZED	ANALYST
pH O	6.6	units	SM 22nd 4500 H B	.1	06-20-19 1248	HN
Fe	.07 J	mg/L	EPA 200.7 Rev 4.4-1994	.05	06-24-19 0538	DB
Mn	.016 J	mg/L	EPA 200.7 Rev 4.4-1994	.002	06-24-19 0538	DB
TSS	U	mg/L	USGS I-3765-85	4	06-22-19 0137	EK
TDS	46	mg/L	USGS I-1750-85	4	06-22-19 0137	EK
MBAS	.02	mg/L	SM22nd 5540C	.02	06-20-19 2210	SW
TOC	2.0	mg/L	SM22nd 5310B	2.0	06-21-19 1307	KC
SO_4	3.07 J	mg/L	EPA 300.0 Rev 2.1-1993	1.0	06-22-19 0318	DC
Cl^-	1.75	mg/L	EPA 300.0 Rev 2.1-1993	1.0	06-22-19 0318	DC
Al	.05 J	mg/L	EPA 200.7 Rev 4.4-1994	.04	06-24-19 0538	DB
As	U	mg/L	EPA 200.9	.0025	06-24-19 1117	RC
Ba	.022 J	mg/L	EPA 200.7 Rev 4.4-1994	.003	06-24-19 0538	DB
Ca	3.71	mg/L	EPA 200.7 Rev 4.4-1994	.15	06-24-19 0538	DB
Na	.84	mg/L	EPA 200.7 Rev 4.4-1994	.05	06-24-19 0538	DB
SPEC GRAVITY	.999675	calc	CALCULATION		06-25-19 1736	SW

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

B	Analyte found in reagent blank. Indicates possible reagent or background contamination.
E	Estimated Reported value exceeded calibration range.
J	Reported value is an estimate because concentration is less than reporting limit.
PND	Precision not determined.
R	Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
RND	Recovery not determined.
U	Compound was analyzed for, but not detected.
O	Out of holding. Time does not meet 40 CFR 136/141 compliance.
T	This result is not supported by our certification ID.
A	Does not meet 40 CFR 136/141 compliance.
C	Does not meet 47 CSR 32 compliance.

Narrative:

Approved Douglas W Bentz

Sturm Environmental Services

JOHN W. STURM, PRESIDENT

COMPANY: PRECISION OIL & GAS, INC.

SAMPLE ID: USDW-T. HILES

SAMPLED BY: B. JONES

LOG NO: W300-19

DATE/TIME SAMPLED:* 06-20-19 0800

DATE/TIME RECEIVED: 06-20-19 1120

LABORATORY ID: POG 190620-1

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	DATE/TIME ANALYZED	ANALYST
Total Coliform	PRESENT	P/A (Cfu)	9223 Colilert	1	06-20-19 1314	LM
E Coli	PRESENT	P/A (Cfu)	9223 Colilert	1	06-20-19 1314	LM

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Microbiological analysis results will be discarded after 5 years

Method of Analysis from "Standard Methods for the Examination of Water and Wastewater."

Data Qualifiers

B Analyte found in reagent blank. Indicates possible reagent or background contamination.
E Estimated Reported value exceeded calibration range.
J Reported value is an estimate because concentration is less than reporting limit.
PND Precision not determined.
R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
RND Recovery not determined.
U Compound was analyzed for, but not detected.
O Out of holding. Time does not meet 40 CFR 136/141 compliance.
T This result is not supported by our certification ID.
A Does not meet 40 CFR 136/141 compliance.
C Does not meet 47 CSR 32 compliance.

Narrative:

Approved Doyle W Bates

Pace Analytical Services - Analytical Report

WO#: 19063118

Date Reported: 7/5/2019
Original

Client:	STURM ENVIRONMENTAL SERVICES	**Collection Date:**	6/20/2019 8:00:00 AM
Project:	PRECISION OIL & GAS, INC.	**Date Received:**	6/25/2019
Lab ID:	19063118-01A	**Matrix:**	Drinking Water
Client Sample ID:	19119 US DW - T. HILES	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
SEMI-VOLATILE RANGE ORGANICS				**Method: SW8015C**					**Analyst: MF**
TPH (Oil Range: C20 - C40)	0.21	0.15	0.22	NA	J	mg/L	06/26/19 11:15AM	06/27/19 9:02PM	
TPH (Diesel Range: C10 - C28)	ND	0.14	0.22	NA		mg/L	06/26/19 11:15AM	06/27/19 9:02PM	
Surr: o-Terphenyl	57.2	NA	14.7-126	NA		%Rec	06/26/19 11:15AM	06/27/19 9:02PM	
VOLATILE RANGE ORGANICS				**Method: SW8015C**					**Analyst: CB**
TPH (Gasoline Range: C6 - C10)	ND	0.220	0.500	NA		mg/L	06/26/19 7:26AM	07/03/19 1:39PM	
Surr: 2,5-Dibromotoluene	97.1	NA	49.3-147	NA		%Rec	06/26/19 7:26AM	07/03/19 1:39PM	
VOLATILE ORGANIC COMPOUNDS				**Method: SW8260B**					**Analyst: AB**
Benzene	ND	0.0790	0.500	NA		µg/L	06/26/19 7:26AM	07/03/19 7:56PM	
Ethylbenzene	ND	0.208	1.00	NA		µg/L	06/26/19 7:26AM	07/03/19 7:56PM	
m,p-Xylene	ND	0.370	2.00	NA		µg/L	06/26/19 7:26AM	07/03/19 7:56PM	
o-Xylene	ND	0.112	1.00	NA		µg/L	06/26/19 7:26AM	07/03/19 7:56PM	
Toluene	ND	0.102	0.500	NA		µg/L	06/26/19 7:26AM	07/03/19 7:56PM	
Surr: 1,2-Dichloroethane-d4	96.5	NA	70-130	NA		%Rec	06/26/19 7:26AM	07/03/19 7:56PM	
Surr: 4-Bromofluorobenzene	99.6	NA	70-130	NA		%Rec	06/26/19 7:26AM	07/03/19 7:56PM	
Surr: Dibromofluoromethane	101	NA	70-130	NA		%Rec	06/26/19 7:26AM	07/03/19 7:56PM	
Surr: Toluene-d8	97.8	NA	70-130	NA		%Rec	06/26/19 7:26AM	07/03/19 7:56PM	

Pace Analytical Services, LLC.
PO Box 684056
Chicago, IL 60695-4056
TEL: (304)255-2500
Website: www.reiclabs.com

Sample Receipt Checklist PRECISION OIL & GAS, INC.

Client Name:	**STU001**			Work Order Number:	**19063118**
RCPNo:	**1**	Date and Time Received:	**6/25/2019 5:10:58 PM**	Received by:	**Holly Glisan**
Completed By:	**Krystion Stover**		Reviewed By:	**Beth Johnson**	
Completed Date:	**6/25/2019 5:16:11 PM**		Reviewed Date:	**6/26/2019 10:48 AM**	

Carrier Name: Pace

1.	Chain of custody present?	Yes [x]	No [ ]	
2.	Chain of custody signed when relinquished and received?	Yes [x]	No [ ]	
3.	Are matrices correctly identified on Chain of custody?	Yes [x]	No [ ]	
4.	Is it clear what analyses were requested?	Yes [x]	No [ ]	
5.	Custody seals intact?	Yes [ ]	No [ ]	Not Present [x]
6.	Samples in proper container type and preservative?	Yes [x]	No [ ]	
7.	Were correct preservatives noted on COC?	Yes [x]	No [ ]	NA [ ]
8.	Sample containers intact?	Yes [x]	No [ ]	
9.	Sufficient sample volume for indicated test?	Yes [x]	No [ ]	
10.	Were container labels complete?	Yes [x]	No [ ]	
11.	All samples received within holding time?	Yes [x]	No [ ]	
12.	Was an attempt made to cool the samples?	Yes [x]	No [ ]	NA [ ]
13.	Sample Temp. taken and recorded upon receipt?	Yes [x]	No [ ]	To 2.7 °C
14.	Water - Were bubbles absent in VOC vials?	Yes [x]	No [ ]	No Vials [ ]
15.	Are Samples considered acceptable?	Yes [x]	No [ ]	
16.	COC filled out properly?	Yes [x]	No [ ]	

Client Notification/Response

Client Name:	**STU001**					Work Order Number:	**19063118**
Comment:							
Client Contacted:	Yes [ ]	No [ ]	NA [x]	Person Contacted:			
Contact Mode:	Phone [ ]	Fax: [ ]	Email: [ ]	In Person: [ ]			
Date Contacted:				Contacted By:			
Regarding:							
Client Instructions:							
Corrective Action:							

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

STU001
STURM ENVIRONMENTAL SER
Beth Johnson

/Login Label Here or List Pace Workorder Numbe.
TJL Log-in Number Here

AREAS are for LAB USE ONLY

Company: Sturm Environmental	Billing Information: ✓
Address: PO Box 650 Bridgeport, WV 26330	
Report To: Mhoops@sturmenvironmental.com	Email To:
Copy To:	Site Collection Info/Address:
Customer Project Name/Number:	State: / County/City: Time Zone Collected: [ ]PT [ ]MT [ ]CT [ ]ET
Phone: 304 623-6549 Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): B. Jones	Purchase Order #: 8339 Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)
	Field Filtered (if applicable): [ ] Yes [ ] No Analysis:

Container Preservative Type **: 3 | 4/3

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: BTEX	Analyses: TPH-DRO, DRO, GRO
19119	DW	G			6/20/19	0800		5	X	X

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Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips:	
Sample pH Acceptable	Y N NA
pH Strips:	
Sulfide Present	Y N NA
Lead Acetate Strips:	

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
* Not A PWS.

Type of Ice Used: (Wet) Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2371740

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: 5
Cooler 1 Temp Upon Receipt: ____oC
Cooler 1 Therm Corr. Factor: ____oC
Cooler 1 Corrected Temp: 2.7 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
K. Krehel	6-24-19 1400		6-24-19 1400
	6-24-19 1440	Holly Gibson Pace	6/24/19 1440
	6-25-19 1400		6-25-19 1530
	6-25-19 1530		6-25-19 1655

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

GEOCHEMICAL TESTING
Environmental and Energy Analysis

2005 N. Center Ave.
Somerset, PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

Tuesday, June 25, 2019

VICKI HOOPS
STURM ENVIRONMENTAL SERVICES
PO BOX 650
BRIDGEPORT, WV 26330
PRECISION OIL & GAS, INC.

Order No.: G1906E07

Dear VICKI HOOPS:

Geochemical Testing received 2 sample(s) on 6/21/2019 for the analyses presented in the following report.

There were no problems with the analyses and all QC data met NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Timothy W Bergstresser

Timothy W. Bergstresser
Director of Technical Services

ACCREDITED IN ACCORDANCE WITH nelac
I.D. 56-00306PA DEP

Laboratory Results

Geochemical Testing PRECISION OIL & GAS, INC.

Date: *25-Jun-19*

CLIENT:	STURM ENVIRONMENTAL SERVICES	**Client Sample ID:**	19014
Lab Order:	G1906E07		
Project:	USDW-T. ~~HICKS~~ HILES	**Collection Date:**	6/20/2019 8:00:00 AM
Lab ID:	G1906E07-001	**Sampled By:**	Sturm Environmental
Matrix:	AQUEOUS	**DateReceived:**	6/21/2019 10:05:59 AM

Analyses	Result	Q	MDL	PQL	Units	DF	Date Prepared	Date Analyzed
DISSOLVED GASSES			Analyst: TEW				ASTM D8028	ASTM D8028
Butane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 7:32 PM
Ethane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 7:32 PM
Methane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 7:32 PM
Propane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 7:32 PM
Surr: Ethoxyethane	94.6		0	70-130	%REC	1	06/21/19 1:21 PM	06/21/19 7:32 PM

Laboratory Results

Geochemical Testing PRECISION OIL & GAS, INC.

Date: *25-Jun-19*

CLIENT:	STURM ENVIRONMENTAL SERVICES	**Client Sample ID:**	Trip Blank
Lab Order:	G1906E07		
Project:	USDW-T. HICKS	**Collection Date:**	6/20/2019
Lab ID:	G1906E07-002	**Sampled By:**	Sturm Environmental
Matrix:	AQUEOUS	**DateReceived:**	6/21/2019 10:05:59 AM

Analyses	Result	Q	MDL	PQL	Units	DF	Date Prepared	Date Analyzed
DISSOLVED GASSES			Analyst: **TEW**				**ASTM D8028**	**ASTM D8028**
Butane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 8:23 PM
Ethane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 8:23 PM
Methane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 8:23 PM
Propane, dissolved	0.010	U	0.010	0.020	mg/L	1	06/21/19 1:21 PM	06/21/19 8:23 PM
Surr: Ethoxyethane	81.2		0	70-130	%REC	1	06/21/19 1:21 PM	06/21/19 8:23 PM

Shuttle/Cooler ID#: 012

CHAIN OF CUSTODY

Geochemical Testing

Form F-5002, 12.16

Geochemical Testing • 2005 North Center Avenue • Somerset PA 15501 • (814) 443-1671 • Fax (814) 445-6729

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WV Department of Environmental Protection

Billing Client: Sturm Environmental	**Contact (Company):** Sturm	**Phone:** (304) 623-6549
Address: PO Box 650	e-mail: mhoops@sturmenvironmental.com	**Fax:** ( ) —
City: Bridgeport **State:** WV **Zip:** 26330	**Sampled by:** B. Jones	**State Sampled:** WV
WO#: GM16E007	**Project:** —	**PO/~~Quote~~#:** 8337

Sample Matrix:	GW Ground Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	nHZ Not Hazardous / HZ Hazardous	PCBs
Sample Type:	G Grab	C Composite	D Distribution/DW	R Raw/DW	S Special/DW	O Other		

Sample Location/ Description	Lab Number	Sample Matrix	Date	Time (Military)	Sample Type	**Analyses Requested	Remarks/ Preservatives, etc	Number of Containers
**NOTE: IF multiple analytes from one bottle, OR if multiple bottles for one analyte, THEN list separately on one line UNLESS LISTED ON ATTACHED FIELD LOG								
19014	001	L	6-20-19	0800	G	Dissolved Gases: Ethane	Field Filtered: Y (N) Unpres	3
						" Methane	Field Filtered: Y (N)	
						" Propane	Field Filtered: Y (N)	
						" Butane	Field Filtered: Y (N)	
							Field Filtered: Y / N	
							Field Filtered: Y / N	
Trip Blank 6-20-19	002						Field Filtered: Y / N	
							Field Filtered: Y / N	

Note Deficiencies Here:

Relinquished by (Company & Signature)	Date	Time (Military)	Received by (Company & Signature):	Date	Time (Military)
K. Michael Sturm Environmental	6-20-19 PM			6-21-19	1630

SAMPLES MUST BE PRESERVED ON ICE.

