APPENDIX E

NMOCD AND BLM REGULATORY DOCUMENTS, NOTIFICATIONS AND SUBMITTALS

APPENDIX E
REGULATORY FILINGS

State of New Mexico Oil and Conservation Commission (NMOCC)
State of New Mexico Oil and Conservation Division (NMOCD)
United States Department of the Interior Bureau of Land Management (BLM)

No.	Document	Submitted	Approved	Notes
1	NMOCC Case No. 15528 Order No. R-14207	Submitted 12/10/2013 Hearing 8/25/2016	9/6/2016	Application to Inject Treated Acid Gas into the Devonian/Wristen/Fusselman/Montoya Formations through Proposed Zia AGI#2, Lea County, New Mexico
2	BLM 3160-5/3160-3	Submitted 8/9/2016	9/7/2016	Application For Permit to Drill and 3160-5 Form for revisions to Zia AGI #2 APD with Conditions of Approval.
3	BLM 3160-5/C-102 Amended	9/28/2016	10/19/2016	Amended Well Location and Acreage Dedication Plat
4	BLM 3160-5	10/13/2016	10/14/2016	Request changes to production casing, 2nd int. casing depth, use of WellLock, use of 5M BOP/BOPE for completion, and production tubing. An updated drilling COA was included
5	BLM Form 3160-5	10/28/2016	11/4/2016	Sundry Notices and Reports on Wells—Intent to Spud Well
6	BLM Form 3160-5	11/2/2016	11/4/2016	Sundry Notices and Reports on Wells—Change to the 5M BOP system on 9.625-inch casing to include 3 rams instead of 2.
7	BLM 3160-5	11/2/2016	11/4/2016	Sundry Notices and Reports on Wells—Revision to the 10M BOP/BOPE system for the 8.75-inch hole
8	BLM Form 3160-5	11/10/2016	12/15/2016	Sundry Notices and Reports on Wells—Install Surface Casing and Name Change
9	BLM Form 3160-5	11/13/2016	12/1/2016	Sundry Notices and Reports on Wells—Install 1st Intermediate Casing
10	NMOCD C-103	11/17/2016	11/22/2016	Sundry Notices and Reports on Wells—Install 1st Intermediate Casing
11	BLM Form 3160-5	11/18/2016	12/15/2016	Sundry Notices and Reports on Wells—Install 2nd Intermediate Casing
12	NMOCD C-103	11/17/2016	11/22/2016	Sundry Notices and Reports on Wells—Install 2nd Intermediate Casing
13	BLM Form 3160-5	12/2/2016	12/15/2016	Sundry Notices and Reports on Wells—Well Completion Notice of Intent
14	NMOCD C-103	12/14/2016	12/16/2016	Sundry Notices and Reports on Wells—Well Completion Notice of Intent
15	BLM 3160-5	12/14/2016	12/15/2016	Sundry Notices and Reports on Wells—Install Production Casing
16	NMOCD C-103	12/14/2016	12/28/2016	Sundry Notices and Reports on Wells—Install Production Casing
17	BLM 3160-5	12/22/2016	1/17/2017	Sundry Notices and Reports on Wells—No Recoverable Hydrocarbons
18	BLM Form 3160-5	1/10/2017	1/26/2017	Sundry Notices and Reports on Wells—Step Rate Test

19	NMOCD C-103	1/11/2017	1/17/2017 (record only)	Sundry Notices and Reports on Wells— Step Rate Test
20	NMOCD C-103	1/25/2017	1/25/2017	Sundry Notices and Reports on Wells— Mechanical Integrity Test
21	BLM Form 3160-5	1/26/2017	2/6/2017	Sundry Notices and Reports on Wells— Final Completion (Including Mechanical Integrity Test Results)
22	NMOCD C-103	1/27/2017	2/1/2017 (record only)	Sundry Notices and Reports on Wells— Final Completion
23	BLM Form 3160-5	1/30/2017	2/6/2017	Sundry Notices and Reports on Wells— Notice to Operators
24	BLM Form 3160-4	1/30/2017	Pending	Well Completion or Recompletion Report and Log

CASE NO. 15528
ORDER NO. R-14207

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF DCP MIDSTREAM, LP FOR AUTHORIZATION TO INJECT ACID GAS INTO THE PROPOSED ZIA AGI #2D WELL, SECTION 19, TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM, LEA COUNTY, NEW MEXICO.

CASE NO. 15528
ORDER NO. R-14207

ORDER OF THE COMMISSION

THIS MATTER came before the Oil Conservation Commission ("Commission") on the application of DCP Midstream, LP ("DCP" or the "Applicant"). The Commission, having held a public hearing on August 25, 2016, and considered the testimony, the record, and the arguments of the parties, and being otherwise fully advised, now, on this 6th day of September, 2016,

FINDS THAT:

1. Notice has been given of the application and the hearing of this matter, and the Commission has jurisdiction of the parties and the subject matter herein.

2. On July 12, 2016, DCP filed an administrative application (OCD Form C-108 and attachments), seeking authority to inject treated acid gas ("TAG") consisting of carbon dioxide ("CO_2") and hydrogen sulfide ("H_2S") into the target injection zones located in the Devonian, Upper Silurian Wristen, and Fusselman Formations, at an approximate depth interval of 13,755 feet to 14,750 feet below the surface through the Zia AGI No. 2D well, at a maximum surface operating pressure of 5,028 pounds per square inch, a rate of 15.0 MMSCF per day TAG, and at a location in Section 19, Township 19 South, Range 32 East, NMPM, in Lea County, New Mexico. The proposed well will be drilled as a vertical well with the surface location at 1900 feet from the South line (FSL) and 950 feet from the West line (FWL) of Section 19.

3. On July 15, 2016, Geolex, Inc., submitted a revised Hydrogen Sulfide Contingency Plan amending the previously approved Zia II Gas Plant Rule 11 contingency plan to incorporate the proposed well. On July 22, 2016, the Division's Environmental Bureau approved and accepted those revisions.

4. The Form C-108 Application was complete and contains all the information necessary to grant approval.

5. An adjacent operator and the U.S. Bureau of Land Management, which owns the surface and minerals within the application area, support DCP's application.

6. The purpose of the proposed Class II injection well is to dispose of natural gas processing wastes consisting of CO_2 and H_2S from the Applicant's Zia II Gas Processing Plant ("Zia Gas Plant") by injecting TAG into the target injection zones. The TAG will consist of approximately 10 percent H_2S and 90 percent CO_2, although the proportions will vary with inlet gas composition changes over time.

7. The Zia AGI No. 2D well will have a surface location approximately 1900 feet from the South line and 950 feet from the West line of Section 19, Township 19 South, Range 32 East, NMPM, Lea County, New Mexico. The proposed AGI well will be located within the boundary of the Zia Gas Plant's premises.

8. On July 12, 2016, DCP requested that its C-108 Application be set for a hearing before the Commission on the August 25, 2016, docket.

9. On August 18, 2016, DCP filed with its Prehearing Statement and exhibits a corrected "Table A-1," marked as Exhibit 2, to replace the original Table A-1 filed with the Form C-108 Application.

10. DCP provided personal notice, via certified mail, return-receipt requested, of its application and the Commission hearing to all operators, surface owners, and lessees within a one-mile radius of the location for the proposed well.

11. Pursuant to 19.15.4.9.B(3) NMAC, the Division provided public notice by publishing notice of DCP's application and the Commission hearing in a newspaper of general circulation in Lea County.

12. No objections to the application were filed. The Division entered an appearance in this matter, but presented no witnesses and no testimony. The Division does not oppose the application. It presented one exhibit, which provided the Division's recommendations for conditions of approval.

13. In support of the application, DCP presented direct testimony from two witnesses: one fact witness, Carlton D. "Tony" Canfield, DCP's Project Engineering Manager, and a technical expert witness, Alberto Gutiérrez, RG, President of Geolex, Inc.

14. DCP's Tony Canfield testified that the proposed Zia Gas Plant has a capacity to process up to 200 MMSCF per day of sour gas and that the design and operation of the Zia Gas Plant is dependent on AGI wells to dispose of the resultant TAG. DCP has been injecting TAG through Zia AGI No. 1 well, approved in Order No. R-13809, since

August 2015 into the Lower Cherry Canyon and Upper Brushy Canyon formations at a depth of approximately 5,470 to 6,070 feet below the surface.

15. Mr. Canfield testified that after commencing injection through the Zia AGI No. 1 well, an operator approached DCP about injecting TAG into a deeper formation. DCP identified the Devonian, Upper Silurian Wristen, and Fusselman Formations as a suitable candidate for injection of TAG through the proposed AGI No. 2D well. DCP intends to maintain authority to inject TAG through the Zia AGI No. 1 well in Order No. R-13809.

16. Mr. Canfield testified that approval of the Zia AGI No. 2D well is necessary to help meet growing production demand for sour gas processing and waste disposal, will increase processing safety and reliability by reducing unplanned plant outages and production well shut-ins, and will result in a net reduction of air emissions from DCP consolidated facilities, as well as Zia Gas Plant and field flaring.

17. Mr. Canfield testified that having redundant AGI wells at the Zia Gas Plant will increase plant reliability and allow DCP to continue to process and inject TAG while one acid gas well is off-line.

18. DCP expert witness Alberto Gutiérrez, RG, testified that injection of TAG through the proposed AGI well will be at a maximum rate of 15.0 MMSCF per day, and at a maximum operating surface pressure of 5,028 pounds per square inch.

19. Mr. Gutierrez testified that with a safety factor of 100 percent, or an additional 15.0 MMSCF per day per well, the radius of influence for the Zia AGI No. 2D well after injecting for thirty years would be approximately 0.39 miles. The radius of influence for the well, based on the actual authorized injection volumes, is expected to be approximately 0.28 miles after thirty years of injection. However, based on areas of higher porosity and permeability in the area observed in the seismic data, the TAG plume may occupy an equivalent area elongated north to south within this zone of higher porosity and permeability rather than a strictly radial pattern.

20. Mr. Gutierrez testified that the proposed injection zone provides a sufficient capacity and geologic seal to contain the injected TAG and prevent its migration into other zones. The injection zone is sufficiently isolated from any protectable groundwater sources and there is no evidence injection will impair existing or potential hydrocarbon production in the area. No faults or other geologic or manmade conduits will allow the treated injected acid gas to migrate out of the injection zone. One fault, which has been identified and mapped in the area, is restricted vertically to the injection zone and cannot, therefore, serve as a conduit to zones outside the confines of the injection zone.

21. Fresh water will be protected by surface casing, which will extend to approximately 800 feet below the surface. The salt zone, including the Salado Formation, will be isolated by the first intermediate casing to approximately 2,550 feet below the surface, and the Capitan Aquifer will be completely isolated by the second intermediate casing, set at approximately 4,500 feet below the surface. All casing strings will be

cemented to the surface, pressure tested, and verified using 360-degree cement bond logs. The casing and cement program will meet all U. S. Bureau of Land Management guidelines and requirements, in addition to all Oil Conservation Division requirements.

22. The AGI well's annular space will be filled with corrosion-inhibited and biocide-treated diesel fuel.

23. Annular and injection tubing pressures and temperatures will be continuously monitored and recorded. The well also will be equipped with downhole pressure and temperature monitoring equipment. As detailed in Section 3.4 of the C-108, DCP also proposes the following:

a. Obtain initial bottomhole pressure and temperature values after drilling and prior to commencing injection.

b. Perform a step-rate test and ten-day fall-off test prior to injection to provide baseline reservoir data.

c. Monitor injection pressure, temperature, injection rate, and annular pressure.

d. Use bottomhole reservoir and surface pressure/temperature data to develop a well-specific empirical relationship between observed surface and bottomhole data.

e. Use TAG and/or wellbore models to predict bottomhole pressure/temperature conditions based on measured surface data, and tested against the empirical relationships established by measured surface and bottomhole data.

f. In the event of any data gaps or bottomhole sensor failures, DCP will use TAG and/or wellbore models with empirical data to fill in missing bottomhole data.

g. In the event of an extended bottomhole pressure/temperature sensor failure, DCP may perform periodic bottomhole pressure monitoring using slickline pressure tools only if data from such a temporary device is necessary to fill in data for relevant analyses, and only at times when the well is off-line.

h. After approximately ten years of operation, DCP may perform another step-rate test and fall-off test to compare with the baseline measured prior to injection.

i. DCP may use the data obtained through the foregoing activities to conduct the periodic ten-year reservoir performance analysis addressed in Section 3.8 of the C-108, which would serve as the required ten-year comparison of

actual reservoir performance against DCP's predicted performance, provided in decretal Paragraph 10, below.

24. DCP presented evidence that injection of the proposed TAG stream will protect the environment and human health, and will not cause waste or impair correlative rights.

25. William V. Jones, P.E., and Phillip Goetze, P.G., both of whom are with the Oil Conservation Division's Engineering Bureau, submitted a letter to the Commission, dated August 18, 2016, and marked as Exhibit 1, stating that they had conducted a review of the C-108 application and that DCP had addressed questions raised in the Division's review. The Division recommended that an order approving DCP's application incorporate those standard conditions and the standard conditions provided in Order Nos. R-13443-B and C.

26. Those conditions are as follows:

a. Conduct a mechanical integrity test ("MIT") on the proposed AGI well every year.

b. .Conduct continuous monitoring of surface TAG injection pressure, temperature and rate, surface annular pressure and bottomhole temperatures and pressures inside the tubing and annulus.

c. Conduct a step-rate test on the completed well before commencing injection. The maximum injection pressure for the proposed well shall be 5,028 pounds per square inch, which may be appropriately adjusted after a step-rate test.

d. Include a biocide component in the inert annular fluid of the well.

e. Keep a maintenance log of its annular fluid (diesel) replacement activities in the annulus of the well.

f. Incorporate temperature controls to govern the temperatures of injected fluid within parameters set by DCP and provide an alarm system for those controls should the parameters be exceeded.

g. Equip the well with a pressure-limiting device as well as a one-way safety valve on the tubing approximately 250 feet below the surface.

h. Provide summary data on injection parameters monitored in item b. above, as requested by the Division in quarterly reports. After one year, the Division may approve submission of such reports annually upon request.

i. Conduct and implement all required air monitoring and safety measures pursuant to the updated H_2S Contingency Plan approved by the Division on July 22, 2016.

j. Thirty days prior to commencing injection, the operator shall coordinate with the Division to establish immediate notification parameters for annulus pressure and tubing and casing differential pressure at a set injection temperature.

k. Ninety days after commencing injection, the operator shall review the pre-injection immediate notification parameters with the Division. If the Division determines that the parameters require modification, new immediate notification parameters shall be developed and implemented in coordination with the Division.

l. The immediate notification parameters shall be reviewed jointly by the operator and the Division periodically, but not less frequently than once a year.

m. All well drilling logs and the estimated static bottomhole pressure measured at completion of drilling the well shall be submitted to the Division's District I Office.

n. Provide a report at the completion of every tenth year of injection summarizing the AGI No. 2D well's performance and potential calibration of models due to information collected during the prior ten-year period.

27. In the letter from Mr. Jones and Mr. Goetze, the Division recommended two additional conditions:

o. The top of cement for the proposed seven-inch production casing should be circulated to the surface; and

p. The final reservoir evaluation should confirm that the open-hole portion of the AGI well does not intersect the fault plane of the identified fault in the Devonian section.

CONCLUSIONS

1. The Commission has jurisdiction over the parties and the subject matter of this case.

2. Proper public notice has been given.

3. Proper individual notice has been given to all operators, surface owners, and lessees within a one-mile radius of the proposed injection well.

4. DCP's request for a maximum allowable operating pressure for injection of 5,028 pounds per square inch (psi) should be approved.

5. DCP's injection of CO_2 and H_2S can be conducted in a safe manner without causing waste, impairing correlative rights, negatively impacting oil and gas producing zones, or endangering fresh water, public health, or the environment.

6. DCP's proposed injection of CO_2 and H_2S is an environmentally superior means of disposing of CO_2 and H_2S because it will result in a net reduction in overall air emissions from the Zia Gas Plant and DCP facilities.

IT IS THEREFORE ORDERED THAT:

1. DCP's application is approved as provided in the Form C-108 as amended and modified by the conditions addressed below. Accordingly, DCP is hereby authorized to drill and operate the Zia AGI No. 2D well to be located in Section 19, Township 19 South, Range 32 East, NMPM, Lea County, New Mexico, to dispose of TAG containing CO_2 and H_2S from DCP's Zia Gas Plant through injection into the Devonian and Silurian Formations, at an approximate depth interval of 13,755 feet to 14,750 feet below the surface at a maximum injection pressure of 5,028 pounds per square inch and a maximum daily injection rate of 15 MMSCF per day.

2. The Zia AGI No. 2D well shall be constructed substantially in accordance with the description in the Form C-108 filed by the Applicant in this case, as amended, and as modified by the conditions agreed to by DCP and the Oil Conservation Division set out in Findings Paragraphs 26 and 27, above.

3. The maximum allowable operating pressure for the Zia AGI No. 2D well shall be 5,028 psi. DCP shall conduct a step-rate test on the completed well before commencing injection. Based on the step-rate test, the Division may allow an increase in the maximum allowable operating pressure.

4. DCP shall be required to conduct a MIT in accordance with Division rules on the Zia AGI No. 2D well once every year.

5. The casing-tubing annulus of the Zia AGI No. 2D well shall be loaded with diesel fluid treated with corrosion inhibitors and biocides and equipped with a pressure gauge or approved leak-detection device to detect any leakage in the casing, tubing, or packer.

6. Thirty days prior to commencing injection, the operator shall coordinate with the Division to establish immediate notification parameters for annulus pressure and tubing and casing differential pressure at a set injection temperature.

7. Ninety days after commencing injection, the operator must review the pre-injection immediate notification parameters with the Division. If the Division determines that the parameters require modification, new immediate notification parameters shall be developed and implemented in coordination with the Division.

8. The immediate notification parameters shall be reviewed jointly by the operator and the Division periodically, but not less than once a year.

9. The operator shall record injection rates and pressures on a continuous basis and report these readings in a summary form on a quarterly basis to the Engineering Bureau in the Division's Santa Fe Office and to the Division's District I Office. Each such report shall include the well name, location, API Number and the number of this order. After one year DCP may apply to the Division to submit such data annually.

10. The operator shall every ten years, once injection begins, provide the Division with a report that compares the reservoir pressures, volumes injected and projected TAG plume extent to those estimated in the C-108 application, along with a summary of all the injection results to date. DCP may use data collected and analyses conducted pursuant to Paragraph 23, above, to prepare this analysis. The report shall include an updated model of current and projected plume migration and shall use the modeling technology in standard use at the time of the report and any available information about plume migration.

11. The Division Director shall have discretion to determine whether any modifications to this order that may be requested by DCP, or imposed by the U. S. Bureau of Land Management, may be administratively approved by the Division or if a hearing before the Commission is required.

12. The injection authority herein granted shall terminate three years after the effective date of this order if the operator has not commenced injection operations pursuant hereto. The Division Director, upon written request of the operator submitted prior to the expiration of this order, may extend this time for good cause shown.

13. Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state, or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

ROBERT BALCH, MEMBER

PATRICK PADILLA, MEMBER

DAVID R. CATANACH, CHAIR

SEAL

APPLICATION FOR PERMIT TO DRILL AND CONDITIONS OF APPROVAL

Date Submitted: 8/9/16
Date Approved: 9/7/16

Attachments: Conditions of Approval
Geolex's Application for Permit to Drill Report

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE – *Other instructions on page 2.*

5. Lease Serial No.
NM 0149956

6. If Indian, Allottee or Tribe Name
N/A

7. If Unit of CA/Agreement, Name and/or No.
N/A

1. Type of Well
☐ Oil Well ☐ Gas Well ☑ Other Acid Gas Injection

8. Well Name and No.
Zia AGI #2D

2. Name of Operator
DCP Midstream, LP

9. API Well No.
3002542207

3a. Address
370 17th St., Suite 2500
Denver, CO 80202

3b. Phone No. *(include area code)*
(303) 595-3331

10. Field and Pool or Exploratory Area
Devonian Expl.

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*
1900' FSL, 950' FWL, Sec. 19, T19S, R32E

11. Country or Parish, State
Lea

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☒ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other _____
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

DCP Midstream respectly requests the changes in the existing approved APD for this well, described in detail in the attached Sundry application.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.
Name *(Printed/Typed)*
Alberto A. Gutierrez, R.G.

Title Consultant to DCP Midstream, LP

Signature

Date

APPROVED
SEP - 7 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by
Teungku Muchlis Krueng

Title PETROLEUM ENGINEER

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NM 0149956

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
N/A

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
Zia AGI #2D

2. Name of Operator DCP Midstream, LP

9. API Well No.
3002542207

3a. Address 370 17th St., Suite 2500
Denver CO 80202

3b. Phone No. *(include area code)*
(303) 595-3331

10. Field and Pool, or Exploratory
Devonian Expl.

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 1900' FSL, 950' FWL, Sec. 19, T19S, R32E
At proposed prod. zone Same

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 19, T119S, R32E

14. Distance in miles and direction from nearest town or post office*
15 Miles South of Maljamar, NM Post Office

12. County or Parish
Lea

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
580' FSL, 950' FWL
NM 0149956

16. No. of acres in lease
N/A: Class II Disposal

17. Spacing Unit dedicated to this well
N/A

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
~200' South of Zia AGI #1 (3002542208)

19. Proposed Depth
~14,500'

20. BLM/BIA Bond No. on file
105982905 (BLM, Statewide)

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3550' GL

22. Approximate date work will start*
11/01/2016

23. Estimated duration
75 Days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name *(Printed/Typed)*
Alberto A. Gutierrez, RG

Date

Title
Consultant to DCP Midstream, LC

Approved by *(Signature)*

Name *(Printed/Typed)*

Date

Title

Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
3002542207		SWD Devonian

Property Code	Property Name	Well Number
	ZIA AGI	2

OGRID No.	Operator Name	Elevation
36785	DCP MIDSTREAM	3547'

Surface Location

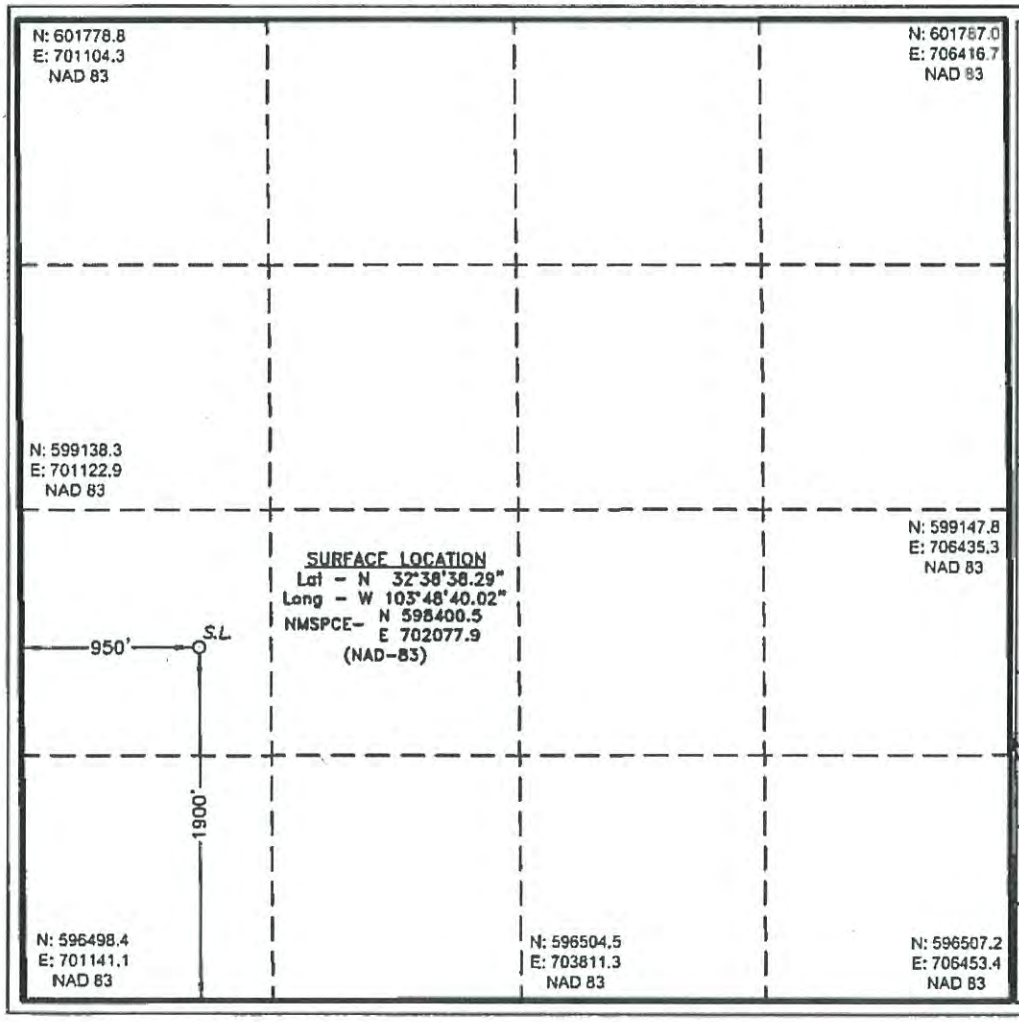
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	19	19 S	32 E		1900	SOUTH	950	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

8/29/16
Signature Date

Carlton D. Canfield
Printed Name

cdcanfield@dcpmidstream.com
Email Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

AUGUST 2, 2016
Date Surveyed

Signature & Seal of Professional Surveyor

Certificate No. GARY L. JONES 7977

BASIN SURVEYS

0' 500' 1000' 1500' 2000'
SCALE: 1" = 1000'
WO Num.: 30775

Conditions of Approval

OPERATOR'S NAME:	DCP Midstream LP
LEASE NO.:	NM0149956
WELL NAME & NO.:	2-Zia AGI
SURFACE HOLE FOOTAGE:	1900'/S & 950'/W
BOTTOM HOLE FOOTAGE	1655'/S & 1655'/W
LOCATION:	Sec. 19, T. 19 S., R. 32 E.
COUNTY:	Lea County, New Mexico

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated **500** feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Risks:

Possibility of Water Flows in the Capitan Reef, in the Salado and in the Artesia Group.
Possibility of Lost Circulation in the Rustler, Capitan Reef, Red Beds, Delaware and in the Artesia Group.

1. The 20 inch surface casing shall be set at approximately 800 feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt)** and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **13 3/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **9 5/8** inch production casing is:
Operator has proposed DV tool at depth of 2650'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:
☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

4. The minimum required fill of cement behind the **7-5/8** and **7** inch intermediate casing is:

Operator has proposed DV tool at depth of 6350'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

c. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

d. Second stage above DV tool:
☒ Cement to surface. Operator to provide method of verification.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **surface casing shoe** shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8 inch intermediate casing** shoe shall be **10,000 (10M)** psi. **10M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. WELL COMPLETION

A NOI sundry with the procedure to complete this well in compliance with BLM and NMOCD requirements shall be submitted and approved prior to commencing completion work.

The procedure will be reviewed to verify that the completion will allow the operator to restrict the injection fluid to the approved formation. NOTE: The sundry shall include data from the conventional core analysis and logs with detailed analysis of the reservoir seal depth related to the perforation interval and the packer setting depth. It may also need to include previously submitted information.

DO NOT install injection tubing until approval is received

NOTE: (include with NOI sundry) prior to beginning Acid Gas Injection at the well, the Operator shall provide all Operators of existing wells within a 1 mile radius with a notice of beginning injection operations and include a map of the possible worst case scenario H2S exposure area(s). BLM is to be copied on this notice mailing. (H2S Public Protection Plan)

An MIT test must be conducted annually and submitted to the BLM via subsequent sundry.

F. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

G. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

TMAK09072016

AMENDED WELL LOCATION AND ACREAGE DEDICATION PLAT

Date Submitted: 9/28/16
Date Approved: 10/19/16

Attachments: Form C-102 Well Location and Acreage Dedication Plat

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Operator

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI 2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool, or Exploratory
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1900FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☒ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

DCP Midstream LP requests a revision of the location of Zia AGI #2D from the original location of:

1900' FSL, 950' FWL, Sec. 19, T19S, R32E to:

1893' FSL, 950' FWL, Sec. 19, T19S, R32E

A signed survey plat (C-102) of the new location is attached.

ok Per Bd Ballard 10-19-16

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #352874 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 09/28/2016 (16PP1219SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 09/28/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title for FIELD MANAGER Date 10/19/16

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office **CARLSBAD FIELD OFFICE**

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 12, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name

Property Code	Property Name	Well Number
	ZIA AGI	2
OGRID No.	**Operator Name**	**Elevation**
025575	DCP MIDSTREAM	3548'

Surface Location

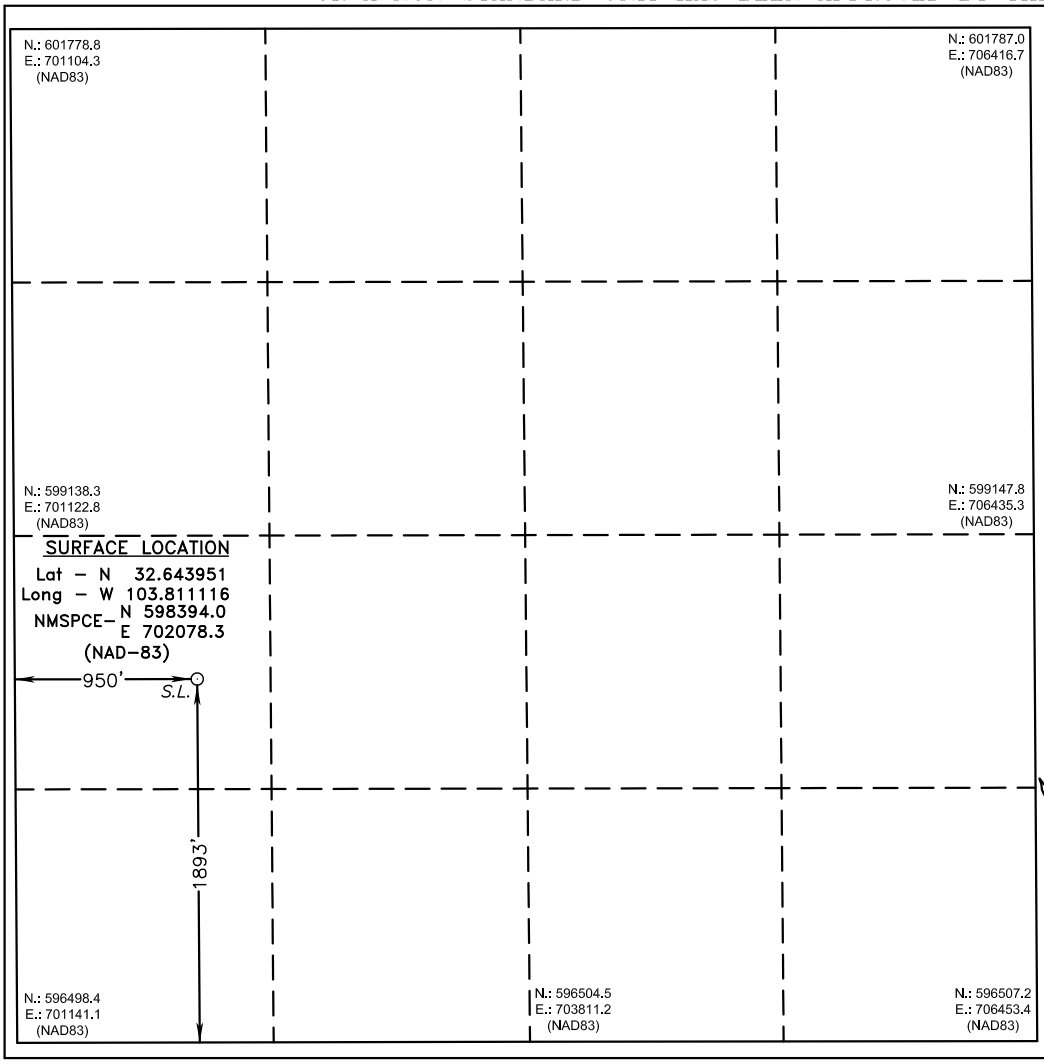
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
L	19	19 S	32 E		1893	SOUTH	950	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unLEAsed mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

Email Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

SEPTEMBER 26, 2016
Date Surveyed

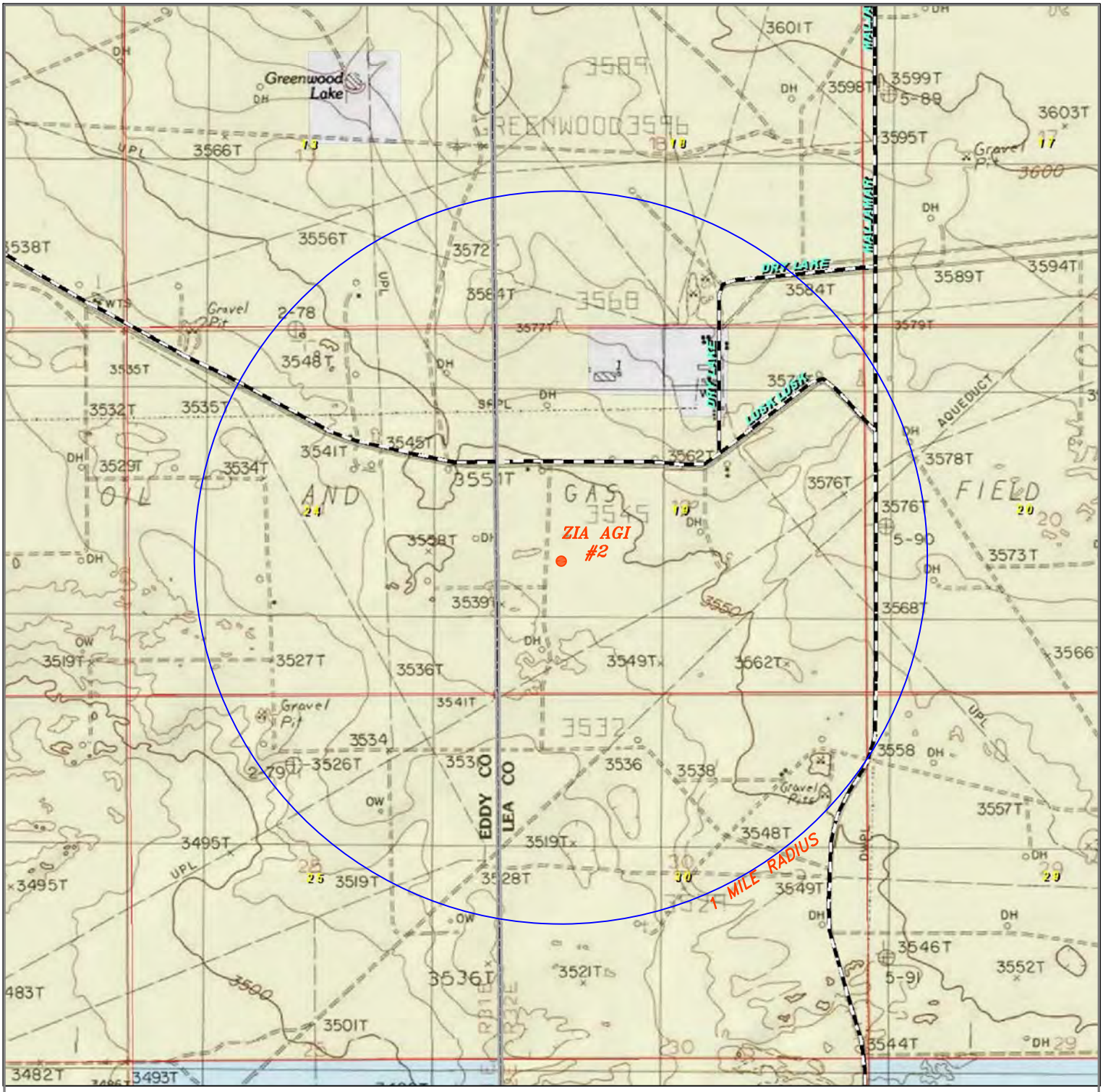
Signature & Seal of Professional Surveyor

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977
BASIN SURVEYS

0' 500' 1000' 1500' 2000'

SCALE: 1" = 2000'
WO Num.: 32487



ZIA AGI #2

Located 1893' FSL and 950' FWL
Section 19 Township 19 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

0' 1000' 2000' 3000' 150'0'
SCALE: 1" = 2000'

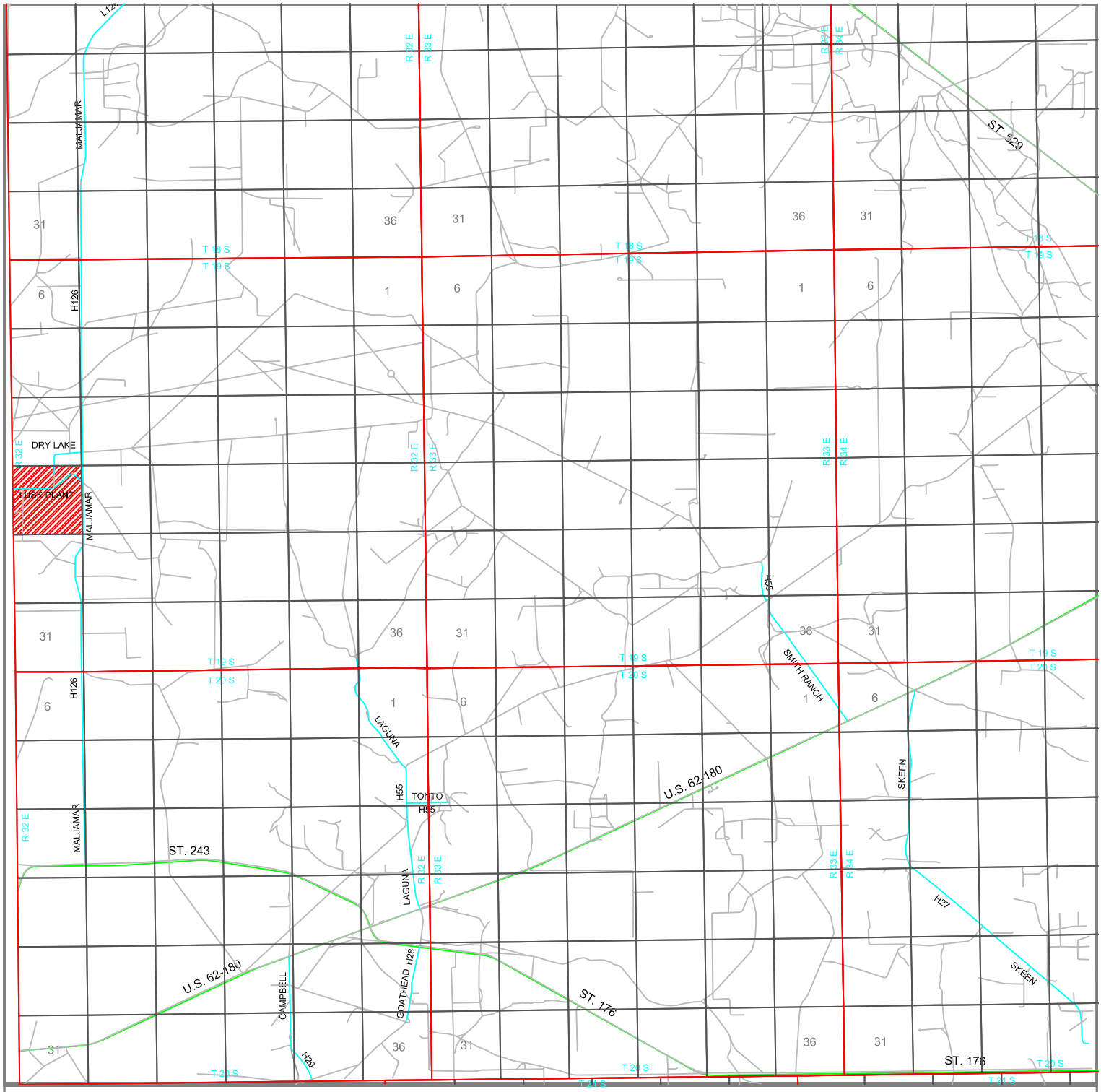
W.O. Number: JG 32487

Survey Date:

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

DCP MIDSTREAM



ZIA AGI #2

Located 1893' FSL and 950' FWL
Section 19 Township 19 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

0 1 MI 2 MI 3 MI 4 MI
SCALE: 1" = 2 MILES

W.O. Number: JG 32487

Survey Date:

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

DCP MIDSTREAM

ZIA AGI #2

Located 1893' FSL and 950' FWL
Section 19 Township 19 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

0' 1000' 2000' 3000' 150'0'
SCALE: 1" = 2000'

W.O. Number: JG 32487

Survey Date:

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

N

DCP MIDSTREAM

CHANGES TO THE FINAL WELL SCHEMATIC AND COMPLETION PROCEDURES

Date Submitted: 10/13/16
Date Approved: 10/14/16

Attachments:
New Well Schematic
New Cement Program
New Tubing and Equipment Design
Updated Conditions of Approval

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

Carlsbad Field Office
OCD Hobbs

HOBBS OCD
OCT 24 2016
RECEIVED

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM 106368

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI 2

2. Name of Operator
DCP MIDSTREAM LP

Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool, or Exploratory
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1900FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

DCP Midstream LP requests minor changes to the final well schematic. Attached is the new well schematic with an updated casing design consisting of casing that is of equal or greater grade. The top 300' of production casing will consist of 7-5/8" casing to accommodate OD of SSSV, and the remaining production casing (300' to 13,755') will be what was originally approved (7").

DCP Midstream LP requests a change to the 2nd intermediate casing seating depth. The new 2nd intermediate casing depth is set at 4700' in competent rock. This is to ensure a proper seal of the Capitan Reef. Furthermore, by setting the casing at this depth DCP has safer options for Zia AGI #2 in case pressure from Zia AGI #1 is encountered.

DCP Midstream LP requests the approval of the use of Halliburton "WellLock" resin-based cement in the intervals of the well potentially impacted from acid gases. Depths and volumes are detailed in

SUBJECT TO LIKE APPROVAL BY STATE

SEE ATTACHED FOR CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #354727 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 10/14/2016 (17PP0043SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 10/13/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Teungku Muchlis Krueng — Title PETROLEUM ENGINEER — Date OCT 14 2016

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE

APPROVED

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

KZ

Additional data for EC transaction #354727 that would not fit on the form

32. Additional remarks, continued

the attached cementing program. This cement is corrosion resistant cement of better quality than the approved ThermaLock or equivalent.

DCP Midstream LP requests permission to employ a 5M BOP/BOPE for completion of the final open hole segment of the well from depths of approximately 13,755' to 14,750'. The approved 10M system will still be employed from drilling, casing, cementing and testing of the 7" production casing (to approximately 13,755'). This change simplifies operations, and this disposal zone is generally under-pressured in this area.

DCP Midstream LP requests a change in production tubing to using approximately 13,400' of 3-1/2" 9.3 ppf L80 VAM top steel tubing, and approximately 300' (13,400' to 13,700') of 3-1/2" 9.3 ppf 28CR110 corrosion-resistant steel for overall corrosion resistant design. See attached for the well completion diagram including tubing and packer assembly.

Lea County, NM
Section 19 T19S R32E

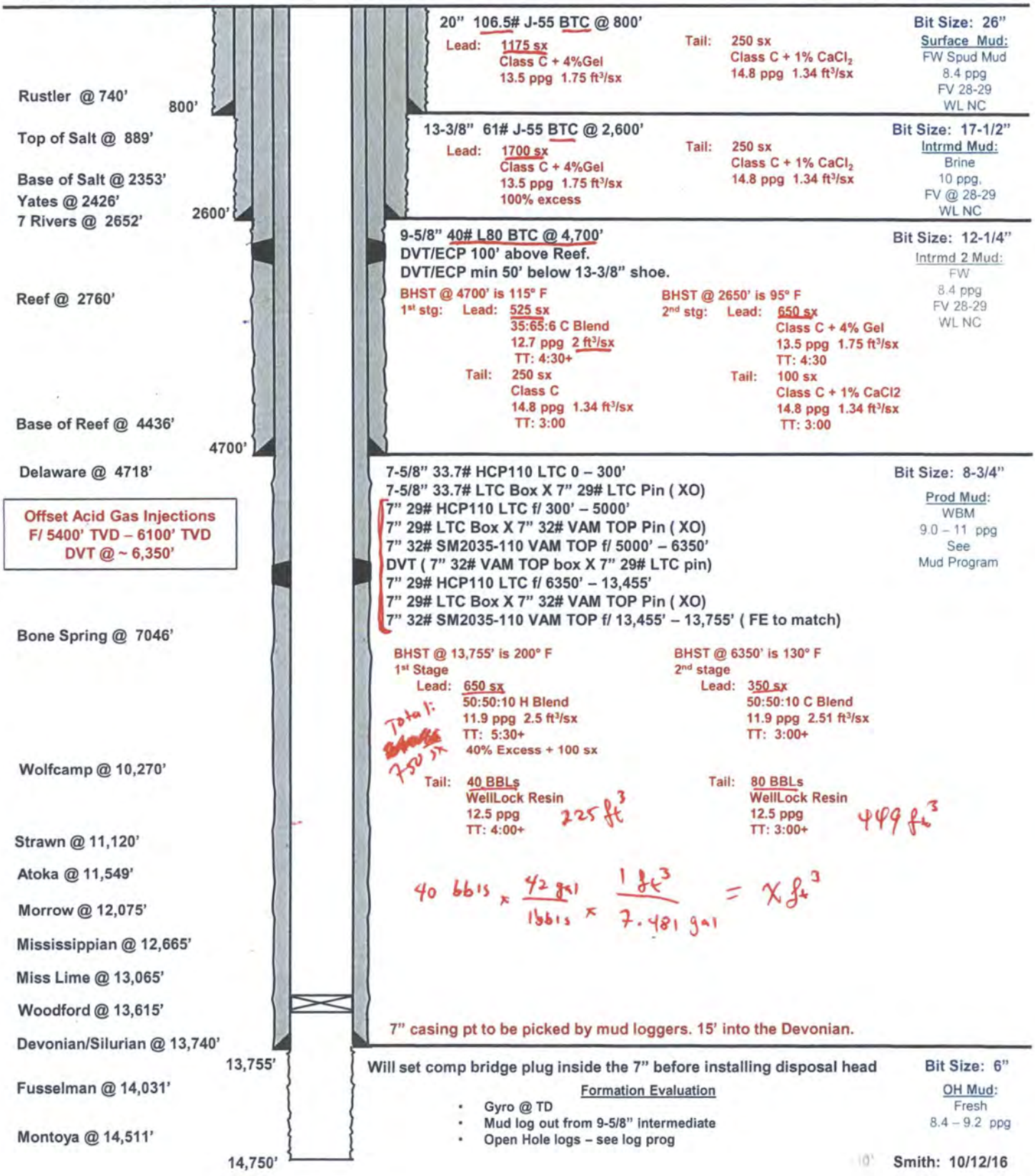
SHL
1900' FSL
950' FWL

KB: 3572' GL: 3547'

Zia AGI #2D
API: 30-025-42207
Lat/Long: 32°38'38.29"N / 103°46'40.02"W

Well Type: Devonian AGI
DCP Midstream, LP

Rig:	Scan Freedom
Cmt:	Halliburton
Mud:	Nova
Dir Drlg:	Integrity
Wellhead:	GE Oil & Gas
Casing:	CRA / JD Rush
Float Equip:	DL / HES
AFE Cost:	$Update
AFE Days:	47



20" 106.5# J-55 BTC @ 800'
Lead: 1175 sx
Class C + 4%Gel
13.5 ppg 1.75 ft³/sx
Tail: 250 sx
Class C + 1% $CaCl_2$
14.8 ppg 1.34 ft³/sx

Bit Size: 26"
Surface Mud:
FW Spud Mud
8.4 ppg
FV 28-29
WL NC

13-3/8" 61# J-55 BTC @ 2,600'
Lead: 1700 sx
Class C + 4%Gel
13.5 ppg 1.75 ft³/sx
100% excess
Tail: 250 sx
Class C + 1% $CaCl_2$
14.8 ppg 1.34 ft³/sx

Bit Size: 17-1/2"
Intrmd Mud:
Brine
10 ppg,
FV @ 28-29
WL NC

9-5/8" 40# L80 BTC @ 4,700'
DVT/ECP 100' above Reef.
DVT/ECP min 50' below 13-3/8" shoe.
BHST @ 4700' is 115° F
1st stg: Lead: 525 sx
35:65:6 C Blend
12.7 ppg 2 ft³/sx
TT: 4:30+
Tail: 250 sx
Class C
14.8 ppg 1.34 ft³/sx
TT: 3:00
BHST @ 2650' is 95° F
2nd stg: Lead: 650 sx
Class C + 4% Gel
13.5 ppg 1.75 ft³/sx
TT: 4:30
Tail: 100 sx
Class C + 1% CaCl2
14.8 ppg 1.34 ft³/sx
TT: 3:00

Bit Size: 12-1/4"
Intrmd 2 Mud:
FW
8.4 ppg
FV 28-29
WL NC

7-5/8" 33.7# HCP110 LTC 0 – 300'
7-5/8" 33.7# LTC Box X 7" 29# LTC Pin (XO)
7" 29# HCP110 LTC f/ 300' – 5000'
7" 29# LTC Box X 7" 32# VAM TOP Pin (XO)
7" 32# SM2035-110 VAM TOP f/ 5000' – 6350'
DVT (7" 32# VAM TOP box X 7" 29# LTC pin)
7" 29# HCP110 LTC f/ 6350' – 13,455'
7" 29# LTC Box X 7" 32# VAM TOP Pin (XO)
7" 32# SM2035-110 VAM TOP f/ 13,455' – 13,755' (FE to match)

Bit Size: 8-3/4"
Prod Mud:
WBM
9.0 – 11 ppg
See
Mud Program

BHST @ 13,755' is 200° F
1st Stage
Lead: 650 sx
50:50:10 H Blend
11.9 ppg 2.5 ft³/sx
TT: 5:30+
40% Excess + 100 sx
Tail: 40 BBLs
WellLock Resin
12.5 ppg
TT: 4:00+

BHST @ 6350' is 130° F
2nd stage
Lead: 350 sx
50:50:10 C Blend
11.9 ppg 2.51 ft³/sx
TT: 3:00+
Tail: 80 BBLs
WellLock Resin
12.5 ppg
TT: 3:00+

Total: 750 sx

225 ft³

449 ft³

40 bbls × 42 gal / 1 bbl × 1 ft³ / 7.481 gal = X ft³

7" casing pt to be picked by mud loggers. 15' into the Devonian.

Will set comp bridge plug inside the 7" before installing disposal head

Bit Size: 6"
OH Mud:
Fresh
8.4 – 9.2 ppg

Formation Evaluation
- Gyro @ TD
- Mud log out from 9-5/8" intermediate
- Open Hole logs – see log prog

Smith: 10/12/16

CEMENT PROGRAM

The cement program is summarized in Table 1 below. All cement for each casing string will be circulated to the surface, using the calculated excesses shown in Table 2 below. After cement curing, each casing string will be pressure tested before drilling out the diverters and shoes, and a formation pressure test will be conducted and approved prior to deeper drilling. All cement jobs for all casing strings will be verified using 360° cement bond logging and analyses.

Table 1: Cement Program and Design Specifications

Casing	Interval (ft.)	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
20"	0 - 800	1175	13.5	1.75	9	12	Lead: Class C + 4% Gel
		250	14.8	1.34	6.34	8	Tail: Class C + 1% CaCl2
13-3/8"	0 – 2,600	1700	13.5	1.75	9	12	Lead: Class C + 4% Gel
		250	14.8	1.34	6.34	8	Tail: Class C + 1% CaCl2
9-5/8" 1st stg	2,650 – 4,700	450	12.7	2	10.6	16	Lead: Econocem HLC 35:65:6 C Blend
		250	14.8	1.34	6.34	8	Tail: Class C + 1% CaCl2
9-5/8" 2nd stg	0 – 2,650	650	13.5	1.75	9	12	Lead: Class C + 4% Gel
		100	14.8	1.34	6.34	8	Tail: Class C + 1% CaCl2
7" 1st stg	6,350 – 13,755	650	11.9	2.5	19.1	24	Lead: 50:50:10 H Blend
		40 (bbls)	12.5	40 (bbls	N/A	24	Tail: WellLock Resin
7" 2nd stg	0 – 6,350	350	11.9	2.51	19.1	24	Lead: 50:50:10 C Blend
		80 (bbls)	12.5	80 (bbls)	N/A	24	Tail: WellLock Resin

N/A = Not Applicable

The DVT/ECP for the 9-5/8" 2nd intermediate casing will be set @ 2650'. This setting depth for the DVT/ECP will ensure we get a proper seal above the initial losses of the reef to ensure a good cement job for the 9-5/8" casing. To get a proper cement job if the BLM is going to enforce us to be 50' below the 13-5/8" casing shoe, then we need the 13-3/8" casing shoe to be set no deeper than 2600'. Setting the 13-3/8" casing at 2600' will case the salt and the top of the Yates.

The DVT for the 7" casing will be set @ 6,350'. Volumes subject to change from hole observations and/or fluid calipers. Lab reports with the 500 psi comp strength time for the cement will be onsite for review. After drilling the OH disposal interval, and before installing disposal head, operator will install a comp bridge plug inside the 7" casing.

Table 2: Cement Excess for Casing Strings

Casing String	TOC	% Excess
20"	0'	50%
13-3/8"	0'	100%
9-5/8"	0'	50%
7"	0'	40% + 100 sacks

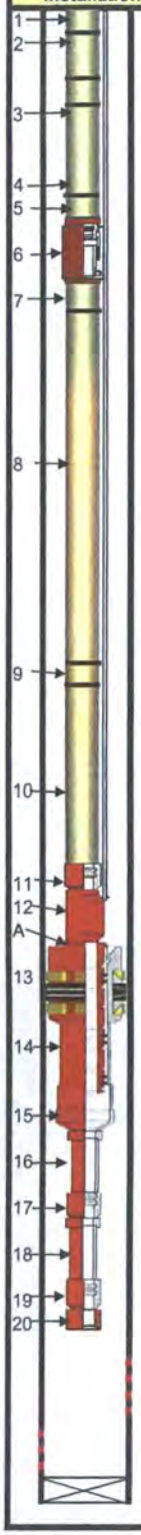
HALLIBURTON

DCP Midstream

ZIA AGI #2
Lea County New Mexico
9/13/16

Company Rep. Brian Collins
Sales Rep. Lynn Talley
Office 432-682-4305

Installation



Installation	Length	Depth	Description	OD	ID
1			KB Correction		
2			Tubing Hanger		
			Casing String) 7 5/8" 33.7# x 7" 29# & 32# Tapered Casing String		
			1) 1 joint 3 1/2" 9.3# BTS-8 L-80 Tubing Joint Inverted	3.500	2.920
3			2) Double Pin Sub (DCP)	3.500	2.920
			3) Tubing Subs (As Required) (DCP)	3.500	2.920
			4) 3 1/2" 9.3# BTS-8 L-80 Tubing	3.500	2.920
4			5) 3 1/2" 9.3# BTS-8 Box X 3 1/2" 9.2# AB TC-II Pin L-80 Sub (DCP)	3.500	2.959
5			6) Halliburton Tubing Retrievable Safety Valve-NE 3 1/2" 9.2#	5.300	2.813
			AB TC-II Box X Pin 102588547 SN ###### Nickel Alloy 925 10K		
6			Rated 875 Minimum PSI Closing, 2000 PSI Open, 2.813" R Profile		
7			7) 3 1/2" 9.2# AB TC-II Box X 3 1/2" 9.3# BTS-8 Pin L-80 Sub (DCP)	3.907	2.920
			8) 3 1/2" 9.3# BTS-8 L-80 VAMTOP steel tubing to 13,400'	3.500	2.920
			9) 3 1/2" 9.3# BTS-8 Box X 3 1/2" 9.2# VAMTOP Pin L-80 Sub (DCP)	3.915	2.920
			10) 3 1/2" 9.3# 28CR110 corrosion-resistant steel (13,400' - 13,700')	3.500	
	1.33		11) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
8			(102204262) Nickel Alloy 925		
	4.86		[illegible]	4.910	2.992
			A) Halliburton Seal Assembly		
	1.76		A1) Straight Slot Locator Sub 3 1/2" 9.2# VAMTOP Box X 3 1/2" 10.2#	4.470	2.883
			VAMINSIDE Pin Incoloy 925 (102351212)(SN-######)		
	8.00		A2) 2-Seal Unit Ext. 3 1/2" 10.2# VAMINSIDE Nickel Alloy 925	3.860	2.902
			(158726) (SN-########)		
9	1.99		A3) 2-Seal Units 4" X 3 1/2" 10.2 VAMINSIDE Nickel Alloy 925	4.050	2.883
			Molded AFLAS/Flourel Seals 4.07 OD, 8000 PSI		
	3.00		A4) 3-Seal Units 4" X 3 1/2" 10.2 VAMINSIDE Nickel Alloy 925	4.050	2.883
			Molded AFLAS/Flourel Seals 4.07 OD, 8000 PSI		
			(102133617)(SN-#########)		
10	0.55		A5) Mule Shoe Guide 3 1/2" 10.2# VAMINSIDE Nickel Alloy 925	3.960	2.972
			(102133560)(SN-#########)		
			Land Seals w/~26,000# Compression @ Surface, ~20K @ Packer		
11			Pick Up Weight ###### Slack Off ########		
12					
A			Halliburton Packer Assembly		
	3.11	13,700.00	13) Halliburton 7" 26-32# BWD Permanent Packer 4.00" Bore	5.875	4.000
13			Incoloy 925 (101303583) (SN ########)		
14	12.00	13,703.11	14) Seal Bore Extension 4.00" X 12' Incoloy 925 (120051359)	5.020	4.000
			(SN-########)		
	0.83	13,715.11	15) Seal Bore Ext. Crossover 4 75" 8UN Box X 3 1/2" 9.2# VAMTOP Pin	5.650	2.992
15			Incoloy 925 (101719647)(SN-######)		
	6.33	13,715.94	16) 6' x 3 1/2" 9.2# VAMTOP Box x Pin Pup Joint Incoloy 925	3.540	2.992
16	1.33	13,722.27	17) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
			(102204262) (SN-########) Nickel Alloy 925		
17	6.34	13,723.60	18) 6' x 3 1/2" 9.3# VAMTOP Box x Pin Pup Joint Incoloy 925	3.540	2.992
	1.33	13,729.94	19) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
18			(102204262) (SN-########) Nickel Alloy 925		
	0.66	13,731.27	20) Wireline Re-entry Guide 3 1/2" 9.2# VAM Incoloy 925	3.960	2.992
19		13,731.93	Bottom Of Assembly		
20					
			DIESEL USED FOR PACKER FLUID		

Conditions of Approval

OPERATOR'S NAME:	DCP Midstream LP
LEASE NO.:	NM0149956
WELL NAME & NO.:	2-Zia AGI
SURFACE HOLE FOOTAGE:	1900'/S & 950'/W
BOTTOM HOLE FOOTAGE	1655'/S & 1655'/W
LOCATION:	Sec. 19, T. 19 S., R. 32 E.
COUNTY:	Lea County, New Mexico

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated **500** feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Risks:

Possibility of Water Flows in the Capitan Reef, in the Salado and in the Artesia Group.
Possibility of Lost Circulation in the Rustler, Capitan Reef, Red Beds, Delaware and in the Artesia Group.

1. The **20** inch surface casing shall be set at approximately **800** feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt)** and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **13 3/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **9 5/8** inch production casing is:
Operator has proposed DV tool at depth of 2650'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:
☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

4. The minimum required fill of cement behind the **7-5/8** and **7** inch intermediate casing is:

Operator has proposed DV tool at depth of 6350'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

c. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

d. Second stage above DV tool:
☒ Cement to surface. Operator to provide method of verification.

Formation below the 7-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **surface casing shoe** shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8 inch intermediate casing** shoe shall be **10,000 (10M)** psi. **10M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **7 5/8 inch intermediate casing** shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. WELL COMPLETION

A NOI sundry with the procedure to complete this well in compliance with BLM and NMOCD requirements shall be submitted and approved prior to commencing completion work.

The procedure will be reviewed to verify that the completion will allow the operator to restrict the injection fluid to the approved formation. NOTE: The sundry shall include data from the conventional core analysis and logs with detailed analysis of the reservoir seal depth related to the perforation interval and the packer setting depth. It may also need to include previously submitted information.

DO NOT install injection tubing until approval is received

NOTE: (include with NOI sundry) prior to beginning Acid Gas Injection at the well, the Operator shall provide all Operators of existing wells within a 1 mile radius with a notice of beginning injection operations and include a map of the possible worst case scenario H2S exposure area(s). BLM is to be copied on this notice mailing. (H2S Public Protection Plan)

An MIT test must be conducted annually and submitted to the BLM via subsequent sundry.

F. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

G. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

TMAK 10142016

INTENT TO SPUD WELL

Date Submitted: 10/28/16
Date Approved: 11/4/16

Attachments: None

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

HOBBS OCD
NOV 14 2016
RECEIVED

Carlsbad Field Office
OCD Hobbs

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI 2

2. Name of Operator
DCP MIDSTREAM LP
Contact: JARED R SMITH
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000
Fx: 505-842-7380

10. Field and Pool, or Exploratory
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Well Spud
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

SPUD NOTICE.

DCP Midstream LP intends to spud Zia AGI #2D between the afternoon of October 31 or morning of November 1.

The duration of the well drilling is estimated at 47 days.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #356297 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 10/31/2016 (17DLM0066SE)

Name *(Printed/Typed)* JARED R SMITH — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 10/28/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By TEUNGKU MUCHLIS KRUENG — Title PETROLEUM ENGINEER — Date 11/04/2016

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

CHANGE TO THE 5M BOP SYSTEMS ON THE 9 5/8-INCH CASING HOLE TO INCLUDE THREE RAMS INSTEAD OF TWO

Date Submitted: 11/2/16
Date Approved: 11/4/16

Attachments: 5M BOP/BOPE Schematic
5M Choke Manifold Equipment

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

Carlsbad Field Office
OCD Hobbs

RECEIVED
NOV 14 2016
NMOCD

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI 2 ✓

2. Name of Operator
DCP MIDSTREAM LP

Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool, or Exploratory
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL ✓
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

DCP Midstream LP is submitting a BLM requested change to the 5M BOP system on the 9 5/8-inch hole to include 3 rams instead of 2. See attached for the updated 5M BOP with 3 rams and the updated 5M Choke Manifold Equipment schematic.

Previous COA Still apply

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #356888 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 11/03/2016 (17DLM0103SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 11/02/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By TEUNGKU MUCHLIS KRUENG — Title PETROLEUM ENGINEER — Date 11/04/2016

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

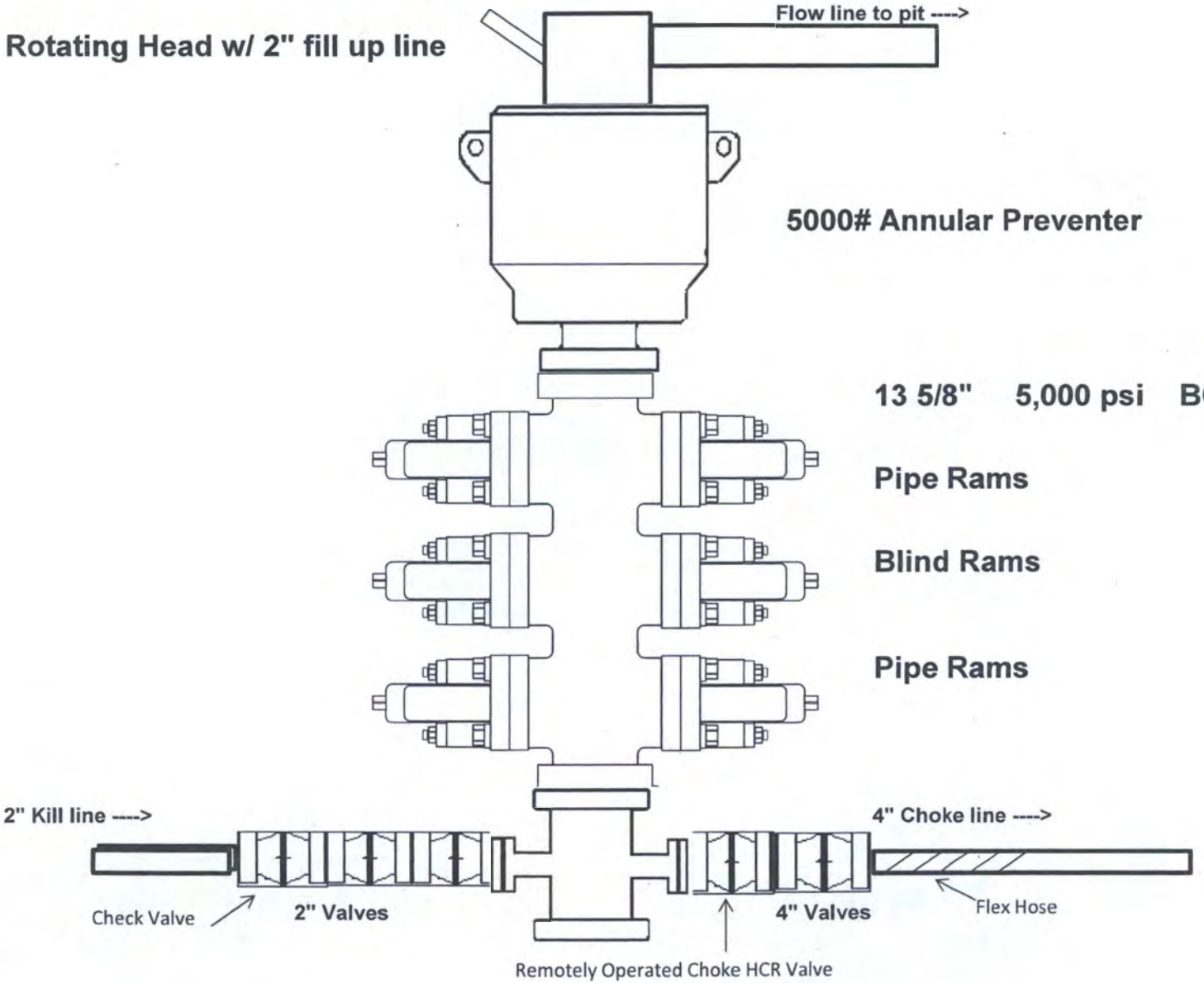
Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

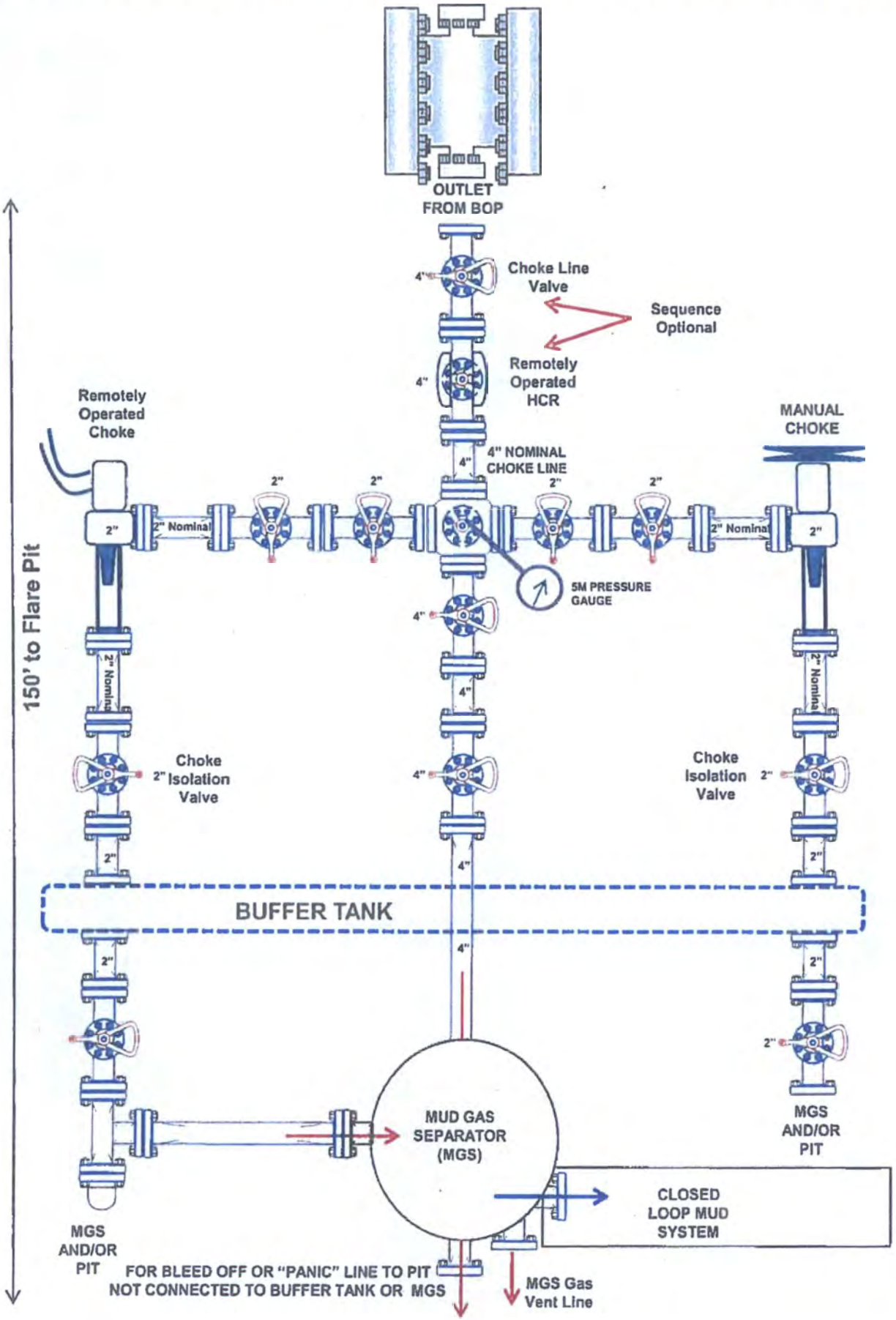
**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

MAB/OCD 11/14/2016

5,000 psi BOP Schematic



5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



REVISION TO THE 10M BOP/BOPE SYSTEM FOR THE 8 ¾-INCH HOLE

Date Submitted: 11/2/16
Date Approved: 11/4/16

Attachments: 5M BOP Schematic
5M Choke Manifold Equipment
Updated Conditions of Approval

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

Carlsbad Field Office
OCD Hobbs

HOBBS OCD
NOV 14 2016
RECEIVED

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM 0[illegible]

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI 2 ✓

2. Name of Operator
DCP MIDSTREAM LP ✓
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool, or Exploratory
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL ✓
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

DCP Midstream LP respectfully requests a revision to the 10M BOP/BOPE system for the 8-3/4" hole from a:

10M BOP system with a 3 Choke manifold system to a:

5M BOP system with a 2 Choke manifold system.

Please see attached for schematics of the 5M BOP and Choke manifold equipment system. The MASP will be approximately 4,840 psi with a half evacuated hole at the anticipated mud weights. It was agreed that the 5M BOP and Choke system will be sufficient for the entire 8-3/4" hole.

SEE ATTACHED FOR CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #356764 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 11/02/2016 (17DLM0094SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 11/02/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By TEUNGKU MUCHLIS KRUENG — Title PETROLEUM ENGINEER — Date 11/04/2016

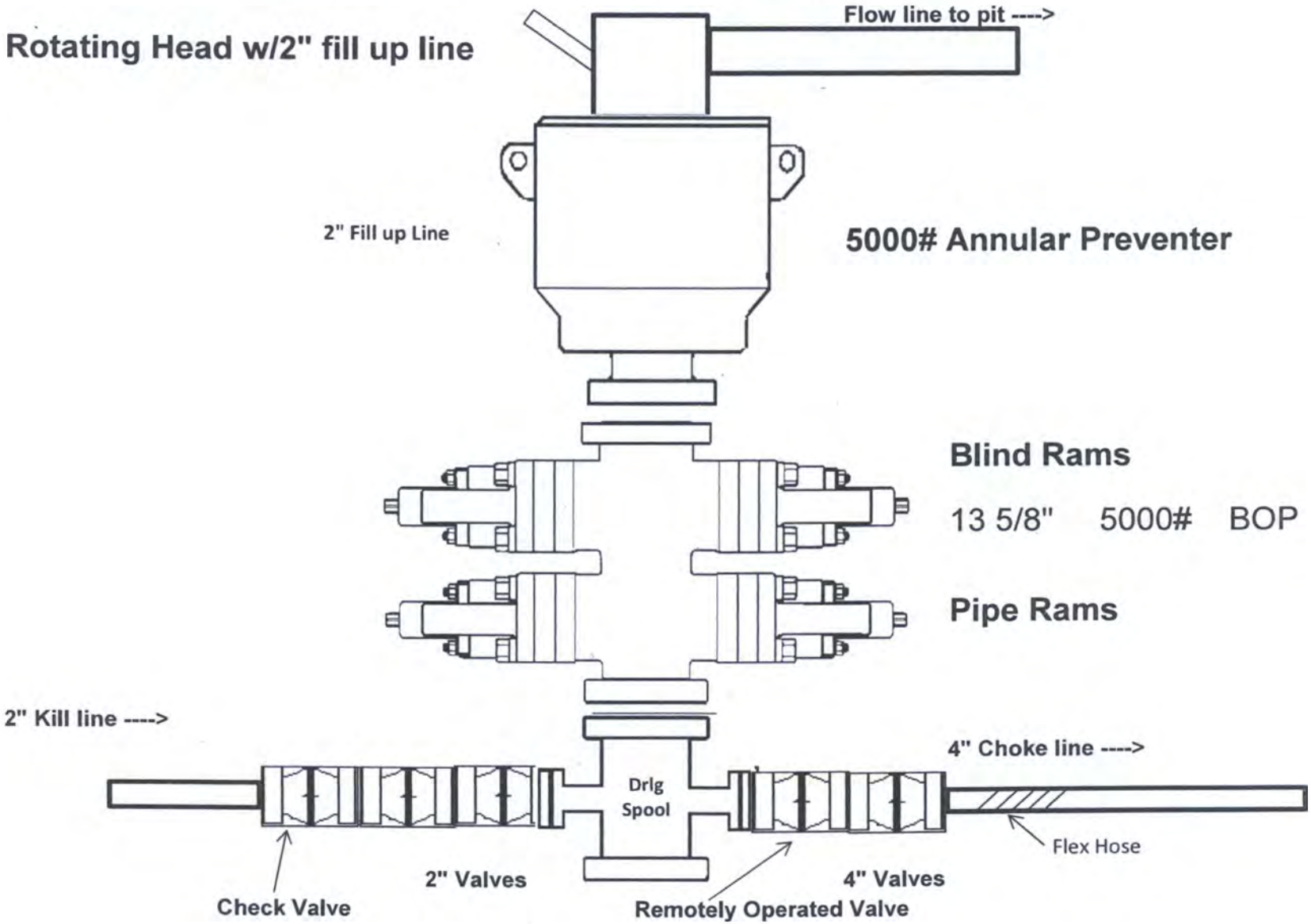
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

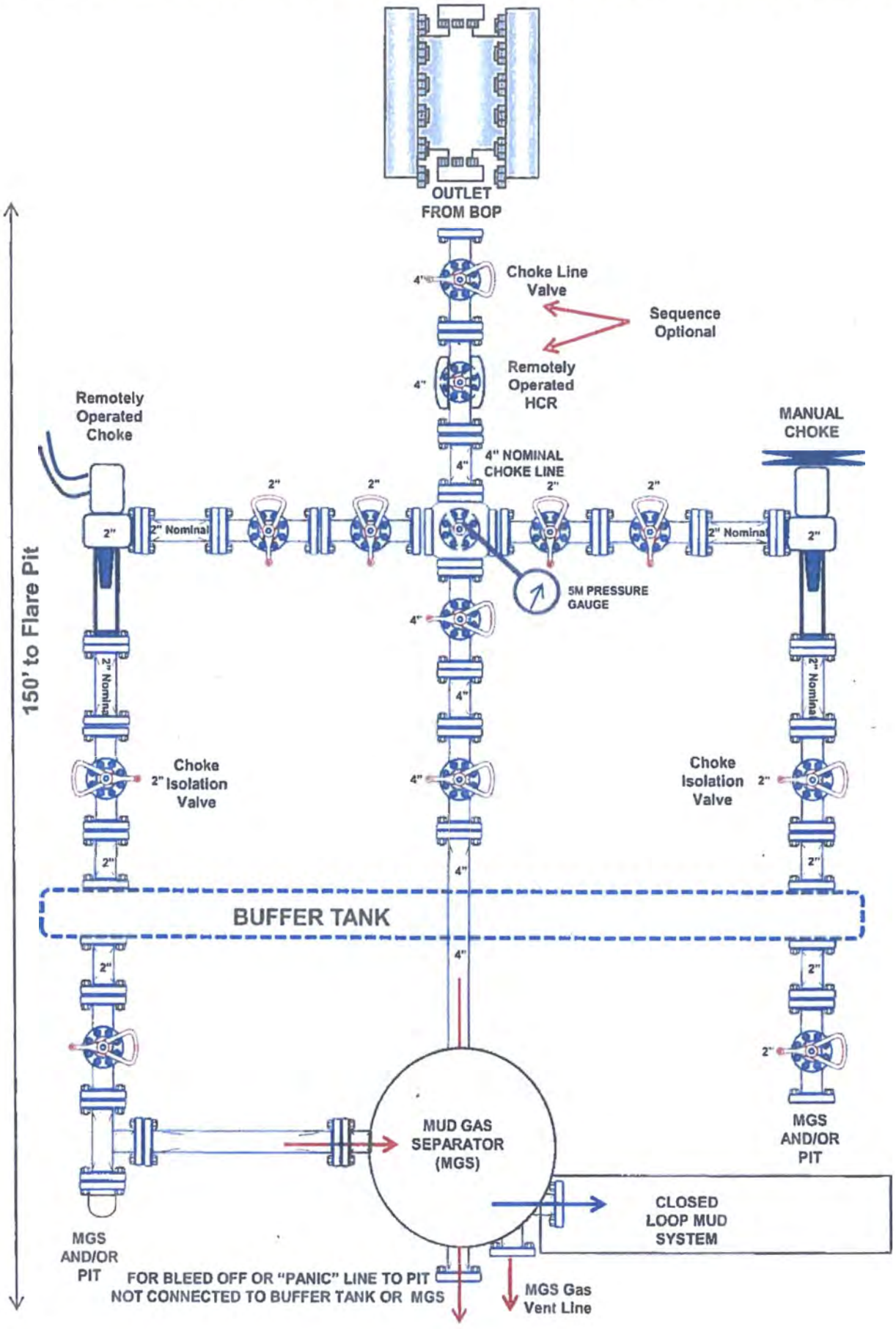
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

5,000 psi BOP Schematic



5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



Conditions of Approval

OPERATOR'S NAME:	DCP Midstream LP
LEASE NO.:	NM0149956
WELL NAME & NO.:	2-Zia AGI
SURFACE HOLE FOOTAGE:	1900'/S & 950'/W
BOTTOM HOLE FOOTAGE	1655'/S & 1655'/W
LOCATION:	Sec. 19, T. 19 S., R. 32 E.
COUNTY:	Lea County, New Mexico

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated **500** feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Risks:

Possibility of Water Flows in the Capitan Reef, in the Salado and in the Artesia Group.
Possibility of Lost Circulation in the Rustler, Capitan Reef, Red Beds, Delaware and in the Artesia Group.

1. The **20** inch surface casing shall be set at approximately **800** feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt)** and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **13 3/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **9 5/8** inch production casing is:
Operator has proposed DV tool at depth of 2650'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:
☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

4. The minimum required fill of cement behind the **7-5/8** and **7** inch intermediate casing is:

Operator has proposed DV tool at depth of 6350'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

c. First stage to DV tool:
☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

d. Second stage above DV tool:
☒ Cement to surface. Operator to provide method of verification.

Formation below the 7-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **surface casing shoe** shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8 inch intermediate casing** shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. WELL COMPLETION

A NOI sundry with the procedure to complete this well in compliance with BLM and NMOCD requirements shall be submitted and approved prior to commencing completion work.

The procedure will be reviewed to verify that the completion will allow the operator to restrict the injection fluid to the approved formation. NOTE: The sundry shall include data from the conventional core analysis and logs with detailed analysis of the reservoir seal depth related to the perforation interval and the packer setting depth. It may also need to include previously submitted information.

DO NOT install injection tubing until approval is received

NOTE: (include with NOI sundry) prior to beginning Acid Gas Injection at the well, the Operator shall provide all Operators of existing wells within a 1 mile radius with a notice of

beginning injection operations and include a map of the possible worst case scenario H2S exposure area(s). BLM is to be copied on this notice mailing. (H2S Public Protection Plan)

An MIT test must be conducted annually and submitted to the BLM via subsequent sundry.

F. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

G. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

TMAK 11042016

INSTALL SURFACE CASING AND NAME CHANGE

Date Submitted: 11/10/16
Date Approved: 12/15/16

Attachments:
Fluid Caliper Log
Gamma Ray, ROP and Correlation Logs
Schematic of Zia AGI D #2 As-Built Well Design
Surface Casing Tally
Photographs of Cement Returns
Halliburton Cement Report
Halliburton Laboratory Results
Schlumberger Cement Bond Log
BOP/BOPE Pressure and Casing Integrity Test Charts
Notifications Made to the BLM

OCD-HOBBS

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD
JAN 23 2017
RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No. ~~NMNM0149956~~ LC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other: INJECTION

8. Well Name and No.
ZIA AGI 2D ✓

2. Name of Operator
DCP MIDSTREAM, LP ✓
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80202

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
DEVONIAN EXPL.

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E 1893FSL 950FWL ✓
32.643951 N Lat, 103.811116 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

DCP Midstream LP respectfully requests a name change for this injection well as required by NMOCD from Zia AGI #2D to Zia AGI #D2. This name change was required by the NMOCD due to naming conventions and database issues that are complicated with well numbers followed by letters. Pursuant to BLM?s request, Geolex is submitting this name change request as included on this 3160-5 form submission

Surface casing was run on Thursday, November 3, 2016 in a 26-inch borehole drilled to a depth of 826 ft. The casing was seated in the Magenta anhydritic dolomite at 826 ft., well above the underlying Salt Top in a competent formation that provides a solid and stable casing seat. The casing was installed after running a fluid caliper log to evaluate the borehole condition and calculate cement volumes. The fluid caliper log (attached) indicates the borehole has an average hole size of approximately 29 inches. The gamma ray log and rate of penetration (ROP) drilling

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #357637 verified by the BLM Well Information System
For DCP MIDSTREAM, LP, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 11/14/2016 ()

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 11/10/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office

ACCEPTED FOR RECORD
DEC 15 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #357637 that would not fit on the form

32. Additional remarks, continued

logs are attached, including the correlation log between Zia AGI #1 and Zia AGI #D2 used for formation top picks.

The Zia AGI #D2 surface casing is constructed with 19 joints of 20 inch, 106.5 lbs/ft, J55, BTC pipe extended from the surface to 826 ft. A schematic of the Zia AGI #D2 well design and the as-built casing tally for the surface pipe is attached. The surface casing for the Zia AGI #D2 was cemented in one stage with 1425 sacks (297 bbls) of HalCem Cemex Premium Plus Class C cement with a lead yield of 1.728 ft3/sack and a tail yield of 1.364 ft3/sack. 487 sacks (150 bbls) were returned to the surface (photographs attached) and witnessed by a BLM representative (see attached cement report from Halliburton). Cement fell back approximately 13 feet from the surface and was filled back to the surface with RediMix. Wait on cement (WOC) time was 15 hours before installing and testing the BOP/BOPE (see attached Halliburton Lab Results).

A Cement Bond Log (CBL) was run on the surface casing that indicated a good bond from 23 ft. to 760 ft. (see attached Schlumberger CBL). The logging tool could not be fully lowered to the float collar at 779 ft. The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 2000 psi (see attached BOPE/BOP Pressure and Casing Integrity Test Charts). The surface casing was pressure tested at 1000 psi for 30 minutes resulting in a successful casing integrity test (see test #10 on BOPE/BOP Pressure and Casing Integrity Test Charts). The casing shoe was drilled out and drilling has continued below the surface casing in a 17 1/2 inch hole. Upper intermediate casing is scheduled to be set at approximately 2,555 ft.

See attached table for a chronological list of notifications that were made to the BLM.

INSTALL 1st INTERMEDIATE CASING – 3160-5

Date Submitted: 11/13/16
Date Approved: 12/1/16

Attachments:
Notifications Made to the BLM
Open Hole Caliper Log
Gamma Ray, ROP and Correlation Logs
Schematic of Zia AGI D #2 As-Built Well Design
First Intermediate Casing Tally
Halliburton Cement Report
Halliburton Laboratory Results
Photographs of Cement Returns
Schlumberger Cement Bond Log
BOP/BOPE Pressure and Casing Integrity Test Charts

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NMOCD
Hobbs
HOBBS OCD
DEC 09 2016
RECEIVED

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM0149956

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other: INJECTION

8. Well Name and No.
ZIA AGI D2 ✓

2. Name of Operator
DCP MIDSTREAM, LP ✓
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80202

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool, or Exploratory
DEVONIAN EXPL.

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Mer NMP NWSW 1893FSL 950FWL ✓

11. County or Parish, and State
LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

First (upper) intermediate casing was run on Wednesday, November 9, 2016 in a 17.5-inch borehole drilled to a depth of 2,555 ft. The casing was seated in the Yates formation at total depth of the wellbore in a competent formation that provides a solid and stable casing seat. The casing was installed after running a Schlumberger Borehole Profile Log (attached) to evaluate the borehole condition and calculate cement volumes. The gamma ray log and rate of penetration (ROP) drilling logs are attached, including the correlation log between Zia AGI #1 and Zia AGI #D2 used for formation top picks.

The Zia AGI #D2 first intermediate casing is constructed with 6 joints of 13 3/8-inch, 68 lbs/ft, J55, BTC pipe and 51 joints of 13 3/8-inch, 6 lbs/ft, J55, BTC pipe extended from the surface to 2,555 ft. A schematic of the Zia AGI #D2 well design and the as-built casing tally for the first intermediate pipe is attached. The first intermediate casing for the Zia AGI #D2 was cemented in

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #357814 verified by the BLM Well Information System
For DCP MIDSTREAM, LP, sent to the Hobbs

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 11/13/2016

ACCEPTED FOR RECORD
DEC 12 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #357814 that would not fit on the form

32. Additional remarks, continued

one stage with 1920 sacks (584 bbls) of HalCem Class C cement with a lead yield of 1.732 ft3/sack and a tail yield of 1.332 ft3/sack. 428 sacks (130 bbls) were returned to the surface (photographs attached) and witnessed by a BLM representative (see attached cement report from Halliburton). No fall back of cement was observed. Wait on cement (WOC) time was 28 hours from plug down, at 18:28 on Wednesday, until pressure testing of the BOP/BOPE, at 22:50 on Thursday (see attached Halliburton Lab Results).

A Cement Bond Log (CBL) was run on the first intermediate casing that indicated a good bond from 400 ft. to 2555 ft. (see attached Schlumberger CBL). The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 2000 psi. The 1st intermediate casing was pressure tested at 1000 psi for 30 minutes resulting in a successful casing integrity test (see attached BOPE/BOP Pressure and Casing Integrity Test Charts). The casing shoe was drilled out and drilling has continued below the 1st intermediate casing in a 17 ?-inch hole.

See attached table for a chronological list of notifications that were made to the BLM during the drilling and completion of this segment.

INSTALL 1st INTERMEDIATE CASING – C-103

Date Submitted: 11/17/16
Date Approved: 11/22/16

Attachments:
Notifications Made to the BLM
Open Hole Caliper Log
Gamma Ray, ROP and Correlation Logs
Schematic of Zia AGI D #2 As-Built Well Design
First Intermediate Casing Tally
Halliburton Cement Report
Halliburton Laboratory Results
Photographs of Cement Returns
Schlumberger Cement Bond Log
BOP/BOPE Pressure and Casing Integrity Test Charts

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
NOV 22 2016
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

	WELL API NO. 30-025-42207
	5. Indicate Type of Lease STATE ☐ FEE ☒ ~~FED~~ FEDX
	6. State Oil & Gas Lease No. NM 0149956
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☐ Other: ☒ **Acid Gas Injection**	7. Lease Name or Unit Agreement Name ~~N/A~~ ZIA AGI D
	8. Well Number ~~0~~ 2
2. Name of Operator DCP MIDSTREAM LP	9. OGRID Number ~~025575~~ 36785
3. Address of Operator 370 17TH STREET, SUITE 2500, DENVER, CO 80202	10. Pool name or Wildcat DEVONIAN EXPL.
4. Well Location Unit Letter L : 1893 feet from the South line and 950 feet from the West line Section 19 Township 19S Range 32E NMPM County LEA	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☒		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

First (upper) intermediate casing was run on Wednesday, November 9, 2016 in a 17.5-inch borehole drilled to a depth of 2,555 ft. The casing was seated in the Yates formation at the total depth of the wellbore in a competent formation that provides a solid and stable casing seat. The casing was installed after running a Schlumberger Borehole Profile Log to evaluate the borehole condition and calculate cement volumes. The gamma ray log and rate of penetration (ROP) drilling logs are attached, including the correlation log between Zia AGI #1 and Zia AGI D #2 used for formation top picks.

The Zia AGI #D2 first intermediate casing is constructed with 6 joints of 13 3/8-inch, 68 lbs/ft, J55, BTC pipe and 51 joints of 13 3/8-inch, 6 lbs/ft, J55, BTC pipe extended from the surface to 2,555 ft. A schematic of the Zia AGI D #2 well design and the as-built casing tally for the first intermediate pipe is attached. The first intermediate casing for the Zia AGI D #2 was cemented in one stage with 1920 sacks (584 bbls) of HalCem Class C cement with a lead yield of 1.732 ft^3/sack and a tail yield of 1.332 ft^3/sack. 428 sacks (130 bbls) were returned to the surface (photographs attached) and witnessed by a BLM representative (see attached cement report from Halliburton). No fall back of cement was observed. Wait on cement (WOC) time was 28 hours from plug down, at 18:28 on Wednesday, until pressure testing of the BOP/BOPE, at 22:50 on Thursday (see attached Halliburton Lab Results).

A Cement Bond Log (CBL) was run on the first intermediate casing that indicated a good bond from 400 ft. to 2555 ft. The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 2000 psi. The 1st intermediate casing was pressure tested at 1000 psi for 30 minutes resulting in a successful casing integrity test (see attached BOPE/BOP Pressure and Casing Integrity Test Charts). The casing shoe was drilled out and drilling has continued below the 1st intermediate casing in a 17 ¼-inch hole.

All geophysical logs will be provided when continuous copies are available. See attached table for a chronological list of notifications that were made to the BLM during the drilling and completion of this segment.

Spud Date: November 2, 2016 Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Michael W Selke TITLE CONSULTANT TO DCP MIDSTREM LP DATE 11/17/2016

Type or print name Michael W Selke E-mail address: MSELKE@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: TITLE DATE

Conditions of Approval (if any):

Accepted for Record Only

SUBJECT TO LIKE APPROVAL BY BLM

11/22/2016

INSTALL 2nd INTERMEDIATE CASING – 3160-5

Date Submitted: 11/18/16
Date Approved: 12/15/16

Attachments:
Gamma Ray, ROP and Correlation Logs
Schematic of Zia AGI D #2 As-Built Well Design
Second Intermediate Casing Tally
Halliburton Laboratory Results
Halliburton Cement Report
Photographs of Cement Returns
Schlumberger Cement Bond Log
BOP/BOPE Pressure and Casing Integrity Test Charts
Notifications to the BLM

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2.

5. Lease Serial No.
NMNM0149956 LC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other: INJECTION

8. Well Name and No.
ZIA AGI D 2

2. Name of Operator
DCP MIDSTREAM, LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80202

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
DEVONIAN EXPL.

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Mer NMP NWSW 1893FSL 950FWL
32.643951 N Lat, 103.811116 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

The Second intermediate casing was run on Sunday, November 13, 2016 in a 12 1/4-inch borehole drilled to a depth of 4,696 ft. The casing was seated in the base of the Goat Seep formation in a competent formation that provides a solid and stable casing seat. A fluid caliper was used to calculate cement volumes. Correlations between Zia AGI #1 and Zia AGI D #2 used to pick the formation tops and the casing seat are included in Attachment 1.

The Zia AGI D #2 second intermediate casing includes 104 joints of 9 5/8-inch, 40 lbs/ft, N55, BTC pipe, a DV tool with external casing packer at 2,608, a float collar at 4,646, and a casing shoe at 4,694. A schematic of well design and the as-built casing tally for the casing is included in Attachment 1.

The casing was cemented in two stages. The first stage consisted of 450 sacks (159 bbls) of

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #358508 verified by the BLM Well Information System
For DCP MIDSTREAM, LP, sent to the Hobbs
Committed to AFMSS for processing by PAUL SWARTZ on 12/12/2016 ()

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 11/18/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #358508 that would not fit on the form

32. Additional remarks, continued

EconoCem HCL lead cement with a yield of 1.987 ft3/sack and 250 sacks (59 bbls) of HalCem Class C tail cement with a yield of 1.333 ft3/sack. The plug was successfully landed into the float collar and 144 sacks (51 bbls) of cement were circulated to the surface. The second stage consisted of 650 sacks (200 bbls) of HalCem Class C lead cement with a yield of 1.728 ft3/sack and 100 sacks (24 bbls) of HalCem Class C tail cement with a yield of 1.332 ft3/sack. The plug was successfully landed into the DV tool and 107 sacks (33 bbls) of cement were circulated to the surface as witnessed by a BLM representative. No fallback of cement was observed and the wait on cement time was 22 hours from plug down, at 22:30 on Sunday, until the DV tool was drilled out at 20:30 on Monday. The Halliburton cement laboratory results, cement report, and cement circulation photographs are included in Attachment 1.

The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 5,000 psi. A CBL was run with no casing pressure applied at the surface. It indicated a generally good bond from 1,000 to 1,320 ft, 1,900 to 2,570 ft, and 2,640 to 4,640 ft. The log was reviewed and evaluated by Geolex, Concho, and Schlumberger and it was determined that a micro-annulus was responsible for the areas where the cement bond appeared inconsistent. Because the locations were above the 13 3/8-inch casing shoe and associated with the 9 5/8-inch casing DV tool, it was decided that rerunning the log under pressure was unnecessary. The CBL is provided in Attachment 2.

Upon completion of the CBL a successful casing integrity test was performed at 1500 psi for 30 minutes. The 8 ?-inch borehole was drilled below the 9 5/8-inch casing shoe and 8 feet into the underlying formation. A formation integrity test was performed by applying 513 psi of pressure to the 9 5/8-inch casing for 10 minutes and 631 psi for 10 minutes with no evidence of formation breakdown. The successful results of all the pressure tests are provided in Attachment 1. Following the tests, drilling was continued below the 2nd intermediate casing into an 8 3/4-inch borehole.

A table that provides a chronological list of notifications that were made to the BLM during the drilling and completion of this segment is provided in Attachment 1.

INSTALL 2nd INTERMEDIATE CASING – C-103

Date Submitted: 11/17/16
Date Approved: 11/22/16

Attachments:
Gamma Ray, ROP and Correlation Logs
Schematic of Zia AGI D #2 As-Built Well Design
Second Intermediate Casing Tally
Halliburton Laboratory Results
Halliburton Cement Report
Photographs of Cement Returns
Schlumberger Cement Bond Log
BOP/BOPE Pressure and Casing Integrity Test Charts
Notifications to the BLM

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
NOV 22 2016
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

	WELL API NO. 30-025-42207
	5. Indicate Type of Lease STATE ☐ FEE ☒ FED X
	6. State Oil & Gas Lease No. NM 0149956
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☐ Other: ☒ **Acid Gas Injection**	7. Lease Name or Unit Agreement Name ~~N/A~~ ZIA AGI D
	8. Well Number 2
2. Name of Operator DCP MIDSTREAM LP	9. OGRID Number ~~025575~~ 36785
3. Address of Operator 370 17TH STREET, SUITE 2500, DENVER, CO 80202	10. Pool name or Wildcat DEVONIAN EXPL.
4. Well Location Unit Letter L : 1893 feet from the South line and 950 feet from the West line Section 19 Township 19S Range 32E NMPM County LEA	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☒		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The Second intermediate casing was run on Sunday, November 13, 2016 in a 12 1/4-inch borehole drilled to a depth of 4,696 ft. The casing was seated in the base of the Goat Seep formation in a competent formation that provides a solid and stable casing seat. A fluid caliper was used to calculate cement volumes. Correlations between Zia AGI #1 and Zia AGI D #2 used to pick the formation tops and the casing seat are included as an Attachment.

The Zia AGI D #2 second intermediate casing includes 104 joints of 9 5/8-inch, 40 lbs/ft, N55, BTC pipe, a DV tool with external casing packer at 2,608, a float collar at 4,646, and a casing shoe at 4,694. A schematic of well design and the as-built casing tally for the casing is included as an Attachment.

The casing was cemented in two stages. The first stage consisted of 450 sacks (159 bbls) of EconoCem HCL lead cement with a yield of 1.987 ft^3/sack and 250 sacks (59 bbls) of HalCem Class C tail cement with a yield of 1.333 ft^3/sack. The plug was successfully landed into the float collar and 144 sacks (51 bbls) of cement were circulated to the surface. The second stage consisted of 650 sacks (200 bbls) of HalCem Class C lead cement with a yield of 1.728 ft^3/sack and 100 sacks (24 bbls) of HalCem Class C tail cement with a yield of 1.332 ft^3/sack. The plug was successfully landed into the DV tool and 107 sacks (33 bbls) of cement were circulated to the surface as witnessed by a BLM representative. No fallback of cement was observed and the wait on cement time was 22 hours from plug down, at 22:30 on Sunday, until the DV tool was drilled out at 20:30 on Monday. The Halliburton cement laboratory results, cement report, and cement circulation photographs are included as an Attachment.

The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 5,000 psi. A CBL was run with no casing pressure applied at the surface. It indicated a generally good bond from 1,000 to 1,320 ft, 1,900 to 2,570 ft, and 2,640 to 4,640 ft. The log was reviewed and evaluated by Geolex, Concho, and Schlumberger and

it was determined that a micro-annulus was responsible for the areas where the cement bond appeared inconsistent. Because the locations were above the 13 3/8-inch casing shoe and associated with the 9 5/8-inch casing DV tool, it was decided that rerunning the log under pressure was unnecessary.

Upon completion of the CBL a successful casing integrity test was performed at 1500 psi for 30 minutes. The 8 ¾-inch borehole was drilled below the 9 5/8-inch casing shoe and 8 feet into the underlying formation. A formation integrity test was performed by applying 513 psi of pressure to the 9 5/8-inch casing for 10 minutes and 631 psi for 10 minutes with no evidence of formation breakdown. The successful results of all the pressure tests are provided as an Attachment. Following the tests, drilling was continued below the 2nd intermediate casing into an 8 3/4-inch borehole.

All geophysical logs will be provided when continuous copies are available. A table that provides a chronological list of notifications that were made to the BLM during the drilling and completion of this segment is provided as an Attachment.