Ice present on receipt: Y Yes or ___No | Cooler Temp (°C) on receipt: 3

Sample Receiving (1st Review): MF | Client Support (2nd Review): DC

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NOT APPLICABLE

APPENDIX F

Area Permit Wells

API #	Well Type (Injection, Production, Observation, Monitoring)	Well Status (Active, Abandoned, Shut-in, Plugged)	Northing (UTM NAD 83 Meters)	Easting (UTM NAD 83 Meters)

Make as many copies as necessary and include page numbers as appropriate.

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UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 8

GEOLOGICAL DATA ON THE INJECTION AND CONFINING ZONE

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 8

SEE ATTACHED Figure No. 7- Structural Contour Map -Huntersville Chert Injection Zone

SEE ATTACHED Figure No. 8- Isopach Map- Huntersville Chert Injection Zone

SEE ATTACHED Figure No. 9- West Virginia Nomenclature

Geophysical logs from the Nestor B-1 well, showing both the confining zones and injection zone have been attached in Section 6 (Figure No. 3).

Confining Layer Description

The confining layer for the Nestor B-1 Disposal well is the very dense and impermeable Devonian Onondaga Limestone. This impermeable limestone layer of rock directly overlying the Huntersville Chert will prevent any upward migration of injected fluid out of the injection zone. A shale layer at the base of the Huntersville Chert serves as the underlying barrier to downward migration. Additionally, the Purcell Limestone and Marcellus Shale, which overlay the confining Onondaga Limestone, are very thick and non-permeable. This would also prevent any upward migration of fluid in the event that the Onondaga Limestone formation would fracture.

Injection Layer Description

The injection layer for the Nestor B-1 Disposal well is the permeable Devonian Huntersville Chert Formation. The injection zone, between 3528' and 3548', is 20' thick and highly fractured. The porosity is 3-5% and the permeability is estimated to be .02 millidarcies.

Earthquake Data

As shown in the attached Figure No. 10, there have been no recorded earthquakes in Tucker County, WV as of 1/26/19, where the Nestor B-1 well is located. As the Nestor B-1 is a non-commercial disposal well, only servicing approximately 14 wells, the likelihood of the injection process causing a seismic event is highly unlikely. According to the USGS database there is a 0.46% chance of a major earthquake event occurring within 50 kilometers of Tucker Co., WV within the next 50 years.

Figure No. 7

STRUCTURAL CONTOUR MAP ON THE TOP OF THE HUNTERSVILLE CHERT INJECTION ZONE

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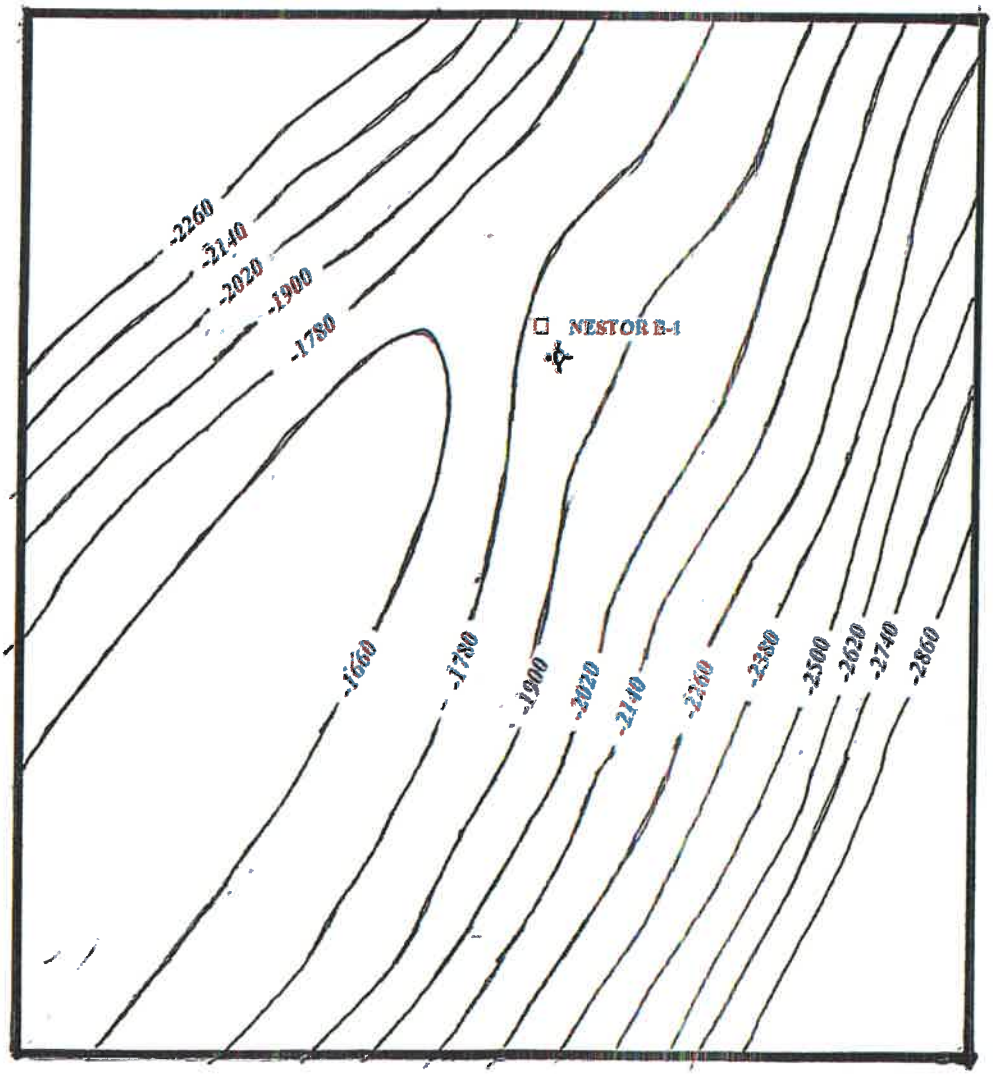
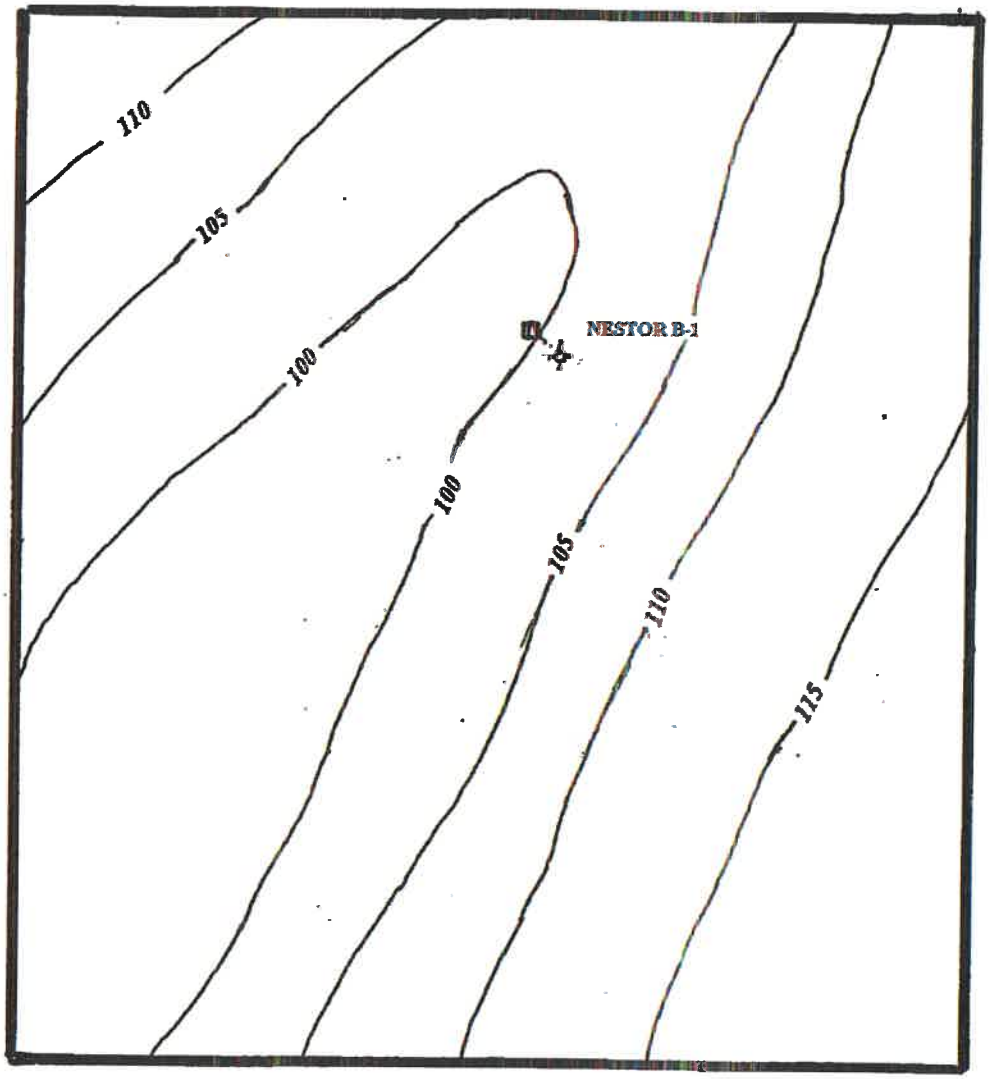