Spud Date: November 2, 2016 Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Michael W Selke TITLE CONSULTANT TO DCP MIDSTREM LP DATE 11/17/2016

Type or print name Michael W Selke E-mail address: MSELKE@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: **Accepted for Record Only** TITLE DATE

Conditions of Approval (if any):

SUBJECT TO LIKE APPROVAL BY BLM

Mateya Brown 11/22/2016

WELL COMPLETION NOTICE OF INTENT – 3160-5

Date Submitted: 12/2/16
Date Approved: 12/15/16

Attachments:
Completion Conditions of Approval
As-Built Well Schematic
BOP Schematic When Running Work String Tubing
BOP Schematic When Running Injection Tubing
BLM SRT Data Form

OPERATORS COPY

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD
JAN 23 2017
RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No. ~~NMNM0149956~~ LC065863
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other: INJECTION

8. Well Name and No.
ZIA AGI D 2

2. Name of Operator
DCP MIDSTREAM, LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80202

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
DEVONIAN EXPL.

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Mer NMP NWSW 1893FSL 950FWL
32.643951 N Lat, 103.811116 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
~~☒ Subsequent Report~~	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Well Completion Notice of Intent

The current well completion schematic with proposed tubing is provided as an attachment. Major components of the well completion, including formation testing will proceed as follows:

1) Install 5,000 psi WP double ram hydraulic BOP as shown on attached BOP schematic

2) Drill out bridge plug and push to TD

3) Set temporary bridge plug on 3.5-inch work tubing at 10,000 feet, hang tubing, and install rental tree at the surface

SEE ATTACHED FOR CONDITIONS OF APPROVAL

SUBJECT TO LIKE APPROVAL BY STATE

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #359790 verified by the BLM Well Information System
For DCP MIDSTREAM, LP, sent to the Hobbs
Committed to AFMSS for processing by PAUL SWARTZ on 12/12/2016 ()

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 12/02/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date

APPROVED
DEC 15 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

Additional data for EC transaction #359790 that would not fit on the form

32. Additional remarks, continued

4) While under static conditions, run fiber optic slick line and bottom-hole pressure gauges to record static BHP and temperature profile

5) Swab approximately 500 bbls of fluid into the swab tanks while monitoring for recoverable hydrocarbons and recover appropriate formation water samples for laboratory analysis

6) Acidize injection zone (open hole) with 40,000 gallons of double inhibited NE Fe 20% HCl, flush with fresh water, and leave shut in overnight

7) Install BHP memory gauges on slick line, leave hanging as deep as possible, and allow 2 hours for BHP to stabilize.

8) Conduct an Step-Rate Test (SRT) with fresh water over the injection zone in accordance with attached BLM SRT form

9) Following the SRT, shut in the well for a 10 day fall-off test

10) Upon completion of the fall-off test and evaluation of the results, the temporary packer will be unseated and removed on the work string tubing.

11) A bit and casing scrapper will be run on the work string to approximately 13,600 feet. The work string will then be removed and laid down.

12) A wire line junk basket/gauge ring/dummy packer will be run to approximately 13,600 feet

13) The Incoloy 925 permanent packer assembly will be set on a wire line packer setting tool/GR/CCL at approximately 13,550 feet (approximately 70 feet above the casing shoe depth)

14) Assemble and install Incoloy 925 packer seats and pressure sensors with approximately 300 feet of 3.5-inch, 9.2 lb/ft, Inconel G-3, VAM Top injection tubing and 3.5-inch 9.2 lb/ft L-80 BTS-8 tubing as needed to approximately 250 feet below the surface

15) Assemble, test, and install subsurface safety valve on 3.5-inch 9.2 lb/ft L-80 BTS-8 tubing as needed to surface

16) Prior to stinging into the packer, the tubing and annulus will be filled with diesel and corrosion inhibitor biocide.

17) The tubing will be seated into the packer and the injection tree/tubing hanger will be installed and pressure tested up to 250 psi for 10 minutes followed by 5000 psi for 10 minutes.

18) A Mechanical Integrity Test (MIT) will be performed to verify that all components are properly installed and working.

Twenty-four hours prior to conducting the SRT and the MIT, notice will be provided to both the BLM and NMOCD so that these procedures can be witnessed. Well completion activities are tentatively scheduled to begin on December 8, 2016.

Conditions of Approval

DCP Midstream, LP
Zia AGI – D2, API 3002542207x
T19S-R32E, Sec 19, 1893FSL & 950FWL
December 15, 2015

1. **Operator is required to have the BLM approved NOI procedure with applicable conditions of approval on location for this workover operation.**
2. Before casing or a liner is added, replaced, or repaired prior BLM approval of the design is required. Use notice of intent Form 3160-5.
3. Surface disturbance beyond the existing pad shall have prior BLM approval.
4. A closed loop system is required. The operator shall properly dispose of drilling/circulating contents at an authorized disposal site. Tanks are required for all operations, no excavated pits.
5. Functional H_2S monitoring equipment shall be on location.
6. 5000 (5M) Blow Out Prevention Equipment to be used. All BOPE and workover procedures shall establish fail safe well control. Blind ram(s) and pipe ram(s) designed to close on all workstring diameters used is required equipment. A manual BOP closure system (hand wheels) shall be available for use regardless of BOP design. Function test the installed BOPE to 500psig when well conditions allow. Related equipment, (choke manifolds, kill trucks, gas vent or flare lines, etc.) shall be employed when needed for reasonable well control requirements.
7. All waste (i.e. trash, salts, chemicals, sewage, gray water, etc.) created as a result of work over operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.
8. **The subsequent report is to include workover stimulation injection pressures. Report maximum/minimum injection rate (BPM) and max/min stimulation injection pressures (psig).**
9. **The well is considered a commercial hydrocarbon producer until proven otherwise. Provide statements with evidence that paying quantities of hydrocarbons cannot be produced. An electronic copy of the well's mudlog, and an estimated insitu water salinity based on copies of open hole logs are to be offered as evidence.**
10. **A minimum of 500 barrels is to be withdrawn from the proposed disposal formation after any recent stimulation load volumes have been recovered. A composite report of ten samples from the last 100bbls analyzed for hydrocarbons and insitu salinity by a reputable laboratory. The procedure is to be witnessed by BLM. Notify pswartz@blm.gov, 575-200-7902 24 hours prior to the 10 samples being taken.**

11. **Operator will provide BLM a summary report of all documented evidence demonstrating the presence of commercial recoverable hydrocarbons volumes that are present in the targeted disposal formation prior to disposal of fluid into the well.**
12. **The proposed Step 8 (Step Rate Test) is to be conducted as an "Injection Potential Test" to provide data to the operator and NMOCD. The data collected by Step 8. is not be used to request a pressure increase.**
13. **Step 8 is to be BLM witnessed and conducted with a fluid of consistent density. The peak rate is to be selected to achieve the peak formation pressure anticipated to meet the well's acid gas disposal volume requirements.**
14. **The Step Rate Test flow rates of the fluid (fresh water or brine) are to be controlled with a constant flow regulator and measured with a turbine flow meter calibrated within 0.1 bbl/min.**
15. **A down hole transmitting pressure device and a surface pressure device with accuracies of ±10psig are required for the Step Rate Test.**
16. **Step Rate Test formation and surface pressures are to be synchronized with BLM approved rate changes.**
17. Record the indicated information of a "STEP RATE TEST DATA for BLM, CFO" data sheet. Provide BLM with the tabulated data and supporting documentation.
18. **The proposed Mechanical Integrity Test of the NOI Step 18 is to be conducted after the wellbore equipment intended for acid gas injection/disposal is installed.** Notify pswartz@blm.gov, 575-200-7902 24 hours prior to the MIT.
19. The minimum test pressure is 500 psig for 30 minutes with a minimum 200 psig differential between tubing and casing pressure (at test time) but no more than 70% of casing burst pressure as described by Onshore Order 2.III.B.1.h. Verify all annular casing vents are plumbed to surface and those valves open to the surface during this pressure test.
20. Document the pressure test on a one hour full rotation chart recorder (calibrated within the last 6 months) registering within 35 to 75 per cent of its full range. Greater than 10% pressure leakoff will be viewed as a failed MIT. Less than 10% pressure leakoff will be evaluated site specifically and may restrict injection approval.
21. Submit a (BLM Form 3160-**5** subsequent report via BLM's Well Information System; https://www.blm.gov/wispermits/wis/SP (email pswartz@blm.gov for instructions) describing (dated daily) all wellbore activity and the Mechanical Integrity Test. Include descriptions of and the setting depths of all installed equipment. File intermediate Form 3160-**5** within 30 days of any interrupted workover procedures and a complete workover subsequent sundry.
22. Workover approval is good for 90 days (completion to be within 90 days of approval). A legitimate request is necessary for extension of that date.

WELL COMPLETION NOTICE OF INTENT – C-103

Date Submitted: 12/14/16
Date Approved: 12/16/16

Attachments:
As-Built Well Schematic
BOP Schematic When Running Work String Tubing
BOP Schematic When Running Injection Tubing
BLM SRT Data Form

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO.
30-025-42207

5. Indicate Type of Lease
STATE ☐ FEE ☒

6. State Oil & Gas Lease No.
NM 0149956

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
N/A

1. Type of Well: Oil Well ☐ Gas Well ☐ Other: Acid Gas Injection

HOBBS OCD
DEC 21 2016
RECEIVED

8. Well Number
D2

2. Name of Operator
DCP MIDSTREAM LP

9. OGRID Number
025575

3. Address of Operator
370 17TH STREET, SUITE 2500, DENVER, CO 80202

10. Pool name or Wildcat
DEVONIAN EXPL.

4. Well Location
Unit Letter L : 1893 feet from the South line and 950 feet from the West line
Section 19 Township 19S Range 32E NMPM County LEA

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☒		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The current well completion schematic with proposed tubing is provided as an attachment. Major components of the well completion, including formation testing will proceed as follows:

1) Install 5,000 psi WP double ram hydraulic BOP as shown on attached BOP schematic
2) Drill out bridge plug and push to TD
3) Set temporary bridge plug on 3.5-inch work tubing at 10,000 feet, hang tubing, and install rental tree at the surface
4) While under static conditions, run fiber optic slick line and bottom-hole pressure gauges to record static BHP and temperature profile
5) Swab approximately 500 bbls of fluid into the swab tanks while monitoring for recoverable hydrocarbons and recover appropriate formation water samples for laboratory analysis
6) Acidize injection zone (open hole) with 40,000 gallons of double inhibited NE Fe 20% HCl, flush with fresh water, and leave shut in overnight
7) Install BHP memory gauges on slick line, leave hanging as deep as possible, and allow 2 hours for BHP to stabilize.
8) Conduct an Step-Rate Test (SRT) with fresh water over the injection zone in accordance with attached BLM SRT form
9) Following the SRT, shut in the well for a 10 day fall-off test
10) Upon completion of the fall-off test and evaluation of the results, the temporary packer will be unseated and removed on the work string tubing.
11) A bit and casing scrapper will be run on the work string to approximately 13,600 feet. The work string will then be removed and laid down.
12) A wire line junk basket/gauge ring/dummy packer will be run to approximately 13,600 feet

13) The Incoloy 925 permanent packer assembly will be set on a wire line packer setting tool/GR/CCL at approximately 13,550 feet (approximately 70 feet above the casing shoe depth)
14) Assemble and install Incoloy 925 packer seats and pressure sensors with approximately 300 feet of 3.5-inch, 9.2 lb/ft, Inconel G-3, VAM Top injection tubing and 3.5-inch 9.2 lb/ft L-80 BTS-8 tubing as needed to approximately 250 feet below the surface
15) Assemble, test, and install subsurface safety valve on 3.5-inch 9.2 lb/ft L-80 BTS-8 tubing as needed to surface
16) Prior to stinging into the packer, the tubing and annulus will be filled with diesel and corrosion inhibitor biocide.
17) The tubing will be seated into the packer and the injection tree/tubing hanger will be installed and pressure tested up to 250 psi for 10 minutes followed by 5000 psi for 10 minutes.
18) A Mechanical Integrity Test (MIT) will be performed to verify that all components are properly installed and working.

Twenty-four hours prior to conducting the SRT and the MIT, notice will be provided to both the BLM and NMOCD so that these procedures can be witnessed. Well completion activities are tentatively scheduled to begin in on December 8, 2016.

Spud Date: November 2, 2016 Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jared Smith TITLE CONSULTANT TO DCP MIDSTREM LP DATE 12/14/2016

Type or print name JARED R. SMITH E-mail address: JSMITH@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: TITLE Petroleum Engineer DATE 12/16/16

Conditions of Approval (if any):

INSTALL PRODUCTION CASING – 3160-5

Date Submitted: 12/14/16
Date Approved: 12/15/16

Attachments:
Porosity, Resistivity, and Sonic Logs
Well Schematic
Casing and Cement Summary Tables
Casing Tally
Cement Lab Results
Cement Job Summary
Cement Circulation Photographs
BOP/BOPE test, CIT, and FIT

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NMOCD

HOBBS OCD
DEC 27 2016
RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS Hobbs

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI D2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

The Production casing was run on 12-1-16 in an 8 3/4-inch borehole drilled to a depth of 13,622 ft. The casing was seated 15 feet into the top of the Devonian. Prior to installing the casing, geophysical logs were run, including a caliper log to calculate cement volumes (Attachment 1a-1c).

The 7-inch production casing and cement was more complicated than the sections due to the potential for exposure to acid gas. Generally, it included 7 5/8-inch casing from surface to 302 feet; 7-inch casing from 302 to 4,955 feet and from 6,363 to 13,329 feet; and 7-inch CRA casing from 4,955 to the DV tool at 6,362 feet and from 13,329 to the float shoe at 13,622. The cement included a combination of Halliburton Tuned Light lead cement and Well-Lock resin tail cement in both stages.

The casing was cemented in two stages and the plugs were landed in the float collar and DV tool with 128 sacks (48 bbls) of cement circulated to the surface during the first stage and 93 sacks

Logs attached in EC

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #360970 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by JENNIFER SANCHEZ on 12/20/2016 (17JAS0125SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 12/14/2016

ACCEPTED FOR RECORD
DEC 21 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

KB

Additional data for EC transaction #360970 that would not fit on the form

32. Additional remarks, continued

(35 bbls) of cement circulated to the surface during the second stage. No fallback of cement was observed and the wait on cement time was 32 hours for TIH and 55 hours for running the CBL. Attachment 2 provides summary tables depicting the casing and cement for the entire well, the production casing tally, the cement (pilot) laboratory data, the cement summary job report, and photographic documentation of cement returns to surface.

Halliburton CBL tools were run with no casing pressure applied at the surface in order to prepare an Advanced Cement Evaluation log and a Peak Analysis of the CBL Waveform log. The logs required significant in-house processing in order to minimize the effects of the CRA pipe and resin-based cement to prevent corrosion associated with acid gas. A field print R-CBL was provided on-site and submitted to the BLM coordinating engineer for review and approval. The CBLs are not provided in this submittal, as the files are too large to submit on the BLM WIS.

The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 2,500 and 5,000 psi. A casing pressure test was performed above the DV tool at 1,000 psi for 30 minutes prior to drilling out the DV tool, residual cement to approximately 30 feet above the casing shoe, and running the CBL. A final CIT was successfully performed over the entire casing at 1,000 psi for 30 minutes. The well was then drilled to 10 feet below the casing shoe to perform a formation integrity test by applying 440 psi of pressure for 30 minutes with no evidence of formation breakdown. The successful results of all the pressure tests are provided in Attachment 3.

Total depth of the 6-inch borehole (14,750 feet) was reached on December 10, 2016 and open-hole geophysical logs were run and are provided in Attachments 4a-c. The complete mud log is included in Attachment 5. Sidewall cores were also taken to better evaluate the quality of injection zone and to demonstrate the absence of producible hydrocarbons. This information will be provided in a future Sundry Report.

INSTALL PRODUCTION CASING – C-103

Date Submitted: 12/14/16
Date Approved: 12/28/16

Attachments: None – NMOCD, Hobbs did not require attachments

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO.
30-025-42207

5. Indicate Type of Lease
STATE ☐ FEE ☒

6. State Oil & Gas Lease No.
NM 0149956

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
N/A

1. Type of Well: Oil Well ☐ Gas Well ☐ Other: Acid Gas Injection

8. Well Number
D2

2. Name of Operator
DCP MIDSTREAM LP

HOBBS OCD

9. OGRID Number
025575

3. Address of Operator
370 17TH STREET, SUITE 2500, DENVER, CO 80202

DEC 21 2016

10. Pool name or Wildcat
DEVONIAN EXPL.

4. Well Location
Unit Letter L : 1893 feet from the South line and 950 feet from the West line
Section 19 Township 19S Range 32E NMPM County LEA

RECEIVED

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☒		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The Production casing was run on 12-1-16 in an 8 3/4-inch borehole drilled to a depth of 13,622 ft. The casing was seated 15 feet into the top of the Devonian. Prior to installing the casing, geophysical logs were run, including a caliper log to calculate cement volumes (Attachment 1a-1c).

The 7-inch production casing and cement was more complicated than the sections due to the potential for exposure to acid gas. Generally, it included 7 5/8-inch casing from surface to 302 feet; 7-inch casing from 302 to 4,955 feet and from 6,363 to 13,329 feet; and 7-inch CRA casing from 4,955 to the DV tool at 6,362 feet and from 13,329 to the float shoe at 13,622. The cement included a combination of Halliburton Tuned Light lead cement and Well-Lock resin tail cement in both stages.

The casing was cemented in two stages and the plugs were landed in the float collar and DV tool with 128 sacks (48 bbls) of cement circulated to the surface during the first stage and 93 sacks (35 bbls) of cement circulated to the surface during the second stage. No fallback of cement was observed and the wait on cement time was 32 hours for TIH and 55 hours for running the CBL. Attachment 2 provides summary tables depicting the casing and cement for the entire well, the production casing tally, the cement (pilot) laboratory data, the cement summary job report, and photographic documentation of cement returns to surface.

Halliburton CBL tools were run with no casing pressure applied at the surface in order to prepare an Advanced Cement Evaluation log and a Peak Analysis of the CBL Waveform log. The logs required significant in-house processing in order to minimize the effects of the CRA pipe and resin-based cement to prevent corrosion associated with acid gas. A field print R-CBL was provided on-site and submitted to the BLM coordinating engineer for review and approval. The CBLs are not provided in this submittal, as the files are too large to submit through e-mail.

The BOP/BOPE was successfully tested at low pressures of 250 psi and high pressures of 2,500 and 5,000 psi. A casing pressure test was performed above the DV tool at 1,000 psi for 30 minutes prior to drilling out the DV tool, residual cement to approximately 30 feet above the casing shoe, and running the CBL. A final CIT was successfully performed over the entire casing at 1,000 psi for 30 minutes. The well was then drilled to 10 feet below the casing shoe to perform a formation integrity test by applying 440 psi of pressure for 30 minutes with no evidence of formation breakdown. The successful results of all the pressure tests are provided in Attachment 3.

Total depth of the 6-inch borehole (14,750 feet) was reached on December 10, 2016 and open-hole geophysical logs were run and are provided in Attachments 4a-c. The complete mud log is included in Attachment 5. Sidewall cores were also taken to better evaluate the quality of injection zone and to demonstrate the absence of producible hydrocarbons. This information will be provided in a future Sundry Report.

Spud Date: November 2, 2016 Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jared Smith TITLE CONSULTANT TO DCP MIDSTREM LP DATE 12/14/2016

Type or print name JARED R. SMITH E-mail address: JSMITH@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: TITLE Petroleum Engineer DATE 12/24/16

Conditions of Approval (if any):

NO RECOVERABLE HYDROCARBONS

Date Submitted: 12/22/16
Date Approved: 1/17/17

Attachments: Geophysical Logs and Sidewall Core Analysis
Mud log Evaluation
Formation Fluid Evaluation

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI D2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

DCP Midstream is submitting this request for permission to finish the final completion of its Zia AGI D #2 within the NMOCC-approved injection zone within the Devonian, Wristen, Fusselman, and Montoya Formations (injection zone) consistent with the approved APD for this well. In order to obtain this approval, DCP is required to assess the presence or absence of commercially-recoverable hydrocarbon potential of the approved injection zone. To accomplish this Geolex has conducted for DCP an extensive analysis of the detailed well logs for the well including a full suite of geophysical logs, mud logs, collection and analysis of sidewall core samples retrieved from the NMOCC-approved injection zone from 13,625? to 14,750? (see Attachments A and B). In addition, the well was swabbed to remove over 500 bbls of formation fluid and 10 samples were collected which showed no visible evidence of hydrocarbons (no sheen or phase separation). TPH has already been analyzed (Attachment C), and the rest of the reservoir fluid chemistry will be reported to the BLM as soon as available. All visual inspection and TPH results (Attachment C) clearly demonstrate the

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #361970 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 01/17/2017 (17DLM0348SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 12/22/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ACCEPTED — Title PAUL SWARTZ TECHNICAL PET — Date 01/17/2017

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #361970 that would not fit on the form

32. Additional remarks, continued

lack of commercially-recoverable hydrocarbons in the NMOCC-approved injection zone. The results of this detailed analysis, which are summarized on this form and its three attachments (Attachments A, B and C) clearly demonstrate that the proposed injection zone does not contain any commercially-recoverable hydrocarbons and will serve as a suitable injection zone for the proposed injection fluid.

The injection zone has been extensively analyzed using all available data obtained during the drilling of the Zia AGI D #2 in November to December 2016. The results of these analyses clearly demonstrate that the minor indications of trace hydrocarbons detected in isolated thin portions of the proposed injection zone are not commercially-recoverable and the zones are wet with very high residual water saturations. These values range from 2 to 26 ppm TPHs. Based on the analyses detailed in the attachments to this form, DCP requests BLM concurrence that there are no commercially-recoverable hydrocarbons in the injection zone, and approval proceed with reservoir testing, and final completion of the well. DCP will conduct an extensive series of injection tests to confirm and better understand the injection characteristics of the approved injection zone. BLM will be notified of these tests, and the test results will also be provided to the BLM following analysis by DCP and their consultants. This work will be conducted under the currently-approved APD, completion NOI Sundry, and BLM conditions of approval. Furthermore, this work will be conducted under the current BLM bond for this well, which is Bond number 105982905 already on file with the BLM.

STEP RATE TEST – 3160-5

Date Submitted: 1/10/17
Date Approved: 1/26/17

Attachments:
BLM SRT Form
Pressure and Injection Rate Graph
Demonstration of No Break over Point
Schlumberger Raw Data
Preliminary Warm-Back Plots

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI D2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

On December 29, 2016 a step rate test (SRT) was successfully completed at the DCP Zia AGI D #2 well. The BLM Carlsbad Hotline and Mr. Paul Swartz were notified, and elected not to observe. The NMOCD Hobbs District Office was also notified as a courtesy and elected to not observe. The injection zone between 13,622 and 14,750 feet was tested. The BLM-provided SRT data forms (Attachment 1) have been provided for synchronized surface and formation pressure measurements recorded by Halliburton and Schlumberger. The bottom-hole pressure and surface pressures are overlain on a single graph included in Attachment 2.

The timing of the surface and bottom hole pressure sensors were synchronized, and all of the bottom hole data were recorded continuously at 5 minute intervals within each step. The Schlumberger P/T data is included in Attachment 4. The injection rate for each step was increased instantaneously and held constant for 30 minutes at each step, as shown in the surface injection rates recorded by

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #363439 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by PAUL SWARTZ on 01/26/2017 (17PRS0013SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 01/10/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ACCEPTED — (BLM Approver Not Specified) Title — Date 01/26/2017

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #363439 that would not fit on the form

32. Additional remarks, continued

Halliburton and Geolex (Attachment 1). The synchronicity of the surface and downhole data were confirmed with the observation of the immediate rate and pressure drop at the surface and at the formation when a needle valve in the lubricator caused a 2.5 minute shutdown shortly after the initiation of step 8 (Attachment 4).

The surface pressure was 86 psig prior to pumping step 1 at 0.25 barrels per minute (bpm) using 8.35 lb/gal fresh water. Maximum surface pressures of 662 psig and 927 psig, respectively were observed in the 7th and 8th steps (4.0 and 5.0 bpm) bracketing the maximum permitted injection rate of 4.4 bpm. The temperature survey demonstrates the majority of fluids were in the upper portions (13,622 ? 13,880 feet) of the injection zone. Three additional steps, of greater injection rate, were conducted following the maximum permitted injection rate of 4.3 bpm. These additional steps were used to help evaluate reservoir injection potential. The maximum surface pressures reached during the last two steps (steps 9 and 10) were 1,253 psig at 6.0 bpm and 1,613 psig at 7.0 bpm.

The SRT did not reach a break-over point, and the formation parting pressure was not reached during the test; even at the highest pumping rate above the maximum permitted injection rate. This is shown by the observed surface or formation pressures, and has a linear fit coefficient in excess of 0.98 (Attachment 3). The NMOCD-approved MAOP for treated acid gas is 5,028 psig at the rate of 15 MMSCFD, which at bottom-hole P/T conditions is approximately 4.4 BPM of liquid treated acid gas (TAG). The anticipated pressure required to inject this volume is estimated to be between 1,400 and 1,800 psig. A preliminary warm-back analysis shows permeable zones between approximately 13,622 ? 13,880 feet, 14,200 ? 14,400 feet, and 14,530 - 14,630 feet (Attachment 5).

This SRT fulfills the requirement of the BLM Conditions of Approval for DCP Zia AGI D #2 dated September 7, 2016 and NMOCC Order R-14207, and demonstrates the Zia AGI D #2 well can be safely operated at pressures well below the approved MAOP. DCP is not requesting an MAOP increase at this time for this well. Required continuous surface and bottom-hole pressure monitoring will assure fracture pressure is never exceeded for this well.

STEP RATE TEST – C-103

Date Submitted: 1/11/17
Date Approved: 1/17/17

Attachments:
BLM SRT Form
Pressure and Injection Rate Graph
Demonstration of No Break over Point
Schlumberger Raw Data
Preliminary Warm-Back Plots

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
JAN 17 2017
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-42207	
5. Indicate Type of Lease STATE ☐ FEE ☒	
6. State Oil & Gas Lease No. NM 0149956	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☐ Other: Acid Gas Injection	7. Lease Name or Unit Agreement Name N/A
	8. Well Number D2
2. Name of Operator DCP MIDSTREAM LP	9. OGRID Number 025575
3. Address of Operator 370 17TH STREET, SUITE 2500, DENVER, CO 80202	10. Pool name or Wildcat DEVONIAN EXPL.
4. Well Location Unit Letter L : 1893 feet from the South line and 950 feet from the West line Section 19 Township 19S Range 32E NMPM County LEA	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

PROVIDE S.R.T. RESULTS TO SANTA FE OCD FOR APPROVAL ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK	☐	ALTERING CASING	☐
COMMENCE DRILLING OPNS.	☐	P AND A	☐
CASING/CEMENT JOB	☒		

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

On December 29, 2016 a step rate test (SRT) was successfully completed at the DCP Zia AGI D #2 well. The BLM Carlsbad Hotline and Mr. Paul Swartz (BLM) were notified, and elected not to observe. The NMOCD Hobbs District Office was also notified and elected to not observe. The injection zone between 13,622 and 14,750 feet was tested. The BLM-provided SRT data forms (Attachment 1) have been provided for synchronized surface and formation pressure measurements recorded by Halliburton and Schlumberger. The bottom-hole pressure and surface pressures are overlain on a single graph included in Attachment 2.

The timing of the surface and bottom hole pressure sensors were synchronized, and all of the bottom hole data were recorded continuously at 5 minute intervals within each step. The injection rate for each step was increased instantaneously and held constant for 30 minutes at each step, as shown in the surface injection rates recorded by Halliburton and Geolex (Attachment 1). The synchronicity of the surface and downhole data were confirmed with the observation of the immediate rate and pressure drop at the surface and at the formation when a needle valve in the lubricator caused a 2.5 minute shutdown shortly after the initiation of step 8 (Attachment 4).

The surface pressure was 86 psig prior to pumping step 1 at 0.25 barrels per minute (bpm) using 8.35 lb/gal fresh water. Maximum surface pressures of 662 psig and 927 psig, respectively were observed in the 7th and 8th steps (4.0 and 5.0 bpm) bracketing the maximum permitted injection rate of 4.4 bpm. The temperature survey demonstrates the majority of fluids were in the upper portions (13,622 – 13,880 feet) of the injection zone. Three additional steps, of greater injection rate, were conducted following the maximum permitted injection rate of 4.3 bpm. These additional steps were used to help evaluate reservoir injection potential. The maximum surface pressures reached during the last two steps (steps 9 and 10) were 1,253 psig at 6.0 bpm and 1,613 psig at 7.0 bpm.

The SRT did not reach a break-over point, and the formation parting pressure was not reached during the test; even at the highest pumping rate above the maximum permitted injection rate. This is shown by the observed surface or formation pressures, and has a linear fit coefficient in excess of 0.98 (Attachment 3). The NMOCD-approved MAOP for treated acid

gas is 5,028 psig at the rate of 15 MMSCFD, which at bottom-hole P/T conditions is approximately 4.4 BPM of liquid treated acid gas (TAG). The anticipated pressure required to inject this volume is estimated to be between 1,400 and 1,800 psig. A preliminary warm-back analysis shows permeable zones between approximately 13,622 – 13,880 feet, 14,200 – 14,400 feet, and 14,530 - 14,630 feet (Attachment 5).

This SRT fulfills the requirement of the BLM Conditions of Approval for DCP Zia AGI D #2 dated September 7, 2016 and NMOCC Order R-14207, and demonstrates the Zia AGI D #2 well can be safely operated at pressures well below the approved MAOP. DCP is not requesting an MAOP increase at this time for this well. NMOCC required continuous surface and bottom-hole pressure monitoring will assure fracture pressure is never exceeded for this well.

Spud Date:	November 2, 2016	Rig Release Date:	

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jared Smith TITLE CONSULTANT TO DCP MIDSTREM LP DATE 01/11/2017

Type or print name JARED R. SMITH E-mail address: JSMITH@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: _____ TITLE _____ DATE _____

Conditions of Approval (if any):

Accepted for Record Only

Mokey G Brown

1/17/2017

MECHANICAL INTEGRITY TEST

Date Submitted: 1/25/17
Date Approved: 1/25/17

Attachments: MIT Chart

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-42207	
5. Indicate Type of Lease STATE ☐ FEE ☒	
6. State Oil & Gas Lease No. NM 0149956	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☐ Other: Acid Gas Injection	7. Lease Name or Unit Agreement Name N/A
	8. Well Number D2
2. Name of Operator DCP MIDSTREAM LP	9. OGRID Number 025575
3. Address of Operator 370 17TH STREET, SUITE 2500, DENVER, CO 80202	10. Pool name or Wildcat DEVONIAN EXPL.
4. Well Location Unit Letter L : 1893 feet from the South line and 950 feet from the West line Section 19 Township 19S Range 32E NMPM County LEA	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: Subsequent MIT and Bradenhead	☒		

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The MIT and Braden head Test were conducted on Wednesday, January 2,7 2017 at 8:18 am. In order to conduct the MIT, the annular space pressure was adjusted to 560 psig by adding a small amount of diesel immediately before the test.

1. Initially the starting injection pressure and the annular space pressure between casing and tubing was 280 psig
2. Placed chart on annular space and began recording annular space pressure.
3. Bled off annular fluid (diesel) to bring observed annular space pressure to zero psig.
4. Slowly raised annular pressure by introducing diesel to the annulus to bring pressure to 560 psig.
5. When annulus pressure reached 560 psig closed valves to pumping truck and recorded annular space pressure for 30 minutes.
6. The DCP Zia AGI D #2 is not yet in service so there is no injection pressure on the tubing.
7. After 30 minutes bled off annular fluid to reduce observed pressure to zero psig.
8. Stopped recording TEST COMPLETE.
9. Restored annular pressure to normal psig.

The Braden head Test was conducted concurrent with the MIT, which included bleeding off the pressure and keeping the valve open during the MIT.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Spud Date: November 2, 2016 Rig Release Date:

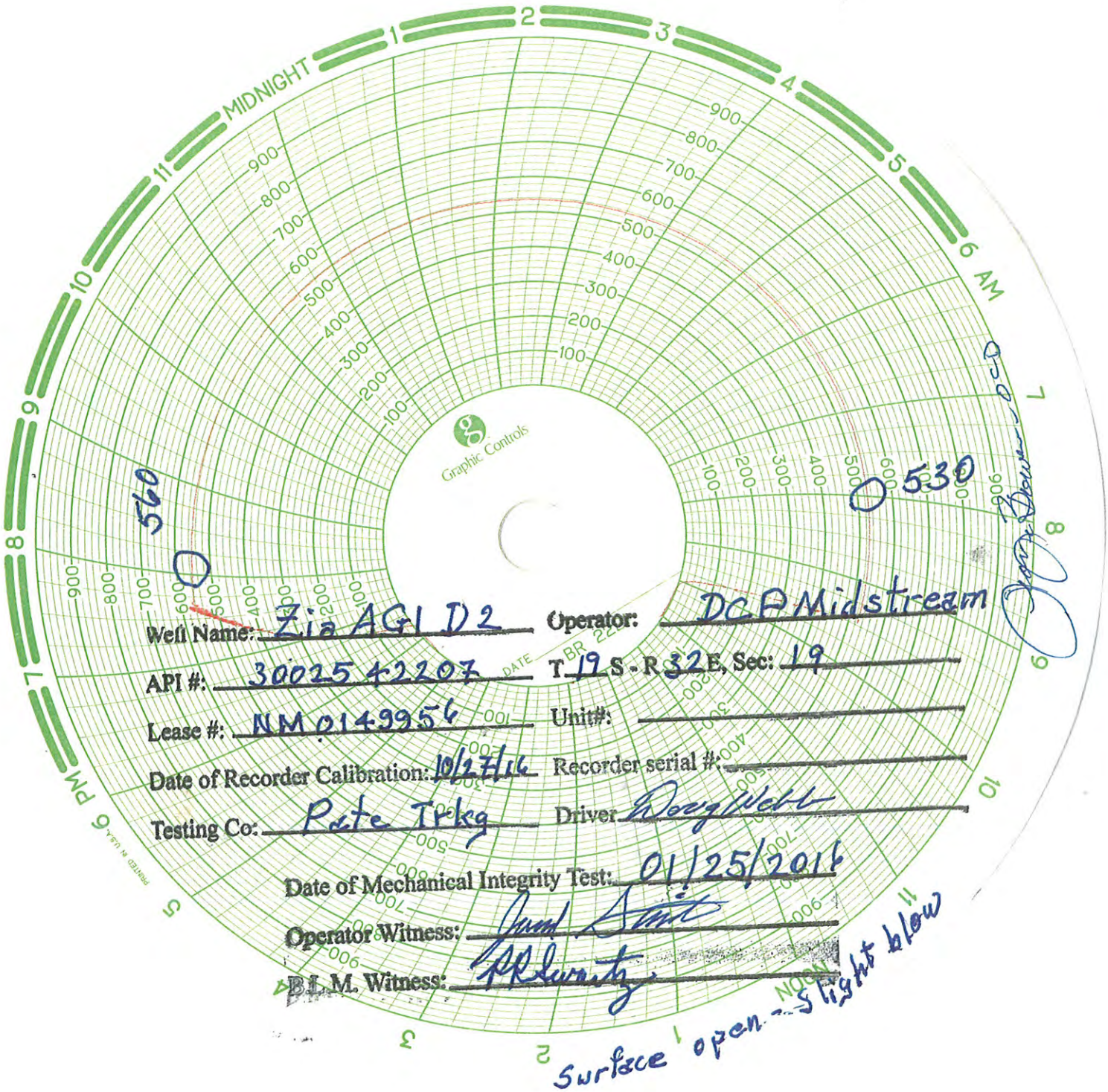
I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jared Smith TITLE CONSULTANT TO DCP MIDSTREM LP DATE 01/25/2017

Type or print name JARED R. SMITH E-mail address: JSMITH@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: TITLE Compliance Officer DATE 1/25/2017


MIDNIGHT
6 AM
Graphic Controls
560
530
Well Name: Zia AGI D2
Operator: DCP Midstream
API #: 3002542207
T 19 S - R 32 E, Sec: 19
Lease #: NM 0149956
Unit#:
Date of Recorder Calibration: 10/27/14
Recorder serial #:
Testing Co: Pate Trkg
Driver: Doug Webb
Date of Mechanical Integrity Test: 01/25/2014
Operator Witness:
B.L.M. Witness:
Surface open - slight blow

FINAL COMPLETION
(INCLUDING MECHANICAL INTEGRITY TEST)

Date Submitted: 1/26/17
Date Approved: 2/6/17

Attachments: MIT Chart
Tubing and Equipment
Tubing Tally
Final Well Schematic

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI D2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

This notice includes information concerning the installation of the permanent packer, tubing and the mechanical integrity test (MIT) results.

The top of the Halliburton permanent packer is set at 13,535 ft. Just above the packer is a Halliburton Pressure-Temperature (P-T) gauge, located at a depth of 13,526 ft. Nine joints of nickel, corrosion resistant alloy tubing and 411 joints of carbon-steel tubing are present between the P-T gauge and the surface. The Halliburton Subsurface Safety Valve is located at a depth of 277 ft. A pipe tally, detailed tubing and equipment diagram, and as-built well schematic are attached.

On January 22, 2017 fluid in the 3.5-inch injection tubing and 7-inch casing annulus was displaced with 500 bbls of red-dyed diesel mixed with 1% (5 bbls) Baker CRO 381 corrosion inhibitor prior to

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #365083 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by PAUL SWARTZ on 02/06/2017 (17PRS0014SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 01/26/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ACCEPTED — Title PAUL SWARTZ TECHNICAL PET — Date 02/06/2017

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #365083 that would not fit on the form

32. Additional remarks, continued

landing the tubing. The Baker CRO 381 corrosion inhibitor has biocide and oxygen scavenging properties. The Wellhead/Tree adapter flange and tie in control fitting components were installed and pressure-tested to 5,000 psi for 15 minutes.

On January 25, 2017, an MIT was successfully performed and witnessed by BLM and NMOCD representatives (attached). Prior to starting the MIT, the chart recorder calibration papers were inspected and approved. Also, the Section A, slip weld (braden head) and tubing pressure were opened and bleed to 0 psi. Pressure had built-up in the braden head during the cement curing process, and no fluids were expelled from this space; which was held open during the MIT. The MIT procedure was as follows:

1.Initially the starting injection pressure and the annular space pressure between casing and tubing was 280 psig
2.Bleed pressure to zero psig
3.Placed chart on annular space and began recording annular space pressure.
4.Slowly raised annular pressure by introducing diesel to the annulus to bring pressure to 560 psig.
5.When annulus pressure reached 560 psig closed valves to pumping truck and recorded annular space pressure for 30 minutes.
6.The DCP Zia AGI D #2 is not yet in service so there is no injection pressure on the tubing.
7.After 30 minutes bled off annular fluid to reduce observed pressure to zero psig.
8.Stopped recording TEST COMPLETE.
9.Restored annular pressure to normal psig.

This 3160-5 form is the final submittal for the Zia AGI D #2. The well installations have been successfully completed and tested pursuant to all the requirements of the NMOCC Order R-13809 and BLMs Conditions of Approval. The H2S contingency plan has also been approved and the well can be put into service upon completion of the surface facility installations, which is expected in February of 2017.

FINAL COMPLETION

Date Submitted: 1/27/17
Date Approved: 2/1/17 (Record Only)

Attachments: Tubing and Equipment
Tubing Tally
Final Well Schematic
All Geophysical logs were mailed to NMOCD, Hobbs

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
JAN 30 2017
RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-42207	
5. Indicate Type of Lease STATE ☐ FEE ☒ FED X	
6. State Oil & Gas Lease No. NM 0149956	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☐ Other: Acid Gas Injection	7. Lease Name or Unit Agreement Name N/A
	8. Well Number D2
2. Name of Operator DCP MIDSTREAM LP	9. OGRID Number 025575
3. Address of Operator 370 17TH STREET, SUITE 2500, DENVER, CO 80202	10. Pool name or Wildcat DEVONIAN EXPL.
4. Well Location Unit Letter L : 1893 feet from the South line and 950 feet from the West line Section 19 Township 19S Range 32E NMPM County LEA	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3548 ft. Ground Level

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: Acid Gas Injection Start-up			☒

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The DCP Zia AGI D#2 well was drilled and completed under the regulatory supervision of the BLM. Sundry notices for each step of the operation through the Step-Rate Test and Mechanical Integrity Test (MIT) have been submitted and approved. As a courtesy, C-103 forms were also provided to the NMOCD and can be found on the NMOCD website. This notice includes information concerning the installation of the permanent packer and tubing. This data has also been provided to the BLM along with the MIT results. The successful MIT was witnessed by an NMOCD representative, and has already been submitted and approved by the NMOCD.

The Halliburton permanent packer is set at 13,535 ft. Just above the packer is a Halliburton Pressure-Temperature (P-T) gauge, located at a depth of 13,526 ft. Nine joints of nickel, corrosion resistant tubing and 411 joints of carbon steel tubing are present between the P-T gauge and the surface. A Halliburton Subsurface Safety Valve (SSSV) is located at a depth of 277 ft. A pipe tally, detailed tubing and equipment diagram, and as-built well schematic are attached.

On January 22, 2017 fluid in the 3.5-inch injection tubing and 7-inch casing annulus was displaced with 500 bbls of red-dyed diesel mixed with 1% (5 bbls) Baker CRO 381 corrosion inhibitor prior to landing the tubing. The Baker CRO 381 corrosion inhibitor has biocide and oxygen scavenging properties. The Wellhead/Tree adapter flange and tie in control fitting components were installed and pressure-tested to 5,000 psi for 15 minutes. On January 25, 2017, an MIT was successfully performed and witnessed by NMOCD and BLM representatives. The results of the MIT were provided on a separate C-103 form following the test.

This C-103 form is the final C-103 for the Zia AGI D #2. The well installations have been successfully completed and tested pursuant to all the requirements of the NMOCC Order R-13809. The H_2S contingency plan has also been approved and the well can be put into service upon completion of the surface facility installations, which is expected in February of 2017.

Spud Date: November 2, 2016

Rig Release Date: December 10, 2016

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jared Smith TITLE: CONSULTANT TO DCP MIDSTREM LP DATE: 01/27/2017

Type or print name JARED R. SMITH E-mail address: JSMITH@GEOLEX.COM PHONE: 505-842-8000

For State Use Only

APPROVED BY: TITLE DATE

Conditions of Approval (if any):

Accepted for Record Only

MBrown 2/1/2017

NOTICE TO OPERATORS

Date Submitted: 1/30/17
Date Approved: 2/6/17

Attachments: List of Operators within 1 mile of Zia AGI D #2
13 Notice letters Sent to the Operators within 1 Mile
ROE Map
Certified Mail Receipts and USPS Purchase Receipt

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC065863

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
ZIA AGI D2

2. Name of Operator
DCP MIDSTREAM LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

9. API Well No.
30-025-42207-00-X1

3a. Address
370 17TH STREET SUITE 2500
DENVER, CO 80208 5406

3b. Phone No. (include area code)
Ph: 505-842-8000

10. Field and Pool or Exploratory Area
AGI

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T19S R32E Lot 3 1893FSL 950FWL
32.644036 N Lat, 103.811145 W Lon

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

In compliance with the approved APD, attached is a list of operators notified within a 1 mile radius for the approximate commencement date of injection at the Zia AGI D #2 well. Attached are the 13 letters sent to the operators and map, that was included with each letter, showing the worst possible case scenarios for H2S exposure areas. These letters were sent certified mail, and the certified mail receipts and USPS purchase receipt are attached.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #365339 verified by the BLM Well Information System
For DCP MIDSTREAM LP, sent to the Hobbs
Committed to AFMSS for processing by PAUL SWARTZ on 02/06/2017 (17PRS0015SE)

Name *(Printed/Typed)* ALBERTO A GUTIERREZ — Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) — Date 01/30/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ACCEPTED — Title PAUL SWARTZ TECHNICAL PET — Date 02/06/2017

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

Date Submitted: 1/30/17
Date Approved: Pending

Attachments: Final Well Directional Survey
Core Report
Complete Well Schematic
All Geophysical logs were mailed to BLM, Carlsbad

Form 3160-4
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. NMNM0149956

1a. Type of Well ☐ Oil Well ☐ Gas Well ☐ Dry ☒ Other: INJ
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.
Other _____

6. If Indian, Allottee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator: DCP MIDSTREAM, LP
Contact: ALBERTO A GUTIERREZ
E-Mail: aag@geolex.com

8. Lease Name and Well No.: ZIA AGI D 2

3. Address: 370 17TH STREET SUITE 2500, DENVER, CO 80808

3a. Phone No. (include area code): Ph: 505-842-8000

9. API Well No.: 30-025-42207

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface: NWSW 1893FSL 950FWL 32.643951 N Lat, 103.811116 W Lon

At top prod interval reported below: NWSW 1893FSL 950FWL 32.643951 N Lat, 103.811116 W Lon

At total depth: NWSW 1893FSL 950FWL 32.643951 N Lat, 103.811116 W Lon

10. Field and Pool, or Exploratory: DEVONIAN EXPL.

11. Sec., T., R., M., or Block and Survey or Area: Sec 19 T19S R32E Mer NMP

12. County or Parish: LEA

13. State: NM

14. Date Spudded: 11/02/2017

15. Date T.D. Reached: 12/10/2017

16. Date Completed ☐ D & A ☐ Ready to Prod. 01/25/2017

17. Elevations (DF, KB, RT, GL)*: 3548 GL

18. Total Depth: MD 14750 TVD 14750

19. Plug Back T.D.: MD TVD

20. Depth Bridge Plug Set: MD TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
RES, SONIC, LATER, NEUT/DEN, GAMMA, MUD, BOREHOLE

22. Was well cored? ☐ No ☒ Yes (Submit analysis)
Was DST run? ☒ No ☐ Yes (Submit analysis)
Directional Survey? ☐ No ☒ Yes (Submit analysis)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
8.750	7.625 P110	33.7	0	306	6346	1190	548	0	221
26.000	20.000 J55	106.5	0	826	826	1425	297	0	487
17.500	13.375 J55	61.0	0	2555	2555	1950	584	0	428
12.250	9.625 N80	40.0	0	4696	2608	1450	442	0	251
8.750	7.000 P110	29.0	306	4955	6346	1190	548	0	221
8.750	7.000 V110	32.0	4955	6346	6346	1190	548	0	221

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
3.500	13518	13535						

25. Producing Intervals / 26. Perforation Record

	Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A)	DEVONIAN	13625	13797				
B)	WRISTEN	13797	13972				
C)	FUSSELMAN	13972	14371				
D)	MONTOYA	14371					

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
13622 TO 14750	40,000 GALS OF DOUBLE INHIBITING NE FE 20% HCL ACID PLUS GRADED ROCK SALT(4,000 LBS) IN GELLED BRINE

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #365237 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*
UNKNOWN

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
				DOCKUM	270
				SALT TOP	882
				CAPITAN REEF	2760
				DELAWARE	4782
				DEVONIAN	13625
				WRISTEN	13797
				FUSSELMAN	13972
				MONTOYA	14371

32. Additional remarks (include plugging procedure):
There is not enough space to fill in the remaining production casing record (Box # 40).
The following is the remaining production casing record:

Hole Size Casing Size Grade Wt. (#/ft.) Top (MD) Bottom (MD) Stage Cementer Depth
8.75 7 29 6363 13,329 6346
8.75 7 32 13,329 13,622 6346

No. of Sks. Slurry Vol. (BBL) Cement Top Amount Pulled

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.)
2. Geologic Report
3. DST Report
4. Directional Survey
5. Sundry Notice for plugging and cement verification
6. Core Analysis
7 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #365237 Verified by the BLM Well Information System.
For DCP MIDSTREAM, LP, sent to the Hobbs

Name *(please print)* ALBERTO A GUTIERREZ Title CONSULTANT TO DCP MIDSTREM, LP

Signature (Electronic Submission) Date 01/30/2017

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fradulent statements or representations as to any matter within its jurisdiction.

**** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ****

Additional data for transaction #365237 that would not fit on the form

32. Additional remarks, continued

1190	548	0	221
1190	548	0	221

The Zia AGI D #2 will be used for acid gas injection, therefore many of the questions and data requests herein are not applicable. All of the open-hole and cased-hole electric logs were submitted with the appropriate Form 3160-5. Hard copies will be mailed to the BLMs Carlsbad office. The final well directional survey, core report, and completed well schematic are attached.

APPENDIX F

NOTICE LETTERS TO PRODUCERS WITHIN ONE MILE

LIST OF OPERATORS WITHIN 1 MILE OF ZIA AGI D #2

OPERATORS WITHIN 1 MILE RADIUS OF DCP MIDSTREAM, LP
ZIA AGI D #2 INJECTION WELL
SURFACE: 1893 FSL, 950 FWL, SECTION 19, T19S, R32E

1) Chisos, Ltd.
   670 Dona Ana Rd., SW
   Deming, NM 88030

2) Cimarex Energy Company of Colorado
   1700 Lincoln St., Ste. 3700
   Denver, CO 80203

3) COG Operating, LLC
   One Concho Center
   600 W. Illinois Ave.
   Midland, TX 79701

4) Concho Oil and Gas, LLC
   One Concho Center
   600 W. Illinois Ave.
   Midland, TX 79701

5) DCP Midstream, LP
   370 17th St., Ste. 2500
   Denver, CO 80202

6) Devon Energy Production, LP
   333 West Sheridan Ave.
   Oklahoma City, OK 73102

7) Lynx Petroleum Consultants, Inc.
   3325 N. Enterprise Dr.
   Hobbs, NM 88240

8) OXY, USA, Inc.
   P.O. Box 4294
   Houston, TX 77210

9) OXY Y-1
   P.O. Box 27570
   Houston, TX 77227

10) Remnant Oil Operating, LLC
    P.O. Box 509
    Perryton, TX 79070

11) Shackelford Oil Company
P.O. Box 10665
Midland, TX 79702

12) Tom R. Cone
1304 Broadway Pl.
Hobbs, NM 88240

13) Yates Petroleum Corporation
105 S. 4th Street
Artesia, NM 88210

13 NOTICE LETTERS SENT TO THE OPERATORS WITHIN 1 MILE OF ZIA AGI D #2

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Chisos, Ltd.
670 Dona Ana Rd., SW
Deming, NM 88030

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

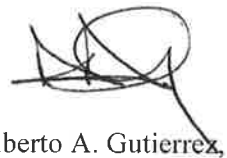
To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.



Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Cimarex Energy Company of Colorado
1700 Lincoln St., Ste. 3700
Denver, CO 80203

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Concho Oil and Gas, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

DCP Midstream, LP
370 17th St., Ste. 2500
Denver, CO 80202

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Devon Energy Production, LP
333 West Sheridan Ave.
Oklahoma City, OK 73102

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

OXY Y-1
P.O. Box 27570
Houston, TX 77227

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Lynx Petroleum Consultants, Inc.
3325 N. Enterprise Dr.
Hobbs, NM 88240

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Shackelford Oil Company
P.O. Box 10665
Midland, TX 79702

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

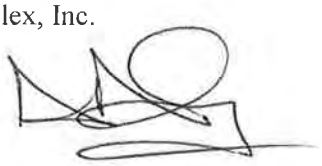
To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.



Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Tom R. Cone
1304 Broadway Pl.
Hobbs, NM 88240

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

OXY, USA, Inc.
P.O. Box 4294
Houston, TX 77210

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Yates Petroleum
105 S. 4th Street
Artesia, NM 88210

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

Remnant Oil Operating, LLC
P.O. Box 509
Perryton, TX 79070

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

January 30, 2017

COG Operating, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

Via First Class Mail Return Receipt Requested

RE: NOTIFICATION OF INTITIAION OF OPERATION – DCP MIDSTREAM LP ZIA AGI D #2 WELL

To Whom It May Concern,

The purpose of this letter is to inform you that on or about February 7, 2017, DCP Midstream LP will commence injection operations at the Zia AGI D #2 Well located at DCP's Zia II Gas plant pursuant to NMOCC Order R-14207, and BLM approval of the well completion. In compliance with the Conditions of Approval of BLMs APD, notice of initiation of operations and a map of the worst case scenario H2S radius of exposure must be provided to all operators of existing wells within a 1 mile radius of the well.

Enclosed please find a map which shows the location of the Zia II Gas Plant, and the well and depicts the worst case 500 ppm and 100 ppm Radii of Exposure for the Plant and the AGI well. The map is taken directly from the Zia II Gas Plant H2S Contingency Plan which was approved by the NMOCD in September 2016.

If you have any questions, please contact me at the address below or at 505-842-8000.

Sincerely,
Geolex, Inc.

Alberto A. Gutierrez, RG
President
Consultant to DCP Midstream LP

cc: Krueng, Teungku Muchlis, BLM District Office, Carlsbad, NM
Chris Root, DCP Denver
Paul Tourangeau, DCP Denver
Tony Canfield, DCP Midland

Enclosure

phone: 505-842-8000
fax: 505-842-7380

500 Marquette Avenue NW, Suite 1350
Albuquerque, New Mexico 87102

email: aag@geolex.com
web: www.geolex.com

500 PPM AND 100 PPM RADIUS OF EXPOSURE MAP, WITH ROADBLOCKS, EMERGENCY ASSEMBLY AREAS, AND EVACUATION ROUTS.

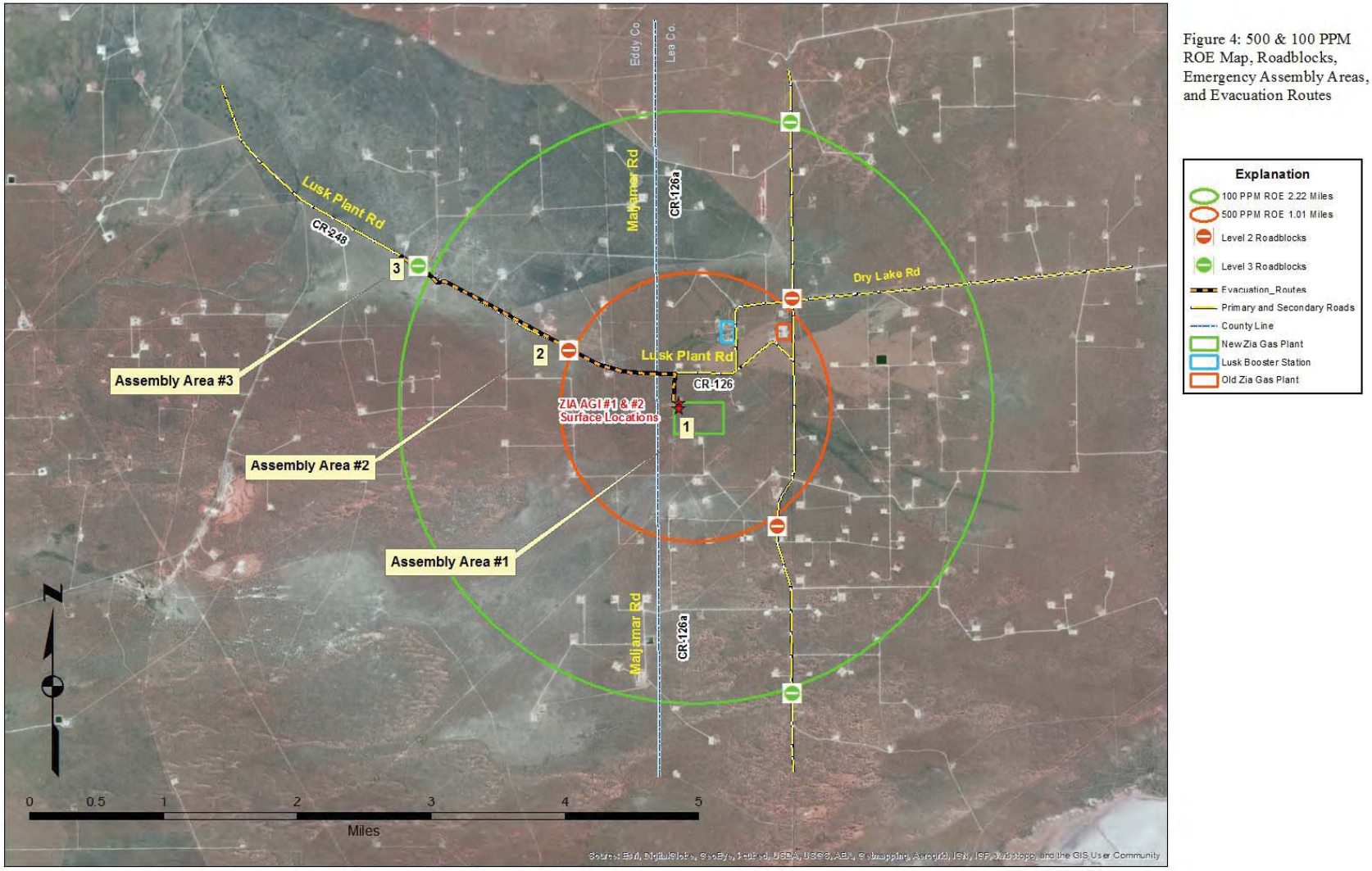


Figure 4: 500 & 100 PPM ROE Map, Roadblocks, Emergency Assembly Areas, and Evacuation Routes

Figure 4: 500 and 100 ppm ROE Map, Roadblocks, Emergency Assembly Areas and Evacuation Routes

CERTIFIED MAIL RECEIPTS AND USPS PURCHASE RECEIPT

7016 1970 0000 8250 7395

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

DEMING, NM 88030

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To Chisos Ltd.
Street and Apt. No., or PO Box No. 670 Dona Ana Rd., SW
City, State, ZIP+4® Deming, NM 88030

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7401

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

DENVER, CO 80203

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To Cimarex Energy Co. of Colorado
Street and Apt. No., or PO Box No. 1700 Lincoln St., Ste 3700
City, State, ZIP+4® Denver, CO 80203

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7418

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

MIDLAND, TX 79701

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To COG Operating, LLC - One Concho Center
Street and Apt. No., or PO Box No. 600 W. Illinois Ave.
City, State, ZIP+4® Midland, TX 79701

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7425

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

MIDLAND, TX 79701

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To Concho Oil & Gas - One Concho Center
Street and Apt. No., or PO Box No. 600 W. Illinois Ave.
City, State, ZIP+4® Midland, TX 79701

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7432

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

DENVER, CO 80202

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To DCP Midstream LP
Street and Apt. No., or PO Box No. 370 17th St., Ste. 2500
City, State, ZIP+4® Denver, CO 80202

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7449

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OKLAHOMA CITY, OK 73102

OFFICIAL USE

Certified Mail Fee $3.35
$2.75
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.49

Total Postage and Fees $6.59

Postmark Here
ALBUQUERQUE, NEW MEXICO 87101
JAN 30 2017
USPS
01/30/2017
0101 18

Sent To Devon Energy Production, LP
Street and Apt. No., or PO Box No. 333 West Sheridan Ave.
City, State, ZIP+4® Oklahoma City, OK 73102

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7456

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
HOBBS, NM 88240

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: Lynx Petroleum Consultants, Inc.
Street and Apt. No., or PO Box No.: 3325 N. Enterprise Dr.
City, State, ZIP+4®: Hobbs, NM 88240

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7463

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
HOUSTON, TX 77210

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: OXY, USA, Inc.
Street and Apt. No., or PO Box No.: P.O. Box 4294
City, State, ZIP+4®: Houston, TX 77210

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7470

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
HOUSTON, TX 77227

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: OXY, Y-1
Street and Apt. No., or PO Box No.: PO Box 27570
City, State, ZIP+4®: Houston, TX 77227

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7487

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
PERRYTON, TX 79070

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: Remnant Oil Operating, LLC
Street and Apt. No., or PO Box No.: PO Box 509
City, State, ZIP+4®: Perryton, TX 79070

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7494

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
MIDLAND, TX 79702

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: Shackelford Oil Company
Street and Apt. No., or PO Box No.: P.O. Box 10665
City, State, ZIP+4®: Midland, TX 79702

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7500

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
HOBBS, NM 88240

OFFICIAL USE

Certified Mail Fee	$3.35
$	$2.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.49
$	
Total Postage and Fees	$6.59
$	

0101 18
Postmark Here
ALBUQUERQUE, NEW MEXICO 87101 USPS JAN 30 2017
01/30/2017

Sent To: Tom R. Cone
Street and Apt. No., or PO Box No.: 1304 Broadway Pl.
City, State, ZIP+4®: Hobbs, NM 88240

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1970 0000 8250 7517

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

ARTESIA, NM 88210

OFFICIAL USE

Certified Mail Fee	$3.35	0101 18
$	$2.75	
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$ $0.00	
☐ Return Receipt (electronic)	$ $0.00	
☐ Certified Mail Restricted Delivery	$ $0.00	
☐ Adult Signature Required	$ $0.00	
☐ Adult Signature Restricted Delivery	$	
Postage	$0.49	
$		
Total Postage and Fees	$6.59	
$		

Postmark Here

ALBUQUERQUE NEW MEXICO 87101 JAN 30 2017 USPS

01/30/2017

Sent To Yates Petroleum Corp

Street and Apt. No., or PO Box No. 105 S. 4th Street

City, State, ZIP+4® Artesia, NM 88210

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

ALBUQUERQUE
1135 BROADWAY BLVD NE
ALBUQUERQUE
NM
87101-0001
3401270101
01/30/2017 (800)275-8777 3:30 PM

Product Description	Sale Qty	Final Price
First-Class Mail Letter (Domestic) (DEMING, NM 88030) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Wednesday 02/01/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507395)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002520)	1	$2.75
First-Class Mail Letter (Domestic) (DENVER, CO 80203) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507401)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002537)	1	$2.75
First-Class Mail Letter (Domestic) (MIDLAND, TX 79701) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507418)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002544)	1	$2.75
First-Class Mail Letter (Domestic) (MIDLAND, TX 79701) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507425)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002650)	1	$2.75
First-Class Mail Letter (Domestic) (DENVER, CO 80202) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507432)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002643)	1	$2.75
First-Class Mail Letter (Domestic) (OKLAHOMA CITY, OK 73102) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507449)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002636)	1	$2.75
First-Class Mail Letter (Domestic) (HOBBS, NM 88240) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507456)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002629)	1	$2.75
First-Class Mail Letter (Domestic) (HOUSTON, TX 77210) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507463)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002612)	1	$2.75
First-Class Mail Letter (Domestic) (HOUSTON, TX 77227) (Weight:0 Lb 0.40 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507470)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002605)	1	$2.75
First-Class Mail Letter (Domestic) (PERRYTON, TX 79070) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507487)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002599)	1	$2.75
First-Class Mail Letter (Domestic) (MIDLAND, TX 79702) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507494)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002582)	1	$2.75
First-Class Mail Letter (Domestic) (HOBBS, NM 88240) (Weight:0 Lb 0.50 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507500)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002575)	1	$2.75
First-Class Mail Letter (Domestic) (ARTESIA, NM 88210) (Weight:0 Lb 0.40 Oz) (Expected Delivery Day) (Thursday 02/02/2017)	1	$0.49
Certified (@@USPS Certified Mail #) (70161970000082507517)	1	$3.35
Return Receipt (@@USPS Return Receipt #) (9590940223706249002568)	1	$2.75
Total		$85.67
Personl/Bus Check		$85.67

****
BRIGHTEN SOMEONE'S MAILBOX. Greeting cards available for purchase at select Post Offices.
****

APPENDIX G

Operation Design Specifications for the Subsurface Safety Valve, Halliburton BWD Permanent Packer, P/T Gauge, and AGI System Training and Maintenance

Operational Design Specifications for the Subsurface Safety Valve, P/T Gauge and Halliburton BWD Permanent Packer

HALLIBURTON

DCP Midstream
Zia AGI #2
Lea County, New Mexico

Design of Service

Installation Procedures

Revision: 1
Date: 12/13/16

Prepared by: Casey Lehmann
Phone: 432-257-8525

Address: 6155 W. Murphy St.
Odessa, TX 79765

HALLIBURTON

Design Verification

Role	Name	Signature	Date
Prepared by:	Casey Lehmann		
Business Development Reviewed by:	Lynn Talley		
	Andrew Gammon		
Engineering Reviewed by:	Travis Marshall		
Halliburton Approval:	Gerald Stutes		
Customer Approval:			

Revision Log

Revision	Revision Date	Revised By	Comments
1	12/13/2016	CL	Initial Copy
2	12/17/2016	CL	Updated depths

Document Distribution List

Name	Company	Role	Email
Daniel Hayward	Halliburton	Service Manager	Daniel.Hayward@Halliburton.com
Lynn Talley	Halliburton	Acct. Leader	Lynn.Talley@Halliburton.com
Andrew Gammon	Halliburton	Acct. Representative	Andrew.Gammon@Halliburton.com
Steve Engleman	Halliburton	Service Coordinator	Steve.Engleman@Halliburton.com
Patrick Corder	Halliburton	Service Coordinator	Patrick.Corder@Halliburton.com
Gerald Stutes	Halliburton	Service Coordinator	Gerald.Stutes@Halliburton.com
Casey Lehmann	Halliburton	Technical Professional	Casey.Lehmann@Halliburton.com
Jeremy Jacobs	Halliburton	Service Specialist	Jeremy.Jacobs@Halliburton.com
Travis Marshall	Halliburton	Service Leader	Travis.Marshall@Halliburton.com

Customer / Halliburton / 3rd Party Interfaces

Name	Company	Project Role	Tel Number Office Number	Email Address
Tony Canfield	DCP Midstream	Project Manager	432.620.5422 432.425.4875	cdcanfield@dcpmidstream.com
Brian Collins	Concho	Operations Engineer	575.748.6924 432.254.5870	bcollins@concho.com
Tim Smith	Concho	Drilling Engineer	432.221.0346	tsmtih@concho.com
Suraj Shetty	Champion Technology	Automation Engineer	281.537.7366 281.537.7366	Suraj.shetty@champtechnology.com

Table of Contents

1. Project Team

1.1. HCT field Installation team

- HCT Specialists (Packer, Seal Assembly, SSSV)
- HCT Engineers (ROC Gauge, TEC)

2. Safety

2.1. Stop Work Authority

If an operation is observed or believed to put safety and/or service quality in jeopardy, it is the duty and obligation of all personnel involved to stop the operation, so that all safety and/or service quality concerns can be addressed.

2.2. Safety – General

Safety at Halliburton is a priority and a core value in the way we do business. Safety shall always be the number one concern in all job processes.
All pertinent PPE must be worn at all times, including:

- Hard Hat, Safety Glasses, FR Clothing, Steel Toe Boots, Impact Resistant Gloves

A safety meeting will be performed before the start of the job. A JSA will be filled out and signed by everyone present.

3. Management of Change

Any deviation from the approved running procedure must be approved by the proper Halliburton and DCP personnel. Any deviation from the approved operating conditions must be approved by engineering as well.

6.1.1 Operations-related Changes and Required Approval Levels:

Type of Change	Approver	Additional Approver
Changes to approved design of service (including equipment, materials, applications or software) not included in contingency planning	Service Coordinator / PSL Designee	Original design approver(s) or designee
Changes to original equipment manufacturer's specifications	Service Coordinator / PSL Designee	Original design approver(s) or designee
Changes to well site facilities that affect design of service	Service Coordinator / PSL Designee	
Changes to approved operating procedures at the well site	Service Coordinator / PSL Designee	Original design approver(s) or designee
Deviations from HMS Documentation	Service Coordinator / PSL Designee	HMS Document Owner
Deviations from Maintenance, Repair Procedures and Manuals	Service Coordinator / PSL Designee	HMS Document Owner
Changes to personnel that could negatively impact a job (excluding planned crew changes)	Service Coordinator / PSL Designee	
Changes to suppliers that directly impact the service	Service Coordinator / PSL Designee	

6.1.2 Infrastructure Changes and Required Approval Levels:

Type of Change	Approver	Additional Approver
Changes to Facilities & Infrastructure (including temporary operations) that significantly impacts support operations	Country/District Manager/Designee [1]	
Deviations from HMS Documentation	Country/District Manager/Designee	HMS Document Owner
Changes to key personnel	Country/District Manager/Designee [1]	
Changes to HMS Documentation as a result of Corrective or Preventive Action from CPI or TapRooT ®	Country/District Manager/Designee	HMS Document Owner
Changes to critical suppliers	Country/District Manager/Designee [1]	
Changes to approved equipment design or use	Country/District Manager/Designee	Equipment Design Owner
Changes in specifications for critical products/equipment.	Country/District Manager/Designee [1]	

[1] For this type of changes the Country/District Manager/Designee will request higher approval if necessary

4. Project Overview & Objectives

The objective of this project is to install an injection string with Check Valve Assembly, BWD Packer, Seal Assembly, ROC Gauge, and Subsurface Safety Valve.

5. Well Information

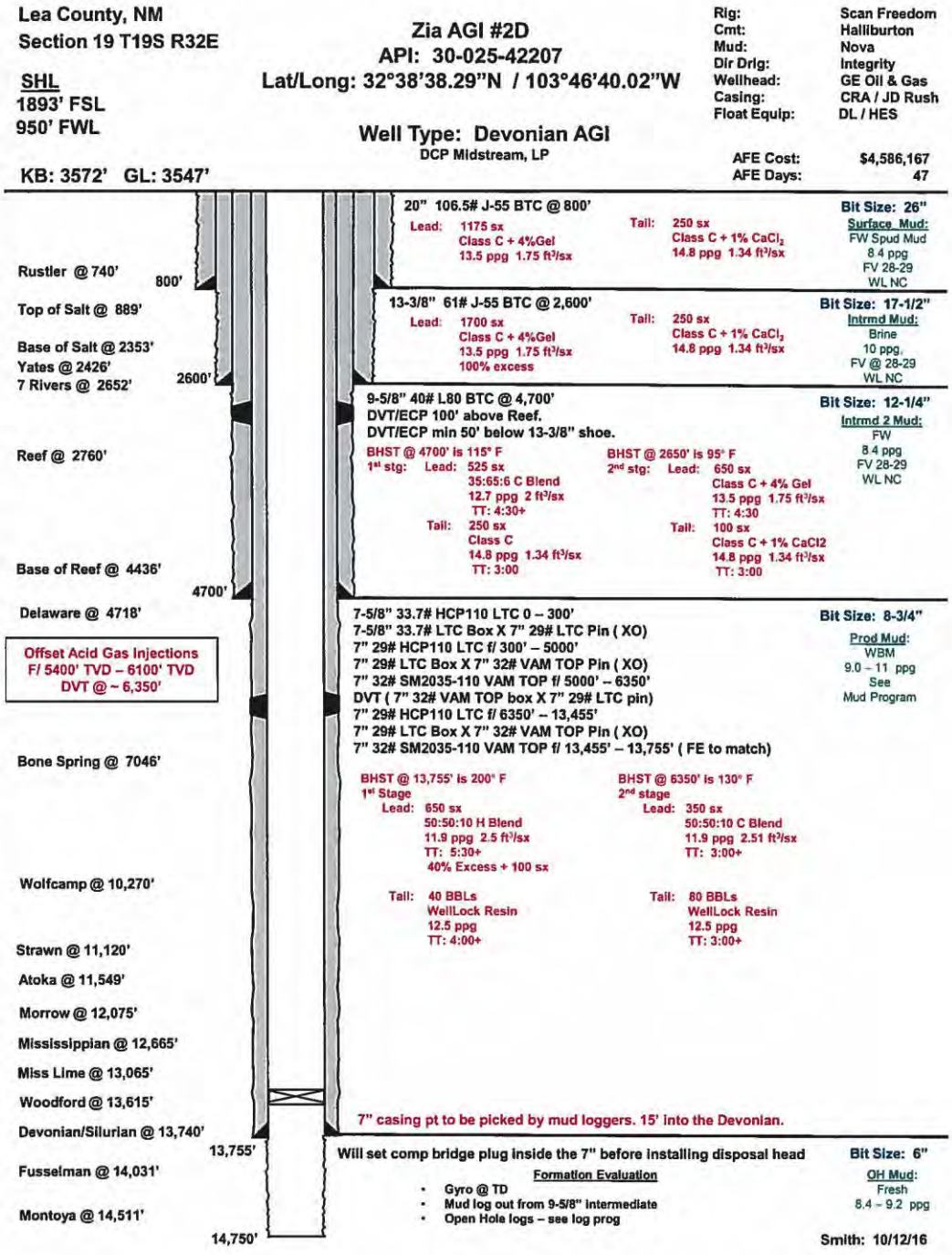


Fig. 1: Proposed Well Schematic

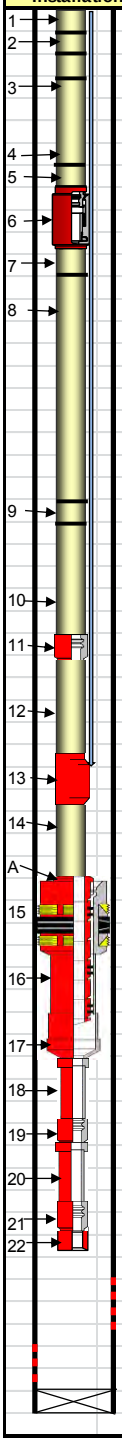
5.1. Well Schematic(s)

HALLIBURTON

DCP Midstream

ZIA AGI #2	Company Rep.	Brian Collins	
Lea County New Mexico	Sales Rep.	Lynn Talley	
7/18/16	Office	432-682-4305	

Installation



Installation	Length	Depth	Description	OD	ID
			KB Correction		
			Tubing Hanger		
			1) 1 joint 3 1/2" 9.3# BTS-8 Tubing Joint Inverted	3.500	2.920
			2) Double Pin Sub (DCP)	3.500	2.920
			3) Tubing Subs (As Required) (DCP)	3.500	2.920
			4) 3 1/2" 9.3# BTS-8 Tubing	3.500	2.920
			5) 3 1/2" 9.3# BTS-8 Box X 3 1/2" 9.2# AB TC-II Pin L-80 Sub (DCP)	3.500	2.959
			6) Halliburton Tubing Retrievable Safety Valve-NE 3 1/2" 9.2#	5.300	2.813
			AB TC-II Box X Pin 102588547 Nickel Alloy 925 10K		
			Rated 875 Minimum PSI Closing, 2000 PSI Open, 2.813" R Profile		
			7) 3 1/2" 9.2# AB TC-II Box X 3 1/2" 9.3# BTS-8 Pin L-80 Sub (DCP)	3.907	2.920
			8) 3 1/2" 9.3# BTS-8 L-80 Tubing	3.500	2.920
			9) 3 1/2" 9.3# BTS-8 Box X 3 1/2" 9.2# VAMTOP Pin L-80 Sub (DCP)	3.915	2.920
			10) 3 1/2" 9.2# VAMTOP Inconel G3 Nickel Tubing	3.500	
	1.33		11) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
			(102204262) Nickel Alloy 925		
	6.00		12) 6' x 3 1/2" 9.2# VAMTOP BxP Tubing Sub NA 925	3.500	2.992
	4.83		13) HAL ROC® PT Gauge Mandrel Assembly	4.660	2.992
			3 1/2 TBG DIAMETER,9.20#,VAMTOP TOP,PIN-PIN Type		
			Nickel Alloy 925 110KSI, 0.75" GAUGE		
	6.00		14) 4' x 3 1/2" 9.2# VAMTOP BxP Tubing Sub NA 925	3.500	2.992
			A) Halliburton Seal Assembly		
	1.76		A1) Straight Slot Locator Sub 3 1/2" 9.2# VAMTOP Box X 3 1/2" 10.2#	4.470	2.883
			VAMINSIDE Pin Incoloy 925 (102351212)		
	8.00		A2) 2-Seal Unit Ext. 3 1/2" 10.2# VAMINSIDE Nickel Alloy 925	3.860	2.902
			-158726		
	1.99		A3) 2-Seal Units 4" X 3 1/2" 10.2 VAMINSIDE Nickel Alloy 925	4.050	2.883
			Molded AFLAS/Flourel Seals 4.07 OD, 8000 PSI		
	3.00		A4) 3-Seal Units 4" X 3 1/2" 10.2 VAMINSIDE Nickel Alloy 925	4.050	2.883
			Molded AFLAS/Flourel Seals 4.07 OD, 8000 PSI		
			-102133617		
	0.55		A5) Mule Shoe Guide 3 1/2" 10.2# VAMINSIDE Nickel Alloy 925	3.960	2.972
			-102133560		
			Land Seals w/~26,000# Compression @ Surface, ~20K @ Packer		
			Halliburton Packer Assembly		
	3.11	13,565.00	15) Halliburton 7" 26-32# BWD Permanent Packer 4.00" Bore	5.875	4.000
			Incoloy 925 (101303583)		
	12.00	13,568.11	16) Seal Bore Extension 4.00" X 12' Incoloy 925 (120051359)	5.020	4.000
	0.83	13,580.11	17) Seal Bore Ext. Crossover 4 75" 8UN Box X 3 1/2" 9.2# VAMTOP Pir	5.650	2.992
			Incoloy 925 (101719647)		
	6.33	13,580.94	18) 6' x 3 1/2" 9.2# VAMTOP Box x Pin Pup Joint Incoloy 925	3.540	2.992
	1.33	13,587.27	19) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
			(102204262) Nickel Alloy 925		
	6.34	13,588.60	20) 6' x 3 1/2" 9.3# VAMTOP Box x Pin Pup Joint Incoloy 925	3.540	2.992
	1.33	13,594.94	21) Halliburton 2.562" R Nipple 3 1/2" 9.2# VAMTOP Box x Pin	3.937	2.562
			(102204262) Nickel Alloy 925		
	0.66	13,596.27	22) Wireline Re-entry Guide 3 1/2" 9.2# VAM Incoloy 925	3.960	2.992
		13,596.93	Bottom Of Assembly		
			DIESEL USED FOR PACKER FLUID		
			Filename:		

Fig. 2: Halliburton Generated Completion Schematic

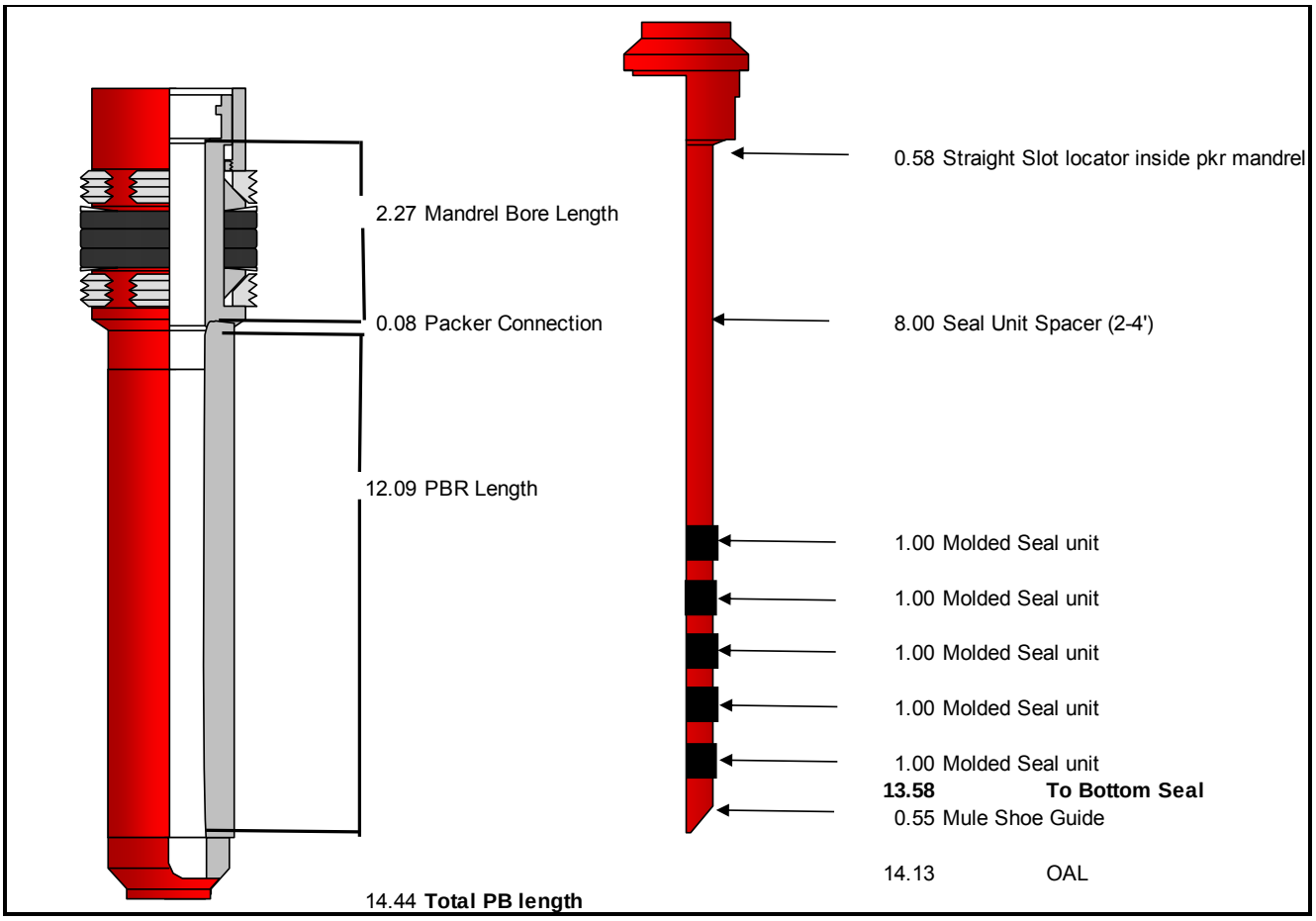


Fig. 3: Halliburton Generated Packer/Seal Assembly Schematic

6. Calculations

6.1. Work String

A Torque and Drag model and Cyberstring model have been run to simulate the effects of injecting through the tie back string and BWD Packer.

7. Procedures

7.1. Pre-Job Preparation – Completions Tools

Inspect and Test HCT Equipment

1. Inspect and record relevant dimensions on all incoming equipment
    a. Cross reference dimensions with machine drawings or EDS.
2. Generate SAMS sheets for all equipment to be RIH

Make Up and Pressure Test Assemblies in Shop

3. Make up and torque any assembly with handling pups and test 5000 psi internal pressure test.

Test Permanent Monitoring Equipment

4. Test ROC Gauge for functionality
    a. Record amperage draw and voltage
    b. Record Gauge values (pressure, temperature)

5. Mount ROC Gauge to Mandrel utilizing document: **ES-A-537**
    a. Document serial numbers on Gauge, Mandrel

6. Prepare and test TEC lines
    a. Make up Cable Termination utilizing document: **ES-A-9388-5216**
    b. Document serial numbers on Cable Termination
    c. Test ROC cable termination to 10,000 psi

Final Preparation

1. Gather and organize hand tools to be utilized on site
    a. Reference ROC Gauge Tool Checklist

2. Perform Rig Site visit and finalize equipment placement.
3. On location checks (prior to RIH)
    a. Test gauge and take readings - pressure, temperature, multi-meter reading

NOTE: Ensure proper weight certifications are supplied for relevant equipment (Sheaves, Spooling units, etc.) A loader is required for offloading large equipment such as standalone spooling units.

7.2. Installation Job Procedure

1) Conduct pre-job Safety Meeting prior to rigging up to discuss running the completion. Review Safety Meeting at each tower change as the Completion is being run to ensure all personnel understand the tasks at hand.

2) Important: Make certain that Halliburton conducts a "Pre-Job Meeting" at every point in which the completion makeup changes or any events change the installation process. The meeting will involve Halliburton, Rig Representatives, Tubular Running Service Representatives and the Company Representative on location

Rig Up

1) Spot trailers and equipment on site.

2) Rig up Cable Protector Installation kit on Rig floor and function test. Ensure mechanical tools are available as a back-up.

3) Examine the Sheave and control line rigging to ensure it is properly installed

4) Feed the line through the Sheave. While holding the end of the cable and assemblies pick up the Sheave with the winch line and secure to the Derrick.
   a. The Sheave should be as high above the Rig floor as possible to optimize the cable running angle. Sheave should be hung from Rig tubing board.
   b. Sheave needs a set of slings (primary and backup) to be secured to tubing board or derrick.

5) Connect surface equipment to spooling units and check continuity.

6) If leaving Sheave rigged up overnight - be sure it is secured to the derrick so it will not blow in the wind.

BWD Packer

1) Well Preparation
   a. It is recommended that a casing scraper be used to thoroughly scrape the area where the Packer will be set. High circulation rates during scraper run are recommended.
   b. A gauge ring and junk basket should be run on wireline

2) Pump Out Plug
   a. Insure that the POP is pinned to discharge at approximately 3200 psi applied pressure. This will depend on the fluid depth in the well before RIH. Verify fluid depth with customer.
   b. Each pin is rated to 5,000 lb. (707 psi/pin).
   c. The POP will be pinned with 3 pins before being sent to location.

3) RIH – Wireline
   a. Inspect Packer – Verify the slips have not been damaged, verify the top slip support and wedges are not sheared, and verify the metal backup shoes and rubber elements are not damaged.
   b. RIH with the setting tool, adapter kit, BWD, 6 ft. pup, 2.562" R nipple, 6 ft. pup, 2.562"

R nipple, and WL re-entry guide with POP. (~32 ft from top of adapter kit to bottom of POP)

c. Do not exceed 100 ft/min when RIH
d. Packer will be ran in 8.33ppg fresh water (if necessary, the well may have to be killed with cut brine, confirm well fluid on site)

4) Confirm Packer setting depth on location. Planned setting depth is approximately 13,565 ft. This is ~70 ft. above the top of the 6" open hole

Run Tieback

1) The tieback will consist of seal assembly, ROC Gauge (TEC to surface), 2.562" R Nipple, and a 3 1/2" NE HES SSSV (hydraulic control line to surface).

2) Make up seal assembly – proceed to ROC Gauge section below.

3) There will be 2000 psi on the hydraulic control line when RIH

4) Place cross coupling cable protector over every coupling.

ROC Gauge Mandrel

5) Make up ROC Gauge Mandrel
   a. Make sure mandrel is rotated to align with overhead TEC line

6) Make up TEC Cable Termination to ROC Single-End Gauge
   a. Utilize document **ES-A-530** for Termination to Gauge make up
   b. Verify Gauge communication
   c. Approximate completion time is 1 hour

NOTE: When the Run-In-Hole begins for any Electronic Gauge assemblies, ZERO TENSION should be applied to the control line. The Pressure setting on the Spooling Units should be set to allow the Units to spool out as the Cables are deployed. **After 5 Cross Coupling Protectors** have been installed above the Gauge Mandrel, it is recommended to increase the Control Line Spooler tension as directed by the HCT supervisor on location. (Normal setting is + 25 PSI on the Spooler motor) and ensure the proper tension is maintained at all times.

7) Install mid joint protector above Gauge Mandrel
   a. Cross coupling at next collar on handling pup
   b. Cross couplings on every joint thereafter

Note: Pipe Rams are NOT to be used with TEC or Control Line in well. Annular bags may be used starting at the lowest possible pressure setting to avoid crushing lines. (600 psi – 900 psi)

8) Run-in-hole while placing protectors at every coupling. Verify the number of protectors you will need
   a. Maximum RIH speed will be determined by the Halliburton Service Specialist on location.

SSSV - See section 9 of HCT Field Operations Manual

1) Make up HIF fitting to end of spool and pressure test prior to picking up equipment

2) Discuss placement of spool with Company Representative

3) Upon making up control line to TRSV, refer to BDMI no. 478LXE11 for proper installation of HIF connection.

4) Test TRSV control line connections to 500 psi LOW/10,000 psi HIGH before RIH, maintain 2,500 psi on control line during RIH.

5) Place hydraulic line under cable protectors on the left side of the TEC line

Landing Seal Assembly / Tubing Hanger and Operations

1) Tag seal assembly and determine amount of space out pups. After space out there needs to be ~20,000 lb. of compression at the Packer. This will be equivalent to 26,000 lb of slack off at surface.

2) Install space out pups as needed

3) Make up Tubing Hanger under GE guidance

4) Terminate the data acquisition and cut/strip encapsulation on TEC to prepare for feed-through

5) Place first set of Swagelok fitting (supplied by GE) on the stripped lines to be installed into bottom of Hanger

6) Feed lines through Hanger and make up second set of Swagelok fittings (supplied by GE) on lines to be installed into top of Hanger
    a. Pull slack and tighten Swagelok fittings 1 ¼ turns past hand tight

7) Make “Temporary Splice” on hydraulic line and TEC line to monitor while landing tubing hanger

8) With end of seal assembly as close as possible to the Packer bore, hanger in place and tubing suspended with landing joint and TIW valve, close Annular for circulation

9) Circulate customer specified fluids down the tubing

    a. Before entering the Packer seal bore, tie onto tubing string with pump truck and pump 20 bbl of dyed spacer followed by 500 bbls diesel Packer fluid mixed with 5bbls of Baker CRO 381 corrosion inhibitor at a max rate of 3bpm.

    b. Stop pumping diesel when the dyed gel spacer circulates out of the tubing x casing annulus and clean diesel appears at the surface. The tubing and tubing x casing annulus will be full of diesel Packer fluid when finished. The capacity of the tubing is

approx. 120 bbls. The capacity of the tubing x casing annulus above the Packer is approx. 350 bbls for a total of 470 bbls.

Maximum rate – 3BPM
Maximum pressure – 1500 psi (VALID ONLY WITH 3 PINS IN POP)

10) Open annular and land tubing hanger. Tighten packoff screws

11) Verify electrical continuity with the Gauge

Wellhead Assembly and Wellhead Rigs

1) If applicable, service loop the TEC line and hydraulic control line above the tubing hanger.

2) While the Wellhead is suspended, pass the lines through the Exit Ports

3) Lower the Wellhead carefully, watching for any pinch points that could damage lines

4) Once the Wellhead is properly seated, verify electrical continuity

5) Install Wellhead exit block (1/2" NPT) and install Halliburton wellhead outlet fitting
   a. Tighten Swagelok fitting 1 ¼ turns past hand tight

6) Pressure test wellhead prior to final outlet installation to 250 psi for 10 minutes followed by 5000 psi for 10 minutes

7) Continue with installation of Wellhead Outlet per Halliburton documentation.

8) Pressure test tubing-casing annulus to 500 psi for 30 minutes
   a. Pressure test should not deviate more than 50 psi

9) Bleed annulus to a minimum of 250 psi in order to monitor the backside while expending the pump out plug.

10) Rig up to tubing and expend POP
   a. With 3 pins in the POP, the plug should expend at approximately 3200 psi
   b. Tubing movement calculations below
      - **2000 psi on annulus will produce 2.66 ft of seal movement**
      - **1000 psi on annulus will produce 4.34 ft of seal movement**
      - **250 psi on annulus will produce 5.66 ft of seal movement (worst case scenario)**

11) Run check valve assembly to lowermost R nipple

12) Final "Health Checks" on TEC to be performed and ensure Gauge is reading

13) Connect the surface cables and surface equipment
   a. Install surface cable in a cable tray

7.3. Injection (Acid Gas)

1) During acid gas injection, Cyberstring predicts approximately 3.64 ft of seal movement

a. Parameters used

i. 6.40 lb/gal fluid (gas mixture)

ii. 2,500 psi injection pressure

iii. 0 psi on annulus

iv. 6.8 lb/gal in annulus

#	Scenario	Initial Slackoff on BWD	Tubing Pressure	Annulus Pressure	Fluid Rate	Weight Down on BWD	Seal Movement
1	Test annulus	20,000 lbs	0	500	0	20,000+ lbf	0 ft.
2	P.O.P	20,000 lbs	3500	250	0	0 lbf	5.66 ft.
3	Gas Injection	20,000 lbs	2,500	0	4 BPM	0 lbf	3.64 ft.

8. Testing and Validation

8.1. Pre-Test Preparation

Pressure test using HMS standards

8.2. Test Procedures

N/A

9. Contingency

Failure	Action
Completion String loses weight immediately (stops high)	Lightly reciprocate and record pickup/slack off. Work through obstruction and consult Company Representative if no progress is made.
Crushed/Cut lines	Consult Company Representative and Halliburton Supervisor on installing a TEC Splice
Gauges stop communicating	Stop RIH immediately. Check all surface connections back to the XPIO using Multi-Meter. Check XPIO settings (voltage, gain) to regain communication with Gauges. If Gauges are not communicating, consult Company Representative to determine whether RIH will proceed or not.
Stinging In Tieback	If mule shoe does not fall into Packer bore, rotate string to give ¼ turn at the mule shoe and try to re-enter Packer. Consult with Halliburton Supervisor before making additional turns.

10. Risk Assessment

10.1. Risk Assessment Table

Risk Assessment											
Project/Well:	DCP Zia AGI #2							Date:			
Completed By:	Casey Lehmann		Target	Existing				After Controls			
Risk Description	Cause	Effects		Sev	Prob	RPC	Controls to Reduce Risk	Sev	Prob	RPC
Components damaged during transport	Improper handling with Hot Shot Service	Increased risk of job failure		2	D	3	Use trained and reliable Hot Shot Service	2	E	3
Vehicle accident	Improper driving Driver not properly rested Weather conditions	Injury or death Loss of company property	3	2	B	1	Be properly rested before journey Do not begin driving in poor weather Utilize journey management			
Damage to equipment	Rough driving or roads Improper packaging Not secured for transport	Equipment in need of remedial work or replacing	3	2	C	2	Strap down equipment Leave thread caps on until it is time to makeup tools			
Over pressured Iron	Being around iron that is under pressure	Injury or death	3	1	D	2	Communicate with cement crew to know when iron is under pressure. Avoid these areas	2	D	3

Pinch Points	Placing hands or other body parts in a pinch point	Injury or death	2	1	B	1	Avoid pinch points. Wear proper PPR			

10.2. Risk Rating Matrix

		Potential Consequences			Probability Rating					
Hazard Severity Category	Descriptive Word	Personal Illness/ Injury	Equipment Loss(s)	Environmental (Any incident that…)	A Frequent	B Reasonably Probable	C Occasional	D Remote	E Extremely Improbable	F Impossible
1	Catastrophic	Fatal or permanent disabling injury or illness	>$1,000,000	Potentially harms or adversely affects the general public and has the potential for widespread public concern of Halliburton operations. Can have serious economic liability on the operation.	1	1	1	2	3	3
2	Critical	Severe Injury or illness	$200,000 to $1,000,000	Potentially harms or adversely affects trained employees and the environment. Requires specialised expertise or resources for correction.	1	1	2	3	3	3
3	Marginal	Minor Injury or Illness	>$10,000 to $200,000	Presents limited harm to the environment and requires general expertise and resources for correction	2	2	3	3	3	3
4	Negligible	No Injury or Illness	<$10,000	Presents limited harm to the environment and requires minor corrective actions (CPI).	3	3	3	3	3	3

11. Appendix

11.1. Equipment Specifications

11.1.1. Packer

HALLIBURTON

December 13, 2016

Engineering Data Sheet

EQUIPMENT MATERIAL NO.: 101303583

PKR,7,26-32 X 4.000,4 3/4-8 UN

PART NUMBER: 212BWD70412-D

DESIGN SPECIFICATIONS

CASING SIZE	7
WEIGHT RANGE	26 TO 32 pound/foot
MAXIMUM OD	5.875 inch
MINIMUM ID	4.000 inch
SEAL BORE ID-MIN	4.000 inch
LENGTH	47.06 inch
MATERIAL	NICKEL ALLOY 925
MATERIAL YIELD STRENGTH-MIN	110000 pounds/sq. inch
ELEMENT MATERIAL	AFLAS RUBBER
O-RING MATERIAL	AFLAS RUBBER
O-RING BACK-UP MATERIAL	PEEK
ACCEPT STANDARD SEAL UNIT	YES
BOTTOM THREAD	4 3/4-8 UN-2B
CONNECTION TYPE	BOX
TEMPERATURE RATING	100 TO 300 Deg. F
SERVICE	H2S/CO2
MEETS REQUIREMENTS OF	MR-01-75
PRESSURE RATING	10000 pounds/sq. inch
PRESSURE RATING REMARKS	ELEMENTS
BURST PRESSURE (CALC)	13400 pounds/sq. inch
COLLAPSE PRESSURE (CALC)	10200 pounds/sq. inch
SHEAR STRENGTH TOP SUB, CALC/1000	60.1 pound
DIM A	7.75 inch
DIM B	47.06 inch
DIM C	5.13 inch
DIM D	5.875 inch
DIM E	4.610 inch
DIM F	4.000 inch
DIM G	25.00 inch
DIM M	.09 inch
DIM N	.08 inch
MILL DISTANCE, APPROXIMATE	25.00 inch

DRIFT GAGE	101089074 (81TO355)
GAGE RING	101016925 (241B7088)
J-LATCH SEAL PLUG	101015577 (212JP7003)
J-LATCH SEAL PLUG-ALLOY	101016700 (212JPN40000-A)
HYDRAULIC SETTING TOOL	101054294 (241HS7002)
HYDRAULIC TUBE GUIDE	100008580 (212K7472)
SETTING KIT F/ #20	101016711 (241AO198)
MATING SEAL BORE EXTENSION	100008567 (212C7060)
MATING MILL OUT EXTENSION	100008573 (212F7460)
MATING COUPLING	100009772 (212F7459)
BDMI/TECHNICAL OPERATIONS MANUAL	212WSPS00000

(END)

(Unless specified, Dim-inches, pres-psi, weight-lbs, temp-deg F)
NOTE: Values of pressure, force and operating depths presented above are based upon empirical data and theoretical calculations. These values will vary within accepted engineering limits due to variations in material strength, dimensional tolerances and actual installed conditions.

NOTE: Halliburton makes no warranty, either expressed or implied, as to the accuracy of the data or of any calculation or opinion expressed herein. Halliburton, Dallas, Texas, U.S.A.