120 FOOT CONTOUR INTERVAL
SCALE 1:22189
1 INCH = 1849 FEET

☐ ***INDICATES BOTTOM HOLE LOCATION OF NESTOR B-1 AT THE HUNTERSVILLE CHERT HORIZON.***

Figure No. 8

ISOPACH MAP OF THE HUNTERSVILLE CHERT INJECTION ZONE



5 FOOT CONTOUR INTERVAL
SCALE 1:22189
1 INCH = 1849 FEET

□ ***INDICATES BOTTOM HOLE LOCATION OF NESTOR B-1 AT THE HUNTERSVILLE CHERT HORIZON.***

West Virginia Nomenclature

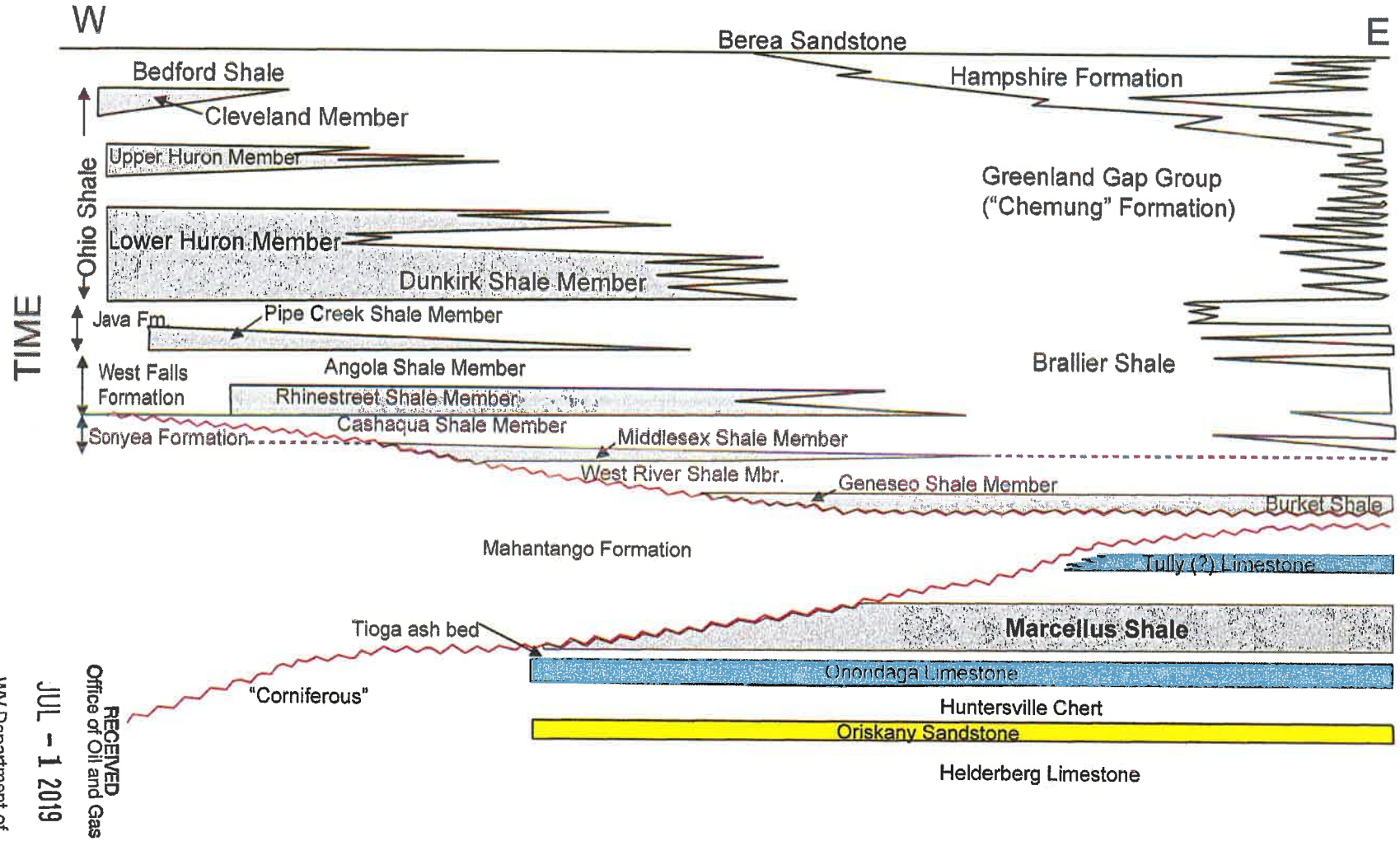


Figure No. 9

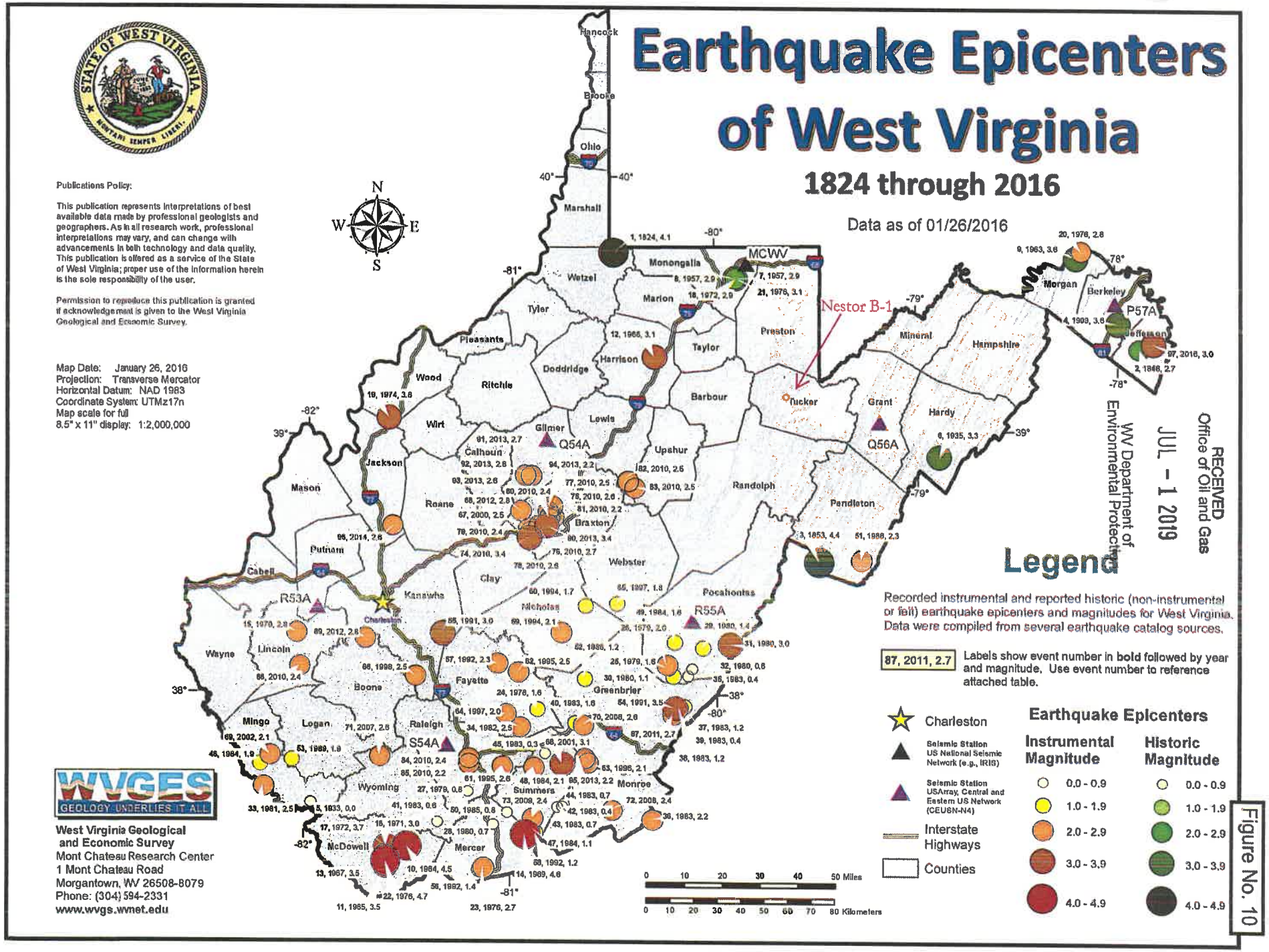

Earthquake Epicenters of West Virginia
1824 through 2016
Data as of 01/26/2016
Publications Policy:
This publication represents interpretations of best available data made by professional geologists and geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.
Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey.
Map Date: January 26, 2016
Projection: Transverse Mercator
Horizontal Datum: NAD 1983
Coordinate System: UTMz17n
Map scale for full 8.5" x 11" display: 1:2,000,000
Nestor B-1
MCWV
Q54A
Q56A
R53A
R55A
S54A
P57A
Legend
Recorded instrumental and reported historic (non-instrumental or felt) earthquake epicenters and magnitudes for West Virginia. Data were compiled from several earthquake catalog sources.
87, 2011, 2.7
Labels show event number in bold followed by year and magnitude. Use event number to reference attached table.
Charleston
Seismic Station US National Seismic Network (e.g., IRIS)
Seismic Station USArray, Central and Eastern US Network (CEUSN-N4)
Interstate Highways
Counties
Earthquake Epicenters
Instrumental Magnitude
0.0 - 0.9
1.0 - 1.9
2.0 - 2.9
3.0 - 3.9
4.0 - 4.9
Historic Magnitude
0.0 - 0.9
1.0 - 1.9
2.0 - 2.9
3.0 - 3.9
4.0 - 4.9
0 10 20 30 40 50 Miles
0 10 20 30 40 50 60 70 80 Kilometers
WVGES
GEOLOGY UNDERLIES IT ALL
West Virginia Geological and Economic Survey
Mont Chateau Research Center
1 Mont Chateau Road
Morgantown, WV 26508-8079
Phone: (304) 594-2331
www.wvgs.wvnet.edu
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Figure No. 10

Event Num	WVQID	County	UTC Year	UTC Month	UTC Day	UTC HH	UTC MM	UTC SS	Latitude (N)	Longitude (W)	Magnitude	Recorded	MMI	Magnitude Type	Source 1	Source 2	USGS Link
1	18240715160	Wood	1824	7	15	16	20	0.00	39.70000	-80.50000	4.1	Historic	4.0	Mb	VTSO	NCEER	
2	18461019020	Jefferson	1846	10	19	2	0	0.00	39.30000	-77.90000	2.7	Historic	3.0	<NULL>	VTSO	<NULL>	
3	18530502140	Pendleton	1853	5	2	14	20	0.00	38.50000	-79.50000	4.4	Historic	5.5	<NULL>	NCEER	Wheeler I-2737	
4	19090402070	Berkeley	1909	4	2	7	25	0.00	39.40000	-78.00000	3.6	Historic	5.0	Mb	VTSO	Wheeler I-2737	
5	19330615010	Mingo	1933	6	15	1	14	36.80	37.56800	-81.97300	0.0	Historic	0.0	<NULL>	VTSO	<NULL>	
6	19351101080	Hardy	1935	11	1	8	30	0.00	38.90000	-78.90000	3.3	Historic	4.0	<NULL>	VTSO	NCEER	
7	19570307210	Monongalia	1957	3	7	21	5	9.00	39.60000	-79.90000	2.9	Historic	3.0	Mb	VTSO	<NULL>	
8	19570313210	Monongalia	1957	3	13	21	0	41.00	39.60000	-79.90000	2.9	Historic	3.0	Mb	VTSO	<NULL>	
9	19631010000	Morgan	1963	10	10	0	0	0.00	39.65500	-78.19700	3.6	Historic	0.0	<NULL>	Wheeler I-2737	<NULL>	
10	19641125020	McDowell	1964	11	25	2	50	5.00	37.40000	-81.50000	4.5	Instrumental	0.0	Mb	ANSS	<NULL>	
11	19650426150	McDowell	1965	4	26	15	26	19.70	37.32500	-81.60200	3.5	Instrumental	0.0	MbLg	VTSO	NCEER	
12	19660928000	Harrison	1966	9	28	0	0	0.00	39.30000	-80.30000	3.1	Instrumental	4.0	<NULL>	NCEER	<NULL>	
13	19671216120	McDowell	1967	12	16	12	23	33.40	37.36000	-81.60400	3.5	Instrumental	0.0	Mb	VTSO	NCEER	
14	19691120010	Mercer	1969	11	20	1	0	9.30	37.44900	-80.93200	4.6	Instrumental	6.0	MbLg	VTSO	NCEER	
15	19700811060	Lincoln	1970	8	11	6	14	25.50	38.23000	-82.05000	2.8	Instrumental	4.0	MbLg	VTSO	NCEER	
16	19710401050	McDowell	1971	4	1	5	5	11.00	37.40000	-81.60000	3.0	Instrumental	0.0	Mb	NCEER	ANSS	
17	19720109230	McDowell	1972	1	9	23	24	29.00	37.40000	-81.60000	3.7	Instrumental	0.0	MbLg	NCEER	ANSS	
18	19720912150	Monongalia	1972	9	12	15	17	13.70	39.60000	-79.90000	2.9	Historic	3.0	Mb	VTSO	NCEER	
19	19741020150	Wood	1974	10	20	15	13	55.60	39.06000	-81.60900	3.8	Instrumental	5.0	Mb	VTSO	NCEER	Further Info
20	19760130180	Morgan	1976	1	30	18	58	49.80	39.68300	-78.17000	2.8	Instrumental	0.0	Lg	USGS	ANSS	Further Info
21	19760506180	Monongalia	1976	5	6	18	46	8.10	39.60000	-79.90000	3.1	Historic	4.0	Mb	VTSO	NCEER	
22	19760619050	McDowell	1976	6	19	5	54	13.40	37.34400	-81.60200	4.7	Instrumental	5.0	Mb	VTSO	NCEER	Further Info
23	19760703200	Mercer	1976	7	3	20	53	45.80	37.32000	-81.13000	2.7	Instrumental	0.0	MbLg	VTSO	<NULL>	
24	19780814040	Fayette	1978	8	14	4	50	5.40	37.93900	-80.87400	1.6	Instrumental	0.0	Mc	VTSO	ANSS	
25	19790916090	Pocahontas	1979	9	16	9	39	22.60	38.09900	-80.24000	1.6	Instrumental	0.0	Mc	ANSS	<NULL>	
26	19790919000	Pocahontas	1979	9	19	0	45	57.40	38.11000	-80.24300	2.0	Instrumental	0.0	Mc	ANSS	<NULL>	
27	19791031080	Raleigh	1979	10	31	8	32	47.30	37.61700	-81.20700	0.8	Instrumental	0.0	Mc	ANSS	<NULL>	
28	19800410220	Mercer	1980	4	10	22	33	15.70	37.48700	-81.08600	0.7	Instrumental	0.0	Mc	VTSO	ANSS	
29	19800921100	Pocahontas	1980	9	21	10	2	46.30	38.17500	-80.07000	1.4	Instrumental	0.0	Mc	VTSO	ANSS	
30	19801016030	Pocahontas	1980	10	16	3	48	7.60	38.06600	-80.21500	1.1	Instrumental	0.0	Mc	VTSO	ANSS	
31	19801105210	Pocahontas	1980	11	5	21	48	14.20	38.18800	-79.93600	3.0	Instrumental	0.0	ML	ANSS	<NULL>	
32	19801125070	Pocahontas	1980	11	25	7	44	4.00	38.09500	-80.12300	0.6	Instrumental	0.0	Md	VTSO	ANSS	
33	19811130170	Mingo	1981	11	30	17	33	11.00	37.63000	-82.20000	2.5	Instrumental	0.0	Mc	VTSO	ANSS	
34	19820623160	Fayette	1982	6	23	16	17	34.10	37.87000	-80.95700	2.5	Instrumental	0.0	Md	VTSO	ANSS	
35	19830121050	Pocahontas	1983	1	21	5	33	20.40	38.06700	-80.14400	0.4	Instrumental	0.0	Md	VTSO	ANSS	
36	19830526010	Monroe	1983	5	26	1	4	44.80	37.50600	-80.31600	2.2	Instrumental	0.0	Md	VTSO	ANSS	
37	19830610000	Greenbrier	1983	6	10	0	18	40.40	37.94800	-80.16300	1.2	Instrumental	0.0	Md	VTSO	ANSS	
38	19830610001	Greenbrier	1983	6	10	0	24	57.00	37.95100	-80.18900	1.2	Instrumental	0.0	Md	VTSO	ANSS	
39	19830610002	Greenbrier	1983	6	10	0	31	8.30	37.93800	-80.16800	0.4	Instrumental	0.0	Md	VTSO	ANSS	
40	19830720040	Greenbrier	1983	7	20	4	41	40.90	37.88500	-80.69100	1.6	Instrumental	0.0	Md	VTSO	ANSS	
41	19830725030	Wyoming	1983	7	25	3	27	0.20	37.49600	-81.35200	0.6	Instrumental	0.0	Md	VTSO	ANSS	
42	19831113160	Summers	1983	11	13	16	51	6.70	37.55600	-80.77500	0.4	Instrumental	0.0	Md	VTSO	ANSS	
43	19831113170	Monroe	1983	11	13	17	50	50.10	37.55900	-80.75300	0.7	Instrumental	0.0	Md	VTSO	ANSS	
44	19831125160	Monroe	1983	11	25	16	27	47.80	37.56800	-80.74500	0.7	Instrumental	0.0	Md	VTSO	<NULL>	
45	19831223100	Summers	1983	12	23	10	51	21.90	37.76600	-80.83700	0.3	Instrumental	0.0	Md	VTSO	ANSS	
46	19840202050	Mingo	1984	2	2	5	10	19.70	37.71700	-82.21800	1.9	Instrumental	0.0	Md	VTSO	ANSS	
47	19840311040	Summers	1984	3	11	4	1	38.90	37.47400	-80.90000	1.1	Instrumental	0.0	Md	VTSO	ANSS	
48	19841009050	Summers	1984	10	9	5	33	31.50	37.71300	-80.89100	2.1	Instrumental	0.0	Md	VTSO	ANSS	
49	19841221130	Pocahontas	1984	12	21	13	12	21.90	38.19800	-80.20800	1.6	Instrumental	0.0	Md	VTSO	ANSS	
50	19850614070	Mercer	1985	6	14	7	57	10.20	37.53400	-81.02000	0.8	Instrumental	0.0	Md	VTSO	ANSS	
51	19860226210	Pendleton	1986	2	26	21	53	20.80	38.50700	-79.29200	2.3	Instrumental	0.0	Md	VTSO	ANSS	
52	19861220080	Greenbrier	1986	12	20	8	13	12.80	38.05800	-80.64300	1.2	Instrumental	0.0	Md	VTSO	ANSS	
53	19890319100	Logan	1989	3	19	10	7	55.80	37.73500	-82.06400	1.9	Instrumental	0.0	Md	VTSO	ANSS	
54	19910422010	Greenbrier	1991	4	22	1	1	20.20	37.94200	-80.20500	3.5	Instrumental	0.0	Md	VTSO	ANSS	Further Info

Event Num	WVQID	County	UTC Year	UTC Month	UTC Day	UTC HH	UTC MM	UTC SS	Latitude (N)	Longitude (W)	Magnitude	Recorded	MMI	Magnitude Type	Source 1	Source 2	USGS Link
55	19910628180	Kanawha	1991	6	28	18	34	55.50	38.23100	-81.33500	3.0	Instrumental	0.0	Mb	VTSO	ANSS	
56	19920329200	Mercer	1992	3	29	20	16	48.20	37.31400	-81.14900	1.4	Instrumental	0.0	Md	VTSO	ANSS	
57	19920506210	Fayette	1992	5	6	21	20	23.90	38.11800	-81.06900	2.3	Instrumental	0.0	Md	VTSO	ANSS	
58	19921124020	Summers	1992	11	24	2	26	50.70	37.45700	-80.88400	1.2	Instrumental	0.0	Md	VTSO	ANSS	
59	19940204070	Nicholas	1994	2	4	7	40	32.40	38.23600	-80.75900	2.1	Instrumental	0.0	Md	VTSO	ANSS	
60	19940619080	Nicholas	1994	6	19	8	36	41.30	38.33900	-80.64000	1.7	Instrumental	0.0	Md	VTSO	ANSS	
61	19951115100	Raleigh	1995	11	15	10	29	24.80	37.71700	-81.04300	2.6	Instrumental	0.0	Md	VTSO	ANSS	
62	19951228230	Fayette	1995	12	28	23	48	30.40	38.08400	-80.96800	2.5	Instrumental	0.0	Md	VTSO	ANSS	
63	19960811090	Greenbrier	1996	8	11	9	11	21.30	37.73100	-80.62800	2.1	Instrumental	<NULL>	Mc	ANSS	<NULL>	
64	19970222140	Fayette	1997	2	22	14	32	33.10	37.92100	-81.02700	2.0	Instrumental	<NULL>	Mc	ANSS	<NULL>	
65	19970315050	Webster	1997	3	15	5	56	36.40	38.34700	-80.48400	1.8	Instrumental	0.0	Md	VTSO	ANSS	
66	19970315050	Kanawha	1998	10	2	10	1	6.90	38.06800	-81.46600	2.5	Instrumental	0.0	Md	VTSO	ANSS	
67	20001016170	Braxton	2000	10	16	17	56	13.80	38.63600	-80.92000	2.5	Instrumental	0.0	Md	VTSO	ANSS	
68	20011204210	Summers	2001	12	4	21	15	13.90	37.72600	-80.75200	3.1	Instrumental	0.0	Mb	VTSO	ANSS	
69	20020327080	Mingo	2002	3	27	8	25	3.30	37.75300	-82.17100	2.1	Instrumental	0.0	Md	VTSO	ANSS	
70	20060711120	Greenbrier	2006	7	11	12	1	43.10	37.87800	-80.64900	2.6	Instrumental	0.0	Mb	CERI	VTSO	
71	20070830120	Wyoming	2007	8	30	12	52	9.34	37.75300	-81.63600	2.6	Instrumental	0.0	Lg GS	CERI	USGS ENS	Further Info
72	20080129010	Monroe	2008	1	29	1	4	20.70	37.54480	-80.50980	2.4	Instrumental	<NULL>	Md	CERI	ANSS	
73	20090411180	Summers	2009	4	11	18	11	9.07	37.51330	-80.89570	2.4	Instrumental	<NULL>	Md	CERI	ANSS	
74	20100404090	Braxton	2010	4	4	9	19	14.01	38.59900	-80.91617	3.4	Instrumental	0.0	MbLg	CERI	USGS ENS	Further Info
75	20100129010	Braxton	2010	4	29	1	36	22.59	38.68567	-80.81483	2.6	Instrumental	0.0	MbLg	CERI	USGS ENS	Further Info
76	20100429120	Braxton	2010	4	29	12	38	53.43	38.64700	-80.87200	2.7	Instrumental	0.0	MbLg	USGS ENS	CERI	Further Info
77	20100429130	Braxton	2010	4	29	23	26	39.47	38.72200	-80.80300	2.5	Instrumental	0.0	Lg GS	CERI	USGS ENS	Further Info
78	20100507100	Braxton	2010	5	7	10	26	3.47	38.60650	-80.91317	2.6	Instrumental	0.0	MbLg	CERI	USGS ENS	Further Info
79	20100508030	Braxton	2010	5	8	3	3	0.62	38.62300	-80.91133	2.4	Instrumental	0.0	Md	CERI	USGS ENS	Further Info
80	20100724090	Braxton	2010	7	24	9	15	44.13	38.67533	-80.82017	2.4	Instrumental	0.0	Md	CERI	USGS ENS	Further Info
81	20100725030	Braxton	2010	7	25	3	48	70.00	38.67900	-80.79700	2.2	Instrumental	0.0	Md	USGS ENS	LDEO	
82	20100815040	Lewis	2010	8	15	4	38	47.38	38.81833	-80.42983	2.5	Instrumental	0.0	Md	CERI	USGS	Further Info
83	20100821030	Upshur	2010	8	21	3	16	21.99	38.79250	-80.39767	2.5	Instrumental	0.0	Md	USGS ENS	LDEO	Further Info
84	20100826040	Raleigh	2010	8	26	4	22	15.19	37.74833	-81.20467	2.4	Instrumental	0.0	Md	CERI	USGS	
85	20100826041	Raleigh	2010	8	26	4	24	55.39	37.72733	-81.20433	2.2	Instrumental	0.0	Md	CERI	USGS ENS	
86	20100913150	Lincoln	2010	9	13	15	8	46.47	38.10000	-82.03400	2.4	Instrumental	0.0	Md	CERI	ANSS	
87	20110825050	Greenbrier	2011	8	25	5	59	13.76	37.91600	-80.21533	2.7	Instrumental	4.0	Md	CERI	USGS	Further Info
88	20120111190	Braxton	2012	1	10	19	38	58.66	38.70400	-80.95900	2.8	Instrumental	4.0	unk	CERI	USGS	Further Info
89	20120316150	Boone	2012	3	16	15	5	55.00	38.21200	-81.71400	2.8	Instrumental	2.0	MbLg	CERI	USGS NEIC	Further Info
90	20130331140	Braxton	2013	3	31	14	1	24.03	38.64500	-80.83317	3.4	Instrumental	5.0	Mw	CERI	USGS NEIC	Further Info
91	20130720110	Gilmer	2013	7	20	11	38	46.18	38.89567	-80.88700	2.7	Instrumental	<NULL>	MbLg	CERI	USGS ENS	Further Info
92	20130730060	Gilmer	2013	7	30	6	9	4.85	38.83933	-80.90867	2.8	Instrumental	<NULL>	Md	CERI	USGS ENS	Further Info
93	20130816110	Gilmer	2013	8	16	11	2	21.04	38.84150	-80.93867	2.6	Instrumental	3.0	MbLg	CERI	USGS ENS	Further Info
94	20131013090	Braxton	2013	10	13	9	20	58.55	38.70117	-80.82417	2.2	Instrumental	<NULL>	Md	CERI	USGS ENS	Further Info
95	20131019080	Greenbrier	2013	10	19	8	41	57.43	37.74767	-80.64333	2.2	Instrumental	<NULL>	Md	CERI	USGS ENS	Further Info
96	20140606220	Jackson	2014	6	6	22	15	40.79	38.64383	-81.58550	2.6	Instrumental	<NULL>	Md	CERI	USGS ENS	Further Info
97	20160117190	Jefferson	2016	1	17	19	12	49.00	39.319	-77.828	3.0	Instrumental	5.0	Ml	LDEO	USGS ENS	

Data as of **January 26, 2016**. For a more detailed listing, please download the West Virginia Earthquake spreadsheet from WVGES at **http://www.wvgs.wvnet.edu/www/earthquakes/seismic.html**
If you view this map and data as a PDF, you can click any of the blue hyperlinked text to view further information on a web site.
Please note that USGS Links, above, are considered "beta" at the time of this publication and USGS may change destinations, pages, etc. afterward.

Definition of terms on next page.

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Environmental Protection

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 9

OPERATING REQUIREMENTS AND DATA

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 9

All Operating Data for Nestor B-1 disposal well is included in Appendix A.

2. SEE ATTACHED Appendix G - List of all wells to be serviced by Nestor B-1 Disposal Well.
3. SEE ATTACHED Figure No. 11 Injection Fluid Testing Results. Samples were taken from the Nestor B-1 above ground storage tank and submitted to a qualified lab, Sturm Environmental in Anmore, WV. All samples were tested for the required parameters, as set forth by the WVDEP.
4. No additives will be used at this time.
5. The annulus fluid will be fresh water used to conduct the MIT.
6. After discovery of a development of mechanical integrity failure on any injection well, the problematic well will be immediately shut in. As with most wells that inject water down cemented casing that has been drilled prior to using modern day techniques, a failure is tangibly going to occur in the casing. A corrective plan will be created and submitted to the WVDEP within 30 days. In such case of failure on a newer well with 2 3/8" tubing on a packer inside 4 1/2" casing, it would also be shut in immediately. Tubing pressure would then be tested. If the tubing pressure's integrity is confirmed, a new packer will be replaced and a MIT pressure test completed. Before resuming operation, all results would be submitted to the WVDEP.

Mechanical Integrity Tests are performed at least once every 5 years. Normally, pipeline pressure is raised to 100psi above its normal operating pressure for a minimum time of 30 minutes. If allowable, the entire system can be tested as one, but may also be tested in separate sections. Pressure recorder results are submitted to the WVDEP after testing.

(4/25)

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APPENDIX G

Wells Serviced by Injection Wells

API #	Operator	Producing Formation
47-093-00093	PILLAR ENERGY, LLC	TUSCARORA
47-077-00324	PILLAR ENERGY, LLC	HUNTERSVILLE CHERT/ORISKANY
47-077-00323	PILLAR ENERGY, LLC	HUNTERSVILLE CHERT/ORISKANY
47-093-00100	PILLAR ENERGY, LLC	TUSCARORA
47-093-00095-01	PILLAR ENERGY, LLC	TUSCARORA
47-077-00099	PILLAR ENERGY, LLC	HUNTERSVILLE CHERT/ORISKANY
47-093-00096	PILLAR ENERGY, LLC	ORISKANY
47-093-00034	PILLAR ENERGY, LLC	TUSCARORA
47-093-00104	PILLAR ENERGY, LLC	HUNTERSVILLE CHERT/ORISKANY
47-093-00101	PILLAR ENERGY, LLC	HUNTERSVILLE CHERT/ORISKANY
47-093-00105	PILLAR ENERGY, LLC	PURCELL/LOWER MARCELLUS
47-071-00021	PILLAR ENERGY, LLC	ORISKANY
47-071-00024	PILLAR ENERGY, LLC	MARCELLUS
47-077-00574	PILLAR ENERGY, LLC	MARCELLUS

Make as many copies as necessary and include page numbers as appropriate.

injectate

Figure No. 11

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Sturm Environmental Services

JOHN W. STURM, PRESIDENT

COMPANY: PRECISION OIL & GAS, INC.

SAMPLE ID: NESTOR B-1 INJECTION FLUID ✓

SAMPLED BY: B. JONES

LOG NO: W223-19

DATE/TIME SAMPLED:* 05-02-19 1000

DATE/TIME RECEIVED: 05-02-19 1355

LABORATORY ID: POG 190502-1

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	DATE/TIME ANALYZED	ANALYST
Total Coliform	[1]ABSENT	P/A (Cfu)	9223 Colilert	1	05-02-19 1414	LM
E Coli	[1]ABSENT	P/A (Cfu)	9223 Colilert	1	05-02-19 1414	LM

*Client Provided
**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.
Microbiological analysis results will be discarded after 5 years
Method of Analysis from "Standard Methods for the Examination of Water and Wastewater."
Data Qualifiers

B	Analyte found in reagent blank. Indicates possible reagent or background contamination.
E	Estimated Reported value exceeded calibration range.
J	Reported value is an estimate because concentration is less than reporting limit.
PND	Precision not determined.
R	Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
RND	Recovery not determined.
U	Compound was analyzed for, but not detected.
O	Out of holding. Time does not meet 40 CFR 136/141 compliance.
T	This result is not supported by our certification ID.
A	Does not meet 40 CFR 136/141 compliance.
C	Does not meet 47 CSR 32 compliance.

Narrative:
[1]SAMPLES WERE ORANGE IN COLOR WHEN BROUGHT IN.

Approved

Sturm Environmental Services

JOHN W. STURM, PRESIDENT

COMPANY: PRECISION OIL & GAS, INC.

SAMPLE ID: NESTOR B-1 INJECTION FLUID

SAMPLED BY: B. JONES

DATE/TIME SAMPLED:* 05-02-19 1000

DATE/TIME RECEIVED: 05-02-19 1355

LABORATORY ID: POG 190502-1

PARAMETER	TEST RESULTS	UNITS	METHOD	METHOD DETECTION LIMIT	DATE/TIME ANALYZED	ANALYST
pH O	4.4	units	SM 22nd 4500 H B	.1	05-03-19 1345	HN
Fe	83.9	mg/L	EPA 200.7 Rev 4.4-1994	.05	05-07-19 1016	DB
Mn	16.8	mg/L	EPA 200.7 Rev 4.4-1994	.002	05-07-19 1016	DB
TSS	250	mg/L	USGS I-3765-85	4	05-06-19 1004	MRS
TDS	126060	mg/L	USGS I-1750-85	4	05-06-19 1004	MRS
MBAS	120.	mg/L	SM22nd 5540C	.02	05-03-19 2121	SW
TOC	U	mg/L	SM22nd 5310B	1.0	05-13-19 1510	LM
SO_4	695.	mg/L	EPA 300.0 Rev 2.1-1993	1.0	05-07-19 1401	DC
Cl^-	75400.	mg/L	EPA 300.0 Rev 2.1-1993	1.0	05-07-19 0020	DC
Al	U	mg/L	EPA 200.7 Rev 4.4-1994	.04	05-07-19 1016	DB
As	U	mg/L	EPA 200.9	.0025	05-07-19 1525	RC
Ba	157.	mg/L	EPA 200.7 Rev 4.4-1994	.003	05-07-19 1016	DB
Ca	12080.	mg/L	EPA 200.7 Rev 4.4-1994	.15	05-07-19 1016	DB
Na	38240.	mg/L	EPA 200.7 Rev 4.4-1994	.05	05-07-19 1016	DB
SPEC GRAVITY	1.09455	calc	CALCULATION		05-13-19 2221	SW

*Client Provided

**See Attached. The following results meet or exceed requirements and standards set forth by the certifying authority except where noted.