11.1.2. ROC Gauge

HALLIBURTON

8.6 ROC Gauge - Single Ended

Gauge Sub-Assembly ROC-175 Single Sensor Gauge

Design Specifications

NAME	VALUE
OD:	0.75"
MAX. OVERALL LENGTH INCLUDING TERMINATION :	28.75"
WELL BORE MECHANICAL INTERFACE:	ALL PT SENSORS TO BE INDEPENDENTLY PORTED THROUGH GAUGE MOUNT SUB CARRIER DUAL METAL SEAL ARRANGEMENT.
MATERIALS/FLUID COMPATIBILITY:	ALL WETTED PARTS TO BE MP35N CORROSION RESISTANT ALLOY FULLY COMPLIANT WITH LATEST REVISION OF NACE MR0175.
PRIMARY SEAL TECHNOLOGY:	DUAL METAL SEAL OR ELECTRON BEAM WELD IN ALL SEAL AREAS EXPOSED TO WELL FLUIDS.
MULTI-DROP CAPABILITY:	6 GAUGES PER CHANNEL AT UP TO 35,000FT
MAX. PT SENSORS PER GAUGE:	1
MAX. OPERATING PRESSURE:	16,000PSI
MAX. OPERATING TEMPERATURE:	175°C
MIN. OPERATING TEMPERATURE:	-20°C
PRESSURE ACCURACY:	+/- 0.02% FS
PRESSURE RESOLUTION:	<0.008 PSI/SEC (<0.00041 BAR/SEC)
TEMPERATURE ACCURACY:	+/- 0.5°C
TEMPERATURE RESOLUTION:	<0.005°C/SEC
MAX. SAMPLING RATE	1 SEC
DRIFT:	TEMPERATURE: <0.1°C/YEAR; PRESSURE: <0.02% FS/YEAR @ MAX PRESSURE AND TEMPERATURE.
TARGET RELIABILITY AT MAX. OPERATING TEMPERATURE:	90% AFTER 10+ YEARS AT 160 DEG.C
MAX. OPERATING RANDOM VIBRATION:	10G RMS
MAX. OPERATING SHOCK:	100G 2MS ½ SINE 6 AXIS (500 G PENDING EXTENDED TEST)

11.1.3. SSSV

HALLIBURTON

November 22, 2016

Engineering Data Sheet

EQUIPMENT MATERIAL NO.: 102588547

TRSV,NE,5.30 2.813,H2S,10K

PART NUMBER: 478HRE18

DESIGN SPECIFICATIONS

VALVE MODEL	NE
CLOSURE TYPE	FLAPPER
SIZE	3 1/2
LOCK PROFILE	R
MINIMUM INSIDE DIAMETER WITHOUT PACKING BORE	2.840 inch
TOP SEAL BORE ID-MINIMUM	2.813 inch
BOTTOM SEAL BORE ID-MINIMUM	2.813 inch
MAXIMUM OD	5.300 inch
LENGTH	55.68 inch
MATERIAL	NICKEL ALLOY 925
SERVICE	H2S
SERVICE REMARKS	H2S AND/OR CO2 SERVICE BASED ON CUSTOMER DEFINED, WELL SPECIFIC CONDITIONS. APPLICATIONS MUST BE REVIEWED FOR SPECIFIC ENVIRONMENTAL COMPATIBILITY.
MEETS MATERIAL SERVICE REQUIREMENTS OF	NACE MR0175/ISO 15156
TOP THREAD	3 1/2-9.20 AB-TC-II
BOTTOM THREAD	3 1/2-9.20 AB-TC-II
CONNECTION TYPE	BOX-PIN
TUBING THREAD TORQUE	2300 foot pound
TUBING THREAD TORQUE REMARKS	BASED ON TRSV END CONNECTION YIELD STRENGTH. CONSULT THREAD VENDOR FOR COMPLETION-SPECIFIC RECOMMENDED TORQUE VALUES.
PRESSURE RATING	10000 pounds/sq. inch
BURST PRESSURE AT AMBIENT, CLOSED ENDS	15952 pounds/sq. inch
INTERNAL YIELD PRESSURE AT MAX TEMPERATURE RATING, VALVE OPEN	14587 pounds/sq. inch
API COLLAPSE PRESSURE AT AMBIENT	11696 pounds/sq. inch
API COLLAPSE PRESSURE AT MAX TEMPERATURE RATING	11105 pounds/sq. inch
EXTERNAL PRESSURE RATING AT AMBIENT, ENDS OPEN	10000 pounds/sq. inch
MAXIMUM CONTROL CHAMBER PRESSURE, AT AMBIENT	20000 pounds/sq. inch
MAXIMUM CONTROL CHAMBER PRESSURE, AT MAX TEMPERATURE RATING	20000 pounds/sq. inch

TENSILE WITH WORK PRESS, WITHOUT TBG THD, AT AMBIENT, ENDS OPEN, CALC/1000	408 pound
TENSILE WITHOUT WORK PRESS, WITHOUT TBG THD, AT AMBIENT, CALC/1000	498 pound
TENSILE WITH WORK PRESS, WITHOUT TBG THD, AT MAX TEMPERATURE RATING, ENDS OPEN, CALC/1000	373 pound
TENSILE WITHOUT WORK PRESS, WITHOUT TBG THD, AT MAX TEMPERATURE RATING, CALC/1000	463 pound
TEMPERATURE RATING	20 TO 300 Deg. F
MAXIMUM FULL OPEN PRESSURE	2000 pounds/sq. inch
MINIMUM CLOSING PRESSURE	875 pounds/sq. inch
PISTON DISPLACEMENT VOLUME	.75 cu. inch
EQUALIZING FEATURE	YES
MAXIMUM PRESSURE DIFFERENTIAL AT VALVE OPENING	10000 pounds/sq. inch
CONTROL LINE PRESSURE TO EQUALIZE AT PRESSURE RATING	7500 pounds/sq. inch
CONTROL LINE CONNECTION	7/16-20 HIF
HIF KIT	101085853 (93F1499)
LOCKOUT TYPE	NE
COMMUNICATION TYPE	NE
LOCKOUT TOOL, PERMANENT	101316031 (42OO717)
LOCKOUT TOOL REMARKS	LOCKOUT ONLY, NO COMMUNICATION
PRESSURE TO LOCK OUT	1000 pounds/sq. inch
COMMUNICATION TOOL	101316024 (42OO716)
INSTALLATION EXTENSION	PENDING
INSTALLATION EXTENSION O-RING	100009103 (91QV1033-H)
WIRELINE REPLACEMENT VALVE	PENDING
RUNNING/PULLING PRONG EXTENSION	PENDING
ISOLATION ASSEMBLY LOCK MANDREL TYPE	2.813 R
ISOLATION ASSEMBLY EQUALIZING VALVE TYPE	2.813 RO
ISOLATION ASSEMBLY EXTENSION MANDREL	PENDING
ISOLATION ASSEMBLY EXTENSION MANDREL O-RING	100009103 (91QV1033-H)
ISOLATION SLEEVE	101073454 (78D2221)
ISOLATION SLEEVE O-RING	100009103 (91QV1033-H)
SEAT INSERT INSTALLATION TOOL	101275474 (83M2051)
SEAT INSERT TORQUE-MIN	2000 foot pound
BODY TORQUE	5300 foot pound
SHOULDER BOLT TORQUE	90 inch pound
SPRING COMPRESSION TOOL	101275476 (83M2052)
SPRING COMPRESSION SLEEVE	101275478 (83M2053)
DRIFT BAR	101088124 (81R105)
DRIFT BAR OUTSIDE DIAMETER	2.803 inch
DRIFT BAR LENGTH	24.00 inch
TEST FIXTURE-BOX END	101091172 (81T12995),101090541 (81T12102)

TEST FIXTURE-PIN END	101091171 (81T12994), 101247913 (81T16241)
API TYPE	SCTRSV
MEETS QUALITY REQUIREMENTS	API-Q1/ISO 9001
MEETS INDUSTRY SPECIFICATION(S)	API 14A
API SPECIFICATION EDITION	TWELFTH
API VALIDATION GRADE	V4-1
API VALIDATION DATE	12-03-15
API VALIDATION METHOD	VARIATION
API VALIDATION REFERENCE	78OO1163
BDMI/TECHNICAL OPERATIONS MANUAL	478HRE18
RATED PERFORMANCE ENVELOPE, ENDS OPEN	478HRE18

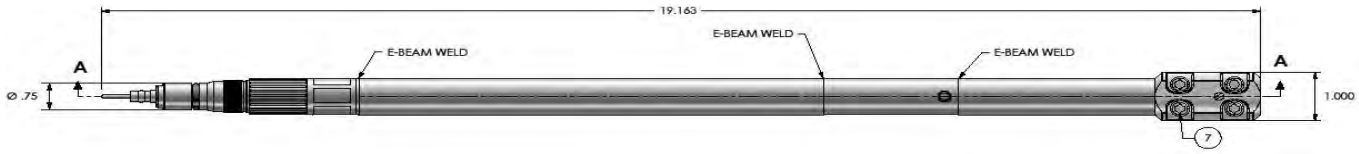
(END)

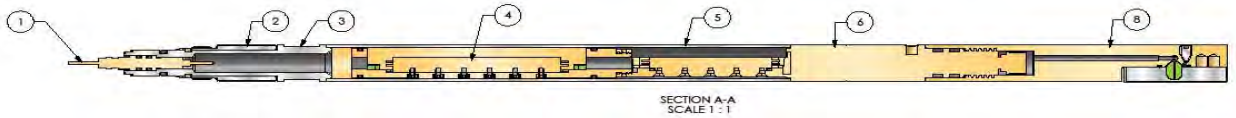
(Unless specified, Dim-inches, pres-psi, weight-lbs, temp-deg F)
NOTE: Values of pressure, force and operating depths presented above are based upon empirical data and theoretical calculations. These values will vary within accepted engineering limits due to variations in material strength, dimensional tolerances and actual installed conditions.

NOTE: Halliburton makes no warranty, either expressed or implied, as to the accuracy of the data or of any calculation or opinion expressed herein. Halliburton, Dallas, Texas, U.S.A.

ROC Single Ended Pressure Temperature Gauge

MATERIALS	
SAP MATERIAL NUMBER	DESCRIPTION
101863921	ROC-15D 10Kpsi 150°C GAUGE SUB ASSEMBLY
101863926	ROC-17S 16Kpsi 175°C GAUGE SUB ASSEMBLY
101863928	ROC-17S 20Kpsi 175°C GAUGE SUB ASSEMBLY





SECTION A-A
SCALE 1 : 1

BILL OF MATERIALS	
NO	PART DESCRIPTION
1	ELECTRICAL FEEDTHROUGH HOUSING
2	COLLAR NUT
3	PRESSURE HOUSING UPPER
4	HYBRID ELECTRONICS ASSEMBLY
5	PRESSURE HOUSING
6	QUARTZ TRANSDUCER
7	CAP SCREW
8	MOUNT SUB

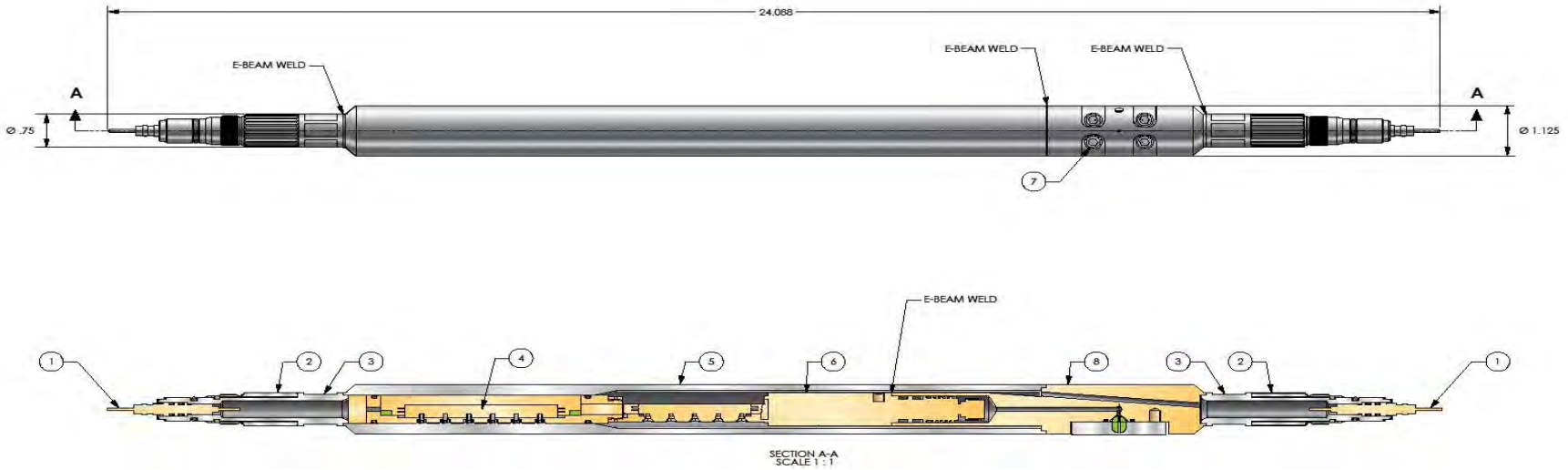
ROC GAUGE (Ø 0.750")			
DRAWN BY	DJT	DATE	13/APR/2010
APPROVED BY	CM	DATE	13/APR/2010

WellDynamics
HALLIBURTON

HALLIBURTON

ROC Feed Through Pressure Temperature Gauge

MATERIALS	
SAP MATERIAL NUMBER	DESCRIPTION
101856620	ROC-150 10Kpsi 150°C FEEDTHROUGH GAUGE SUB ASSEMBLY
101856426	ROC-175 10Kpsi 175°C FEEDTHROUGH GAUGE SUB ASSEMBLY
101856406	ROC-175 20Kpsi 338°C FEEDTHROUGH GAUGE SUB ASSEMBLY



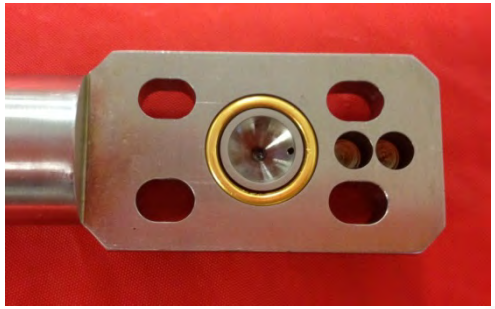
BILL OF MATERIALS	
NO	PART DESCRIPTION
1	ELECTRICAL FEEDTHROUGH HOUSING
2	COLLAR NUT
3	PRESSURE HOUSING UPPER
4	HYBRID ELECTRONICS ASSEMBLY
5	PRESSURE HOUSING
6	QUARTZ TRANSDUCER
7	CAP SCREW
8	MOUNT SUB

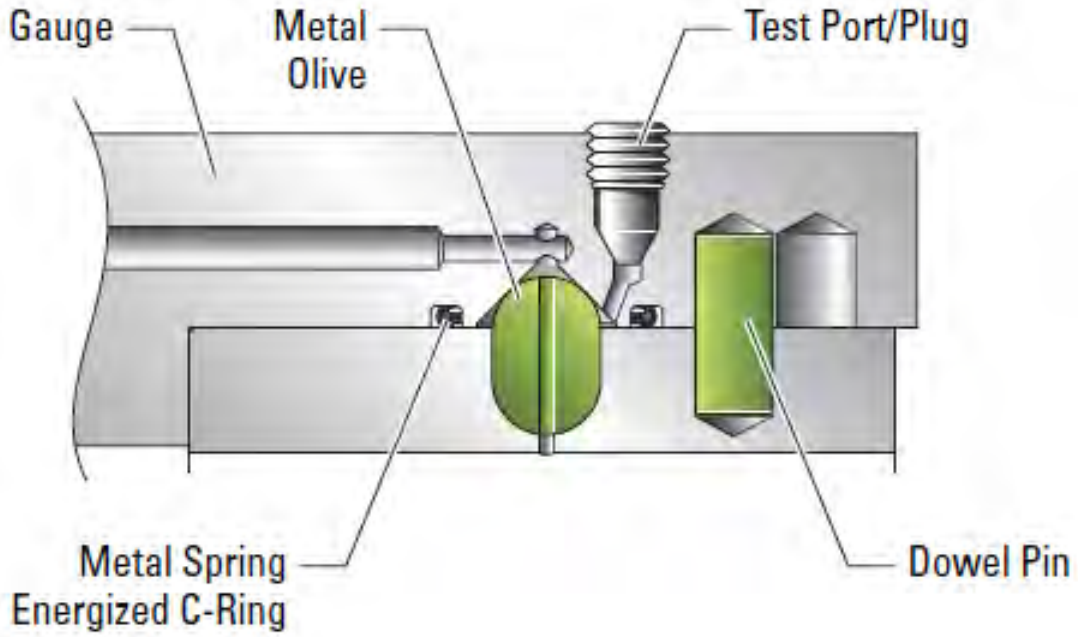
ROC FEEDTHROUGH GAUGE			
DRAWN BY	CVT	DATE	13/APR/2010
APPROVED BY	CM	DATE	13/APR/2010

WellDynamics
HALLIBURTON

HALLIBURTON

ROC Gauge To Gauge Mandrel Seals





HALLIBURTON

Operational Instructions for Hydraulic Control Panel

The control panel is used to control the Subsurface Safety Valve (SSSV) and the Wing Valve (WV). These instructions will be updated when panel is re-piped to allow cycling of SSSV without closing the Wing Valve (WV).

FOR EMERGENCY SHUTDOWN (THIS SHUTS THE SSSV AND THE WING VALVE (WV)):

1. Push in Red ESD/TSE handle on front of panel.
   - ESD/TSE holding pressure will immediately go to 0 PSI.
   - Wing Valve (WV) will close over 90 seconds and the output pressure should slowly drop to 0 PSI.
   - After 90 second delay, SSSV will close and SSSV output pressure will drop to 0 PSI (Hydraulic supply pressure will also drop, but may not reach 0 PSI).

TO REOPEN SSSV AND WING VALVE (WV):

1. Pull out Red ESD/TSE handle and hold for several seconds.
   - ESD/TSE holding pressure will increase to set level (~60 PSI).
   - Hydraulic pump will engage and SSSV output pressure will increase. At ~2000 PSI, the pressure will bobble (rise and fall) as the sleeve on the SSSV slides down opening the valve. Once the sleeve is in place, the SSSV output pressure will rapidly climb to just below the set pressure (~3000-3500 PSI). The pump will then slow down pump to the set level over the next several minutes.
2. Pull out Black Wing Valve (WV) handle and hold for several seconds.
   - Wing Valve (WV) output pressure will increase to set level (60-110 PSI). The Wing Valve (WV) will slowly open until the valve is completely open.

TO CYCLE SSSV OR TEST SSSV WHILE INJECTING (Without shutting wing valve)

1. Manipulate the SSSV valve from the In service to Shut In position. If this valve is used the wing valve should stay open.

NORMAL OPERATION

Red ESD/TSE pull handle & Black Wing Valve (WV) pull handle
Handles should be out during normal operation.

Panel supply pressure
Panel is controlled pneumatically. Panel supply pressure should be >30 PSI and <125 PSI. We suggest ~75 PSI. This level depends on air supply pressure and is controlled by regulator closest to panel supply (B-1 on diagram).

ESD/TSE holding pressure
Pressure must be >20 PSI for the proper operation of the panel. The preset is for 60 PSI. This level can be controlled using the regulator on the right hand side of the panel interior.

Output pressure to SSSV
Pressure should be >2500 PSI and <5000 PSI. We recommend 3000-3500 PSI. This level will fluctuate due to temperature changes (both atmospheric and injection fluid) and is controlled by the regulator next to the hydraulic pump (C-2 on diagram). While the panel supply pressure is between 30 and 125 PSI, the hydraulic pump (S-1 on diagram) should automatically engage to maintain pressure to SSSV. Should the panel supply pressure drop below ~30 PSI, the pump can be manually operated using the handle attached to the back door of the control panel.

Output pressure to Wing Valve (WV)
The Wing Valve (WV) output pressure should be between 60-110 PSI. This level is determined by the Wing Valve (WV) and should not require adjustment as long as the panel supply pressure is sufficient for operation.
Hydraulic supply pressure
The hydraulic supply pressure is linked to the operation of the SSSV and should equal the SSSV output pressure. The sight glass shows the level of hydraulic fluid and should be maintained at ~3/4 full. Fluid can be added through the fill cap on the top of the panel just above the sight glass. Use H-32 hydraulic oil.
In-Service/Bypass/Wing Valve (WV) handle
Handle should be set to In-Service during normal operation.

MAINTENANCE (CYCLING OF SSSV)
The SSSV sleeve should be cycled (activated) roughly once a month to prevent scale build-up on the SSSV and to check performance.

1. Go to wellhead and manually open Wing Valve (WV) to hold valve in full open position (piston fully depressed into valve). **Important: If this step is not taken first, the Wing Valve (WV) will shut and cause interruption of acid gas injection and emergency shutdown of compressor due to over-pressuring.**
2. Turn the In-service/Bypass/Wing Valve (WV) handle to Bypass.
3. Push in the red ESD/TSE handle and wait ~90 seconds until the SSSV closes (output pressure goes to 0 PSI).
4. Pull out and hold the ESD/TSE handle for several seconds. Watch the SSSV output pressure and make certain that the pressure bobbles (rises and falls) at ~2000 PSI before climbing to the set pressure. If the pressure does not bobble, it may mean the sleeve has become stuck in the up position. Repeat the process.
5. Return the In-service/Bypass/Wing Valve (WV) handle to the In-service position.
6. Go to wellhead and manually close Wing Valve (WV) and verify that piston remains in full open position (piston fully depressed into valve) when manual valve is fully unscrewed to beyond close position. **Verify that piston remains fully depressed into Wing Valve (WV) for at least 2 minutes and that output pressure to Wing Valve (WV) is within range as measured on hydraulic control panel.**

For Help with Panel
Call RSI Global – Louis Lesage 504-340-1992
Job number 2012110063

INSTALLATION INSTRUCTIONS

1. Connect a clean/dry air/gas supply of less than 200 psi to the panel bulkhead labeled "Panel Supply." Connection Type 3/8" tubing.
2. Route "Drain" bulkhead to a safe drain area. This drain will produce water from the air supply if the supply is not dry. Connection Type 1/4" tubing.
3. "ESD/TSE" bulkhead may be connected to local ESD stations, and/or appropriate fusible devices, or may simply be plugged if not in use. Connection Type 3/8" tubing.
4. Connect pneumatic "Wing Valve Output" bulkhead and hydraulic "SCSSV Output" to their respective valve ports. Connection Type 3/8" tubing.
5. Connect 24V DC power to Terminal Block 1 and ground to Terminal Block 3 IAW Electrical Schematic on –PH1 drawing.
6. Connect PLC open and Close signal to appropriate Solenoid Valve Terminals and connect wiring to pressure transmitters for Status IAW Electrical Schematic on –PH1 drawing.
7. Fill hydraulic reservoir to full level with standard hydraulic fluid, i.e. Shell Tellus 32.

OPERATING INSTRUCTIONS

1. Once air supply is connected, open ball valve A-1 to allow air flow to regulator B-1.
2. Adjust regulator B-1 (inside of panel) until Panel Supply Pressure Gauge D-1 reaches appx 100-120 psi.
3. Then set regulator C-1 (inside of panel) at 60 psi.
4. Pull relay G-1 to charge the ESD system. As long as the ESD solenoid Q-3 is closed, and the ESD outlet is connected or plugged, ESD holding pressure of 60 psi should be read on gauge E-1.
5. Ensure hydraulic interface valve W-1 is not over ridden. To do this, make sure the over ride handle is turned completely counter clockwise. Also at this time, make sure that SCSSV solenoid is in the open position. With power connected to the panel, this may be done either from PLC or at the panel face by the open switches.
6. To set pump regulator, pull know up and turn clockwise until pump reaches desired operating pressure on gauge F-1. If pressure will not build, the pump may not be primed, and the output to SSSV may need to be opened to release air from the line.
7. At this time, with the Wing valve solenoid Q-2 open, pull the Wing valve relay and pressure should be read on gauge E-2.

8. Panel is now operating. To set a SCSSV delay closing, adjust the flow control valve P-1 inside of the panel. Turning this valve clockwise will increase the delay time. If this valve is open, there should be very minimal or no delay.
9. For testing purposes, the wing valve and SCSSV may be opened or closed independently by manipulating their respective bypass/in service valves.
10. To remotely perform a complete shut in, the ESD solenoid valve Q-3 may be opened. This valve can be closed remotely but the panel ESD must be manually charged by pulling of the panel mounted relay.
11. To adjust the hydraulic relief valve, loosen lock nut and turn clockwise to increase relief pressure or turn counter clockwise to decrease.

AGI System Training and Maintenance

Zia AGI D#2 TAG Injection System, DCP Zia II Gas Plant, NM

January 25, 2017

GEOLEX INCORPORATED

dcp Midstream

1

Outline of Training Session

1. Goals of Zia AGI D#2 and Project History
2. Geology: Injection Zone and Caprock Properties
3. Engineering: Zia AGI D#2 Well Design and Operation – Includes Visit to Wellhead
4. Monitoring Operating Conditions: Reservoir Evaluation and Regulatory Reporting/Compliance
5. Zia AGI D#2 Commissioning
6. Acid Gas – System Overview
7. Acid Gas - Properties
8. Well Dynamics and Acid Gas Density
9. Water in Acid Gas
10. Troubleshooting
11. Environmental
12. Inspection and Testing
13. Summary of H2S Contingency Plan

GEOLEX INCORPORATED

dcp Midstream

2

1. Goals of Zia AGI D#2 System

- To safely inject and store up to 15 MMSCFD of TAG in the subsurface over a 30-year lifespan.
- To have a two well system to allow ongoing operation of the Zia plant during any individual well failure or routine maintenance operation.
- And as a result:
  - Allow increase in plant processing capacity
  - Improve injection conditions due to better reservoir

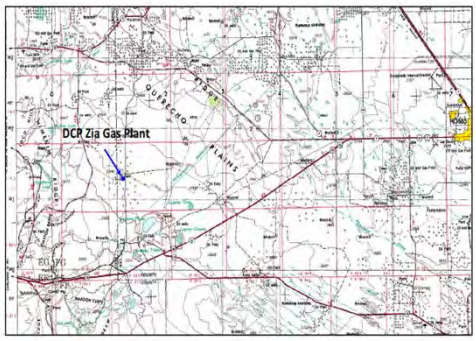
GEOLEX INCORPORATED

dcp Midstream

3

History of Zia AGI D#2 Project

- Need due to less than optimal performance of AGI#1
- Feasibility
  - **Initiated – February 2016**
  - **Completed – August 2016**
- Permit
  - **Granted by the BLM and NMOCC – September 2016**
- Well
  - **Spudded – November 2016**
  - **Completed – January 2017**
  - **Anticipated In-service – February 2017**



Location of the DCP Zia II Gas Plant and AGI Wells

GEOLEX INCORPORATED

dcp Midstream

4

2. Geology and the Injection Zone

a. Local stratigraphy
b. Characteristics of injection zone and cap rock
c. Anticipated area of impact from injection (footprint)
d. Reservoir testing results at Zia AGI D#2

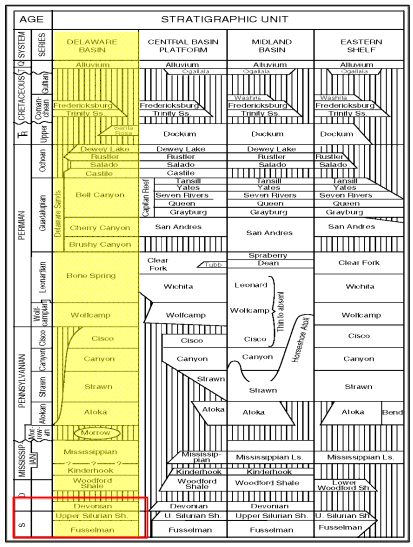
GEOLEX INCORPORATED

dcp Midstream

5

Stratigraphy of Delaware Basin

- The Permian Basin is subdivided into the Delaware Basin, Central Basin Platform and Midland Basin.
- The Zia II Gas Plant is located in the Delaware Basin portion of the Permian Basin.
- The Injection zone is in the Devonian/Wristen/ Silurian-Fusselman/ Montoya.

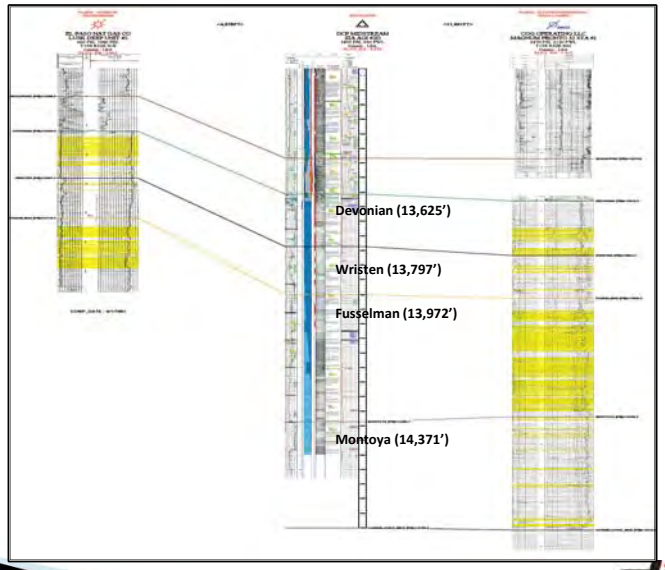


GEOLEX INCORPORATED

dcp Midstream

6

Reservoir & Caprock Characteristics



GEOLEX INCORPORATED

dcp Midstream

7

Predicting Long-term Area of Impact

- Area of Footprint – assumes perfect displacement – like an expanding balloon - while accounting for residual formation water that can't be displaced

Injection Rate (MMSCFD)	Radius of AGI Plume after 30 Years (Feet)	Radius of AGI Plume after 30 Years (Miles)	Area occupied (Acres)
15	1,473	0.28	156
30	2,083	0.39	313

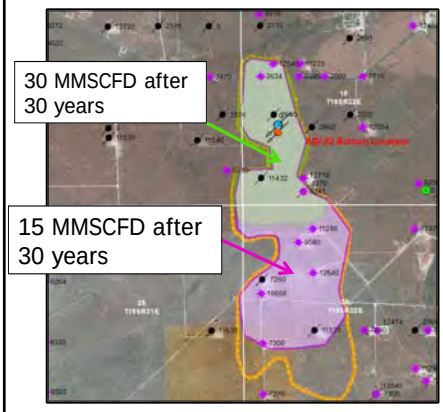
- Shape of footprint dependent on local structure and physical characteristics of the formation – like faults and fractures

GEOLEX INCORPORATED

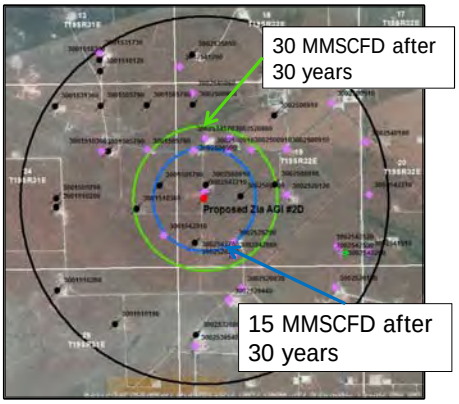
dcp Midstream

8

Predicted Area of Impact



Potential porosity fairway resulting in a elongated TAG plume after 30 years.



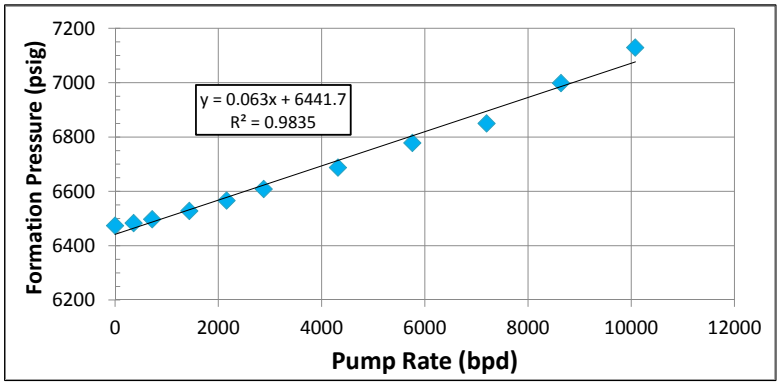
Calculated Radii of injection after 30 years of operation with 100% safety factor at 30 MMSCFD

GEOLEX INCORPORATED

dcp Midstream

9

Reservoir Testing, Zia AGI D#2



Formation Pressure vs. Injection Rate demonstrating formation parting pressure exceeds maximum observed pressure of 7,164 psig at the 7 bpm (10,080 bpd) injection rate. Very rapid falloff indicates excellent permeability and bleed off of pressure to reservoir – this suggest the reservoir will very easily take our acid gas maximum rate of 6,500 bpd

GEOLEX INCORPORATED

dcp Midstream

10

3. Zia AGI D#2 System Design and Operation

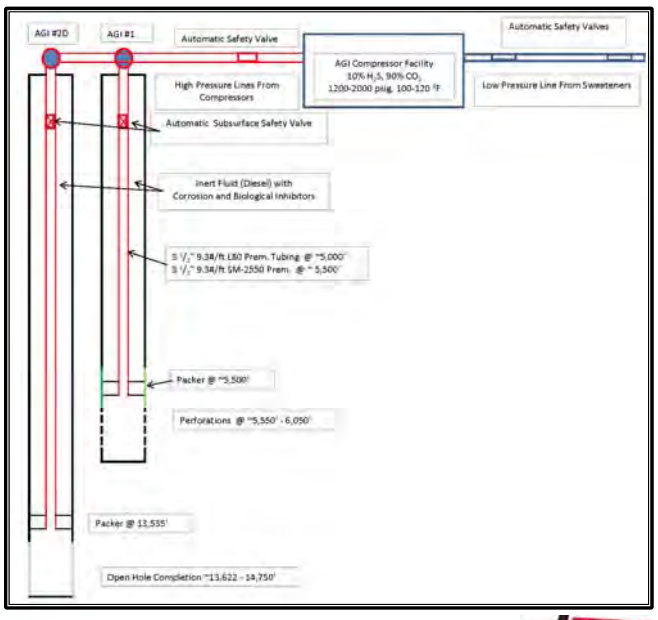
a. Well Design
b. Complete Wellhead and Tree Schematic (with methanol for startup)
c. Subsurface Safety Valve Operation
d. Hydraulic Control Panel for SSSV and Wing Valve
e. PT sensors in bottom hole for reservoir monitoring

GEOLEX INCORPORATED

dcp Midstream

11

Generalized Zia AGI Facility Design



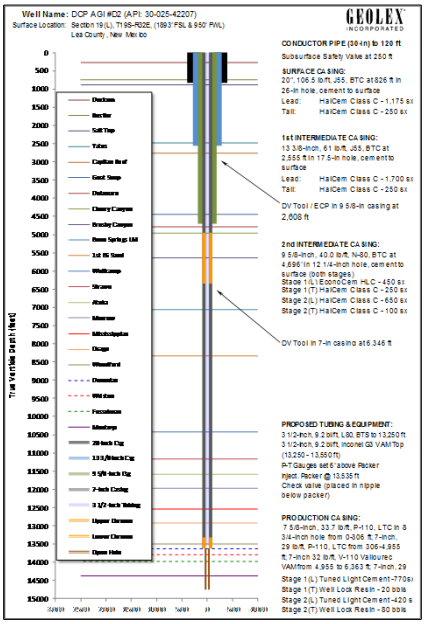
GEOLEX INCORPORATED

dcp Midstream

12

Well Design

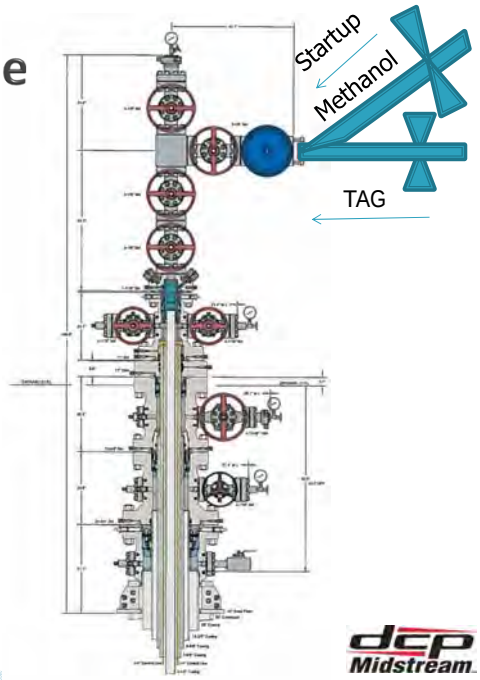
- Tubing, casing and cement
- Packer
- Safety features
  - Subsurface Safety Valve
  - Check valve
  - CRA joints
  - Fluid-filled annulus



GEOLEX INCORPORATED

dcp Midstream

Wellhead and Tree Schematic (with methanol for startup)



GEOLEX INCORPORATED

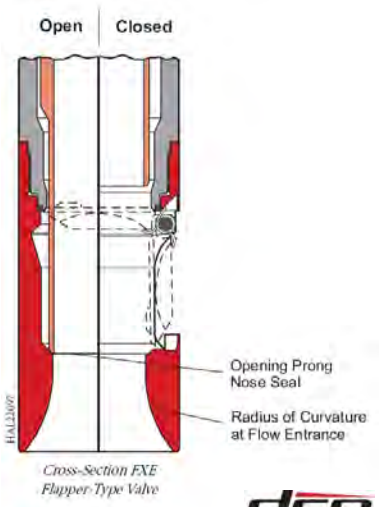
dcp Midstream

#1

#2

Subsurface Safety Valve

- Valve can be closed to prevent fluid from coming back up tubing to surface
- This is important in case of a sudden loss in pressure at the surface



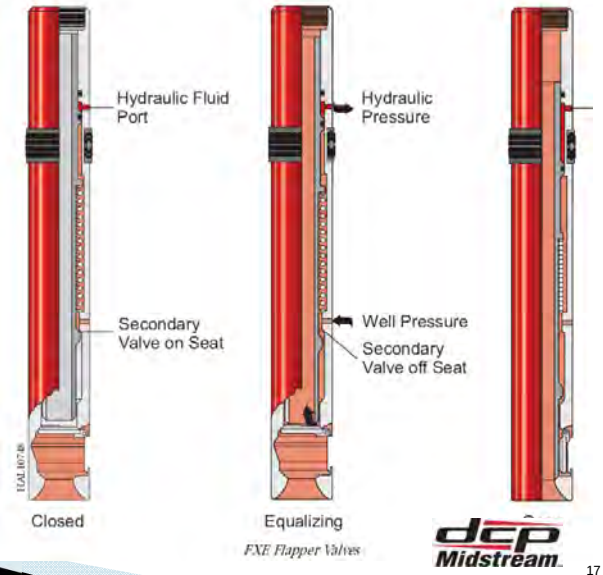
GEOLEX INCORPORATED

dcp Midstream

16

Subsurface Safety Valve Features

- Valve is controlled by a hydraulic line to surface panel



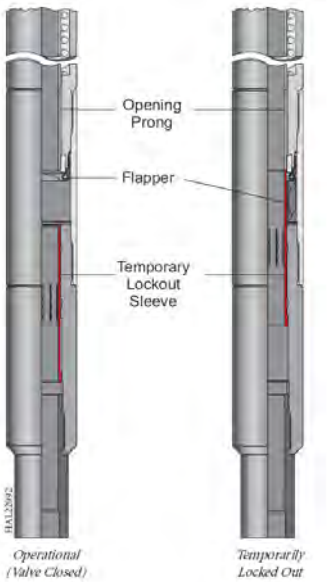
GEOLEX INCORPORATED

dcp Midstream

17

Subsurface Safety Valve Features

- Valve can be locked open using temporary lockout sleeve
- This is used when doing wireline work down-hole



GEOLEX INCORPORATED

18

Hydraulic Panel

- The Hydraulic Panel is used to monitor and control the Subsurface Safety Valve (SSSV)
- Inconel hydraulic line extends from panel through tubing hanger, down annulus and connects to SSSV
- Decreasing pressure causes valve in SSSV to close
- Increasing pressure allow valve to open
- Valve can be cycled to maintain function

GEOLEX INCORPORATED

dcp Midstream

19

Hydraulic Panel Gauges and Controls

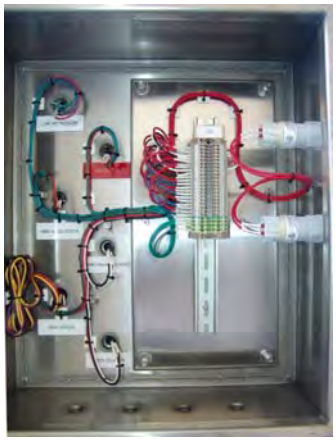
- Gauges
- Red Button
- Black Button
- Hydraulic fluid level

GEOLEX INCORPORATED

dcp Midstream

20

Hydraulic Panel Interior



GEOLEX INCORPORATED

dcp Midstream

21

4. Monitoring Operating Conditions: Reservoir Evaluation and Regulatory Reporting/Compliance

- Operator has limited control over injection volume –
  - Throughput system – no storage capability for TAG stream from amine unit
  - Can control TAG volume by lowering raw inlet volume and/or re-routing high CO2/H2S to other plants
- Requires monitoring of some parameters to ensure operation within safety and regulatory limits of system
- Additional data collection to evaluate reservoir performance over time

GEOLEX INCORPORATED

dcp Midstream

22

Required Operational Monitoring and Reporting

- Monitor annulus pressure within established range observed after initial operation-must maintain data for OCD inspection
- Monitor injection pressure and flow rate - must report monthly total injected volume and average pressure to OCD on C-115 (measured in MMCFD and psig – reported in MCF/month and average psig)
- Document any repairs, diesel addition/bleeding or maintenance activities required in response to any observed operational problems

GEOLEX INCORPORATED

dcp Midstream

23

Required Regulatory Reporting To OCD

- Monthly online reporting to NMOCD on C-115 Form of following parameters:
  - Number of days injection system operated
  - Total barrels of acid gas injected for each month from totalizer or other electronic data recorder (report volume in MCF and pressure in psig)
  - Monthly average injection pressure in psi (from recording chart or other electronic data recorder)
  - Must be electronically filed with OCD by 15th of following month
- Must maintain record of injection conditions at surface, annular pressure and bottom hole conditions and provide quarterly analysis and reporting to NMOCD.
- MIT test results on production casing and Braden head annually
  - Requires notification to Hobbs OCD of scheduled test and they must witness and sign the chart

GEOLEX INCORPORATED

dcp Midstream

24

C-115 Form Injection Reporting to OCD

Requires setting up NMOCD online login and password to access your "account" in OCD's electronic system, followed by:

- **Step 1** Use Excel spreadsheet template from previous month to generate current month spreadsheet
- **Step 2** Confirm that you have measured monthly injected volume (in MCF) and average pressure (in psig) correctly and make sure any large variation from previous month is understood as a quick check on numbers
- **Step 3** Convert spreadsheet into .txt file using Excel add-in for submitting to OCD
- **Step 4** Submit .txt file and make sure any errors are corrected
- **Step 5** Confirm that OCD system does not yield errors on submission
- **Step 6** Confirm that report was accepted by OCD by rechecking day after submission

GEOLEX INCORPORATED

dcp Midstream

25

Steps to Create and File a C-115

First Time Steps

1. Obtain an OCD Online User ID
2. Download the Excel add-in
3. Download the C-115 template
4. Entering information to the C-115 Form
   Key your wells, properties, pools, PODs, etc. into the C-115 template (spreadsheet)

Monthly Steps

5. Entering information to the C115 Form
   Fill in the production, injection, disposition etc. for a specific month into the Excel spreadsheet (.xls file)
6. Using the Add-in
   (Click Add-Ins and fill in this month's information on the first and last tabs (creates .txt file))
7. Submitting the C115 Online
   Sign on to OCD Online, select Create a New C-115, Browse to your .txt file, attach it
   a. Validate your C-115
   b. Submit the C-115 if no errors exist
8. Correct errors, out of balance conditions and omissions
9. Receive e-mail notification of acceptance from the OCD
   Amendments: complete all of the monthly steps, re-reporting all production and disposition

GEOLEX INCORPORATED

dcp Midstream

26

Sample C-115 Excel Sheet for 5/2011

2 Operator DCP Midstream, LP | 3 OGRID: 36785 | 4 Month/Year 5/2011

5 Address: 370 17th Street, Suite 2500, Denver CO., 80202 | 6 Page 1 of 4

		INJECTION			PRODUCTION					DISPOSITION OF OIL, GAS, AND WATER							
7	8			11	12				16			19			22	23
POOL NO. AND NAME	C			C	Barrels of	13	14	15	C	17	18	Oil on hand	20	21	C	Oil on
Property No. and Name	O	9	10	O	Oil/conden-	Barrels of	MCF	Days	O	Point of	Gas BTU	at	Volume	Transporter	O	hand at
Well No. & U-L-S-T-R	D	Volume	Pressure	D	sate	water	Gas	Prod-	D	Disposition	or Oil API	beginning	(Bbls/mcf)	Ogrid	D	end of
API No.	E			E	produced	produced	Produced	uced	E		Gravity	of month			E	month
	1			2					3						4	
97756 AGI; Wolfcamp																
036738 Zia AGI #001																
30-025-38576	I	124909	1330.94	O	0	0	0	0	O				2758		V	

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.

24

Signature | Printed Name & Title | E-Mail Address | Date | Phone Number

Be sure to put all data on same line as API number

GEOLEX INCORPORATED

dcp Midstream

27

Data Collection for Evaluating Injection Performance

- Injection pressure, rate and temperature conditions are examined over time to determine the response of reservoir to injection both at bottom hole and surface.
- Monitoring of these conditions and analysis of data allow for documentation of integrity of well between MIT tests and allow for evaluation of reservoir performance and compliance with NMOCD operating limitations.
- Relationship between pressure and injection rate gives a measure of injection performance - indicates probable future reservoir behavior
  - Decreasing injection pressures with time (improved performance) indicate favorable reservoir response
  - Increasing injection pressures with time suggest that reservoir response should be monitored – may require future action

GEOLEX INCORPORATED

dcp Midstream

28

5. Zia AGI D#2 Commissioning

- Notification to BLM and NMOCD
- Conduct witnessed MIT test
- Check all valves on tree and all monitoring systems
- Test SSSV operation
- Purge system with Methanol
- Hook up TAG line to tree and start injection
- Inject following plan and monitor injection parameters and annulus pressure

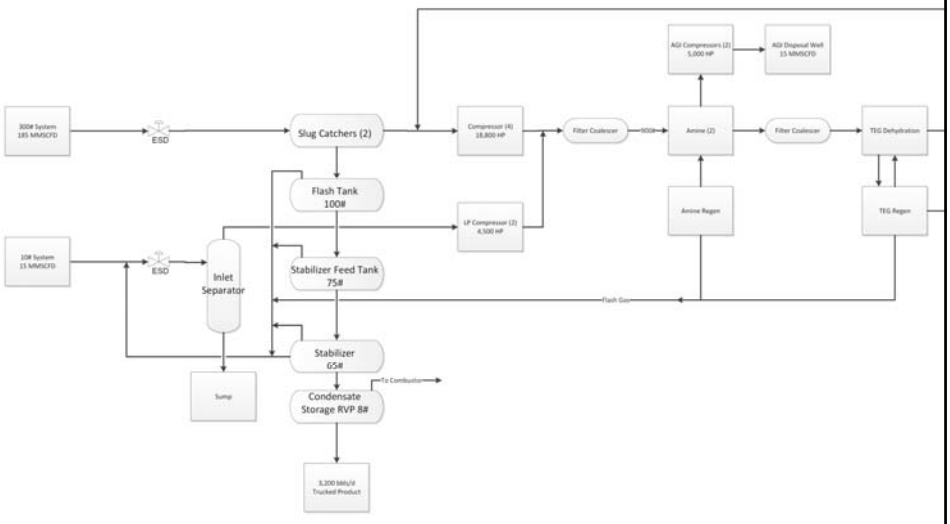
GEOLEX INCORPORATED

dcp Midstream

29

6. Acid Gas – System Overview

The source of the Acid Gas is the Inlet Gas.



7. Acid Gas - Properties

The source of the Acid Gas is the Inlet Gas. The following components are removed from the Inlet gas by the Amine System:

- Hydrogen Sulfide
- Carbon Dioxide
- Mercaptans
- Other Sulfur Compounds
- Water
- Methanol
- Hydrocarbons (methane, ethane, propane, and aromatics) – though we try to catch as little of these components as possible

AG Composition Range

	Mole %
Hydrogen Sulfide	~0 to 35
Carbon Dioxide	64 to 98
Nitrogen	0.0634
Methane	0.3553
Ethane	0.0439
Propane	0.0221
i-Butane	0.0057
n-Butane	0.0068
i-Pentane	0.0021
n-Pentane	0.0020
Hexane	0.0058
Benzene,Toluene,Xylene (BETX)	0.0831

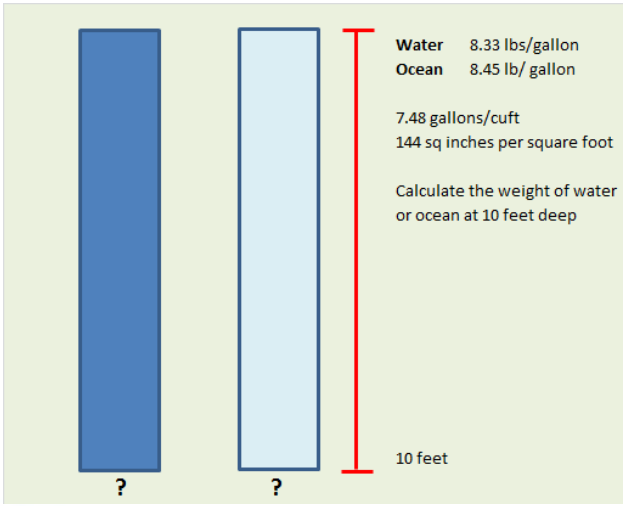
H_2S Toxicity

Concentration			Physical Effects
percent (%)	ppm	grains per ft^3	
0.001	10	0.65	Obvious and unpleasant odor. Safe for 8 hours exposure. **(PEL & TLV)**
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat. IDLH
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; artificial respiration / oxygen must be given promptly.
0.07	700	45.36	**Unconscious quickly; death will result if not rescued promptly.**
0.10	1000	64.80	**Unconscious at once; followed by death within minutes.**

8. Well Dynamics and Acid Gas Density

1. The pressure and temperature at the formation does not change much day-to-day…. only slowly over time
2. If the temperature of the acid gas increases at the surface, the surface pressure must increase to get to the same formation pressure due to lower gas density
3. So…..during summer, we will normally require higher injection pressure (since the gas from the compressor discharge fin fan is hotter than during the winter)

Gas Density

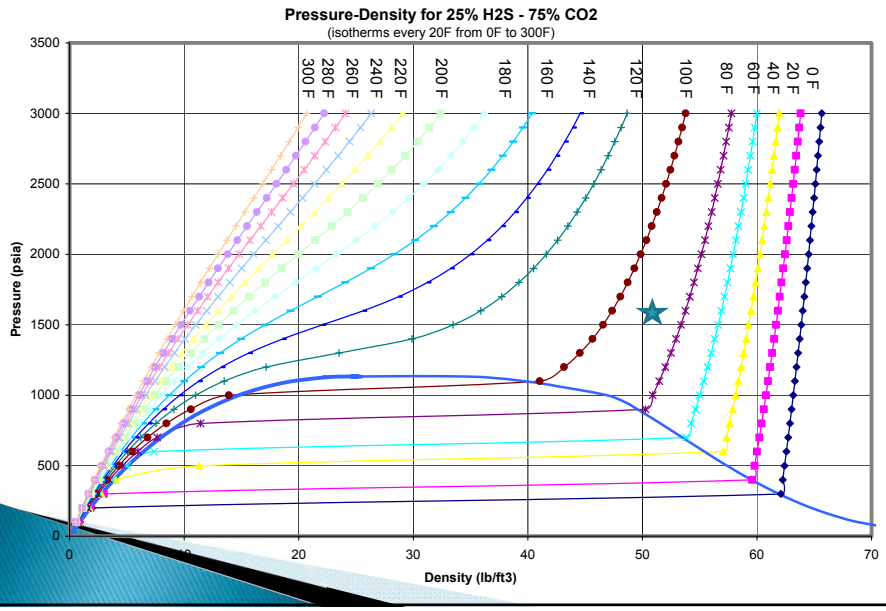


How Temperature Effects Injection Pressure 80% CO2, 12% H2S

(Mw CO2 28, Mw H2S 34)

	Case 1	Case 2
Injection Temperature °F	90	100
Pressure at Wellhead psig	1,600	1,765
Density at Wellhead lb/cuft	48.3	45.2
Temperature at Reservoir °F	151	164
Pressure at Reservoir psig	6,390	6,390
Density at Reservoir lb/cuft	56.3	54.9

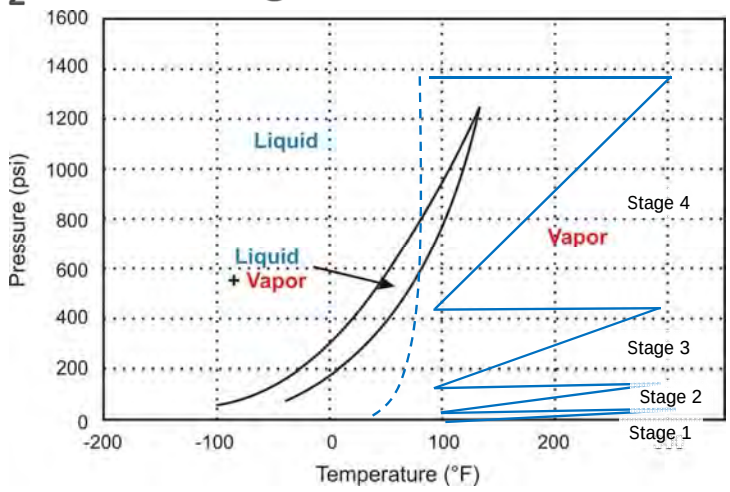
Acid Gas Density



8. Well Dynamics and Acid Gas Density

1. So….why don't we run the acid gas as cool as possible into the well (final stage discharge temperature) in order to get the lowest injection pressure as possible and save horsepower (fuel or electricity)?
2. Because…..we drop out water if we gets too cold
   a) Hydrates can form as warm as 85 F
   b) Water drop out causes corrosion
   c) Water drop out can cause slugging in the wellbore
3. This is why we need to keep the temperature from the discharge cooler between 90 F and 110 F
4. HOWEVER, We can minimize the amount of water in the final stage gas by ensuring the interstage gas is cooled to ~ 100F, thus removing the water in the interstage scrubbers, but avoid hydrate formation

CO_2 Phase Diagram



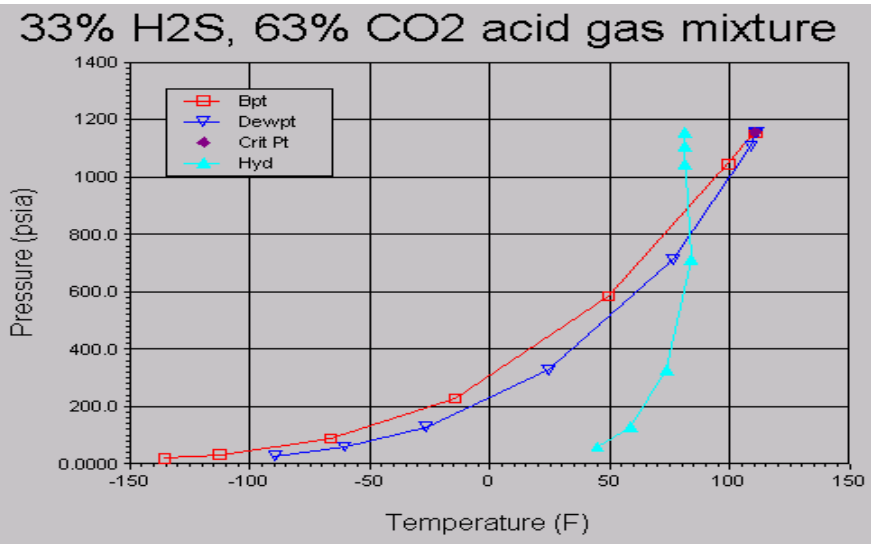
CO_2 and H_2S behave independently, H_2S becomes liquid at lower pressures and temperatures

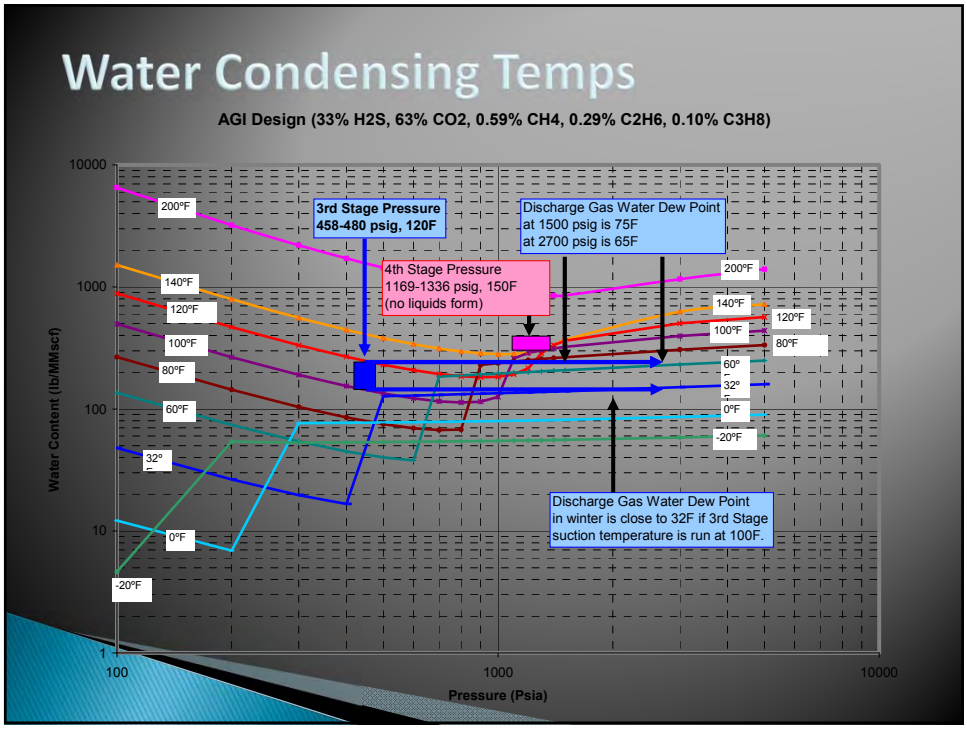
GEOLEX INCORPORATED

dcp Midstream

39

9. Water In Acid Gas





Acid Gas Density – Effect of Methane

	Case 1	Case 2	Case 3
Injection Temperature °F	90	90	90
CO2	79	78.5	75.4
H2S	12.7	12.6	12.1
Methane	0.2	1.0	5.0
Pressure at Wellhead psig	1,600	1,650	1,875
Density at Wellhead lb/cuft	48.3	47.6	44.3
Temperature at Reservoir °F	151	151.5	151.2
Pressure at Reservoir psig	6,390	6,390	6,390
Density at Reservoir lb/cuft	56.3	55.8	53.3

10. Troubleshooting

- Injection Pressure Variances
- Leak at Tree
- Annulus Pressure Variances
- Blowing Down Lines

GEOLEX INCORPORATED

dcp Midstream

43

Injection Pressure Variance

- High Injection Pressure Causes:
  - High temperature from final stage discharge cooler
    - Requires higher injection pressure to get density required to get into reservoir
  - Hydrate causing plugging
  - SSSV partially closed
  - Flow/Pressure valve partially closed
  - Compositional change in Acid Gas
    - Methane

GEOLEX INCORPORATED

dcp Midstream

44

Leak at Tree

- If the well head/injection tree are compromised causing leak of TAG
  - Immediately close SSSV if it has not already closed
  - Shut down operations and go to flare
  - Notify NMED, OCD and Geolex
  - Follow H_2S Contingency Plan Protocol

GEOLEX INCORPORATED

dcp Midstream

45

Annulus Pressure Increase

- If 7” casing x 3 1/2” tubing annular pressure approaches or exceeds normal operating range:
  - Geolex will assist in determining operating range during commissioning of well.
  - A tubing or casing leak is indicated
  - Prepare to shut down injection operations and go to flare
  - Notify NMED and OCD of flaring event
  - Notify Geolex

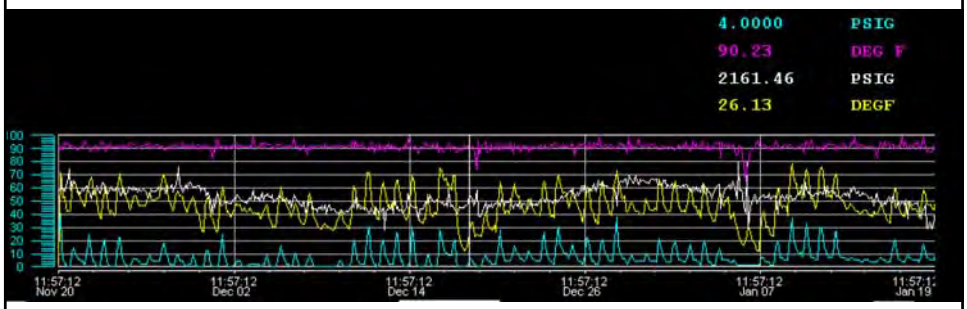
Note: the annular pressure can fluctuate 500-1000 psi depending on ambient conditions or tubing injection pressure fluctuations

GEOLEX INCORPORATED

dcp Midstream

46

Annulus Pressure Variation



- Annulus pressure will vary due to seasonal and diurnal atmospheric changes and injection pressure changes

GEOLEX INCORPORATED

dcp Midstream

47

Blowing Down Lines

- Injection lines are at very high pressure
- Flare line is near atmospheric
- Temperature of acid gas can drop to -100 F when blown down to flare line
  - Water dropout
  - Hydrate/Ice formation
- High gas velocity in flare line
  - Hydrate or Ice can tear up piping
- NOTE: each blowdown has a ball valve AND a globe valve
  - Globe valve should be used to handle pressure drop
  - If you use the ball valve to handle the pressure drop, it will cut out – immediately

GEOLEX INCORPORATED

dcp Midstream

48

11. Environmental

- Air Quality Permit
  - AGI is 100% efficient when in operation
  - Start-up, Shutdown, and Malfunction
- Well Requirements
- OCD Rule 118 – H_2S Contingency Plan
- State Land Office (SLO) Requirements
  - Patrol Line every 14 Days
  - Semi-Annual Reports of Daily Operating Data

Startup, Shutdown and Malfunction

Exceedances of the Permit Limits

- Under the acid gas injection scenario, any flaring event is considered an exceedance of the permit conditions.
- Reportable to the State
- Need to comply with the State's Startup, Shutdown and Malfunction Regulation

Unplanned Event

- Verbal notification to the State within 24 hours
- Written report (801 Form) detailing the event. This includes the calculated SO_2 emission, length of time and how the exceedance was rectified
- Minimize emissions during upset, including possible shut in of producers and use of overtime labor

Planned Maintenance

- Written notification to the State at least 24 hours prior to the event
- Minimize emissions during upset, including possible shut in of producers and use of overtime labor
- After the event an 801 Form must be submitted to the State

AGI Well Minimum Requirements

Operation and Maintenance

- Well to be equipped, operated, monitored, and maintained to facilitate periodic testing and to assure continued mechanical integrity.
- Failure of the injection well must be reported under "Immediate Notification" under Rule 116 - Release Notification and Corrective Action.

Integrity Testing Required:

- Prior to starting injection operations ***or*** any time the tubing is pulled or the packer is reseated.
  - Well must be tested to assure the integrity of the casing and the tubing and packer including pressure testing of the casing-tubing annulus to a minimum of 300 psi for 30 minutes or as otherwise approved by NMOCD.
- At least once every year.
  - Measurement of annular pressures in the well injecting at positive pressure under a packer or a balanced fluid seal.
- Division may require more comprehensive testing as deemed necessary;

Monitoring & Reporting

- Injection rate and pressure at the wellhead and bottom hole– monitor continuously. Report quarterly C-103
- Annular pressure at the wellhead and bottom hole- monitor continuously report quarterly C-103
- Injection volume and pressure data – monitor continuously and report monthly on C-115
- Development and implementation of immediate notification parameters with annual review
- Any additions or bleeding of diesel annular fluid must be recorded and records maintained for OCD inspection as requested.–significant events reported on quarterly C-103s

OCD Rule 11 – H_2S Contingency Plan

OCD Rule 11

- Covers gathering, compression, and processing.
- Also covers well workovers and drilling when H_2S is expected.

Plan Developed:

- Includes information on Acid Gas Compressor Design, Safety Equipment, and Well
- Emergency Procedures
- Emergency Notification
- Characteristics of H_2S and SO_2
- Maps and Drawings
- Training and Drills
- Coordination with State Emergency Plans
- Activation Levels

Reporting

- After Plan Activation
- Notify the Division As Soon as Possible, but within 4 hours
- Full Report (Form C-141) within 15 days

12. Inspections and Testing

a. Visual inspections (bi-weekly or monthly)
b. Manual inspections and cycling of SSSV (bi-weekly or monthly)
c. Required Mechanical Integrity Test (MIT) annually
d. Troubleshooting and required notification to OCD and other parties

GEOLEX INCORPORATED

dcp Midstream

53

Inspections and Testing

- Practice safe H_2S procedures! Approach well from upwind direction
- Inspect all valve handles and stems for evidence of leakage. Leakage will appear in the form of yellow stains on metal surfaces
- Look at analog pressure gauges on annular spaces. Verify same readings with remote digital sources

GEOLEX INCORPORATED

dcp Midstream

54

Inspections and Testing

Manual Inspection and Cycling of SSSV (bi-weekly or Monthly

- Confirm that pressure monitoring equipment and flow rate totalizer or monitoring equipment is functioning properly
- Actuate SSSV sliding sleeve via hydraulic panel. Watch for pressure kicks indicating piston movement.
- Calibrate H_2S sensors in cellar as appropriate.
- Data reduction as needed for OCD recordkeeping and reporting

GEOLEX INCORPORATED

dcp Midstream

55

Inspection and Testing

Mechanical Integrity Test (MIT)

- Required annually by OCD
- Must notify OCD prior to performance
- Current schedule is January of every year based on initial test
- May decide to coordinate MIT timing for both wells to optimize operations

GEOLEX INCORPORATED

dcp Midstream

56

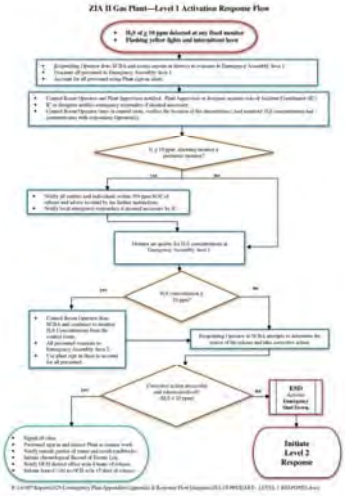
13. Summary of H_2S Contingency Plan

- H_2S Contingency Plan applies to entire plant and AGI facility (aka Rule 11 plan)
- Separate training and maintenance requirements for H2S Contingency Plan
- Goal here to present summary of general requirements and activation levels
- Requirements for notices during different potential scenarios particularly important for this site
- Flow charts summarize actions associated with different action levels

Midstream

57

H_2S Contingency Plan – Level I activation

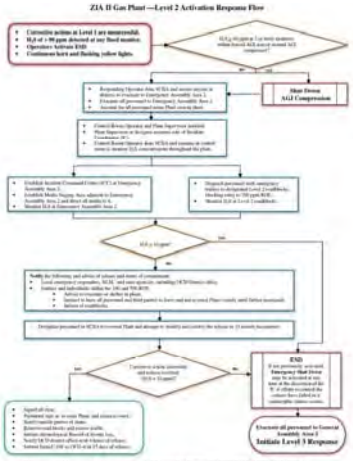


GEOLEX INCORPORATED

Midstream

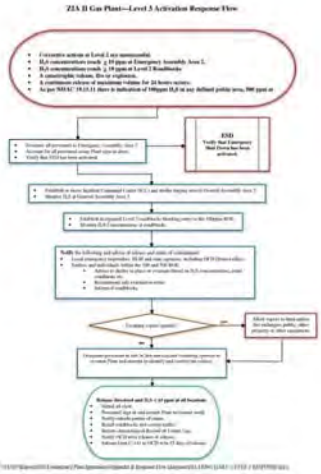
58

H_2S Contingency Plan – Level II activation



59

H_2S Contingency Plan – Level III activation



60

GEOLEX INCORPORATED

dcp Midstream

ZIA AGI #1 AND D #2 ROUTINE MAINTENANCE TO BE PERFORMED DURING WELL OPERATION (No need to shut down or interrupt injection operations)

- Monthly maintenance on the SSSV following the procedure in the operations manual (See backside of this page)
- Keep the cellar as dry as possible – check monthly
- Inspect the well tree monthly and keep the paint fresh – especially in the cellar
- Visually inspect Hydraulic Control Panel – check monthly. Inspect all valve grease fittings and maintain as necessary
- Check gauges on Bradenhead and Intermediate casing(s) – check weekly. The pressures should all be at or near zero psig and if they are not should be vented (there will be some positive pressure on recently completed wells from vapors related to curing cement). As long as each annulus can be vented to zero psig within a few seconds, or minutes, they will remain in regulatory compliance (the Bradenhead and intermediate casing(s) should all have 30 psig gauges)
- Try to keep backside annular pressure between 300 and 600 psig
- If it becomes necessary to bleed down backside annular pressure it must be done slowly and do not bleed below 200 psig
- If it becomes necessary to add fluid to the backside annulus make sure to bleed out all air pockets and keep the pressure between 300 and 600 psig
- Keep records for all fluids added to or removed from the backside annulus - this is required by NMOCC order and must be available for inspection on demand
- Have all tree valves serviced and lubricated. This may require opening and closing each valve a few times as you lubricate. This does not require killing the well but may require flaring for an hour or so. This should be done every six (6) months.

VALVE MAINTENANCE WHEN AGI WELL IS OFFLINE AND NOT INJECTING

- When the AGI is offline, open and close all valves on well tree several times to make sure all are in good operating condition and record status, grease or repair as needed—see below.

MAINTENANCE DURING PLANT TURN AROUND

- Call GE (Wood Group) to conduct inspection of tree and perform PM.
- Have all valve grease fittings serviced.
- Have all valves serviced.
- Clean and paint entire tree. Do not paint over any grease fittings.
- Every five (5) years plus/minus have manufacturer inspect the tree and if maintenance is recommended kill the well and dismantle the tree and have components refurbished or replaced.
- Sample and analyze the backside annular fluid and add corrosion inhibitors and biocides as needed.

******SEE BACK OF THIS SHEET FOR SSSV MAINTENANCE INSTRUCTIONS AND LIST OF EMERGENCY AND CONTRACTOR CONTACTS******

MANUAL OPERATIONAL CHECK FOR SUBSURFACE SAFETY VALVE

The Subsurface Safety Valve (SSSV) should be cycled (activated) roughly once a month to prevent scale build-up on the SSSV and to check performance.

1) Go to wellhead and manually open Wing Valve (WV) to hold valve in full open position (piston fully depressed into valve). **Important: If this step is not taken first, the Wing Valve (WV) will shut and cause interruption of acid gas injection and emergency shutdown of compressor due to over-pressuring.**

2) Turn the In-service/Bypass/Wing Valve (WV) switch to Bypass.

3) Push in the red ESD/TSE plunger and wait ~90 seconds until the SSSV closes (output pressure goes to 0 PSI). The black plunger which controls the wing valve will also depress automatically.

4) Pull out and hold the red ESD/TSE plunger for several seconds. Watch the SSSV output pressure and make certain that the pressure bobbles (rises and falls) at ~2000 PSI before climbing to the set pressure. If the pressure does not bobble, it may mean the sleeve has become stuck in the up position. Repeat the process. Pull out and hold the black plunger to place the wing valve in the normal operations position.

5) Return the In-service/Bypass/Wing Valve (WV) handle to the In-service position.

6) Go to wellhead and manually close Wing Valve (WV) and verify that piston remains in full open position (piston fully depressed into valve) when manual valve is fully unscrewed to beyond close position. **Verify that piston remains fully depressed into Wing Valve (WV) for at least two (2) minutes and that output pressure to Wing Valve (WV) is within range as measured on hydraulic control panel.**

EMERGENCY AND CONTRACTOR CONTACTS

Contact	Position/Primary Contact	Office	Cell
DCP Contacts			
Rachael Henry	EHS Manager	432-620-4009	
Tony Canfield	Project Engineering Mgr	432-620-5422	432-425-4875
Heath Kingham	DCP Zia Plant Mgr	575-973-7313	575-706-6983
Primary Contractor			
Geolex, Inc.	Alberto A. Gutierrez Jared R. Smith	505-842-8000 505-842-8000	505-259-4283 405-659-0285
Equipment Vendors			
Halliburton Completion Tools (SSSV)	HCT Completion Manager	970-523-3600	
RSI Global (Hydraulic Safety Panel)	Louis Lesage	504-340-1992	
Wood Group (Wellhead, Christmas Tree)	Jonathon Breaux	713-876-4586	

APPENDIX H

MUD LOGS

SELMAN AND ASSOCIATES, LTD.
GEOLOGICAL CONSULTING / SURFACE LOGGING SERVICES
CORPUS CHRISTI TEXAS
P.O. BOX 61150
MIDLAND TEXAS 79711
ROCK SPRINGS WYOMING
OFFICE (432) 563-0084 --- 24 HOURS (800) 578-1006

GEOLEX® INCORPORATED

dcp Midstream℠

COMPANY:	GEOLEX INCORPORATED					**DRILLING CO:**	SCANDRILL
WELL:	ZIA AGI D2					**RIG #:**	FREEDOM
FIELD:	AGI; DEVONIAN EXPL.					**API:**	30-025-42207
LOCATION:	1893' FSL & 950' FWL, SEC. 19, T-19-S, R-32-E					**GL (FT):**	3548
COUNTY:	LEA	**STATE:**	NEW MEXICO	**LAT:**	32.643951	**DF (FT):**	3575
INTERVAL:	4700'	**TO:**	14750	**LONG:**	-103.811116	**KB (FT):**	
DATE:	11/14/2016	**TO:**	12/10/2016	**JOB #:**	9477	**UNIT #:**	59
LOGGER(S):	TYLER HARGROVE BEN RICHARDS					**PHONE #:**	432-770-6505; 432-557-0051

5 INCH HYDROCARBON WELL LOG [5" = 100']

CUTTINGS

ANHYDRITE	CHERT	DOLOMITE	LIMESTONE	SILTSTONE
BENTONITE	COAL	GRANITE	SALT	SAND
CALCITE	CONGLOMERATE	GRANITE WASH	SHALE	CEMENT

POROSITY - % FLUORESCENCE - TYPE CUT

NONE	TRACE	FAIR	GOOD

SYMBOLS

FOSSIL

ALGAE
AMPH
BELM
BIOCLST
BRACH
BRYOZOA
CEPHAL
CORAL
CRIN
ECHIN
FISH
FORAM
FOSSIL
OOLITE
OSTRA
PELEC
PELLET
PISOLITE
PLANT
STROM

MINERAL

ANHY
ARG
ARGGRN
BENT
BIT
BRECFRAG
CARB
CHTDK
CHTLT
DOL
FELDSPAR
FERR
FERRPEL
GLAU
GYP
HVYMIN
KAOL
MARL
MINXL
NODULE
PYR
SALT
SANDY
SIL
SILT
SULPHUR
TUFF

TEXTURE

BS BOUNDST
C CHALKY
CX CRXLN
E EARTHY
FX FINEXLN
GS GRAINST
MX MICROXLN
MS MUDST
PS PACKST
WS WACKEST

STRINGER

ANHYSTRG
ARGSTRG
BENTSTRG
COALSTRG
DOLSTRG
GYPSTRG
LSSTRG
MRST
SLTSTRG

GASTRO CALC PHOS LITHOGR SSSTRG

DRILLING INFO

DRILL RATE [MIN/FT]
WOB [kLBS]
GAMMA RAY [GAPI]

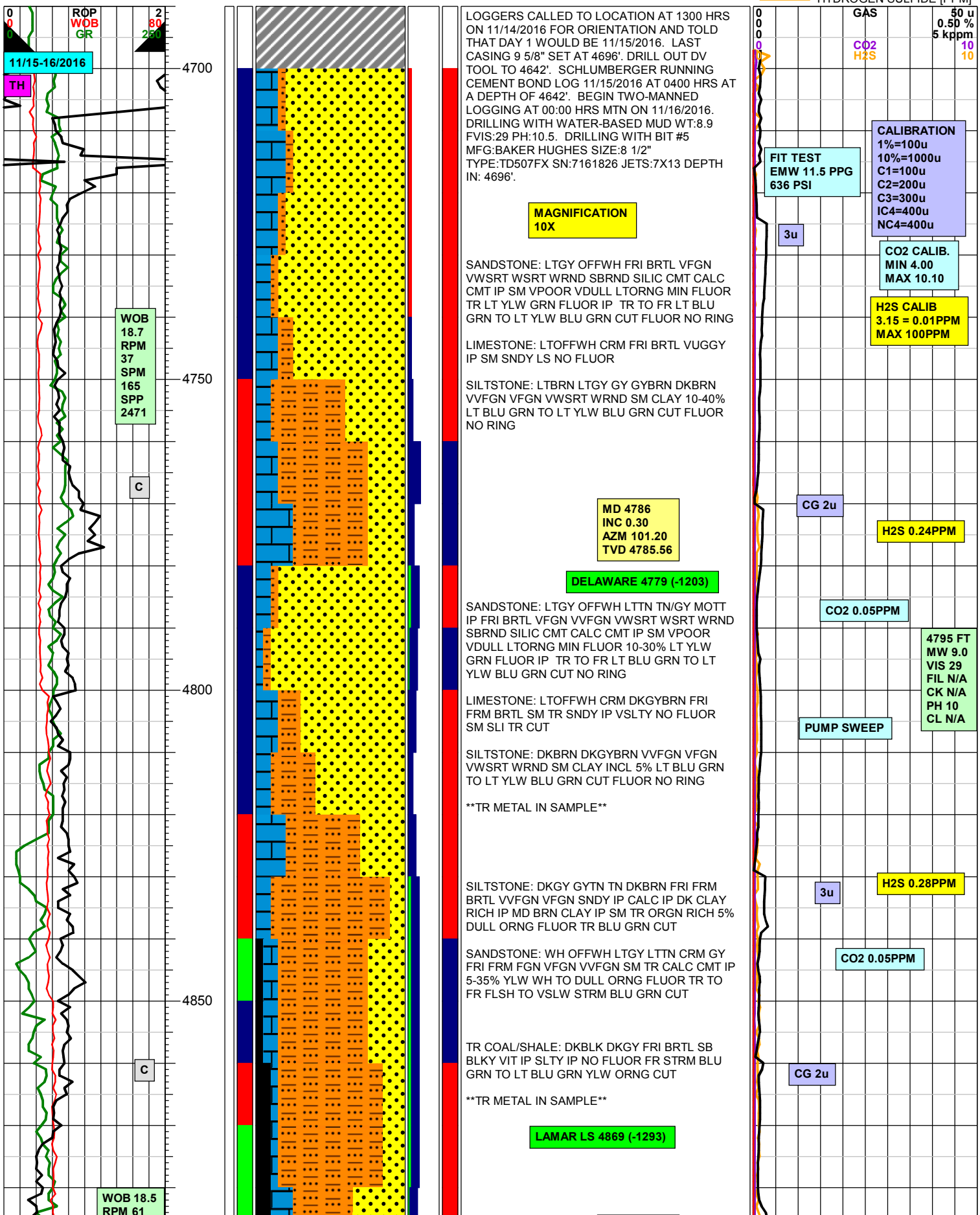
DEPTH

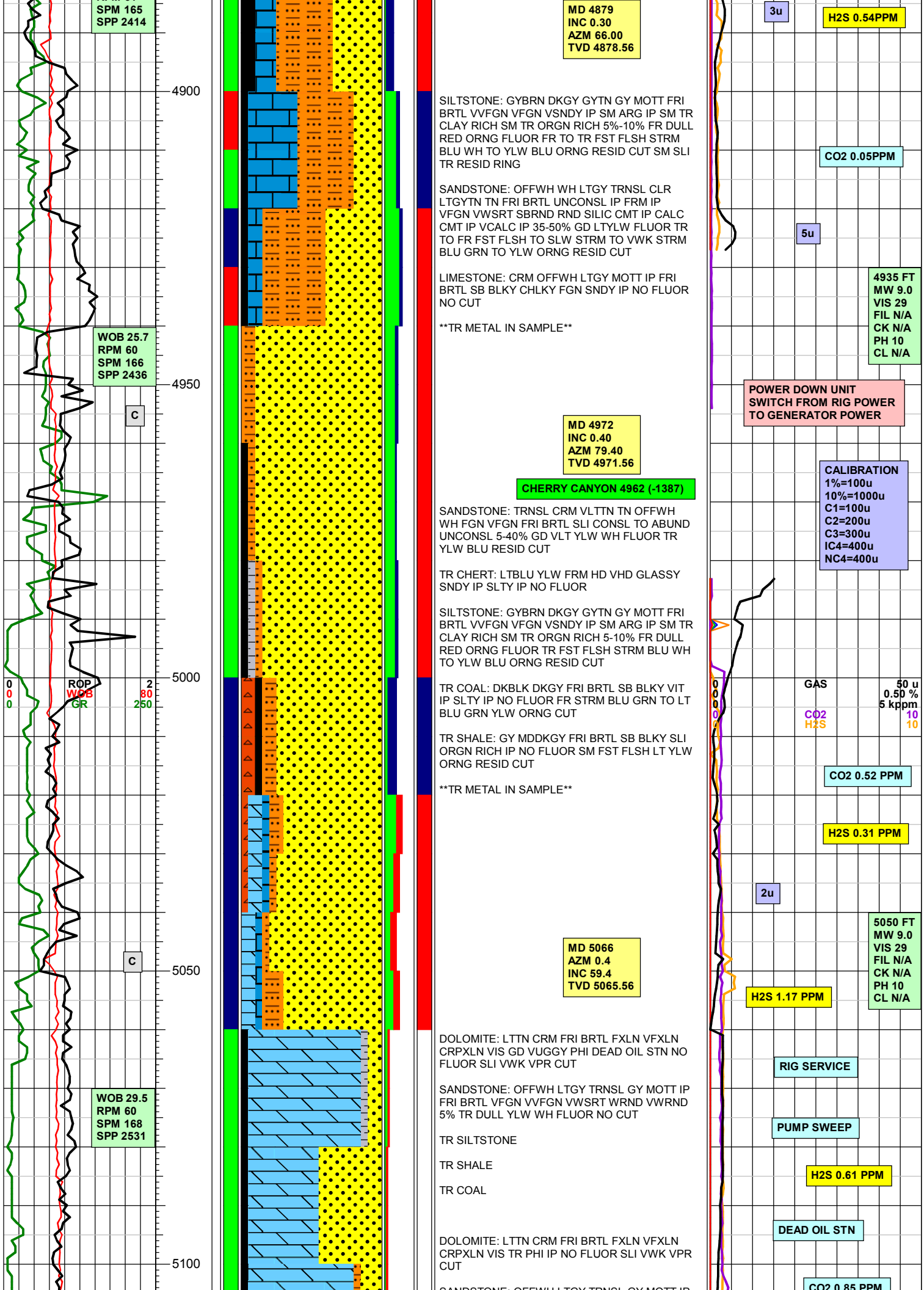
SLIDE / ROTATE | POROSITY | CUTTINGS [%] | % FLUORESCENCE | CUT

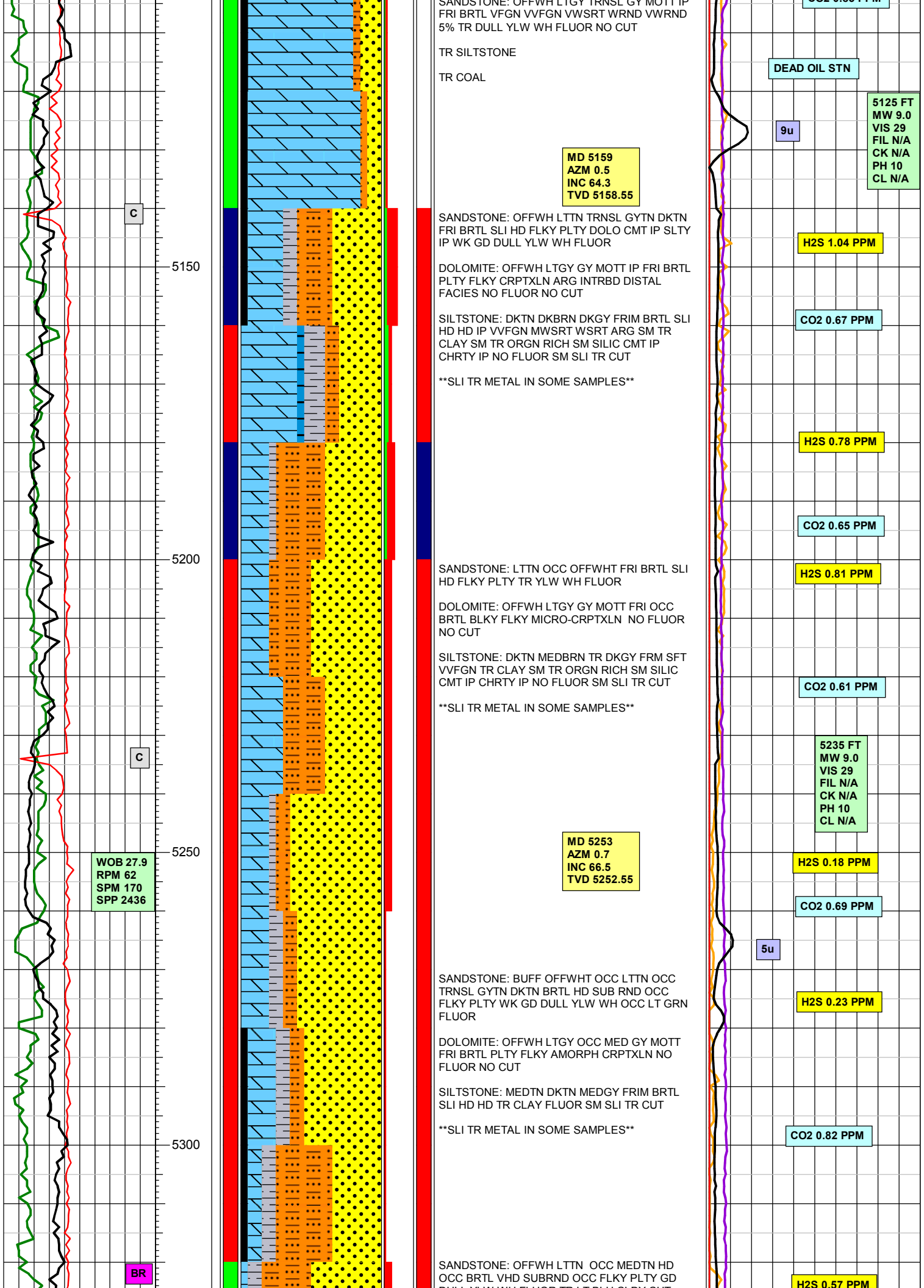
LITHOLOGY DESCRIPTIONS AND OTHER REMARKS

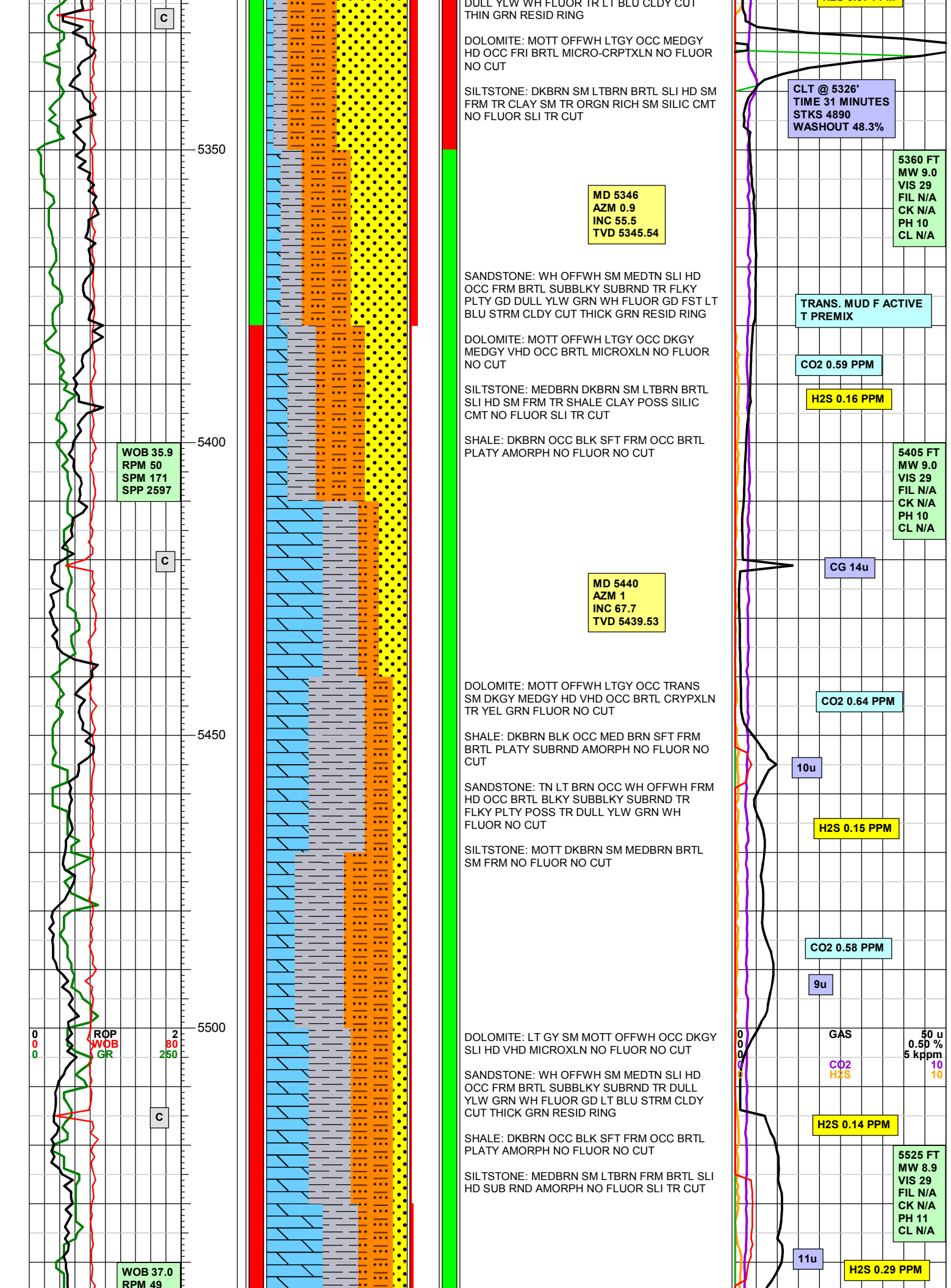
GAS ANALYSIS

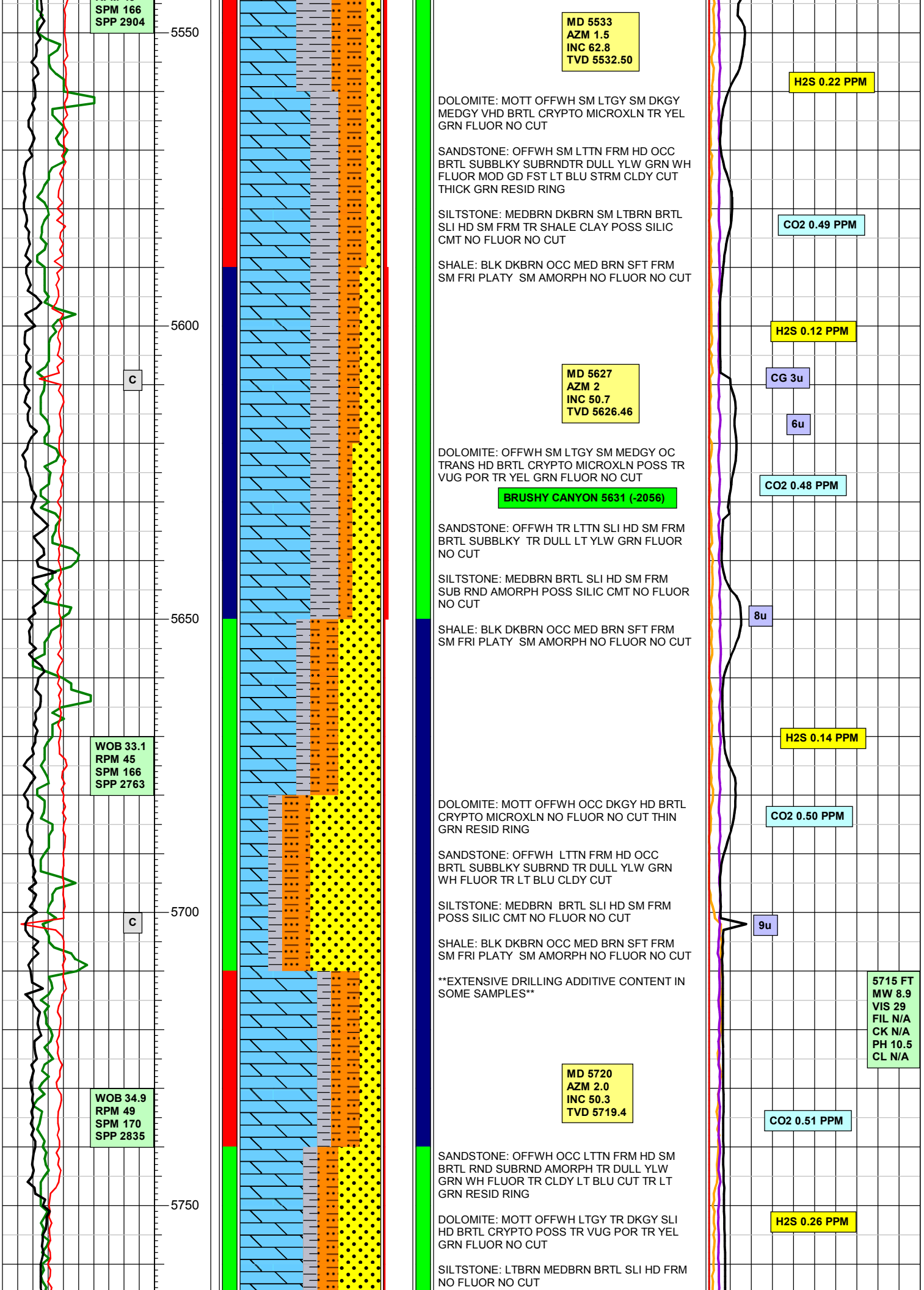
TOTAL GAS
C1 - METHANE
C2 - ETHANE
C3 - PROPANE
C4 - BUTANE
CARBON DIOXIDE [PPM]
HYDROGEN SULFIDE [PPM]