Data Qualifiers

B Analyte found in reagent blank. Indicates possible reagent or background contamination.
E Estimated Reported value exceeded calibration range.
J Reported value is an estimate because concentration is less than reporting limit.
PND Precision not determined.
R Sample results rejected because of gross deficiencies in QC or method performance. Re-sampling and/or re-analysis is necessary.
RND Recovery not determined.
U Compound was analyzed for, but not detected.
O Out of holding. Time does not meet 40 CFR 136/141 compliance.
T This result is not supported by our certification ID.
A Does not meet 40 CFR 136/141 compliance.
C Does not meet 47 CSR 32 compliance.

Narrative:

Approved Douglas H Bunto

GEOCHEMICAL TESTING
Environmental and Energy Analysis

2005 N. Center Ave.
Somerset, PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

Saturday, May 11, 2019

VICKI HOOPS
STURM ENVIRONMENTAL SERVICES
PO BOX 650
BRIDGEPORT, WV 26330
PRECISION OIL & GAS, INC.

Order No.: G1905429

Dear VICKI HOOPS:

Geochemical Testing received 1 sample(s) on 5/7/2019 for the analyses presented in the following report.

There were no problems with the analyses and all QC data met NELAC, EPA, and laboratory specifications except where noted in the Case Narrative or Laboratory Results.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Timothy W. Bergstresser
Director of Technical Services

Geochemical Testing

Date: *11-May-19*

CLIENT: STURM ENVIRONMENTAL SERVICES
Project: PRECISION OIL & GAS, INC.
Lab Order: G1905429 **PWS:** 9999999

CASE NARRATIVE

No problems were encountered during analysis of this workorder, except if noted in this report.

Legend:

ND - Not Detected

J - Indicates an estimated value.

U - The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

B - Analyte detected in the associated Method Blank

Q - Qualifier QL -Quantitation Limit DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

** - Value exceeds Action Limit

H - Method Hold Time Exceeded

MCL - Contaminant Limit

ACCREDITED IN ACCORDANCE WITH nelac
I.D. 56-00306 PA DEP

Laboratory Results

Geochemical Testing PRECISION OIL & GAS, INC.

Date: *11-May-19*

CLIENT:	STURM ENVIRONMENTAL SERVICES	**Client Sample ID:**	19010
Lab Order:	G1905429		
Project:	NESTOR B-I INJECTION FLUID	**Collection Date:**	5/2/2019 10:00:00 AM
Lab ID:	G1905429-001	**Sampled By:**	Sturm Environmental
Matrix:	AQUEOUS	**DateReceived:**	5/7/2019 4:02:52 PM

Analyses	Result	Q	MDL	PQL	Units	DF	Date Prepared	Date Analyzed
DISSOLVED GASSES			Analyst: TEW				ASTM D8028	ASTM D8028
Butane, dissolved	ND		0.010	0.020	mg/L	1	05/07/19 4:36 PM	05/08/19 3:18 PM
Ethane, dissolved	ND		0.010	0.020	mg/L	1	05/07/19 4:36 PM	05/08/19 3:18 PM
Methane, dissolved	0.12		0.010	0.020	mg/L	1	05/07/19 4:36 PM	05/08/19 3:18 PM
Propane, dissolved	ND		0.010	0.020	mg/L	1	05/07/19 4:36 PM	05/08/19 3:18 PM
Surr: Ethoxyethane	144	S	0	70-130	%REC	1	05/07/19 4:36 PM	05/08/19 3:18 PM

Shuttle/Cooler ID#: 008

CHAIN OF CUSTODY

Geochemical Testing

Form F-5002, 12.16

Geochemical Testing • 2005 North Center Avenue • Somerset PA 15501 • (814) 443-1671 • Fax (814) 445-6729

Billing Client: Sturm Environmental	**Contact (Company):** Sturm	**Phone:** (304) 623-6549
Address: PO Box 650	**e-mail:** mhoops@sturmenvironmental.com	**Fax:** ( ) —
City: Bridgeport **State:** WV **Zip:** 26330	**Sampled by:** B. Jones	**State Sampled:** WV
WO#: G19005429	**Project:** —	**PO/Quote#:** 8293

Sample Matrix:	GW Ground Water	SW Surface Water	PW Potable Water	WW Wastewater	SO Soil	SL Sludge	nHZ Not Hazardous / HZ Hazardous	PCBs
Sample Type:	G Grab	C Composite	D Distribution/DW	R Raw/DW	S Special/DW	O Other		

Sample Location/ Description	Lab Number	Sample Matrix	Date	Time (Military)	Sample Type	**Analyses Requested	Remarks/ Preservatives, etc	Number of Containers
**NOTE: If multiple analytes from one bottle, OR if multiple bottles for one analyte, THEN list separately on one line UNLESS LISTED ON ATTACHED FIELD LOG								
19010	001	L	5-2-19	1000	G	Dissolved Gases: Ethane	Field Filtered: Y (N) unfiltered	3
						" Methane	Field Filtered: Y (N)	
						" Propane	Field Filtered: Y (N)	
						" Butane	Field Filtered: Y (N)	
							Field Filtered: Y / N	
							Field Filtered: Y / N	
							Field Filtered: Y / N	
							Field Filtered: Y / N	

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Note Deficiencies Here: I know you may have to rush this to be done with in The 7 days - If so That is Fine. Thanks Kim

Relinquished by (Company & Signature)	Date	Time (Military)	Received by (Company & Signature):	Date	Time (Military)
K. Kehl	5-6-19	PM		5-7-19	1603
	"				
	"				

SAMPLES MUST BE PRESERVED ON ICE.

Ice present on receipt: X Yes or ___ No | Cooler Temp (°C) on receipt: 4

Sample Receiving (1st Review): MW | Client Support (2nd Review): [illegible]

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 21, 2019

Ms. Laurie Hiles
Sturm Environmental Services
P.O. Box 650
Bridgeport, WV 26330

RE: Project: 19003
Pace Project No.: 30292907
PRECISION OIL & GAS, INC.

Dear Ms. Hiles:
Enclosed are the analytical results for sample(s) received by the laboratory on May 07, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Samantha Bayura

Samantha Bayura
samantha.bayura@pacelabs.com
(724)850-5622
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

PRECISION OIL & GAS, INC.

Project: 19003
Pace Project No.: 30292907

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

PRECISION OIL & GAS, INC.
Project: 19003 NESTOR B-1 INJECTION FLUID
Pace Project No.: 30292907

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30292907001	19003	Water	05/02/19 10:00	05/07/19 10:00

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

PRECISION OIL & GAS, INC.

Project: 19003 NESTOR B-1 INJECTION FLUID
Pace Project No.: 30292907

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30292907001	19003	EPA 900.0	CLA	2
		EPA 903.1	MK1	1
		EPA 904.0	JLW	1

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PRECISION OIL & GAS, INC.

PROJECT NARRATIVE

Project: 19003
Pace Project No.: 30292907

Method: EPA 900.0
Description: 900.0 Gross Alpha/Beta
Client: Stumm Environmental Sevices
Date: May 21, 2019

General Information:
1 sample was analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical
www.pacelabs.com

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PRECISION OIL & GAS, INC.

PROJECT NARRATIVE

Project: 19003
Pace Project No.: 30292907

Method: EPA 903.1
Description: 903.1 Radium 226
Client: Sturm Environmental Sevices
Date: May 21, 2019

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

PRECISION OIL & GAS, INC.

PROJECT NARRATIVE

Project: 19003
Pace Project No.: 30292907

Method: EPA 904.0
Description: 904.0 Radium 228
Client: Sturm Environmental Sevices
Date: May 21, 2019

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

PRECISION OIL & GAS, INC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19003
Pace Project No.: 30292907

Sample: 19003 Lab ID: 30292907001 Collected: 05/02/19 10:00 Received: 05/07/19 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	1,404 ± 1,013 (1,755) C:NA T:NA	pCi/L	05/13/19 17:23	12587-46-1	
Gross Beta	EPA 900.0	103 ± 837 (1,646) C:NA T:NA	pCi/L	05/13/19 17:23	12587-47-2	
Radium-226	EPA 903.1	11.6 ± 2.49 (1.11) C:NA T:87%	pCi/L	05/21/19 12:16	13982-63-3	
Radium-228	EPA 904.0	280 ± 55.8 (19.1) C:61% T:86%	pCi/L	05/20/19 16:42	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

PRECISION OIL & GAS, INC.

Project: 19003
Pace Project No.: 30292907

QC Batch: 341915 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30292907001

METHOD BLANK: 1664458 Matrix: Water
Associated Lab Samples: 30292907001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.349 ± 0.742 (1.60) C:NA T:NA	pCi/L	05/13/19 17:21	
Gross Beta	0.383 ± 0.758 (1.48) C:NA T:NA	pCi/L	05/13/19 17:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

PRECISION OIL & GAS, INC.

Project: 19003
Pace Project No.: 30292907

QC Batch: 342774
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30292907001

METHOD BLANK: 1668420
Matrix: Water
Associated Lab Samples: 30292907001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.135 ± 0.376 (0.729) C:NA T:91%	pCi/L	05/21/19 11:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PRECISION OIL & GAS, INC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 19003
Pace Project No.: 30292907

QC Batch: 342173
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30292907001

METHOD BLANK: 1665847
Matrix: Water
Associated Lab Samples: 30292907001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.00366 ± 0.303 (0.702) C:80% T:87%	pCi/L	05/20/19 13:06	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

PRECISION OIL & GAS, INC.

Project: 19003
Pace Project No.: 30292907

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1756247

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Sturm Environmental	Report To:	Attention:
Address: PO Box 650 Bridgeport, WV 26330	Copy To:	Company Name: Sturm
Email To: mbones@sturmenvironmental.com	Purchase Order No.: 8298	Address:
Phone: 304-623-6549 Fax:	Project Name:	Pace Quote Reference:
Requested Due Date/TAT:	Project Number:	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WV

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,) Sample IDs MUST BE UNIQUE	Matrix Codes (MATRIX / CODE): Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓	Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	14003		WT	G			5-2-19	1000		3			X						N	Alpha/Beta Radium/226/228	N		
2																				GTP 5.5	X	X	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

WO#: 30292907

30292907

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WV Department of
Environmental Protection

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	K. Kuhl	5-6-19	PM		5/07/19	1000	N/A	N	N	Y
		mailed								

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: B. JONES

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Stone Environmental Project #: 30292907

Courier: ☐ Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label DK
LIMS Login DK

Tracking #: 1Z 281 271 03 7764 4012

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals Intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

RECEIVED
Office of Oil and Gas
JUL - 1 2019
WV Department of
Environmental Protection

Comments:	Yes	No	N/A		
				pH paper Lot# 100358 1	Date and initials of person examining contents: DK 05-07-19
Chain of Custody Present:	✓			1.	
Chain of Custody Filled Out:	✓			2.	
Chain of Custody Relinquished:	✓			3.	
Sampler Name & Signature on COC:		✓		4.	
Sample Labels match COC: -Includes date/time/ID Matrix: wt		✓		5.	No time/date on samples
Samples Arrived within Hold Time:	✓			6.	
Short Hold Time Analysis (<72hr remaining):		✓		7.	
Rush Turn Around Time Requested:		✓		8.	
Sufficient Volume:	✓			9.	
Correct Containers Used:	✓			10.	
-Pace Containers Used:		✓			
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16.	pH<2
All containers meet method preservation requirements.	✓			Initial when completed: DK	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			✓	17.	
Trip Blank Present:		✓		18.	
Trip Blank Custody Seals Present			✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DK	Date: 05-07-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in eReports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1756247

Section A Required Client Information:

Company: Sturm Environmental
Address: PO Box 650
Bridgeport, WV 26330
Email To: mhaynes@sturmenvironmental.com
Phone: 304 623-6549 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To:
Copy To:
Purchase Order No.: 8298
Project Name:
Project Number:

Section C Invoice Information:

Attention:
Company Name: Sturm
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WV

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (use valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE ENDGRAB DATE	COMPOSITE ENDGRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N): Y/N	Analysis Test ↓: Alpha/Beta/Radium 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	19003	WT	G			5-2-19	1000		3			X						N	X		
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

RECEIVED
Office of Oil and Gas
JUL -1 2019
WV Department of
Environmental Protection

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	K. Kehl	5-6-19	PM				
		mailed					

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: B. JONES

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.pacelabs.com

782 North Lee Highway
Lexington, VA 24450
TEL: 540.464.1880

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Kim Krehel
STURM ENVIRONMENTAL SERVICES
P O BOX 650
BRIDGEPORT, WV 26330

Tuesday, May 28, 2019

TEL: (304) 623-6549
FAX: (304) 623-6552

RE: PRECISION OIL & GAS, INC.
Work Order #: 19050661
Dear Kim Krehel:

Pace Analytical Services received 1 sample(s) on 5/6/2019 for the analyses presented in the following report.

Sincerely,

Beth Johnson

Beth Johnson
Project Manager
(304) 250-6205

RECEIVED
Office of Oil and Gas

JUL - 1 2019

WV Department of
Environmental Protection

Pace Analytical Services - Case Narrative

WO#: 19050661

Date Reported: 5/28/2019
Original

Client: STURM ENVIRONMENTAL SERVICES

Project: PRECISION OIL & GAS, INC.

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP and/or VELAP requirements for parameters clearly designated as PA, VA, PA/VA, or VELAP in the column labeled NELAP.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by the Lexington and Morgantown Service Centers are designated by an annotation on the test code. All other tests were performed by Pace Analytical Services, LLC Laboratory in Beaver, WV. Subcontracted results are attached to the end of the report.

This report may not be reproduced, except in full, without the written approval of Pace Analytical Services, LLC.