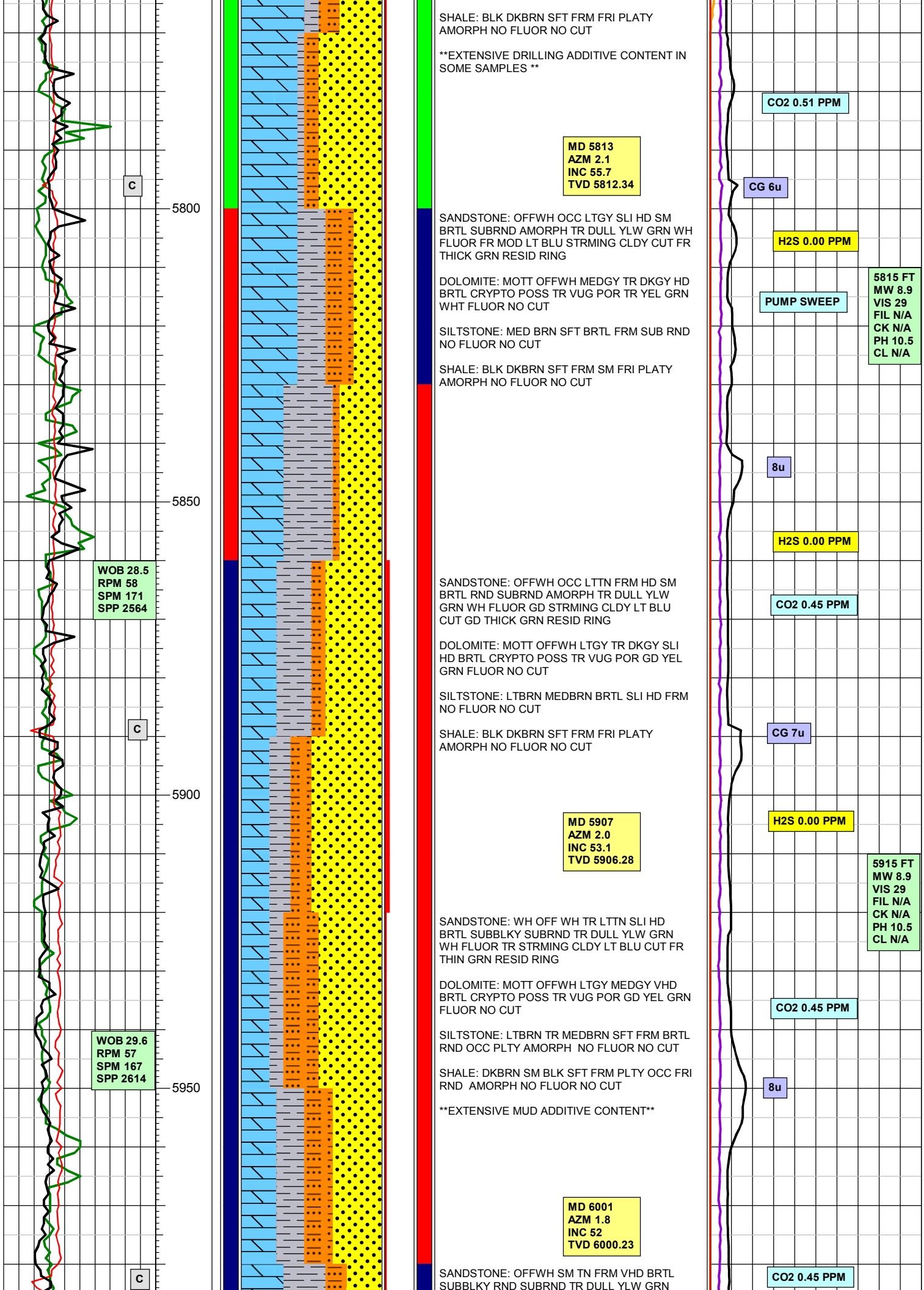


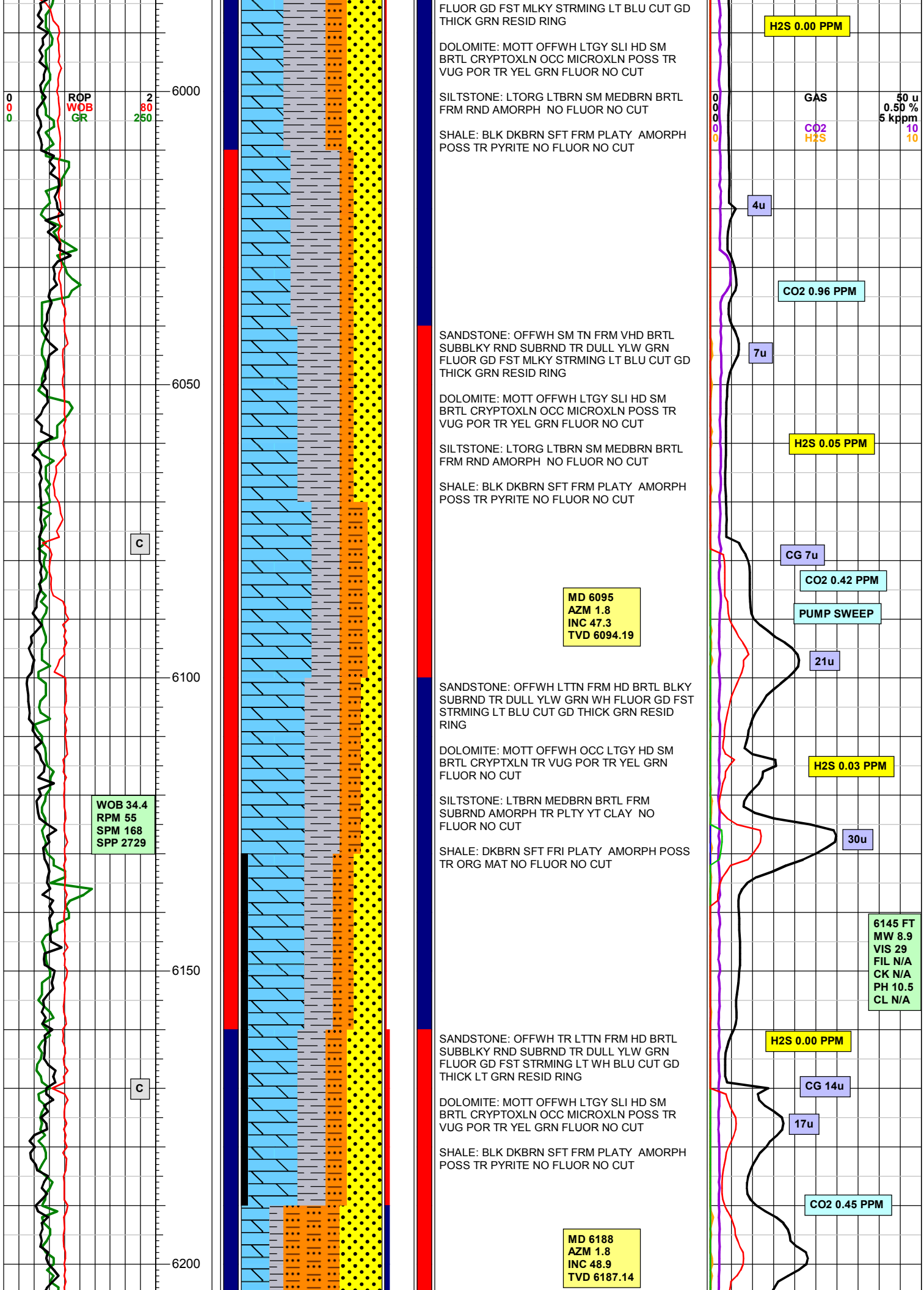

SPM 165
SPP 2414
4900
WOB 25.7
RPM 60
SPM 166
SPP 2436
4950
C
0 ROP 2
0 WOB 80
0 GR 250
5000
C
5050
WOB 29.5
RPM 60
SPM 168
SPP 2531
5100
MD 4879
INC 0.30
AZM 66.00
TVD 4878.56
SILTSTONE: GYBRN DKGY GYTN GY MOTT FRI BRTL VVFGN VFGN VSNDY IP SM ARG IP SM TR CLAY RICH SM TR ORGN RICH 5%-10% FR DULL RED ORNG FLUOR FR TO TR FST FLSH STRM BLU WH TO YLW BLU ORNG RESID CUT SM SLI TR RESID RING
SANDSTONE: OFFWH WH LTGY TRNSL CLR LTGYTN TN FRI BRTL UNCONSL IP FRM IP VFGN VWSRT SBRND RND SILIC CMT IP CALC CMT IP VCALC IP 35-50% GD LTYLW FLUOR TR TO FR FST FLSH TO SLW STRM TO VWK STRM BLU GRN TO YLW ORNG RESID CUT
LIMESTONE: CRM OFFWH LTGY MOTT IP FRI BRTL SB BLKY CHLKY FGN SNDY IP NO FLUOR NO CUT
TR METAL IN SAMPLE
MD 4972
INC 0.40
AZM 79.40
TVD 4971.56
CHERRY CANYON 4962 (-1387)
SANDSTONE: TRNSL CRM VLTTN TN OFFWH WH FGN VFGN FRI BRTL SLI CONSL TO ABUND UNCONSL 5-40% GD VLT YLW WH FLUOR TR YLW BLU RESID CUT
TR CHERT: LTBLU YLW FRM HD VHD GLASSY SNDY IP SLTY IP NO FLUOR
SILTSTONE: GYBRN DKGY GYTN GY MOTT FRI BRTL VVFGN VFGN VSNDY IP SM ARG IP SM TR CLAY RICH SM TR ORGN RICH 5-10% FR DULL RED ORNG FLUOR TR FST FLSH STRM BLU WH TO YLW BLU ORNG RESID CUT
TR COAL: DKBLK DKGY FRI BRTL SB BLKY VIT IP SLTY IP NO FLUOR FR STRM BLU GRN TO LT BLU GRN YLW ORNG CUT
TR SHALE: GY MDDKGY FRI BRTL SB BLKY SLI ORGN RICH IP NO FLUOR SM FST FLSH LT YLW ORNG RESID CUT
TR METAL IN SAMPLE
MD 5066
AZM 0.4
INC 59.4
TVD 5065.56
DOLOMITE: LTTN CRM FRI BRTL FXLN VFXLN CRPXLN VIS GD VUGGY PHI DEAD OIL STN NO FLUOR SLI VWK VPR CUT
SANDSTONE: OFFWH LTGY TRNSL GY MOTT IP FRI BRTL VFGN VVFGN VWSRT WRND VWRND 5% TR DULL YLW WH FLUOR NO CUT
TR SILTSTONE
TR SHALE
TR COAL
DOLOMITE: LTTN CRM FRI BRTL FXLN VFXLN CRPXLN VIS TR PHI IP NO FLUOR SLI VWK VPR CUT
3u
H2S 0.54PPM
CO2 0.05PPM
5u
4935 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
POWER DOWN UNIT
SWITCH FROM RIG POWER
TO GENERATOR POWER
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u
0 GAS 50 u
0 0.50 %
0 5 kppm
0 CO2 10
0 H2S 10
CO2 0.52 PPM
H2S 0.31 PPM
2u
5050 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
H2S 1.17 PPM
RIG SERVICE
PUMP SWEEP
H2S 0.61 PPM
DEAD OIL STN
CO2 0.85 PPM

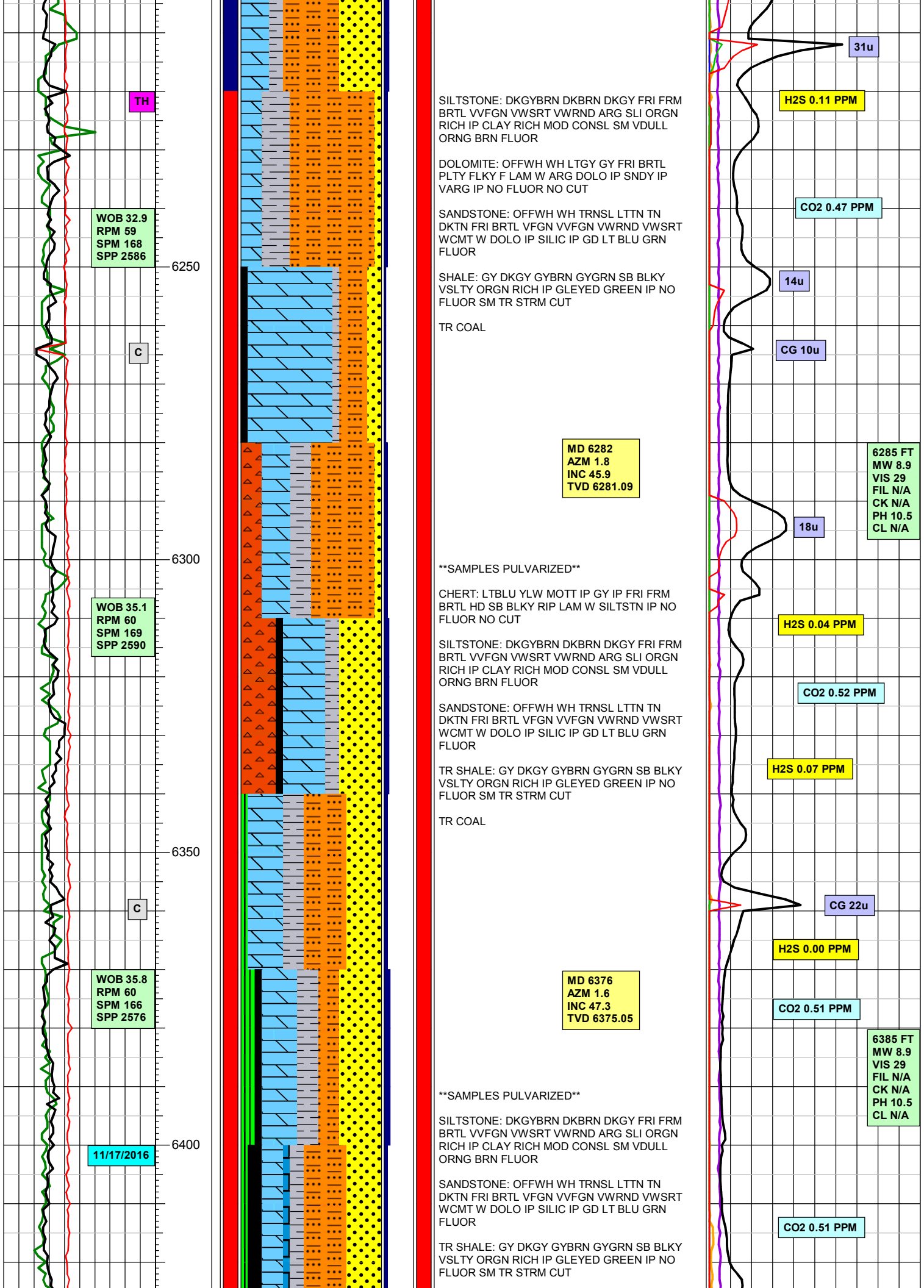

SANDSTONE: OFFWH LTGY TRNSL GY MOTT IP FRI BRTL VFGN VVFGN VWSRT WRND VWRND 5% TR DULL YLW WH FLUOR NO CUT
TR SILTSTONE
TR COAL
DEAD OIL STN
5125 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
9u
MD 5159
AZM 0.5
INC 64.3
TVD 5158.55
C
SANDSTONE: OFFWH LTTN TRNSL GYTN DKTN FRI BRTL SLI HD FLKY PLTY DOLO CMT IP SLTY IP WK GD DULL YLW WH FLUOR
H2S 1.04 PPM
5150
DOLOMITE: OFFWH LTGY GY MOTT IP FRI BRTL PLTY FLKY CRPTXLN ARG INTRBD DISTAL FACIES NO FLUOR NO CUT
SILTSTONE: DKTN DKBRN DKGY FRIM BRTL SLI HD HD IP VVFGN MWSRT WSRT ARG SM TR CLAY SM TR ORGN RICH SM SILIC CMT IP CHRTY IP NO FLUOR SM SLI TR CUT
SLI TR METAL IN SOME SAMPLES
CO2 0.67 PPM
H2S 0.78 PPM
CO2 0.65 PPM
5200
SANDSTONE: LTTN OCC OFFWHT FRI BRTL SLI HD FLKY PLTY TR YLW WH FLUOR
H2S 0.81 PPM
DOLOMITE: OFFWH LTGY GY MOTT FRI OCC BRTL BLKY FLKY MICRO-CRPTXLN NO FLUOR NO CUT
SILTSTONE: DKTN MEDBRN TR DKGY FRM SFT VVFGN TR CLAY SM TR ORGN RICH SM SILIC CMT IP CHRTY IP NO FLUOR SM SLI TR CUT
SLI TR METAL IN SOME SAMPLES
CO2 0.61 PPM
5235 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
C
MD 5253
AZM 0.7
INC 66.5
TVD 5252.55
WOB 27.9
RPM 62
SPM 170
SPP 2436
5250
H2S 0.18 PPM
CO2 0.69 PPM
5u
SANDSTONE: BUFF OFFWHT OCC LTTN OCC TRNSL GYTN DKTN BRTL HD SUB RND OCC FLKY PLTY WK GD DULL YLW WH OCC LT GRN FLUOR
H2S 0.23 PPM
DOLOMITE: OFFWH LTGY OCC MED GY MOTT FRI BRTL PLTY FLKY AMORPH CRPTXLN NO FLUOR NO CUT
SILTSTONE: MEDTN DKTN MEDGY FRIM BRTL SLI HD HD TR CLAY FLUOR SM SLI TR CUT
SLI TR METAL IN SOME SAMPLES
CO2 0.82 PPM
5300
BR
SANDSTONE: OFFWH LTTN OCC MEDTN HD OCC BRTL VHD SUBRND OCC FLKY PLTY GD
H2S 0.57 PPM

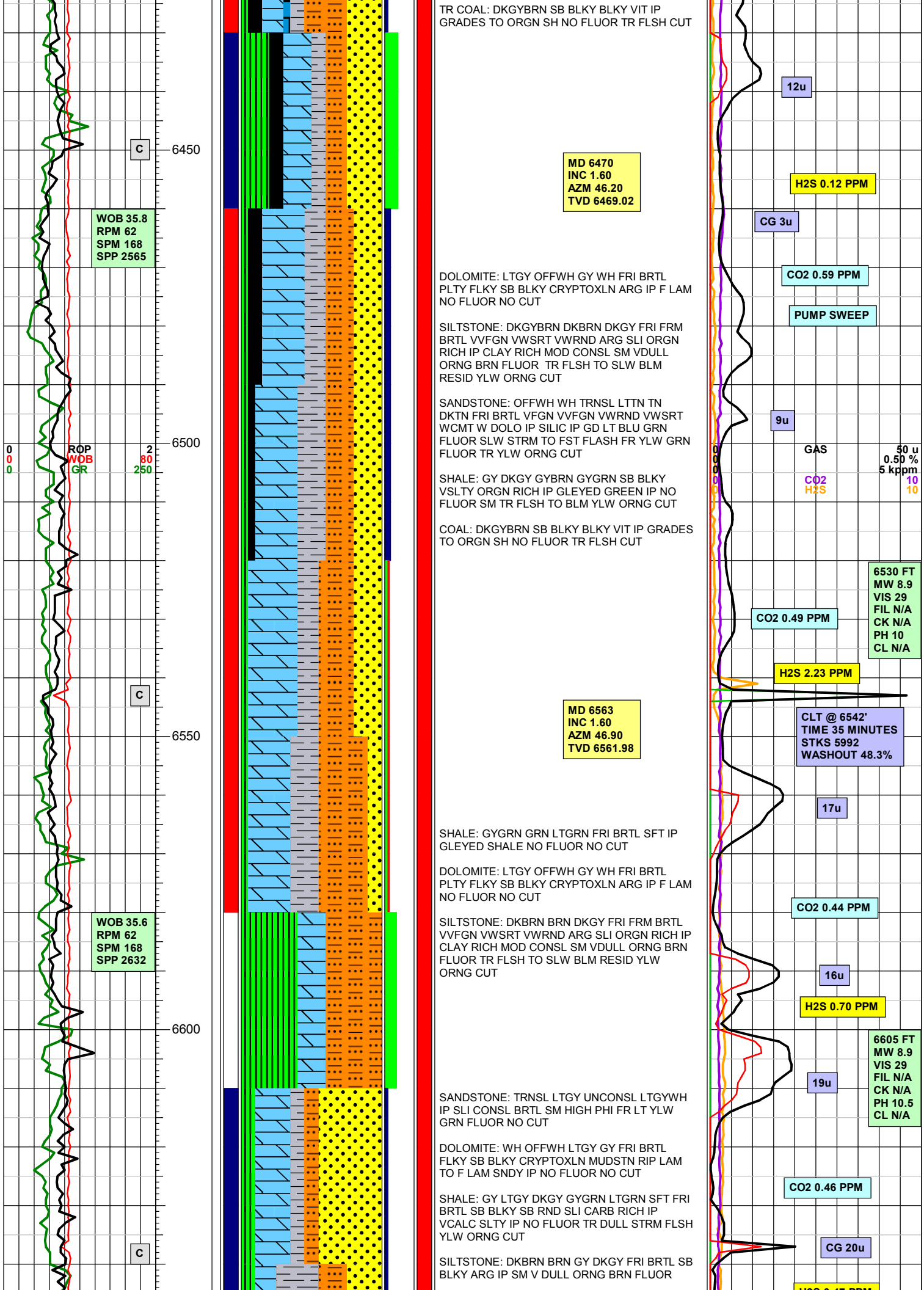

C
5350
5400
5450
5500
WOB 35.9
RPM 50
SPM 171
SPP 2597
0
0
0
ROP
WOB
GR
2
80
250
WOB 37.0
RPM 49
DULL YLW WH FLUOR TR LT BLU CLDY CUT THIN GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY OCC MEDGY HD OCC FRI BRTL MICRO-CRPTXLN NO FLUOR NO CUT
SILTSTONE: DKBRN SM LTBRN BRTL SLI HD SM FRM TR CLAY SM TR ORGN RICH SM SILIC CMT NO FLUOR SLI TR CUT
MD 5346
AZM 0.9
INC 55.5
TVD 5345.54
SANDSTONE: WH OFFWH SM MEDTN SLI HD OCC FRM BRTL SUBBLKY SUBRND TR FLKY PLTY GD DULL YLW GRN WH FLUOR GD FST LT BLU STRM CLDY CUT THICK GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY OCC DKGY MEDGY VHD OCC BRTL MICROXLN NO FLUOR NO CUT
SILTSTONE: MEDBRN DKBRN SM LTBRN BRTL SLI HD SM FRM TR SHALE CLAY POSS SILIC CMT NO FLUOR SLI TR CUT
SHALE: DKBRN OCC BLK SFT FRM OCC BRTL PLATY AMORPH NO FLUOR NO CUT
MD 5440
AZM 1
INC 67.7
TVD 5439.53
DOLOMITE: MOTT OFFWH LTGY OCC TRANS SM DKGY MEDGY HD VHD OCC BRTL CRYPXLN TR YEL GRN FLUOR NO CUT
SHALE: DKBRN BLK OCC MED BRN SFT FRM BRTL PLATY SUBRND AMORPH NO FLUOR NO CUT
SANDSTONE: TN LT BRN OCC WH OFFWH FRM HD OCC BRTL BLKY SUBBLKY SUBRND TR FLKY PLTY POSS TR DULL YLW GRN WH FLUOR NO CUT
SILTSTONE: MOTT DKBRN SM MEDBRN BRTL SM FRM NO FLUOR NO CUT
DOLOMITE: LT GY SM MOTT OFFWH OCC DKGY SLI HD VHD MICROXLN NO FLUOR NO CUT
SANDSTONE: WH OFFWH SM MEDTN SLI HD OCC FRM BRTL SUBBLKY SUBRND TR DULL YLW GRN WH FLUOR GD LT BLU STRM CLDY CUT THICK GRN RESID RING
SHALE: DKBRN OCC BLK SFT FRM OCC BRTL PLATY AMORPH NO FLUOR NO CUT
SILTSTONE: MEDBRN SM LTBRN FRM BRTL SLI HD SUB RND AMORPH NO FLUOR SLI TR CUT
CLT @ 5326'
TIME 31 MINUTES
STKS 4890
WASHOUT 48.3%
5360 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
TRANS. MUD F ACTIVE
T PREMIX
CO2 0.59 PPM
H2S 0.16 PPM
5405 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
CG 14u
CO2 0.64 PPM
10u
H2S 0.15 PPM
CO2 0.58 PPM
9u
0
0
0
GAS
CO2
H2S
50 u
0.50 %
5 kppm
10
10
H2S 0.14 PPM
5525 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 11
CL N/A
11u
H2S 0.29 PPM

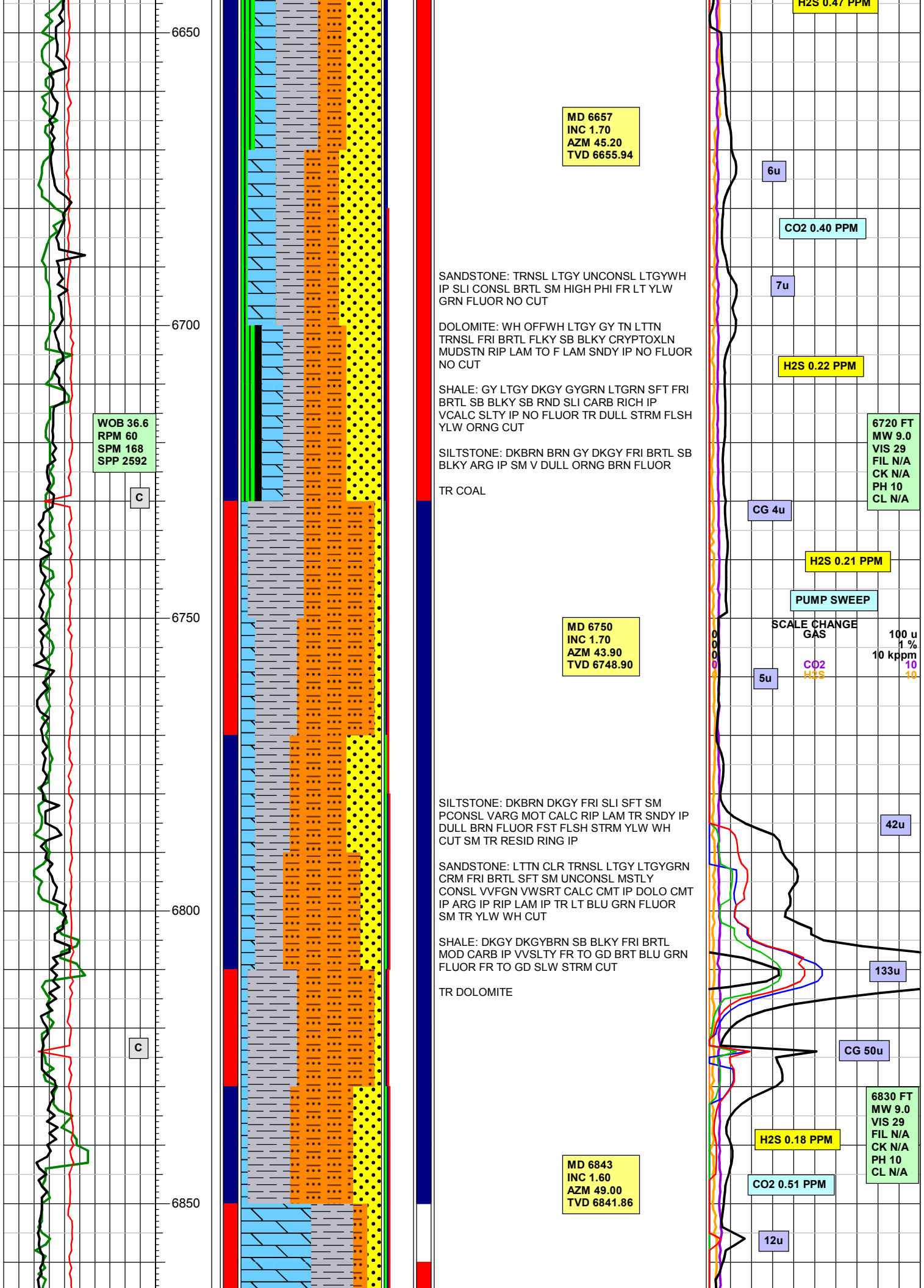

SPM 166
SPP 2904
5550
MD 5533
AZM 1.5
INC 62.8
TVD 5532.50
DOLOMITE: MOTT OFFWH SM LTGY SM DKGY MEDGY VHD BRTL CRYPTO MICROXLN TR YEL GRN FLUOR NO CUT
SANDSTONE: OFFWH SM LTTN FRM HD OCC BRTL SUBBLKY SUBRNDTR DULL YLW GRN WH FLUOR MOD GD FST LT BLU STRM CLDY CUT THICK GRN RESID RING
SILTSTONE: MEDBRN DKBRN SM LTBRN BRTL SLI HD SM FRM TR SHALE CLAY POSS SILIC CMT NO FLUOR NO CUT
SHALE: BLK DKBRN OCC MED BRN SFT FRM SM FRI PLATY SM AMORPH NO FLUOR NO CUT
H2S 0.22 PPM
CO2 0.49 PPM
5600
C
MD 5627
AZM 2
INC 50.7
TVD 5626.46
DOLOMITE: OFFWH SM LTGY SM MEDGY OC TRANS HD BRTL CRYPTO MICROXLN POSS TR VUG POR TR YEL GRN FLUOR NO CUT
H2S 0.12 PPM
CG 3u
6u
CO2 0.48 PPM
BRUSHY CANYON 5631 (-2056)
SANDSTONE: OFFWH TR LTTN SLI HD SM FRM BRTL SUBBLKY TR DULL LT YLW GRN FLUOR NO CUT
SILTSTONE: MEDBRN BRTL SLI HD SM FRM SUB RND AMORPH POSS SILIC CMT NO FLUOR NO CUT
SHALE: BLK DKBRN OCC MED BRN SFT FRM SM FRI PLATY SM AMORPH NO FLUOR NO CUT
5650
8u
WOB 33.1
RPM 45
SPM 166
SPP 2763
H2S 0.14 PPM
DOLOMITE: MOTT OFFWH OCC DKGY HD BRTL CRYPTO MICROXLN NO FLUOR NO CUT THIN GRN RESID RING
CO2 0.50 PPM
SANDSTONE: OFFWH LTTN FRM HD OCC BRTL SUBBLKY SUBRND TR DULL YLW GRN WH FLUOR TR LT BLU CLDY CUT
SILTSTONE: MEDBRN BRTL SLI HD SM FRM POSS SILIC CMT NO FLUOR NO CUT
SHALE: BLK DKBRN OCC MED BRN SFT FRM SM FRI PLATY SM AMORPH NO FLUOR NO CUT
5700
C
9u
EXTENSIVE DRILLING ADDITIVE CONTENT IN SOME SAMPLES
5715 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
WOB 34.9
RPM 49
SPM 170
SPP 2835
MD 5720
AZM 2.0
INC 50.3
TVD 5719.4
CO2 0.51 PPM
SANDSTONE: OFFWH OCC LTTN FRM HD SM BRTL RND SUBRND AMORPH TR DULL YLW GRN WH FLUOR TR CLDY LT BLU CUT TR LT GRN RESID RING
5750
DOLOMITE: MOTT OFFWH LTGY TR DKGY SLI HD BRTL CRYPTO POSS TR VUG POR TR YEL GRN FLUOR NO CUT
H2S 0.26 PPM
SILTSTONE: LTBRN MEDBRN BRTL SLI HD FRM NO FLUOR NO CUT

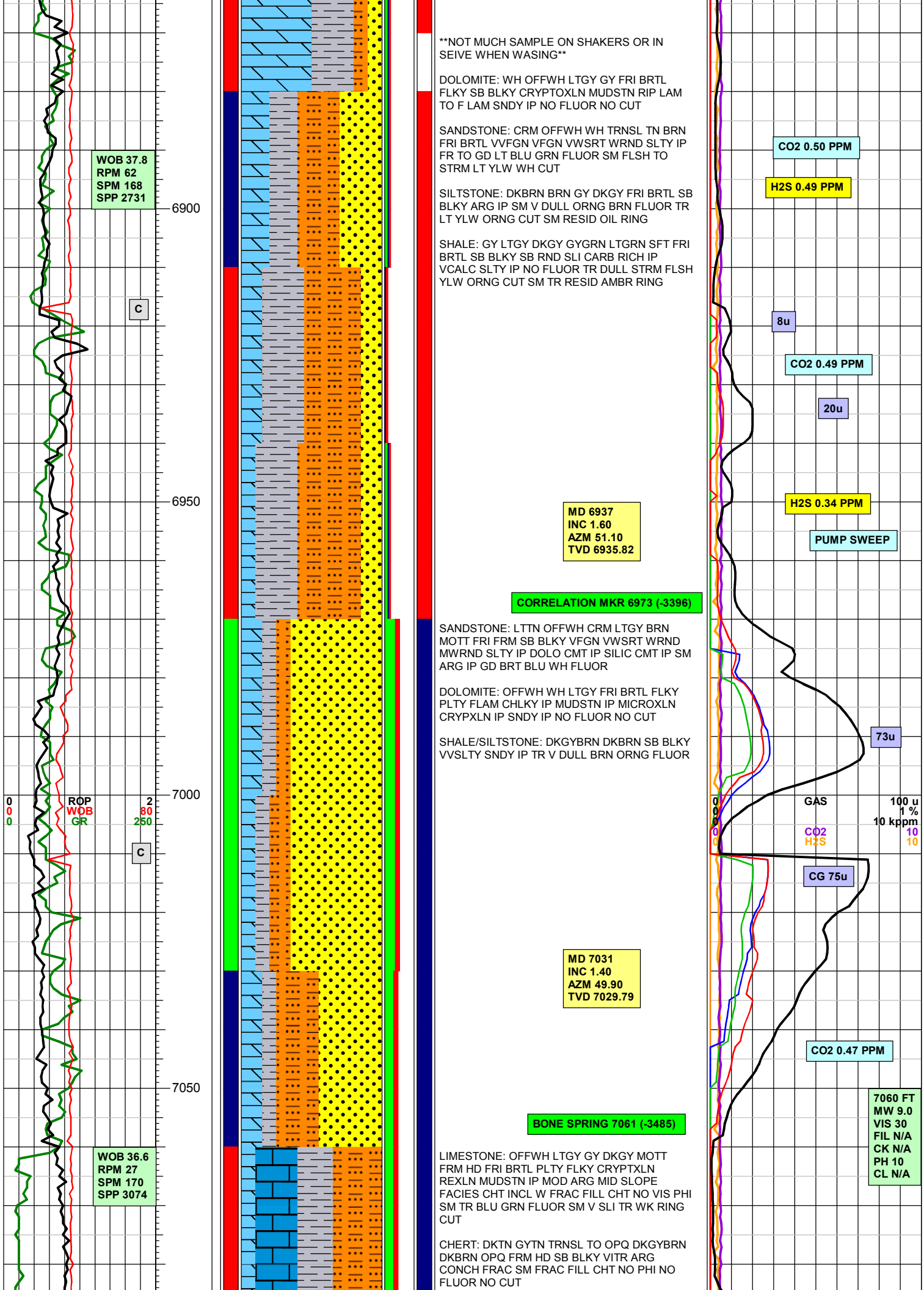

SHALE: BLK DKBRN SFT FRM FRI PLATY AMORPH NO FLUOR NO CUT
**EXTENSIVE DRILLING ADDITIVE CONTENT IN SOME SAMPLES **
CO2 0.51 PPM
MD 5813
AZM 2.1
INC 55.7
TVD 5812.34
C
5800
CG 6u
SANDSTONE: OFFWH OCC LTGY SLI HD SM BRTL SUBRND AMORPH TR DULL YLW GRN WH FLUOR FR MOD LT BLU STRMING CLDY CUT FR THICK GRN RESID RING
H2S 0.00 PPM
DOLOMITE: MOTT OFFWH MEDGY TR DKGY HD BRTL CRYPTO POSS TR VUG POR TR YEL GRN WHT FLUOR NO CUT
5815 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
PUMP SWEEP
SILTSTONE: MED BRN SFT BRTL FRM SUB RND NO FLUOR NO CUT
SHALE: BLK DKBRN SFT FRM SM FRI PLATY AMORPH NO FLUOR NO CUT
8u
5850
H2S 0.00 PPM
WOB 28.5
RPM 58
SPM 171
SPP 2564
SANDSTONE: OFFWH OCC LTTN FRM HD SM BRTL RND SUBRND AMORPH TR DULL YLW GRN WH FLUOR GD STRMING CLDY LT BLU CUT GD THICK GRN RESID RING
CO2 0.45 PPM
DOLOMITE: MOTT OFFWH LTGY TR DKGY SLI HD BRTL CRYPTO POSS TR VUG POR GD YEL GRN FLUOR NO CUT
SILTSTONE: LTBRN MEDBRN BRTL SLI HD FRM NO FLUOR NO CUT
SHALE: BLK DKBRN SFT FRM FRI PLATY AMORPH NO FLUOR NO CUT
C
CG 7u
5900
MD 5907
AZM 2.0
INC 53.1
TVD 5906.28
H2S 0.00 PPM
5915 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
SANDSTONE: WH OFF WH TR LTTN SLI HD BRTL SUBBLKY SUBRND TR DULL YLW GRN WH FLUOR TR STRMING CLDY LT BLU CUT FR THIN GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY MEDGY VHD BRTL CRYPTO POSS TR VUG POR GD YEL GRN FLUOR NO CUT
CO2 0.45 PPM
SILTSTONE: LTBRN TR MEDBRN SFT FRM BRTL RND OCC PLTY AMORPH NO FLUOR NO CUT
SHALE: DKBRN SM BLK SFT FRM PLTY OCC FRI RND AMORPH NO FLUOR NO CUT
WOB 29.6
RPM 57
SPM 167
SPP 2614
8u
5950
EXTENSIVE MUD ADDITIVE CONTENT
MD 6001
AZM 1.8
INC 52
TVD 6000.23
C
SANDSTONE: OFFWH SM TN FRM VHD BRTL SUBBLKY RND SUBRND TR DULL YLW GRN
CO2 0.45 PPM

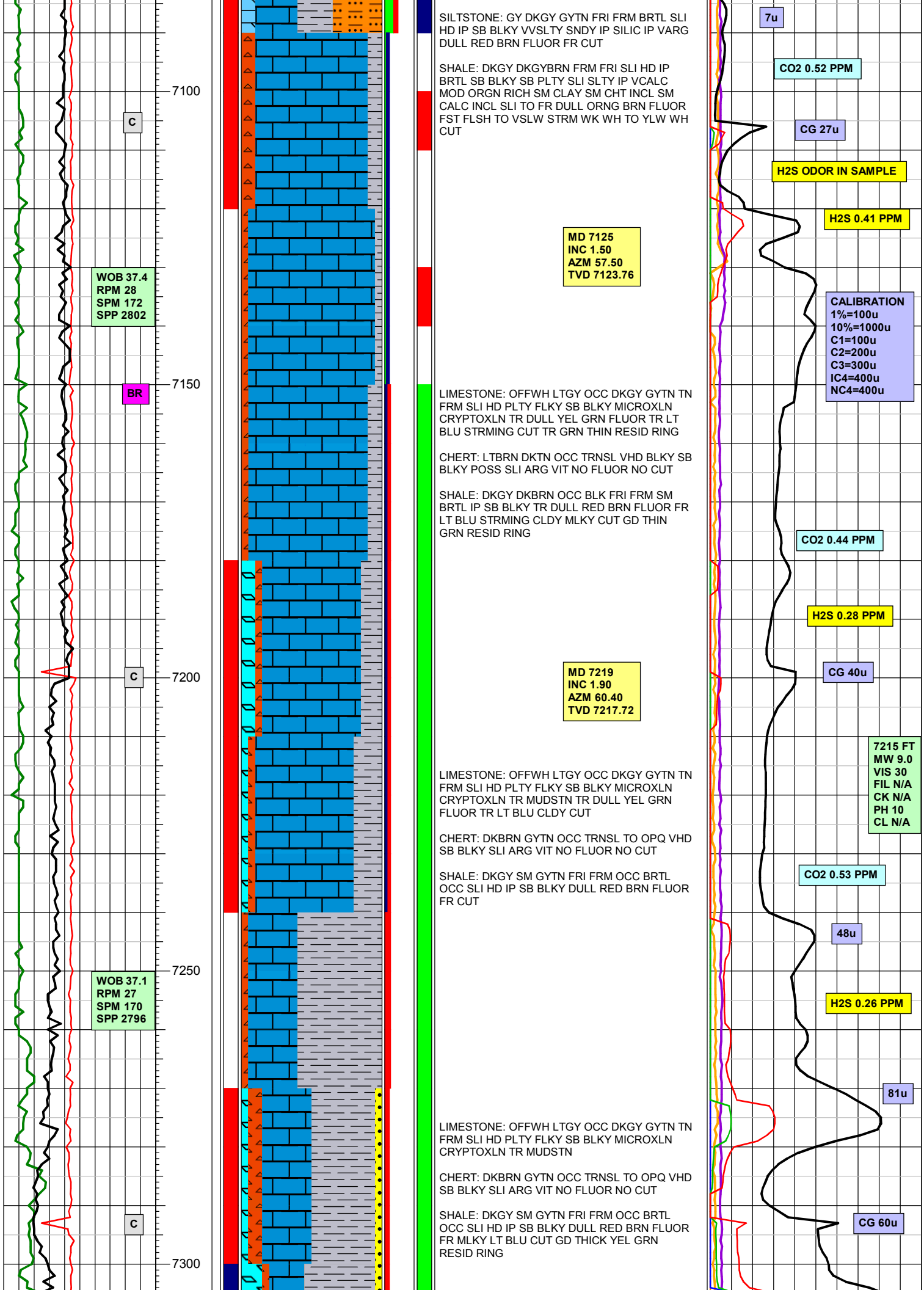

0
ROP
2
0
WOB
80
0
GR
250
6000
6050
6100
6150
6200
C
C
WOB 34.4
RPM 55
SPM 168
SPP 2729
FLUOR GD FST MLKY STRMING LT BLU CUT GD THICK GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY SLI HD SM BRTL CRYPTOXLN OCC MICROXLN POSS TR VUG POR TR YEL GRN FLUOR NO CUT
SILTSTONE: LTORG LTBRN SM MEDBRN BRTL FRM RND AMORPH NO FLUOR NO CUT
SHALE: BLK DKBRN SFT FRM PLATY AMORPH POSS TR PYRITE NO FLUOR NO CUT
SANDSTONE: OFFWH SM TN FRM VHD BRTL SUBBLKY RND SUBRND TR DULL YLW GRN FLUOR GD FST MLKY STRMING LT BLU CUT GD THICK GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY SLI HD SM BRTL CRYPTOXLN OCC MICROXLN POSS TR VUG POR TR YEL GRN FLUOR NO CUT
SILTSTONE: LTORG LTBRN SM MEDBRN BRTL FRM RND AMORPH NO FLUOR NO CUT
SHALE: BLK DKBRN SFT FRM PLATY AMORPH POSS TR PYRITE NO FLUOR NO CUT
MD 6095
AZM 1.8
INC 47.3
TVD 6094.19
SANDSTONE: OFFWH LTTN FRM HD BRTL BLKY SUBRND TR DULL YLW GRN WH FLUOR GD FST STRMING LT BLU CUT GD THICK GRN RESID RING
DOLOMITE: MOTT OFFWH OCC LTGY HD SM BRTL CRYPTXLN TR VUG POR TR YEL GRN FLUOR NO CUT
SILTSTONE: LTBRN MEDBRN BRTL FRM SUBRND AMORPH TR PLTY YT CLAY NO FLUOR NO CUT
SHALE: DKBRN SFT FRI PLATY AMORPH POSS TR ORG MAT NO FLUOR NO CUT
SANDSTONE: OFFWH TR LTTN FRM HD BRTL SUBBLKY RND SUBRND TR DULL YLW GRN FLUOR GD FST STRMING LT WH BLU CUT GD THICK LT GRN RESID RING
DOLOMITE: MOTT OFFWH LTGY SLI HD SM BRTL CRYPTOXLN OCC MICROXLN POSS TR VUG POR TR YEL GRN FLUOR NO CUT
SHALE: BLK DKBRN SFT FRM PLATY AMORPH POSS TR PYRITE NO FLUOR NO CUT
MD 6188
AZM 1.8
INC 48.9
TVD 6187.14
H2S 0.00 PPM
0
GAS
50 u
0
0.50 %
0
5 kppm
0
CO2
10
0
H2S
10
4u
CO2 0.96 PPM
7u
H2S 0.05 PPM
CG 7u
CO2 0.42 PPM
PUMP SWEEP
21u
H2S 0.03 PPM
30u
6145 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
H2S 0.00 PPM
CG 14u
17u
CO2 0.45 PPM

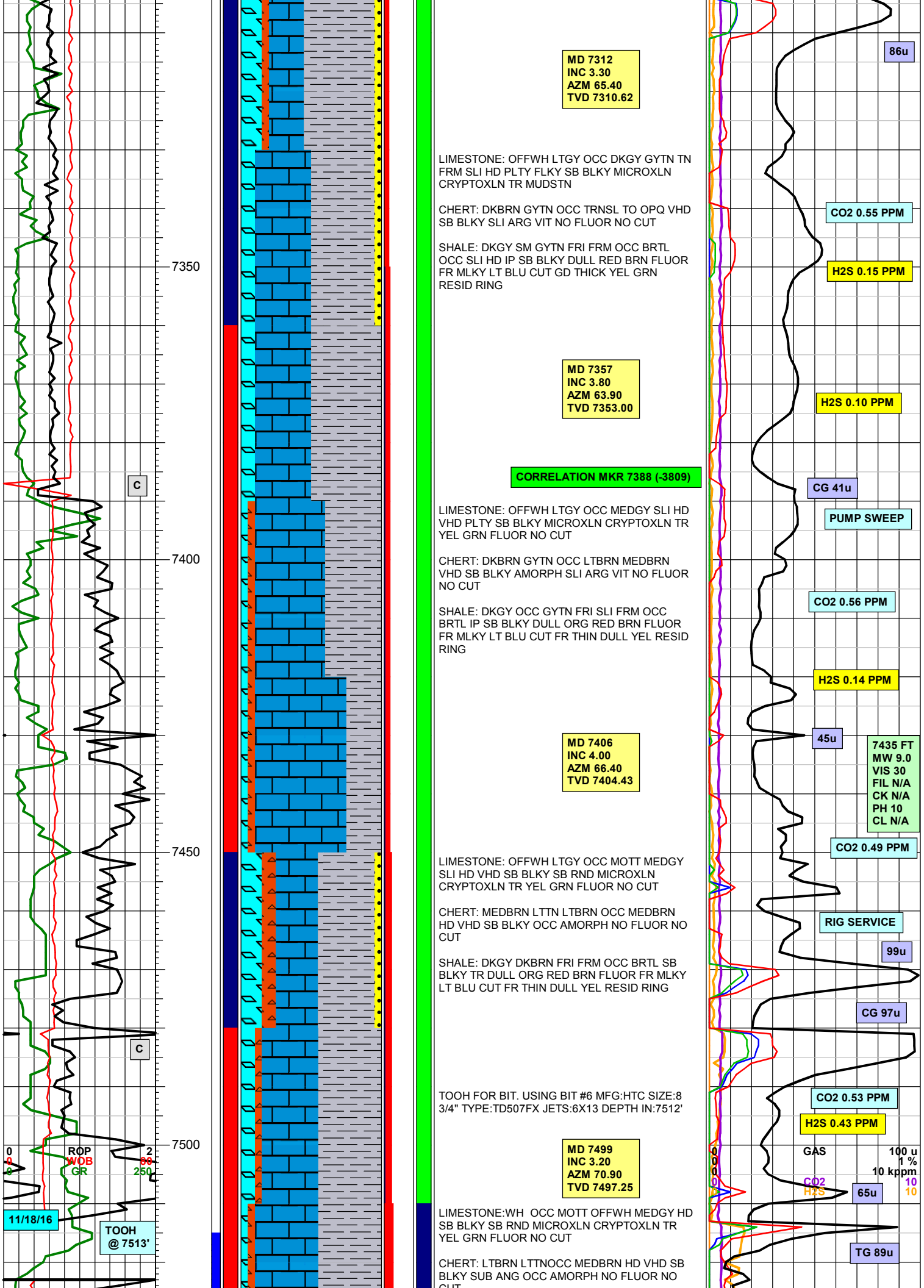

TH
WOB 32.9
RPM 59
SPM 168
SPP 2586
6250
C
WOB 35.1
RPM 60
SPM 169
SPP 2590
6300
C
WOB 35.8
RPM 60
SPM 166
SPP 2576
6350
11/17/2016
6400
SILTSTONE: DKGYBRN DKBRN DKGY FRI FRM BRTL VVFGN VWSRT VWRND ARG SLI ORGN RICH IP CLAY RICH MOD CONSL SM VDULL ORNG BRN FLUOR
DOLOMITE: OFFWH WH LTGY GY FRI BRTL PLTY FLKY F LAM W ARG DOLO IP SNDY IP VARG IP NO FLUOR NO CUT
SANDSTONE: OFFWH WH TRNSL LTTN TN DKTN FRI BRTL VFGN VVFGN VWRND VWSRT WCMT W DOLO IP SILIC IP GD LT BLU GRN FLUOR
SHALE: GY DKGY GYBRN GYGRN SB BLKY VSLTY ORGN RICH IP GLEYED GREEN IP NO FLUOR SM TR STRM CUT
TR COAL
MD 6282
AZM 1.8
INC 45.9
TVD 6281.09
SAMPLES PULVARIZED
CHERT: LTBLU YLW MOTT IP GY IP FRI FRM BRTL HD SB BLKY RIP LAM W SILTSTN IP NO FLUOR NO CUT
SILTSTONE: DKGYBRN DKBRN DKGY FRI FRM BRTL VVFGN VWSRT VWRND ARG SLI ORGN RICH IP CLAY RICH MOD CONSL SM VDULL ORNG BRN FLUOR
SANDSTONE: OFFWH WH TRNSL LTTN TN DKTN FRI BRTL VFGN VVFGN VWRND VWSRT WCMT W DOLO IP SILIC IP GD LT BLU GRN FLUOR
TR SHALE: GY DKGY GYBRN GYGRN SB BLKY VSLTY ORGN RICH IP GLEYED GREEN IP NO FLUOR SM TR STRM CUT
TR COAL
MD 6376
AZM 1.6
INC 47.3
TVD 6375.05
SAMPLES PULVARIZED
SILTSTONE: DKGYBRN DKBRN DKGY FRI FRM BRTL VVFGN VWSRT VWRND ARG SLI ORGN RICH IP CLAY RICH MOD CONSL SM VDULL ORNG BRN FLUOR
SANDSTONE: OFFWH WH TRNSL LTTN TN DKTN FRI BRTL VFGN VVFGN VWRND VWSRT WCMT W DOLO IP SILIC IP GD LT BLU GRN FLUOR
TR SHALE: GY DKGY GYBRN GYGRN SB BLKY VSLTY ORGN RICH IP GLEYED GREEN IP NO FLUOR SM TR STRM CUT
31u
H2S 0.11 PPM
CO2 0.47 PPM
14u
CG 10u
6285 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
18u
H2S 0.04 PPM
CO2 0.52 PPM
H2S 0.07 PPM
CG 22u
H2S 0.00 PPM
CO2 0.51 PPM
6385 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
CO2 0.51 PPM

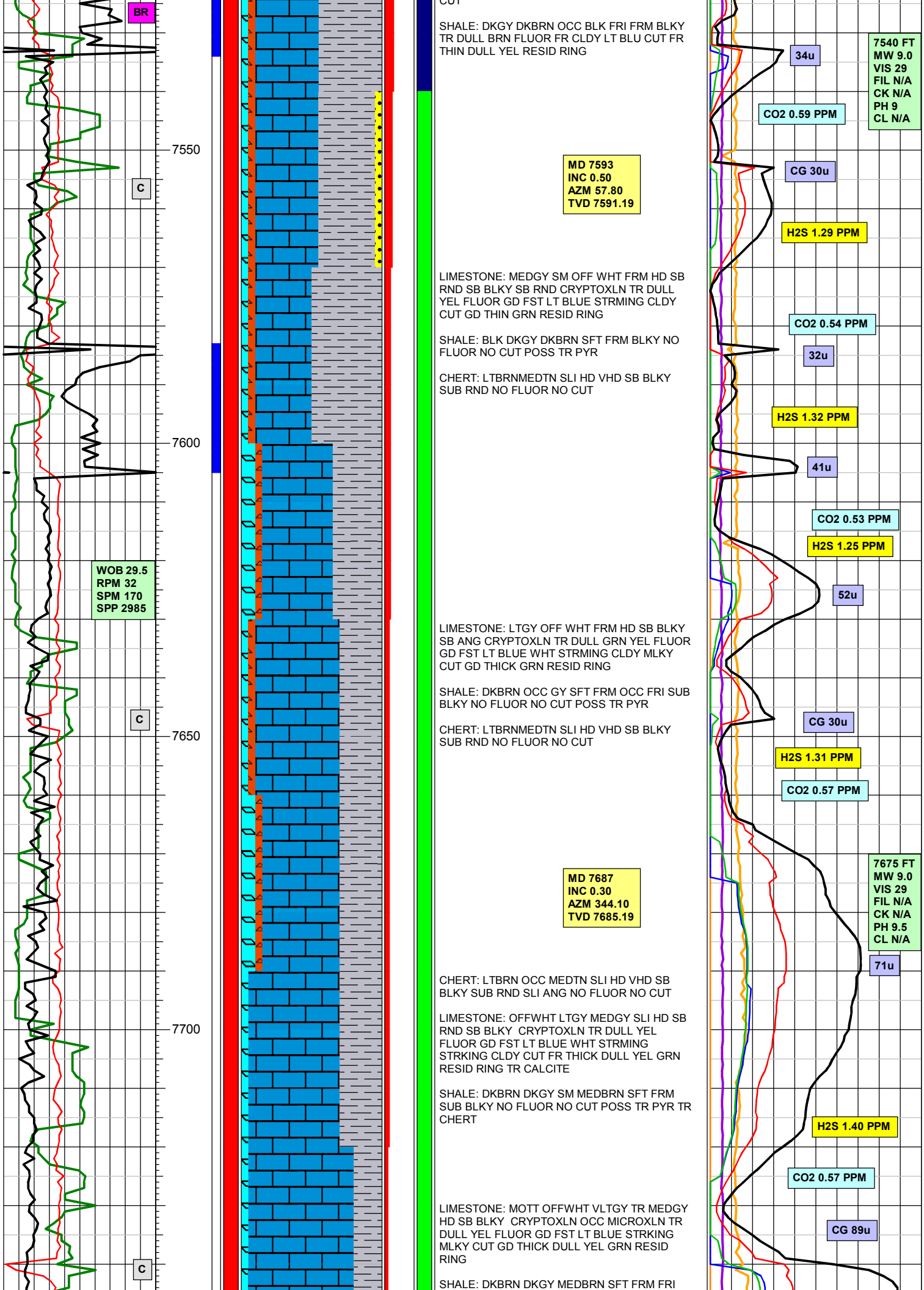

C
6450
WOB 35.8
RPM 62
SPM 168
SPP 2565
0 ROP 2
0 WOB 80
0 GR 250
6500
C
6550
WOB 35.6
RPM 62
SPM 168
SPP 2632
6600
C
TR COAL: DKGYBRN SB BLKY BLKY VIT IP GRADES TO ORGN SH NO FLUOR TR FLSH CUT
MD 6470
INC 1.60
AZM 46.20
TVD 6469.02
DOLOMITE: LTGY OFFWH GY WH FRI BRTL PLTY FLKY SB BLKY CRYPTOXLN ARG IP F LAM NO FLUOR NO CUT
SILTSTONE: DKGYBRN DKBRN DKGY FRI FRM BRTL VVFGN VWSRT VWRND ARG SLI ORGN RICH IP CLAY RICH MOD CONSL SM VDULL ORNG BRN FLUOR TR FLSH TO SLW BLM RESID YLW ORNG CUT
SANDSTONE: OFFWH WH TRNSL LTTN TN DKTN FRI BRTL VFGN VVFGN VWRND VWSRT WCMT W DOLO IP SILIC IP GD LT BLU GRN FLUOR SLW STRM TO FST FLASH FR YLW GRN FLUOR TR YLW ORNG CUT
SHALE: GY DKGY GYBRN GYGRN SB BLKY VSLTY ORGN RICH IP GLEYED GREEN IP NO FLUOR SM TR FLSH TO BLM YLW ORNG CUT
COAL: DKGYBRN SB BLKY BLKY VIT IP GRADES TO ORGN SH NO FLUOR TR FLSH CUT
MD 6563
INC 1.60
AZM 46.90
TVD 6561.98
SHALE: GYGRN GRN LTGRN FRI BRTL SFT IP GLEYED SHALE NO FLUOR NO CUT
DOLOMITE: LTGY OFFWH GY WH FRI BRTL PLTY FLKY SB BLKY CRYPTOXLN ARG IP F LAM NO FLUOR NO CUT
SILTSTONE: DKBRN BRN DKGY FRI FRM BRTL VVFGN VWSRT VWRND ARG SLI ORGN RICH IP CLAY RICH MOD CONSL SM VDULL ORNG BRN FLUOR TR FLSH TO SLW BLM RESID YLW ORNG CUT
SANDSTONE: TRNSL LTGY UNCONSL LTGYWH IP SLI CONSL BRTL SM HIGH PHI FR LT YLW GRN FLUOR NO CUT
DOLOMITE: WH OFFWH LTGY GY FRI BRTL FLKY SB BLKY CRYPTOXLN MUDSTN RIP LAM TO F LAM SNDY IP NO FLUOR NO CUT
SHALE: GY LTGY DKGY GYGRN LTGRN SFT FRI BRTL SB BLKY SB RND SLI CARB RICH IP VCALC SLTY IP NO FLUOR TR DULL STRM FLSH YLW ORNG CUT
SILTSTONE: DKBRN BRN GY DKGY FRI BRTL SB BLKY ARG IP SM V DULL ORNG BRN FLUOR
12u
H2S 0.12 PPM
CG 3u
CO2 0.59 PPM
PUMP SWEEP
9u
0 GAS 50 u
0 0.50 %
0 5 kppm
0 CO2 10
0 H2S 10
CO2 0.49 PPM
6530 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
H2S 2.23 PPM
CLT @ 6542'
TIME 35 MINUTES
STKS 5992
WASHOUT 48.3%
17u
CO2 0.44 PPM
16u
H2S 0.70 PPM
6605 FT
MW 8.9
VIS 29
FIL N/A
CK N/A
PH 10.5
CL N/A
19u
CO2 0.46 PPM
CG 20u