All samples are stored for a minimum of 14 days after the date of the final report. All records are stored for a minimum of 5 years. If longer sample or records retention is required, please contact your project manager for details.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, NCDWQ 466, PADEP 68-00839, VADCLS(VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Lexington, VA: VADCLS(VELAP) 460150
Morgantown, WV: WVDHHR 003112M, WVDEP 387

Pace Analytical Services - Analytical Report

WO#: 19050661

Date Reported: 5/28/2019
Original

Client:	STURM ENVIRONMENTAL SERVICES	**Collection Date:**	5/2/2019 10:00:00 AM
Project:	PRECISION OIL & GAS, INC.	**Date Received:**	5/6/2019
Lab ID:	19050661-01A	**Matrix:**	Liquid
Client Sample ID:	19093 NESTOR B-1 INJECTION FLUID	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
SEMI-VOLATILE RANGE ORGANICS				**Method: SW8015C**				**Analyst: MF**	
TPH (Oil Range: C20 - C40)	123	12.9	18.9	NA		mg/L	05/07/19 10:38AM	05/09/19 10:46PM	
TPH (Diesel Range: C10 - C28)	194	11.9	18.9	NA		mg/L	05/07/19 10:38AM	05/09/19 10:46PM	PA/VA
Surr: o-Terphenyl	57.5	NA	14.7-126	NA		%Rec	05/07/19 10:38AM	05/09/19 10:46PM	
VOLATILE RANGE ORGANICS				**Method: SW8015C**				**Analyst: CB**	
TPH (Gasoline Range: C6 - C10)	ND	4.41	10.0	NA		mg/L	05/07/19 9:31AM	05/14/19 1:59PM	PA/VA
Surr: 2,5-Dibromotoluene	101	NA	49.3-147	NA		%Rec	05/07/19 9:31AM	05/14/19 1:59PM	

Notes:

The reporting limit is elevated as a result of dilutions required due to matrix interference.

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
VOLATILE ORGANIC COMPOUNDS				**Method: SW8260B**				**Analyst: TKC**	
Benzene	ND	0.790	5.00	NA		µg/L	05/07/19 7:23AM	05/16/19 4:41PM	PA/VA
Ethylbenzene	ND	2.08	10.0	NA		µg/L	05/07/19 7:23AM	05/16/19 4:41PM	PA/VA
m,p-Xylene	9.20	3.70	20.0	NA	J	µg/L	05/07/19 7:23AM	05/16/19 4:41PM	PA/VA
o-Xylene	ND	1.12	10.0	NA		µg/L	05/07/19 7:23AM	05/16/19 4:41PM	PA/VA
Toluene	ND	1.02	5.00	NA		µg/L	05/07/19 7:23AM	05/16/19 4:41PM	PA/VA
Surr: 1,2-Dichloroethane-d4	92.2	NA	70-130	NA		%Rec	05/07/19 7:23AM	05/16/19 4:41PM	
Surr: 4-Bromofluorobenzene	102	NA	70-130	NA		%Rec	05/07/19 7:23AM	05/16/19 4:41PM	
Surr: Dibromofluoromethane	6.90	NA	70-130	NA	S	%Rec	05/07/19 7:23AM	05/16/19 4:41PM	
Surr: Toluene-d8	101	NA	70-130	NA		%Rec	05/07/19 7:23AM	05/16/19 4:41PM	

Notes:

The reporting limit is elevated as a result of dilutions required due to matrix interference.

Pace Analytical Services, LLC.
PO Box 684056
Chicago, IL 60695-4056
TEL: (304)255-2500
Website: www.mtclabs.com

Sample Receipt Checklist PRECISION OIL & GAS, INC.

Client Name:	STU001			Work Order Number:	19050661
RCPNo:	1	Date and Time Received:	5/6/2019 8:17:00 PM	Received by:	Ernest Tronco
Completed By:	Krystion Stover		Reviewed By:	Beth Johnson	
Completed Date:	5/6/2019 8:20:01 PM		Reviewed Date:	5/7/2019 12:03 PM	

Carrier Name: Pace

1.	Chain of custody present?	Yes [x]	No [ ]	
2.	Chain of custody signed when relinquished and received?	Yes [x]	No [ ]	
3.	Are matrices correctly identified on Chain of custody?	Yes [x]	No [ ]	
4.	Is it clear what analyses were requested?	Yes [x]	No [ ]	
5.	Custody seals intact?	Yes [ ]	No [ ]	Not Present [x]
6.	Samples in proper container type and preservative?	Yes [x]	No [ ]	
7.	Were correct preservatives noted on COC?	Yes [x]	No [ ]	NA [ ]
8.	Sample containers intact?	Yes [x]	No [ ]	
9.	Sufficient sample volume for indicated test?	Yes [x]	No [ ]	
10.	Were container labels complete?	Yes [x]	No [ ]	
11.	All samples received within holding time?	Yes [x]	No [ ]	
12.	Was an attempt made to cool the samples?	Yes [x]	No [ ]	NA [ ]
13.	Sample Temp. taken and recorded upon receipt?	Yes [x]	No [ ]	To 1.2 °C
14.	Water - Were bubbles absent in VOC vials?	Yes [ ]	No [ ]	No Vials [x]
15.	Are Samples considered acceptable?	Yes [x]	No [ ]	
16.	COC filled out properly?	Yes [x]	No [ ]	

Client Notification/Response

Client Name: STU001 Work Order Number: 19050661

Comment:

Client Contacted: Yes [ ] No [ ] NA [x] Person Contacted:

Contact Mode: Phone [ ] Fax: [ ] Email: [ ] In Person: [ ]

Date Contacted: Contacted By:

Regarding:

Client Instructions:

Corrective Action:

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical™

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

19050661

STU001
STURM ENVIRONMENTAL SER
Beth Johnson

w/Login Label Here or List Pace Workorder Number or ATTL Log-In Number Here

AREAS are for LAB USE ONLY

Company: Sturm Environmental	Billing Information: ↓
Address: PO Box 650 Bridgeport, WV	26330
Report To: Mhamsa@sturmenvironmental.com	Email To:
Copy To	Site Collection Info/Address:
Customer Project Name/Number:	State: / County/City: Time Zone Collected: [ ]PT [ ]MT [ ]CT [ ]ET
Phone: 304 623 6549 Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): B. Jones	Purchase Order #: 8296 DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis:

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

Analyses: BTEX; TPH-GRO, DRO, ORO

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	BTEX	TPH-GRO, DRO, ORO
19093	L	G			5-2-19	1000		5	X	X

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

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Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2371727

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: 17
Cooler 1 Temp Upon Receipt: 1.4 oC
Cooler 1 Therm Corr. Factor: 0.2 oC
Cooler 1 Corrected Temp: 1.2 oC
Comments:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
K. Kiehl	5-6-19		5-6-19 12:47
	5/6/19 1600		5/6/19 1340
	5-6-19 1600		5-6-19 1600

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

STURM ENVIRONMENTAL SERVICES

CHAIN OF CUSTODY RECORD

Main Office:
STURM ENVIRONMENTAL SERVICES
BRUSHY FORK ROAD
P.O. BOX 660
BRIDGEPORT, WV 26330
PHONE: 304-623-6549
FAX: 304-623-6552

STURM ENVIRONMENTAL SERVICES
610 D STREET
P.O. BOX 8337
SO. CHARLESTON, WV 25303
PHONE: 304-744-9864
FAX: 304-744-7866

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REPORT TO: Client Name: Precision Oil and Gas, INC.
Address: P.O. Box 884
City/State/Zip: Bridgeport, WV 26330
Contact Person: Blake Jones
Telephone Number: 304-848-0307 Fax No. 304-848-0309
Email Address: bjones42@gmail.com
Sampler Name: (Print) Blake Jones
Sampler Signature:
Project Name: Nestor B-1 UIC Permit
Special Reporting: X Email Results ____ Fax Results

BILL TO: Client Name: SAME
Address:
City/State/Zip:
Contact Person:
Telephone Number: Fax No.
Email Address:
Purchase Order #:
TURN AROUND TIME: X Standard
____ RUSH! (pre-scheduled; surcharges may apply) Please Check One
Date Needed

1 DAY	2 DAY	3 DAY

Sample ID / Description	START DATE	START TIME	END DATE	END TIME	COMPOSITE SAMPLE: DATE	COMPOSITE SAMPLE: TIME	GRAB SAMPLE: Ice	GRAB SAMPLE: OTHER	PRESERVATIVE: HCl	PRESERVATIVE: NaOH	PRESERVATIVE: H_2SO_4, Plastic	PRESERVATIVE: H_2SO_4, Glass	PRESERVATIVE: None	PRESERVATIVE: HNO_3	MATRIX: Groundwater	MATRIX: Wastewater	MATRIX: Drinking Water	MATRIX: Sludge	MATRIX: Soil	MATRIX: Other (specify):	ANALYZE FOR: BIG SET	# of Bottles	Flow (gpm, cfs, mgd) circle one	Field pH	Field Conductivity	Field DO	Field Chlorine (mg/L or mg/L) circle one	Field Temp (°F or °C) circle one
Nestor B-1 Injection Fluid					5/2/19	10am	X				X			X						X	X	15						

Comments

Records retained for 5 years

Relinquished by:	Date	Time	Received by:	Date	Time
	5/2/19	1355		5-2-19	1355
Relinquished by:	Date	Time	Received by:	Date	Time

Laboratory Comments:
Temperature Upon Receipt: <6
Bottles Preserved? (Y) N

colllert # 162-19

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UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 10

MONITORING

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

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SECTION 10

1. Pillar Energy, LLC employees visit the Nestor B-1 Disposal Well several times per week. During active injection operations, field employees monitor the entire wellsite. Injection pressure, annulus pressure, flow rate, and the volume of the injection fluid that is disposed will be monitored and documented on Form WR-40. All recorded data is submitted to the WVDEP.

2. For every barrel of disposal waste that is received at the Nestor B-1, a haul ticket from the trucking company is submitted to Pillar Energy. The ticket indicates from which oil or gas well the fluid was haul from along with the quantity of the load and the date hauled.

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 11

GROUNDWATER PROTECTION PLAN

(GPP)

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 11

SEE APPENDIX H - Groundwater Protection Plan (GPP)

SEE ATTACHED - MIT Approval Letter

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APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: NESTOR B-1

County: TUCKER CO.

Facility Location:

Postal Service Address:	1642 HORSESHOE ROAD		
PARSONS, WV 26287			
Latitude :	39.166773	Longitude:	-79.628508

Contact Information:

Person:	ERIC ANDERSON
Phone Number:	304-542-4195
E-mail Address:	eric.anderson@pillar-energy.com

Date: 5/1/19

1. A list of all operations that may contaminate the groundwater.

Delivery of Brine Water, Storage of Brine Water, Injecting Brine Water in Well, Fuel/Oil Leaks from Equipment at Site

2. A description of procedures and facilities used to protect groundwater quality from the list of potential contaminant sources above.

All transportation trucks are equipped with secondary spill containment buckets. All Aboveground Storage Tanks are located inside a concrete secondary containment berm. Injection of brine into the well is only operated with trained personnel on site. Spill kits are located at site.

3. List procedures to be used when designing and adding new equipment or operations.

No new operation is planned at this time.

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4. Summarize all activities at your facility that are already regulated for groundwater protection.

WVDEP UIC Injection, Aboveground Storage Tanks

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

Disposal fluids were sampled and analyzed at an approved water testing facility. Analytical results can be seen in section 9.

6. Provide a statement that no waste material will be used for deicing or fill material on the property unless allowed by another rule.

No waste material will be used for deicing or fill material on the property unless allowed by another rule.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

All significant Pillar Energy employees undergo safety training that includes spill response and how to protect the groundwater from being contaminated. Also, employees are trained in the visual inspection of tanks, pipelines, and equipment.

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8. Include provisions for inspections of all GPP elements and equipment. Inspections must be made quarterly at a minimum.

While the injection well is in operation, inspections are made on a daily basis. These inspections include, but are not limited to visual inspection of all equipment, pipelines, storage tanks, pumps, and overall operations. The injection well is subject to MIT every 5 years. The latest MIT Approval Letter from the WVDEP is attached herein.

Signature: _____

Date: 6-18-19

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

May 17, 2017

Pillar Energy, LLC
Attn: Ezra Schoolcraft
412 Tennessee Ave.
Charleston, WV 25302

91 7199 9991 7031 5498 3358

Re: Mechanical Integrity Test Approval and Authorization for Injection

Dear Pillar Energy, LLC:

The mechanical integrity test performed April 26, 2017 on well API 47-093-00081 has been approved. Authorization is granted to resume injection. The maximum permitted injection pressure for this well is set at 1142 psig. If you have any questions then please feel free to contact me at Justin.E.Nottingham@wv.gov 1(304) 926-0499 ext. 1650.

Respectfully,

Justin E. Nottingham
Environmental Resources Analyst
WVDEP Office of Oil & Gas

JN

WR-37
REV. 5/01

Date: 4-26-17

Operator's Well Number Nestor B1

	State	County	Permit
API Well No.:	47-	093	- 00081

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENT-OFFICE OF OIL AND GAS
PRE-OPERATION CERTIFICATE
FOR LIQUID INJECTION OR WASTE DISPOSAL WELL

WELL OPERATOR Pillar Energy
Address 412 Tennessee Ave
Charleston WV 25302

DESIGNATED AGENT Jeff Isner
Address 412 Tennessee Ave
Charleston WV 25302

GEOLOGICAL TARGET FORMATION Huntersville Depth 3496 feet(top) to 3652 feet(bottom)

Virgin reservoir pressure in target formation _____ psig

Source of information on virgin reservoir pressure: _____

Perforation intervals 3529 - 3548 Open-hole intervals _____

MAXIMUM PERMITTED INJECTION OPERATIONS

Well head injection pressure: 1142 psig Bottom hole pressure: _____ psig

Volume per hour: _____

DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED

Liquids to be injected for oil recovery: N/A

Wastes to be disposed of: produced brine water

Additives (Slurry mediums, inhibitors, solvents, oxidizers, deoxidizers, etc.) _____

Not at this time

SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL _____

rust inhibitor in casing annulus

ADDITIONAL DRILLING AS PART OF THE CONVERSION (Complete form WR-35)

DETAILS ON NEW CASING AND TUBING PROGRAM AS PART OF THE CONVERSION (To be completed below unless the new casing and tubing program is described on a form WR-35, submitted in connection with the permit to which this form WR-37 relates.)

CASING OR TUBING TYPE	SIZE	GRADE	WEIGHT PER FT.	NEW	USED	FOOTAGE USED IN DRILLING	FOOTAGE LEFT IN WELL	CEMENT USED	PACKERS (KIND, SIZE, DEPTH SET)
CONDUCTOR									
FRESH WATER									
COAL									
INTERMEDIATE									
PRODUCTION									
TUBING									
LINERS									

WR37

MECHANICAL INTEGRITY TEST

Test Method: We put a chart on casing and gauge on tubing. A pressure washer was used to make 1800 lbs thru a valve. The valve was closed. The casing held its 1800 lbs and the tubing held below 200 lbs. We observed the pressures for about 30 minutes.

The undersigned certifies that the test was performed on April 26, 2017 and demonstrated mechanical integrity of the well. The test was witnessed by Emmit Z. Inspector representing the Office of Oil and Gas.

Eric Anderson
Well Operator

4-26-17
Date

THIS WELL IS AUTHORIZED FOR INJECTION.

Signed _____ UIC PROGRAM DIRECTOR

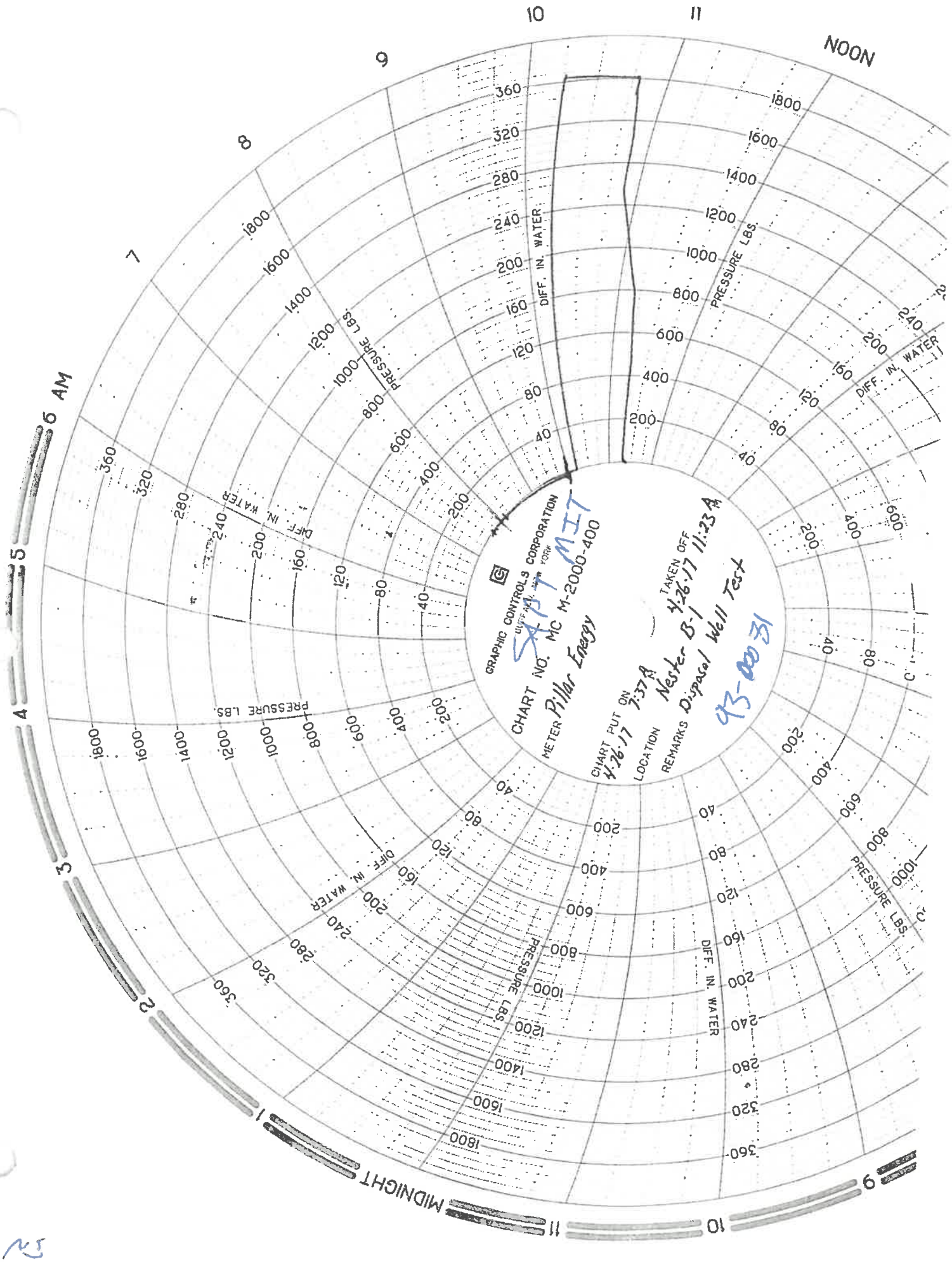
Date 5/17/17

[NOTE: That the mechanical integrity of this well must be demonstrated again within ninety (90) days of five years from this date in order for injection to continue. Please notify the state inspector 24 hours in advance of the test].

Eric Anderson
Well Operator

By: _____

Its _____


GRAPHIC CONTROLS CORPORATION
BUFFALO, N.Y. U.S.A.
CHART NO. MC M-2000-400
METER Pillar Energy
CHART PUT ON 4-26-17 7:37A
TAKEN OFF 4-26-17 11:23A
LOCATION Nester B-1
REMARKS Disposal Well Test
API MIT
43-009 31
NOON
MIDNIGHT
6 AM
PRESSURE LBS.
DIFF. IN. WATER

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

October 20, 2017

Pillar Energy
Attn: Ezra Schoolcraft
412 Tennessee Ave.
Charleston, WV 25302

Re: Mechanical Integrity Test Approval and Authorization for Injection

Dear Mr. Schoolcraft:

The mechanical integrity test performed September 28, 2017 on well API 47-093-00081 has been approved. Authorization is granted to resume injection. The maximum permitted injection pressure for this well is set at 1142 psig. If you have any questions then please feel free to contact Justin Nottingham via email at Justin.E.Nottingham@wv.gov or by phone at (304) 926-0499 ext. 1650.

Respectfully,

Melanie Hankins
Environmental Resources Specialist
WVDEP Office of Oil & Gas

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WV Department of
Environmental Protection

JN

WR-37
REV. 5/01

Pumpline Pressure Test

Date: 4 28 17

Operator's Well Number Nestor B1

API Well No.:	State	County	Permit
	47-	093	00081

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENT-OFFICE OF OIL AND GAS
PRE-OPERATION CERTIFICATE
FOR LIQUID INJECTION OR WASTE DISPOSAL WELL

WELL OPERATOR Pillar Energy
Address 412 Tennessee Ave
Charleston WV 25302

DESIGNATED AGENT Jeff Isner
Address 412 Tennessee Ave
Charleston WV 25302

GEOLOGICAL TARGET FORMATION Huntersville Depth 3496 feet(top) to 3652 feet(bottom)

Virgin reservoir pressure in target formation _____ psig

Source of information on virgin reservoir pressure: _____

Perforation intervals 3529 - 3543 Open-hole intervals _____

MAXIMUM PERMITTED INJECTION OPERATIONS

Well head injection pressure: 1142 psig Bottom hole pressure: _____ psig

Volume per hour: _____

DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED

Liquids to be injected for oil recovery: N A

Wastes to be disposed of: produced brine water

Additives (Slurry mediums, inhibitors, solvents, oxidizers, deoxidizers, etc.)

Not at this time

SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

rust inhibitor in casing annulus

ADDITIONAL DRILLING AS PART OF THE CONVERSION (Complete form WR-35)

DETAILS ON NEW CASING AND TUBING PROGRAM AS PART OF THE CONVERSION (To be completed below unless the new casing and tubing program is described on a form WR-35, submitted in connection with the permit to which this form WR-37 relates.)

CASING OR TUBING TYPE	SIZE	GRADE	WEIGHT PER FT.	NEW	USED	FOOTAGE USED IN DRILLING	FOOTAGE LEFT IN WELL	CEMENT USED	PACKERS (KIND, SIZE, DEPTH SET)
CONDUCTOR									
FRESH WATER									
COAL									
INTERMEDIATE									
PRODUCTION									
TUBING									
LINERS									

Received
OCT 19 2017
Office of Oil and Gas
WV Dept. of Environmental Protection

JN ✓

WR37

MECHANICAL INTEGRITY TEST

Test Method: Line Test – same method as well test.

Append to well test

The undersigned certifies that the test was performed on Sep 28, 2017 and demonstrated mechanical integrity of the well. The test was witnessed by Edward D. Reynolds representing the Office of Oil and Gas.

Well Operator

9/28/17
Date

THIS WELL IS AUTHORIZED FOR INJECTION.

Signed _____ UIC PROGRAM DIRECTOR

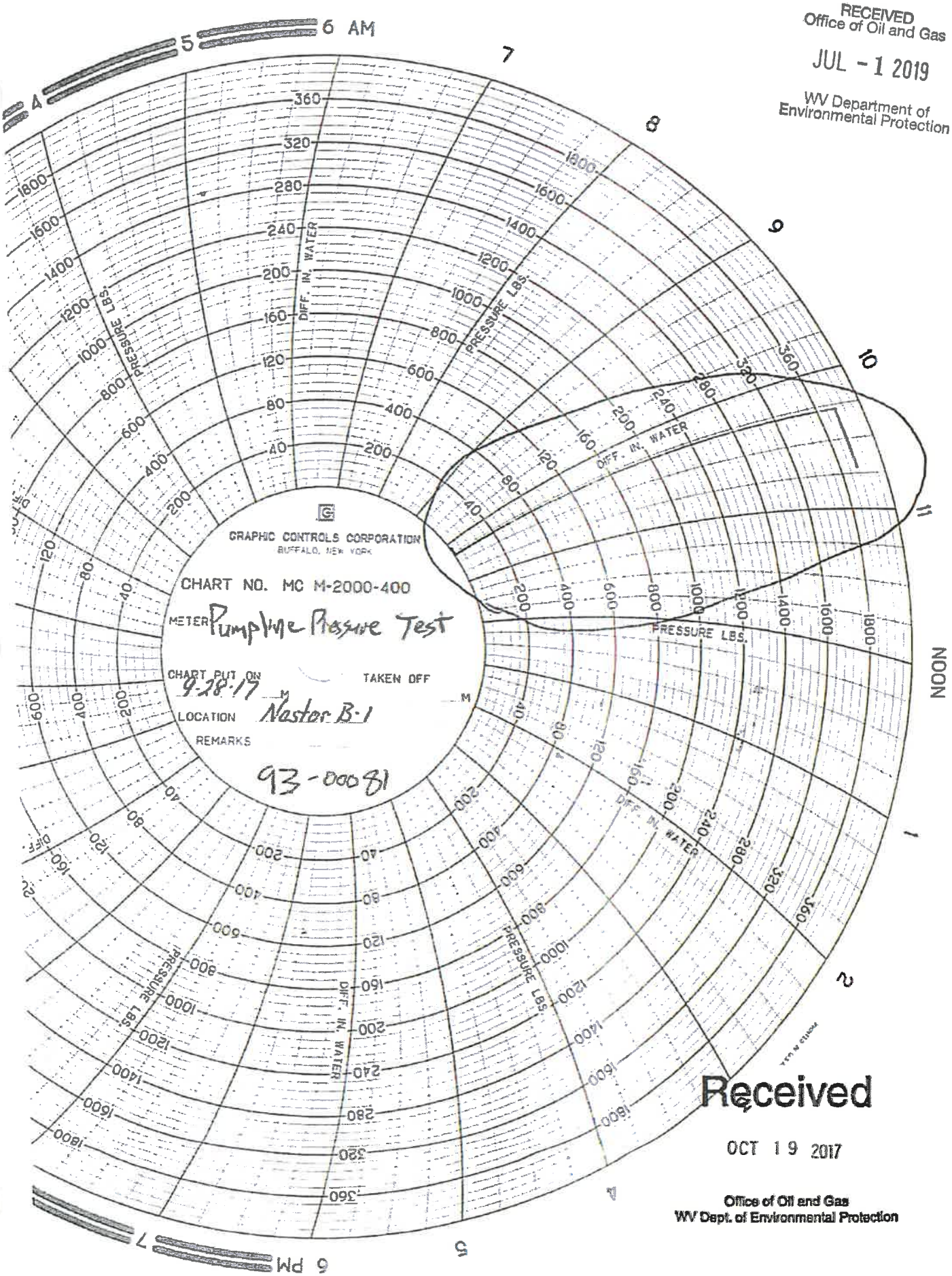
Date 10/19/17

[NOTE: That the mechanical integrity of this well must be demonstrated again within ninety (90) days of five years from this date in order for injection to continue. Please notify the state inspector 24 hours in advance of the test].

Well Operator

By: Rillar Energy

Its COO



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Environmental Protection

Form IR-11A
Rev. 8/21/2013

State of West Virginia
Office of Oil and Gas

INSPECTORS REPORT

Operator: Pillar Energy, LLC
API Number: 9300081

Findings:

UIC MIT TEST - WITNESS OF MIT TEST. TEST WENT WELL. PRESSURE DROPPED APPROXIMATELY 15 LBS FROM 1850 LB IN HALF OF AN HOUR. NO ISSUES. TEST PASSED

Does this inspection identify any dust issues? ☐ Yes ☑ No. If Yes, explain.

Oil & Gas Inspector

4-26-17
Date

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 12

PLUGGING AND ABANDONMENT

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

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SECTION 12

A well work plugging permit must be obtained from the West Virginia Department of Environmental Protection Office of Oil and Gas before beginning any well plugging operation. Plan will be in compliance with all applicable plugging and abandonment regulations including 35-4-14 and 22-6-24. The guidelines provided in Oil and Gas rule and code will be followed to complete the necessary application to plug and abandon. All cement plugs will be a minimum of 100 feet in thickness. A cement plug will be set above any perforation(s) and/or shot hole(s). All casings will be free pointed and as much casing will be removed as possible. A cement plug will be used to separate oil and gas bearing formations. A cement plug will be placed across all casing cuts. An elevation plug will be placed in each. If surface casing is cemented to surface a cement plug will be placed across the shoe and at the surface. If there is no cemented surface casing then a cement plug will be placed across fresh water zone and at the surface. Gel will be used as a spacer between all cement plugs.

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 13

ADDITIONAL BONDING

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 13

Pillar Energy, LLC is reapplying for a Class 2D UIC Permit and is in full compliance with permit regulations and requirements, therefore, their previous disposal well bonding is valid.

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 14

FINANCIAL RESPONSIBILITY

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2DO930081

SECTION 14

SEE APPENDIX I - Requirement for Financial Responsibility to Plug/Abandon an Injection Well

(4/25)

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WV Department of
Environmental Protection

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

To: WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street, SE
Charleston, West Virginia 25304-2345
ATTN: Underground Injection Control Program

From: Pillar Energy, LLC
P.O. Box 2682
Charleston, WV 25330

Date: 6-18-19

Subject: Underground Injection Control (UIC) Permit Application
2D09300081
Requirement for Financial Responsibility

I, Jeff Isner, verify in accordance with 47CSR13-13.7.g., that I will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas.

Name: Jeff Isner

Signature:

Date: 6-18-19

dep

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 15

SITE SECURITY PLAN

NOT APPLICABLE

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

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WV Department of
Environmental Protection

NOT APPLICABLE

APPENDIX J

Site Security for Commercial Facilities

Provide a detailed description of the method(s) utilized at the facility to restrict or prohibit illegal dumping of unauthorized waste or vandalism at the facility.

1. Complete enclosure of all wells, holding tank/pits and manifold assemblies within a chain link or other suitable fencing; and

2. Require that all gates and other entry points be locked when the facility is unattended; or

3. Providing tamper-proof seals for the master valve on each well (a "lock-out" or chain & padlock system would be more secure; however, these devices could create a potential safety hazard if the well needed to be quickly shut in due to an emergency); and

4. Installing locking caps on all valves and connections on holding tanks, unloading racks, and headers.

UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SECTION 16

ADDITIONAL INFO

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

PILLAR ENERGY, LLC

UIC PERMIT# UIC2D0930081

SECTION 16

SEE APPENDIX K - Underground Injection Control Permit# UIC2D0930081

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APPENDIX K

Identify permit or construction approvals received or applied for under the following programs:

Permit/approvals	ID Number
Hazardous Waste Management Program under RCRA	
NPDES Program	
Prevention of Significant Deterioration (PSD)	
Nonattainment Program	
Dredge or Fill	
NPDES/NPDES – Stormwater	
WVDEP – Office of Waste Management (OWM) – Solid Waste Facility	
WVDEP – OWM – RCRA (Hazardous Waste TSD or Transporter)	
WVDEP – OWM – UST	
CERCLA – Superfund	
WV Voluntary Remediation – Brownfields	
FIFRA – Federal Insecticide, Fungicide and Rodenticide Act	
Well Head Protection Program (WHPP)	
Underground Injection Control (UIC)	UIC2D0930081
Toxic Substances Control Act (TSCA)	
Best Management Plans	
Management of Used Oil	
Other Relevant Permits (Specify):	
AST #:	
047-00000075	047-00000078
047-00000076	047-00000079
047-00000077	047-00000080

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UNDERGROUND INJECTION CONTROL (UIC)
PERMIT RENEWAL APPLICATION

SUPPLEMENTAL INFORMATION

UIC#: 2D0930081

FACILITY NAME: NESTOR B-1

OPERATOR: PILLAR ENERGY, LLC

2019

WVGES "Pipeline"

Select County: (093) Tucker | Select datatypes: (Check All)
Enter Permit #: 81
Get Data | Reset
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Bim Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline Plus" New

WV Geological & Economic Survey:

Well: County = 093 Permit = 81

Report Time: Wednesday, May 22, 2019 12:34:58 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7S	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4709300081	Tucker	81	Saint George	Saint George	Parsons	39.166773	-79.628506	615482.9	4336179.5

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4709300081	5/11/2001	Original Loc	Completed	Marshall A Nestor		B-1			Marshall A Nestor	MegaEnergy Operating, Inc.			
4709300081	-/-/-	Worked Over	Completed	Marshall A Nestor	B-1				Marshall A Nestor	MegaEnergy Operating, Inc.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4709300081	5/11/2001	3/22/2001	1650	Ground Level	Leadmine	Helderberg	Helderberg	Development Well	Development Well	Gas	Rotary	Acid+Frac	4304		4304														
4709300081	-/-/-	-/-/-	1650	Ground Level	Leadmine	Helderberg	Huntersville Chert	Service Well	Unsuccessful	Salt Water Disp	unknown	unknown	4304		0														

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4709300081	5/11/2001	Water	Fresh Water	Vertical			110	Pennsylvanian System					
4709300081	5/11/2001	Pay	Gas	Vertical	3526	Huntersville Chert	3548	Huntersville Chert					
4709300081	-/-/-	Horizon	Injection	Vertical	3528	Huntersville Chert	3546	Huntersville Chert					
4709300081	5/11/2001	Pay	Gas	Vertical	3672	Oriskany	3676	Oriskany					
4709300081	5/11/2001	Pay	Gas	Vertical	3738	Oriskany	3742	Oriskany					
4709300081	5/11/2001	Pay	Gas	Vertical	3767	Oriskany	3770	Oriskany					
4709300081	5/11/2001	Pay	Gas	Vertical	4060	Helderberg	4064	Helderberg					
4709300081	5/11/2001	Pay	Gas	Vertical	4067	Helderberg	4072	Helderberg					
4709300081	5/11/2001	Pay	Gas	Vertical	4106	Helderberg	4110	Helderberg					

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4709300081	Original Loc	Tully Ls	Well Record	3159	Reasonable		Ozmble Pick	1650	Ground Level
4709300081	Original Loc	Onondaga Ls	Well Record	3466	Reasonable	30	Reasonable	1650	Ground Level
4709300081	Original Loc	Huntersville Chert	Well Record	3496	Reasonable	156	Reasonable	1650	Ground Level
4709300081	Original Loc	Oriskany	Well Record	3652	Reasonable	150	Reasonable	1650	Ground Level
4709300081	Original Loc	Helderberg	Well Record	3802	Reasonable		Ozmble Pick	1650	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCHS	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_MSRD_FROM
4709300081	88	4310		G,D,N,I,T,C,*	Y	N	88	4282	1213	4304	1213	4290	1192	4310	1213	4304			88	4310	Y	Y	N						

Comment: *logs: caliper, tension, PE, audio

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

FILENAME
4709300081gamtech.tif
4709300081telen.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here
geologic log types:
d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
e photoelectric adsorption (PE or Pe, etc.)
g gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l laterolog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
o other[1]
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential
mechanical log types:
b cement bond
c caliper
o other[1]
p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

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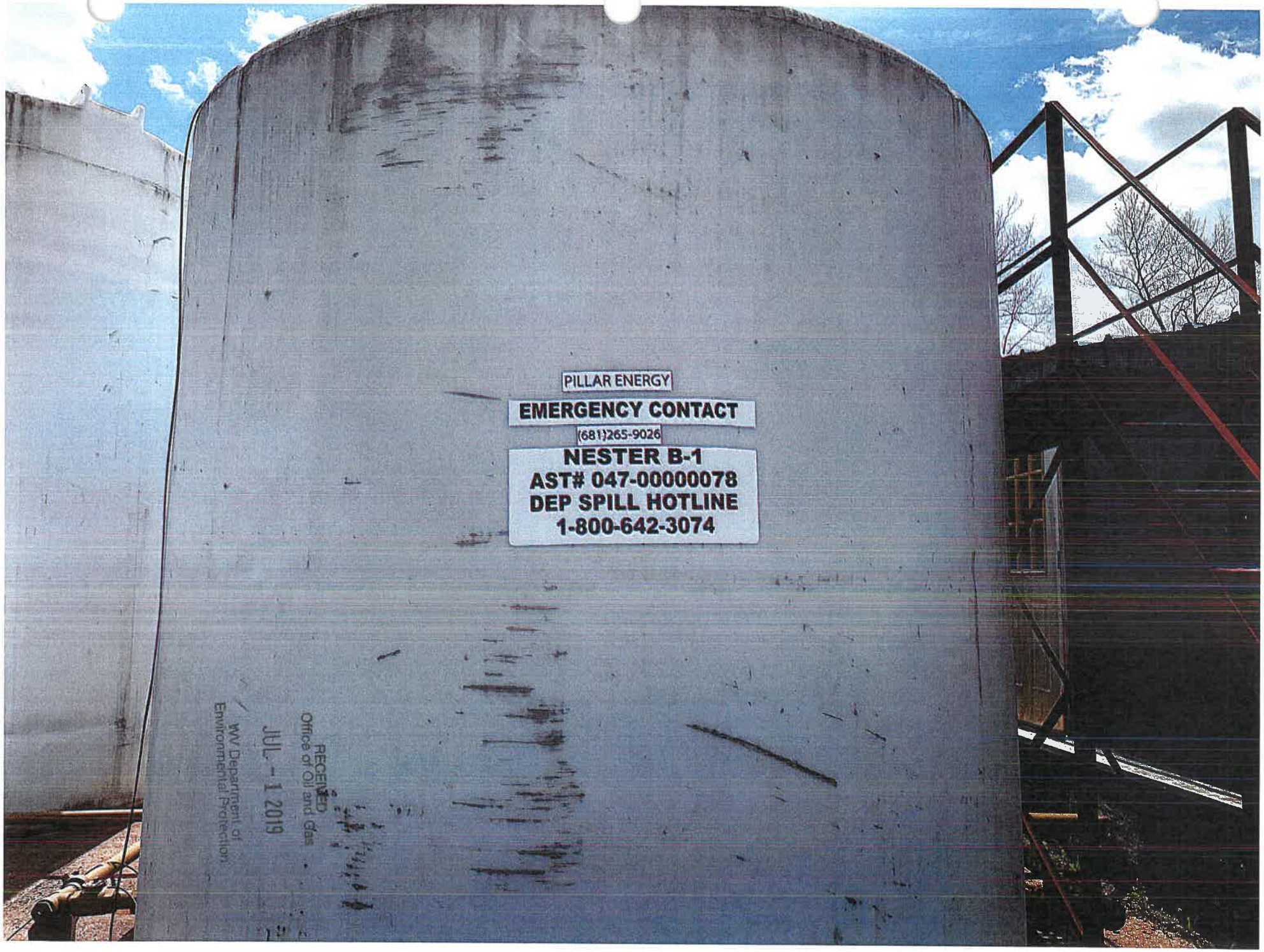
PILLAR ENERGY
EMERGENCY CONTACT
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NESTER B-1
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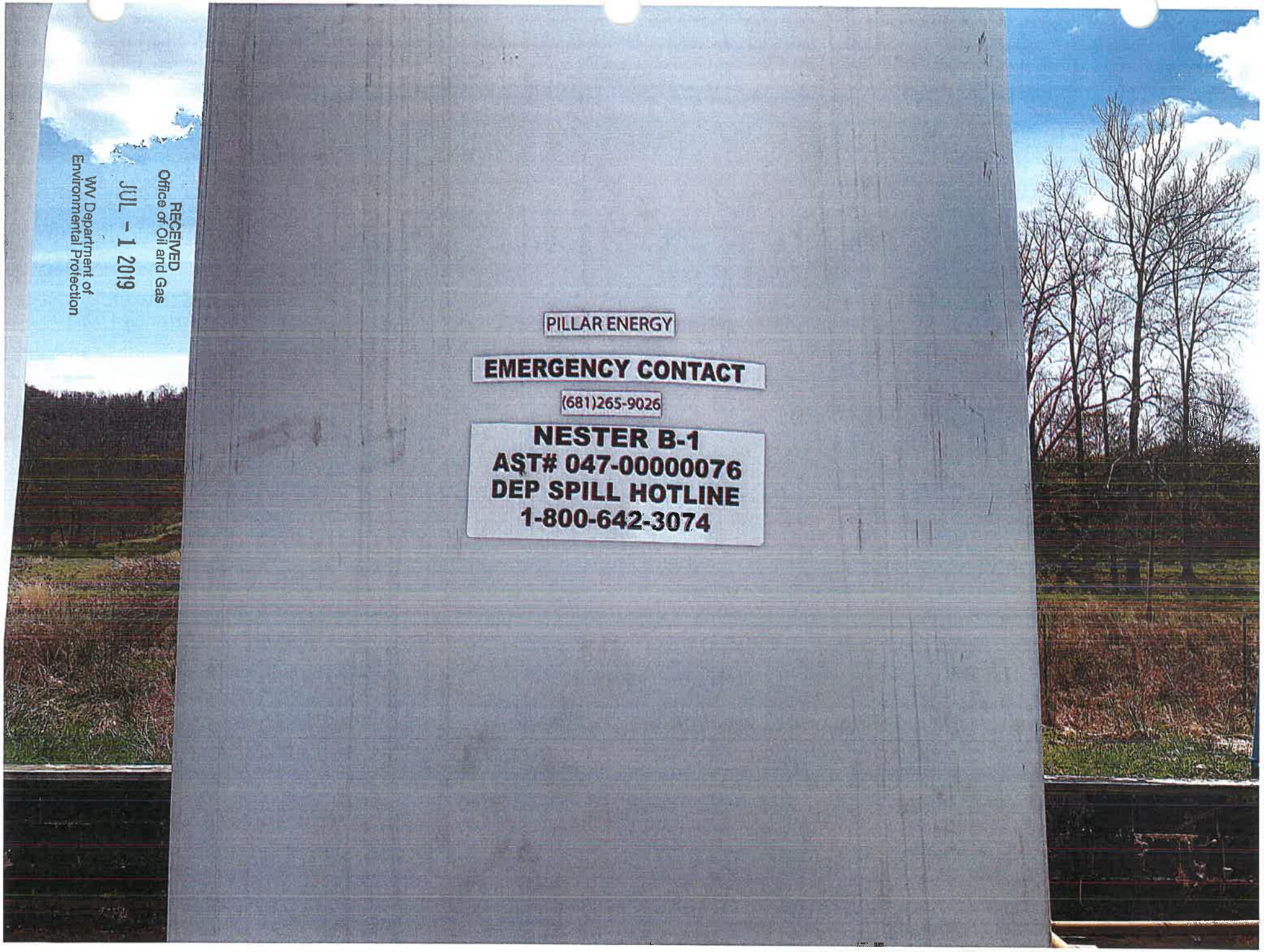


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