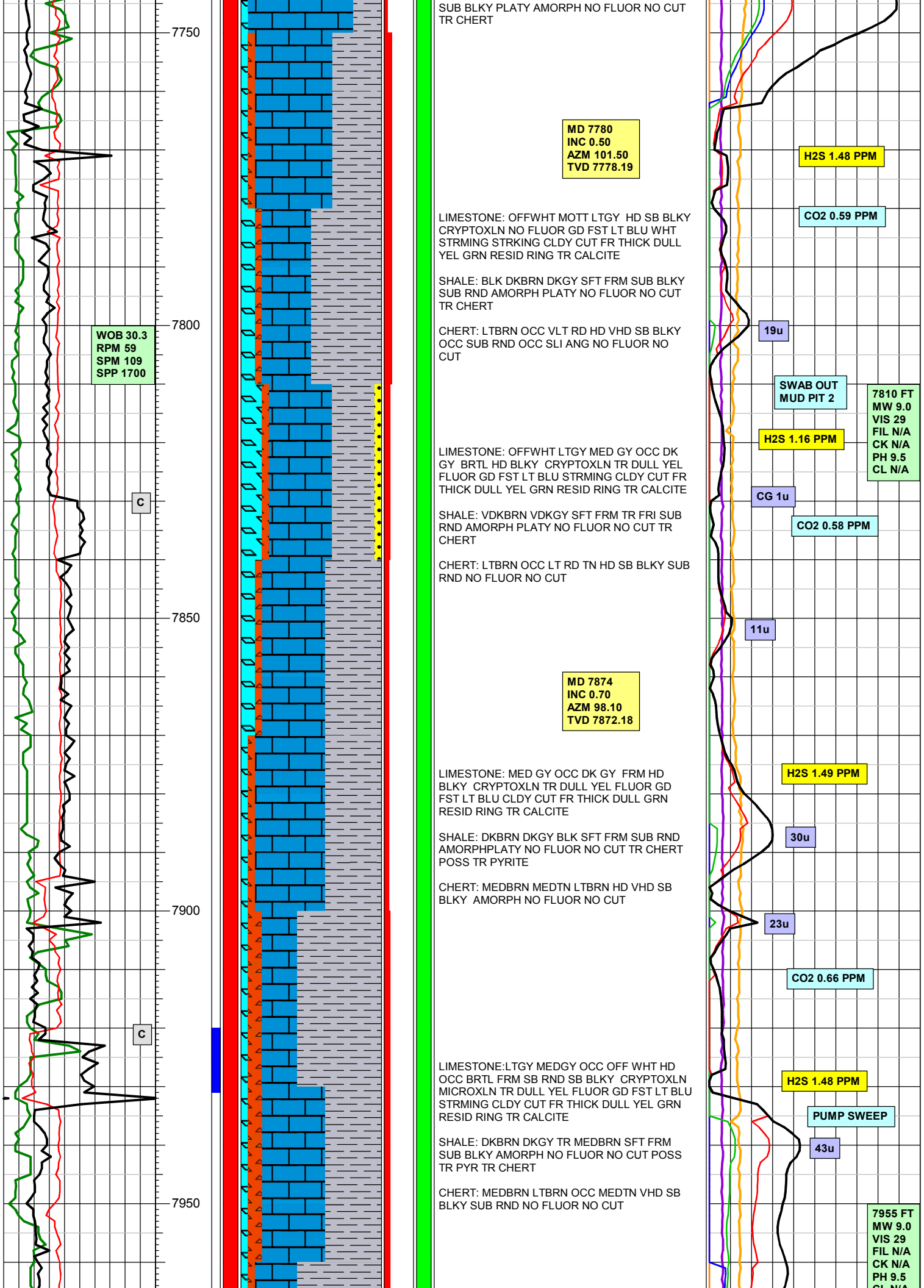

6650
6700
6750
6800
6850
WOB 36.6
RPM 60
SPM 168
SPP 2592
C
C
MD 6657
INC 1.70
AZM 45.20
TVD 6655.94
SANDSTONE: TRNSL LTGY UNCONSL LTGYWH IP SLI CONSL BRTL SM HIGH PHI FR LT YLW GRN FLUOR NO CUT
DOLOMITE: WH OFFWH LTGY GY TN LTTN TRNSL FRI BRTL FLKY SB BLKY CRYPTOXLN MUDSTN RIP LAM TO F LAM SNDY IP NO FLUOR NO CUT
SHALE: GY LTGY DKGY GYGRN LTGRN SFT FRI BRTL SB BLKY SB RND SLI CARB RICH IP VCALC SLTY IP NO FLUOR TR DULL STRM FLSH YLW ORNG CUT
SILTSTONE: DKBRN BRN GY DKGY FRI BRTL SB BLKY ARG IP SM V DULL ORNG BRN FLUOR
TR COAL
MD 6750
INC 1.70
AZM 43.90
TVD 6748.90
SILTSTONE: DKBRN DKGY FRI SLI SFT SM PCONSL VARG MOT CALC RIP LAM TR SNDY IP DULL BRN FLUOR FST FLSH STRM YLW WH CUT SM TR RESID RING IP
SANDSTONE: LTTN CLR TRNSL LTGY LTGYGRN CRM FRI BRTL SFT SM UNCONSL MSTLY CONSL VVFGN VWSRT CALC CMT IP DOLO CMT IP ARG IP RIP LAM IP TR LT BLU GRN FLUOR SM TR YLW WH CUT
SHALE: DKGY DKGYBRN SB BLKY FRI BRTL MOD CARB IP VVSLTY FR TO GD BRT BLU GRN FLUOR FR TO GD SLW STRM CUT
TR DOLOMITE
MD 6843
INC 1.60
AZM 49.00
TVD 6841.86
H2S 0.47 PPM
6u
CO2 0.40 PPM
7u
H2S 0.22 PPM
6720 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
CG 4u
H2S 0.21 PPM
PUMP SWEEP
SCALE CHANGE
GAS
100 u
1 %
10 kppm
CO2
H2S
10
10
5u
42u
133u
CG 50u
6830 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
H2S 0.18 PPM
CO2 0.51 PPM
12u

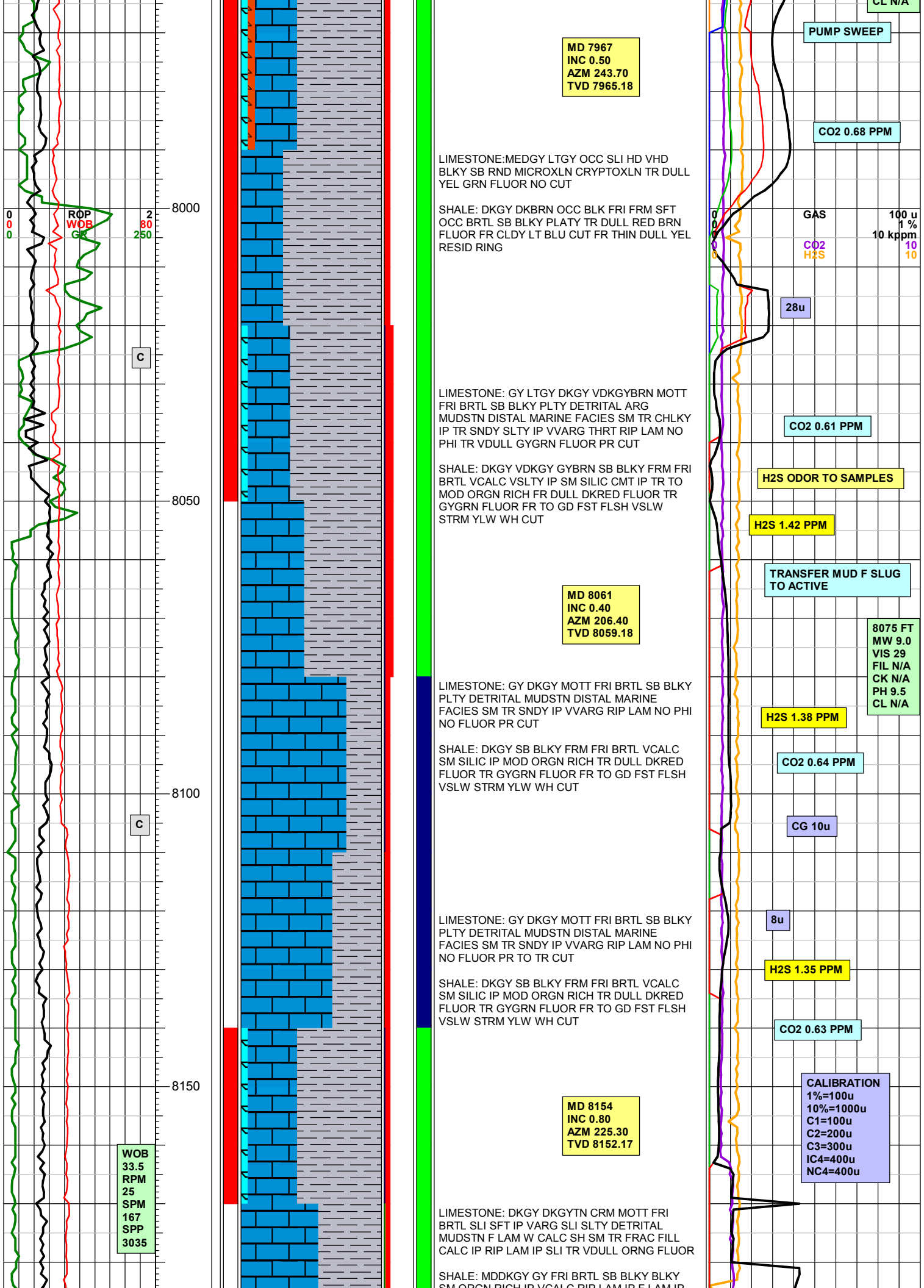

WOB 37.8
RPM 62
SPM 168
SPP 2731
6900
C
6950
7000
0 ROP 2
0 WOB 80
0 GR 250
C
7050
WOB 36.6
RPM 27
SPM 170
SPP 3074
NOT MUCH SAMPLE ON SHAKERS OR IN SEIVE WHEN WASING
DOLOMITE: WH OFFWH LTGY GY FRI BRTL FLKY SB BLKY CRYPTOXLN MUDSTN RIP LAM TO F LAM SNDY IP NO FLUOR NO CUT
SANDSTONE: CRM OFFWH WH TRNSL TN BRN FRI BRTL VVFGN VFGN VWSRT WRND SLTY IP FR TO GD LT BLU GRN FLUOR SM FLSH TO STRM LT YLW WH CUT
SILTSTONE: DKBRN BRN GY DKGY FRI BRTL SB BLKY ARG IP SM V DULL ORNG BRN FLUOR TR LT YLW ORNG CUT SM RESID OIL RING
SHALE: GY LTGY DKGY GYGRN LTGRN SFT FRI BRTL SB BLKY SB RND SLI CARB RICH IP VCALC SLTY IP NO FLUOR TR DULL STRM FLSH YLW ORNG CUT SM TR RESID AMBR RING
MD 6937
INC 1.60
AZM 51.10
TVD 6935.82
CORRELATION MKR 6973 (-3396)
SANDSTONE: LTTN OFFWH CRM LTGY BRN MOTT FRI FRM SB BLKY VFGN VWSRT WRND MWRND SLTY IP DOLO CMT IP SILIC CMT IP SM ARG IP GD BRT BLU WH FLUOR
DOLOMITE: OFFWH WH LTGY FRI BRTL FLKY PLTY FLAM CHLKY IP MUDSTN IP MICROXLN CRYPXLN IP SNDY IP NO FLUOR NO CUT
SHALE/SILTSTONE: DKGYBRN DKBRN SB BLKY VVSLTY SNDY IP TR V DULL BRN ORNG FLUOR
MD 7031
INC 1.40
AZM 49.90
TVD 7029.79
BONE SPRING 7061 (-3485)
LIMESTONE: OFFWH LTGY GY DKGY MOTT FRM HD FRI BRTL PLTY FLKY CRYPTXLN REXLN MUDSTN IP MOD ARG MID SLOPE FACIES CHT INCL W FRAC FILL CHT NO VIS PHI SM TR BLU GRN FLUOR SM V SLI TR WK RING CUT
CHERT: DKTN GYTN TRNSL TO OPQ DKGYBRN DKBRN OPQ FRM HD SB BLKY VITR ARG CONCH FRAC SM FRAC FILL CHT NO PHI NO FLUOR NO CUT
CO2 0.50 PPM
H2S 0.49 PPM
8u
CO2 0.49 PPM
20u
H2S 0.34 PPM
PUMP SWEEP
73u
0 GAS 100 u
0 1 %
0 10 kppm
0 CO2 10
0 H2S 10
CG 75u
CO2 0.47 PPM
7060 FT
MW 9.0
VIS 30
FIL N/A
CK N/A
PH 10
CL N/A

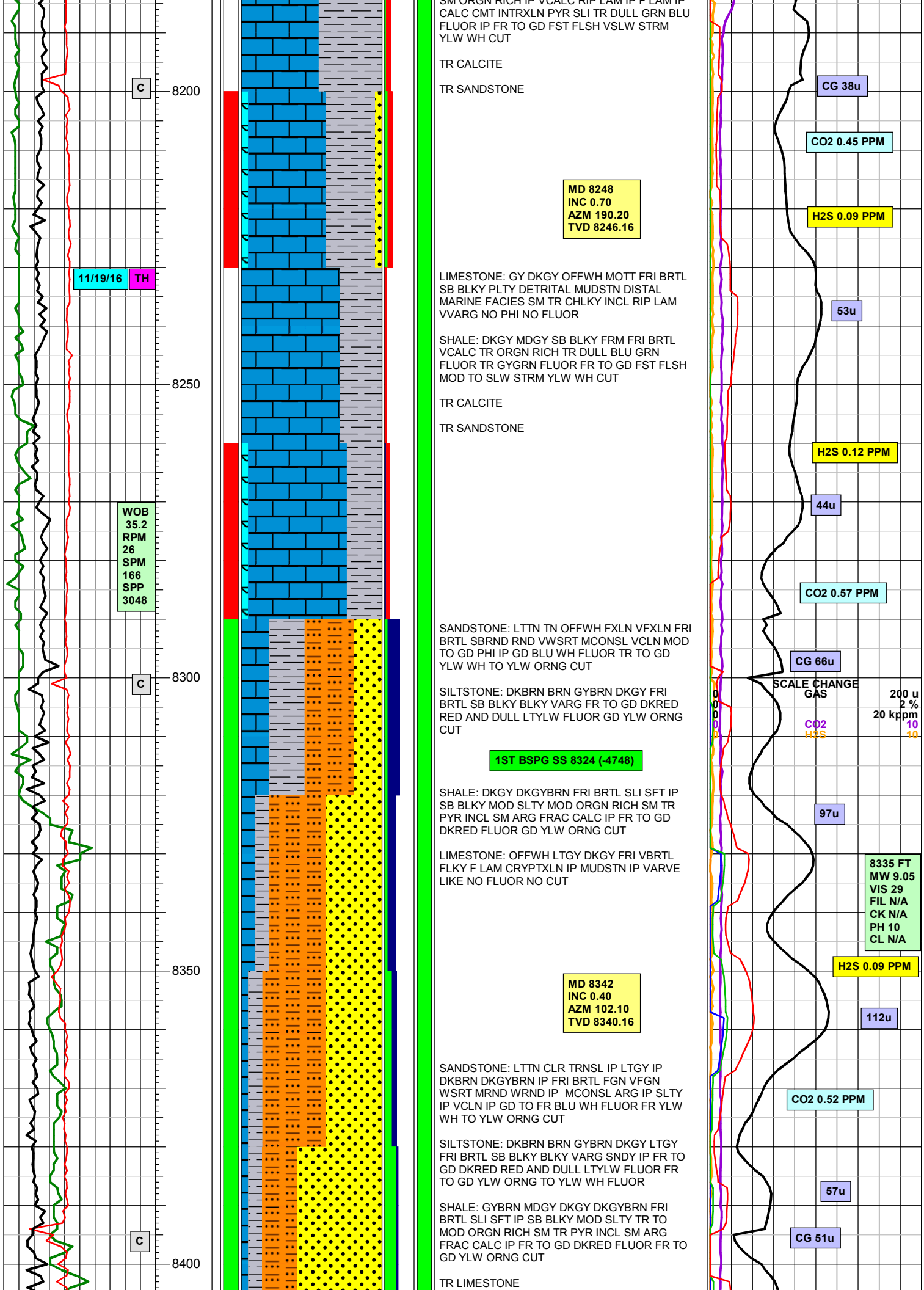

7100
7150
7200
7250
7300
C
BR
C
C
WOB 37.4
RPM 28
SPM 172
SPP 2802
WOB 37.1
RPM 27
SPM 170
SPP 2796
SILTSTONE: GY DKGY GYTN FRI FRM BRTL SLI HD IP SB BLKY VVSLTY SNDY IP SILIC IP VARG DULL RED BRN FLUOR FR CUT
SHALE: DKGY DKGYBRN FRM FRI SLI HD IP BRTL SB BLKY SB PLTY SLI SLTY IP VCALC MOD ORGN RICH SM CLAY SM CHT INCL SM CALC INCL SLI TO FR DULL ORNG BRN FLUOR FST FLSH TO VSLW STRM WK WH TO YLW WH CUT
MD 7125
INC 1.50
AZM 57.50
TVD 7123.76
LIMESTONE: OFFWH LTGY OCC DKGY GYTN TN FRM SLI HD PLTY FLKY SB BLKY MICROXLN CRYPTOXLN TR DULL YEL GRN FLUOR TR LT BLU STRMING CUT TR GRN THIN RESID RING
CHERT: LTBRN DKTN OCC TRNSL VHD BLKY SB BLKY POSS SLI ARG VIT NO FLUOR NO CUT
SHALE: DKGY DKBRN OCC BLK FRI FRM SM BRTL IP SB BLKY TR DULL RED BRN FLUOR FR LT BLU STRMING CLDY MLKY CUT GD THIN GRN RESID RING
MD 7219
INC 1.90
AZM 60.40
TVD 7217.72
LIMESTONE: OFFWH LTGY OCC DKGY GYTN TN FRM SLI HD PLTY FLKY SB BLKY MICROXLN CRYPTOXLN TR MUDSTN TR DULL YEL GRN FLUOR TR LT BLU CLDY CUT
CHERT: DKBRN GYTN OCC TRNSL TO OPQ VHD SB BLKY SLI ARG VIT NO FLUOR NO CUT
SHALE: DKGY SM GYTN FRI FRM OCC BRTL OCC SLI HD IP SB BLKY DULL RED BRN FLUOR FR CUT
LIMESTONE: OFFWH LTGY OCC DKGY GYTN TN FRM SLI HD PLTY FLKY SB BLKY MICROXLN CRYPTOXLN TR MUDSTN
CHERT: DKBRN GYTN OCC TRNSL TO OPQ VHD SB BLKY SLI ARG VIT NO FLUOR NO CUT
SHALE: DKGY SM GYTN FRI FRM OCC BRTL OCC SLI HD IP SB BLKY DULL RED BRN FLUOR FR MLKY LT BLU CUT GD THICK YEL GRN RESID RING
7u
CO2 0.52 PPM
CG 27u
H2S ODOR IN SAMPLE
H2S 0.41 PPM
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u
CO2 0.44 PPM
H2S 0.28 PPM
CG 40u
7215 FT
MW 9.0
VIS 30
FIL N/A
CK N/A
PH 10
CL N/A
CO2 0.53 PPM
48u
H2S 0.26 PPM
81u
CG 60u

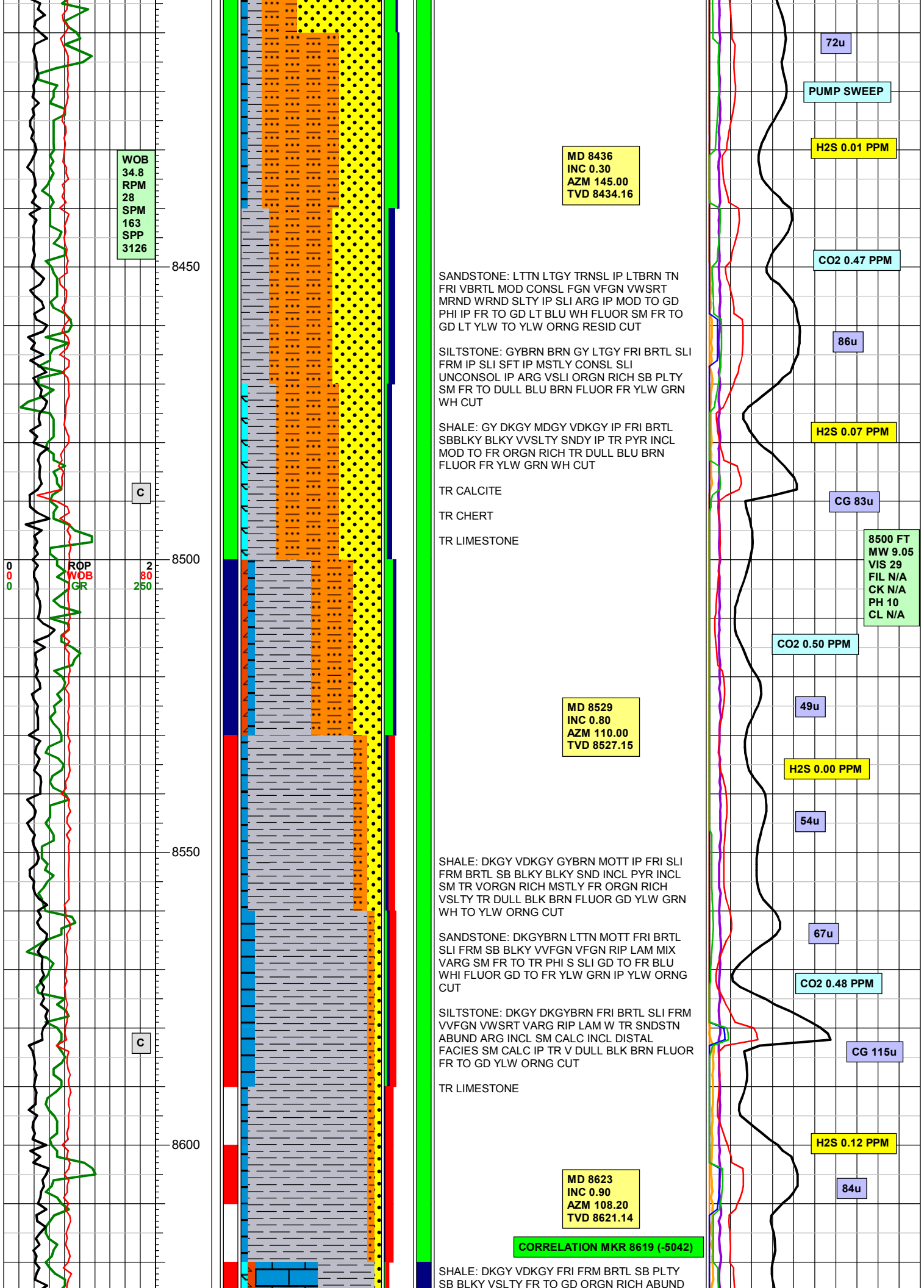

7350
7400
7450
7500
C
C
0
0
6
ROP
WOB
GR
2
30
250
11/18/16
TOOH
@ 7513'
MD 7312
INC 3.30
AZM 65.40
TVD 7310.62
LIMESTONE: OFFWH LTGY OCC DKGY GYTN TN FRM SLI HD PLTY FLKY SB BLKY MICROXLN CRYPTOXLN TR MUDSTN
CHERT: DKBRN GYTN OCC TRNSL TO OPQ VHD SB BLKY SLI ARG VIT NO FLUOR NO CUT
SHALE: DKGY SM GYTN FRI FRM OCC BRTL OCC SLI HD IP SB BLKY DULL RED BRN FLUOR FR MLKY LT BLU CUT GD THICK YEL GRN RESID RING
MD 7357
INC 3.80
AZM 63.90
TVD 7353.00
CORRELATION MKR 7388 (-3809)
LIMESTONE: OFFWH LTGY OCC MEDGY SLI HD VHD PLTY SB BLKY MICROXLN CRYPTOXLN TR YEL GRN FLUOR NO CUT
CHERT: DKBRN GYTN OCC LTBRN MEDBRN VHD SB BLKY AMORPH SLI ARG VIT NO FLUOR NO CUT
SHALE: DKGY OCC GYTN FRI SLI FRM OCC BRTL IP SB BLKY DULL ORG RED BRN FLUOR FR MLKY LT BLU CUT FR THIN DULL YEL RESID RING
MD 7406
INC 4.00
AZM 66.40
TVD 7404.43
LIMESTONE: OFFWH LTGY OCC MOTT MEDGY SLI HD VHD SB BLKY SB RND MICROXLN CRYPTOXLN TR YEL GRN FLUOR NO CUT
CHERT: MEDBRN LTTN LTBRN OCC MEDBRN HD VHD SB BLKY OCC AMORPH NO FLUOR NO CUT
SHALE: DKGY DKBRN FRI FRM OCC BRTL SB BLKY TR DULL ORG RED BRN FLUOR FR MLKY LT BLU CUT FR THIN DULL YEL RESID RING
TOOH FOR BIT. USING BIT #6 MFG:HTC SIZE:8 3/4" TYPE:TD507FX JETS:6X13 DEPTH IN:7512'
MD 7499
INC 3.20
AZM 70.90
TVD 7497.25
LIMESTONE:WH OCC MOTT OFFWH MEDGY HD SB BLKY SB RND MICROXLN CRYPTOXLN TR YEL GRN FLUOR NO CUT
CHERT: LTBRN LTTNOCC MEDBRN HD VHD SB BLKY SUB ANG OCC AMORPH NO FLUOR NO
86u
CO2 0.55 PPM
H2S 0.15 PPM
H2S 0.10 PPM
CG 41u
PUMP SWEEP
CO2 0.56 PPM
H2S 0.14 PPM
45u
7435 FT
MW 9.0
VIS 30
FIL N/A
CK N/A
PH 10
CL N/A
CO2 0.49 PPM
RIG SERVICE
99u
CG 97u
CO2 0.53 PPM
H2S 0.43 PPM
0
0
0
0
0
GAS
100 u
1 %
10 kppm
CO2
H2S
10
10
65u
TG 89u

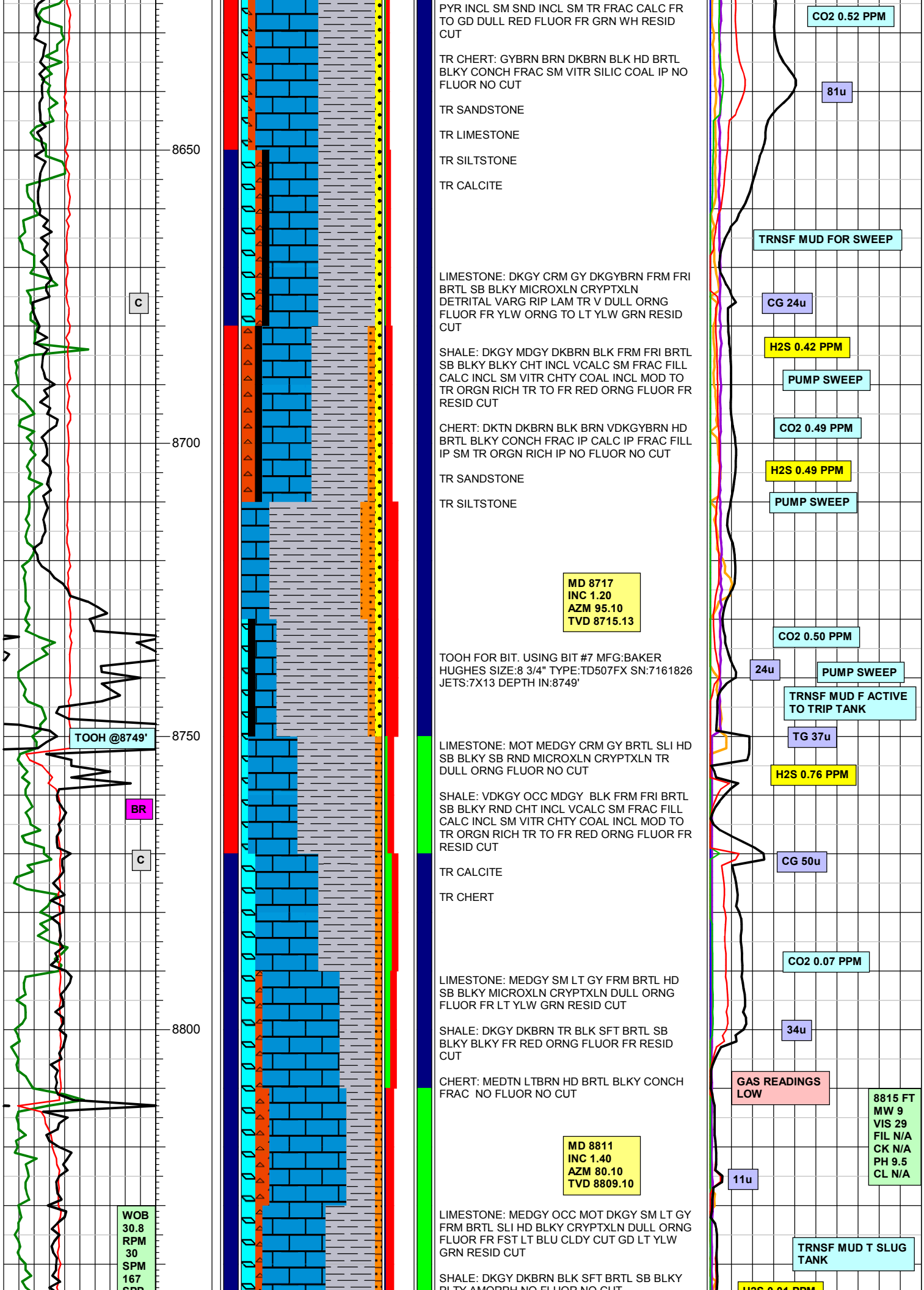

BR
7550
C
7600
WOB 29.5
RPM 32
SPM 170
SPP 2985
C
7650
7700
C
SHALE: DKGY DKBRN OCC BLK FRI FRM BLKY TR DULL BRN FLUOR FR CLDY LT BLU CUT FR THIN DULL YEL RESID RING
MD 7593
INC 0.50
AZM 57.80
TVD 7591.19
LIMESTONE: MEDGY SM OFF WHT FRM HD SB RND SB BLKY SB RND CRYPTOXLN TR DULL YEL FLUOR GD FST LT BLUE STRMING CLDY CUT GD THIN GRN RESID RING
SHALE: BLK DKGY DKBRN SFT FRM BLKY NO FLUOR NO CUT POSS TR PYR
CHERT: LTBRNMEDTN SLI HD VHD SB BLKY SUB RND NO FLUOR NO CUT
LIMESTONE: LTGY OFF WHT FRM HD SB BLKY SB ANG CRYPTOXLN TR DULL GRN YEL FLUOR GD FST LT BLUE WHT STRMING CLDY MLKY CUT GD THICK GRN RESID RING
SHALE: DKBRN OCC GY SFT FRM OCC FRI SUB BLKY NO FLUOR NO CUT POSS TR PYR
CHERT: LTBRNMEDTN SLI HD VHD SB BLKY SUB RND NO FLUOR NO CUT
MD 7687
INC 0.30
AZM 344.10
TVD 7685.19
CHERT: LTBRN OCC MEDTN SLI HD VHD SB BLKY SUB RND SLI ANG NO FLUOR NO CUT
LIMESTONE: OFFWHT LTGY MEDGY SLI HD SB RND SB BLKY CRYPTOXLN TR DULL YEL FLUOR GD FST LT BLUE WHT STRMING STRKING CLDY CUT FR THICK DULL YEL GRN RESID RING TR CALCITE
SHALE: DKBRN DKGY SM MEDBRN SFT FRM SUB BLKY NO FLUOR NO CUT POSS TR PYR TR CHERT
LIMESTONE: MOTT OFFWHT VLTGY TR MEDGY HD SB BLKY CRYPTOXLN OCC MICROXLN TR DULL YEL FLUOR GD FST LT BLUE STRKING MLKY CUT GD THICK DULL YEL GRN RESID RING
SHALE: DKBRN DKGY MEDBRN SFT FRM FRI
34u
7540 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 9
CL N/A
CO2 0.59 PPM
CG 30u
H2S 1.29 PPM
CO2 0.54 PPM
32u
H2S 1.32 PPM
41u
CO2 0.53 PPM
H2S 1.25 PPM
52u
CG 30u
H2S 1.31 PPM
CO2 0.57 PPM
7675 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 9.5
CL N/A
71u
H2S 1.40 PPM
CO2 0.57 PPM
CG 89u

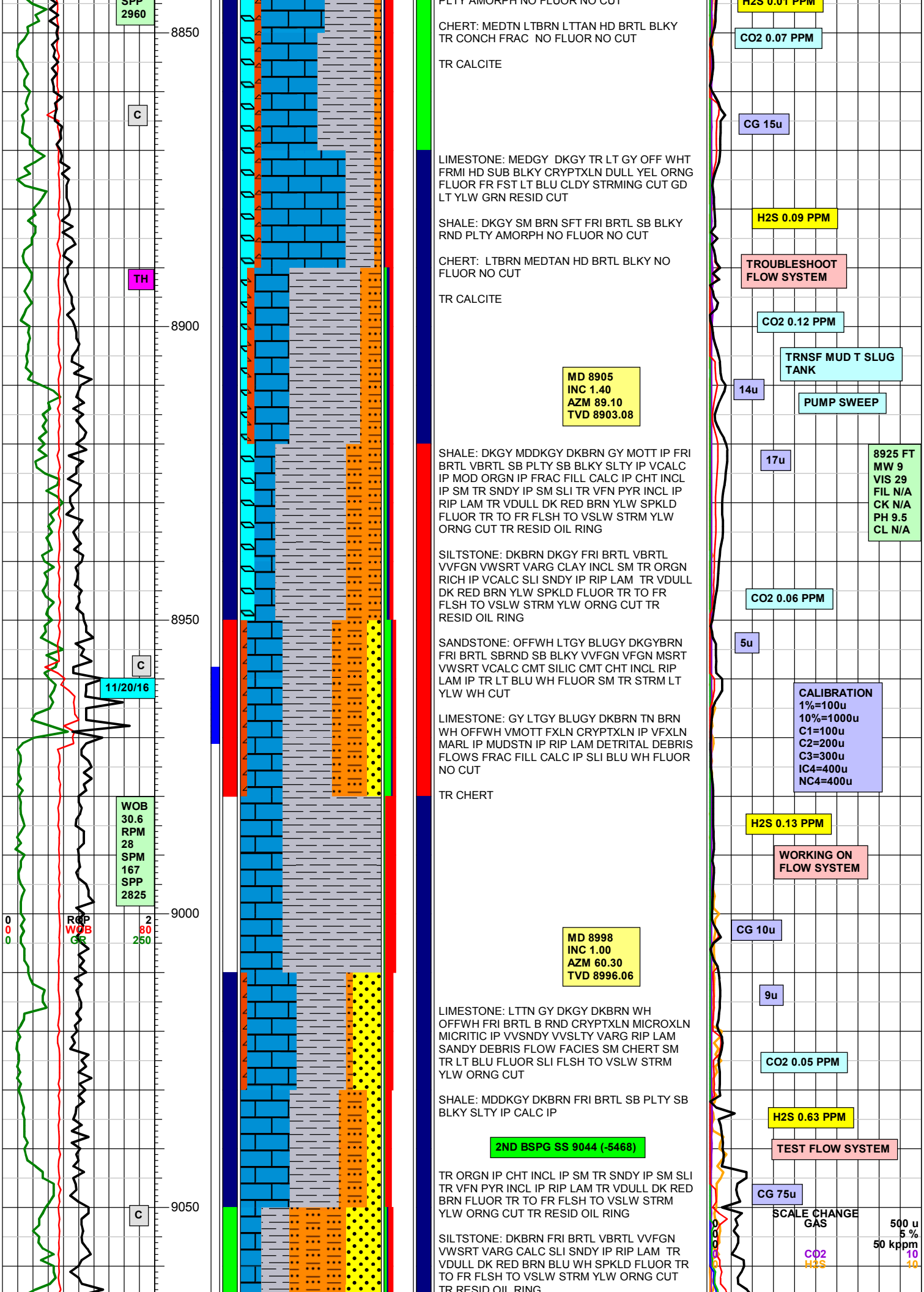

7750
7800
7850
7900
7950
WOB 30.3
RPM 59
SPM 109
SPP 1700
C
C
SUB BLKY PLATY AMORPH NO FLUOR NO CUT TR CHERT
MD 7780
INC 0.50
AZM 101.50
TVD 7778.19
LIMESTONE: OFFWHT MOTT LTGY HD SB BLKY CRYPTOXLN NO FLUOR GD FST LT BLU WHT STRMING STRKING CLDY CUT FR THICK DULL YEL GRN RESID RING TR CALCITE
SHALE: BLK DKBRN DKGY SFT FRM SUB BLKY SUB RND AMORPH PLATY NO FLUOR NO CUT TR CHERT
CHERT: LTBRN OCC VLT RD HD VHD SB BLKY OCC SUB RND OCC SLI ANG NO FLUOR NO CUT
LIMESTONE: OFFWHT LTGY MED GY OCC DK GY BRTL HD BLKY CRYPTOXLN TR DULL YEL FLUOR GD FST LT BLU STRMING CLDY CUT FR THICK DULL YEL GRN RESID RING TR CALCITE
SHALE: VDKBRN VDKGY SFT FRM TR FRI SUB RND AMORPH PLATY NO FLUOR NO CUT TR CHERT
CHERT: LTBRN OCC LT RD TN HD SB BLKY SUB RND NO FLUOR NO CUT
MD 7874
INC 0.70
AZM 98.10
TVD 7872.18
LIMESTONE: MED GY OCC DK GY FRM HD BLKY CRYPTOXLN TR DULL YEL FLUOR GD FST LT BLU CLDY CUT FR THICK DULL GRN RESID RING TR CALCITE
SHALE: DKBRN DKGY BLK SFT FRM SUB RND AMORPHPLATY NO FLUOR NO CUT TR CHERT POSS TR PYRITE
CHERT: MEDBRN MEDTN LTBRN HD VHD SB BLKY AMORPH NO FLUOR NO CUT
LIMESTONE:LTGY MEDGY OCC OFF WHT HD OCC BRTL FRM SB RND SB BLKY CRYPTOXLN MICROXLN TR DULL YEL FLUOR GD FST LT BLU STRMING CLDY CUT FR THICK DULL YEL GRN RESID RING TR CALCITE
SHALE: DKBRN DKGY TR MEDBRN SFT FRM SUB BLKY AMORPH NO FLUOR NO CUT POSS TR PYR TR CHERT
CHERT: MEDBRN LTBRN OCC MEDTN VHD SB BLKY SUB RND NO FLUOR NO CUT
H2S 1.48 PPM
CO2 0.59 PPM
19u
SWAB OUT MUD PIT 2
7810 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 9.5
CL N/A
H2S 1.16 PPM
CG 1u
CO2 0.58 PPM
11u
H2S 1.49 PPM
30u
23u
CO2 0.66 PPM
H2S 1.48 PPM
PUMP SWEEP
43u
7955 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 9.5

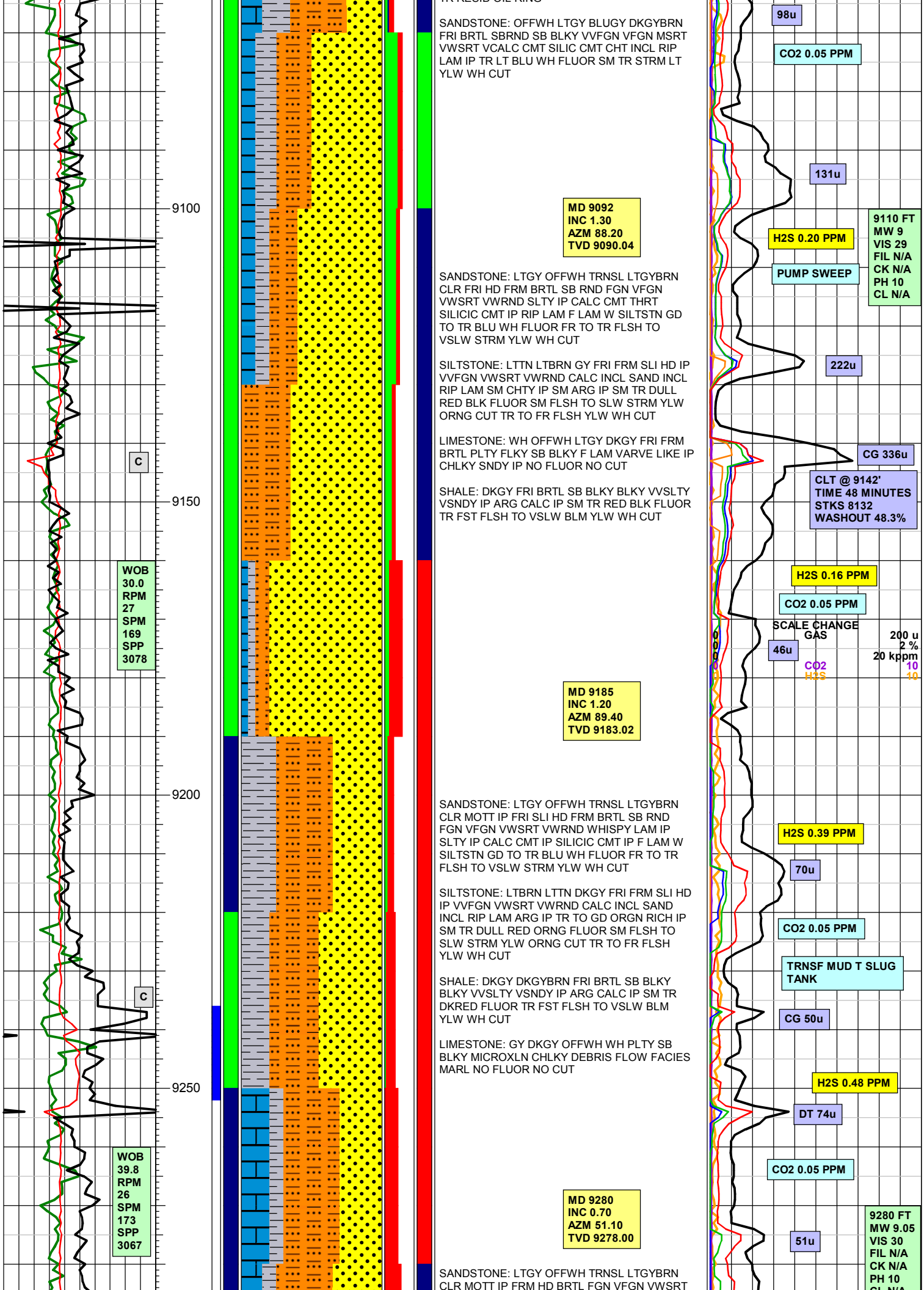

0
ROP
2
0
WOB
80
0
GR
250
8000
8050
8100
8150
C
C
WOB
33.5
RPM
25
SPM
167
SPP
3035
MD 7967
INC 0.50
AZM 243.70
TVD 7965.18
LIMESTONE:MEDGY LTGY OCC SLI HD VHD BLKY SB RND MICROXLN CRYPTOXLN TR DULL YEL GRN FLUOR NO CUT
SHALE: DKGY DKBRN OCC BLK FRI FRM SFT OCC BRTL SB BLKY PLATY TR DULL RED BRN FLUOR FR CLDY LT BLU CUT FR THIN DULL YEL RESID RING
LIMESTONE: GY LTGY DKGY VDKGYBRN MOTT FRI BRTL SB BLKY PLTY DETRITAL ARG MUDSTN DISTAL MARINE FACIES SM TR CHLKY IP TR SNDY SLTY IP VVARG THRT RIP LAM NO PHI TR VDULL GYGRN FLUOR PR CUT
SHALE: DKGY VDKGY GYBRN SB BLKY FRM FRI BRTL VCALC VSLTY IP SM SILIC CMT IP TR TO MOD ORGN RICH FR DULL DKRED FLUOR TR GYGRN FLUOR FR TO GD FST FLSH VSLW STRM YLW WH CUT
MD 8061
INC 0.40
AZM 206.40
TVD 8059.18
LIMESTONE: GY DKGY MOTT FRI BRTL SB BLKY PLTY DETRITAL MUDSTN DISTAL MARINE FACIES SM TR SNDY IP VVARG RIP LAM NO PHI NO FLUOR PR CUT
SHALE: DKGY SB BLKY FRM FRI BRTL VCALC SM SILIC IP MOD ORGN RICH TR DULL DKRED FLUOR TR GYGRN FLUOR FR TO GD FST FLSH VSLW STRM YLW WH CUT
LIMESTONE: GY DKGY MOTT FRI BRTL SB BLKY PLTY DETRITAL MUDSTN DISTAL MARINE FACIES SM TR SNDY IP VVARG RIP LAM NO PHI NO FLUOR PR TO TR CUT
SHALE: DKGY SB BLKY FRM FRI BRTL VCALC SM SILIC IP MOD ORGN RICH TR DULL DKRED FLUOR TR GYGRN FLUOR FR TO GD FST FLSH VSLW STRM YLW WH CUT
MD 8154
INC 0.80
AZM 225.30
TVD 8152.17
LIMESTONE: DKGY DKGYTN CRM MOTT FRI BRTL SLI SFT IP VARG SLI SLTY DETRITAL MUDSTN F LAM W CALC SH SM TR FRAC FILL CALC IP RIP LAM IP SLI TR VDULL ORNG FLUOR
SHALE: MDDKGY GY FRI BRTL SB BLKY BLKY
CL N/A
PUMP SWEEP
CO2 0.68 PPM
0
GAS
100 u
0
1 %
0
10 kppm
CO2
10
H2S
10
28u
CO2 0.61 PPM
H2S ODOR TO SAMPLES
H2S 1.42 PPM
TRANSFER MUD F SLUG TO ACTIVE
8075 FT
MW 9.0
VIS 29
FIL N/A
CK N/A
PH 9.5
CL N/A
H2S 1.38 PPM
CO2 0.64 PPM
CG 10u
8u
H2S 1.35 PPM
CO2 0.63 PPM
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u

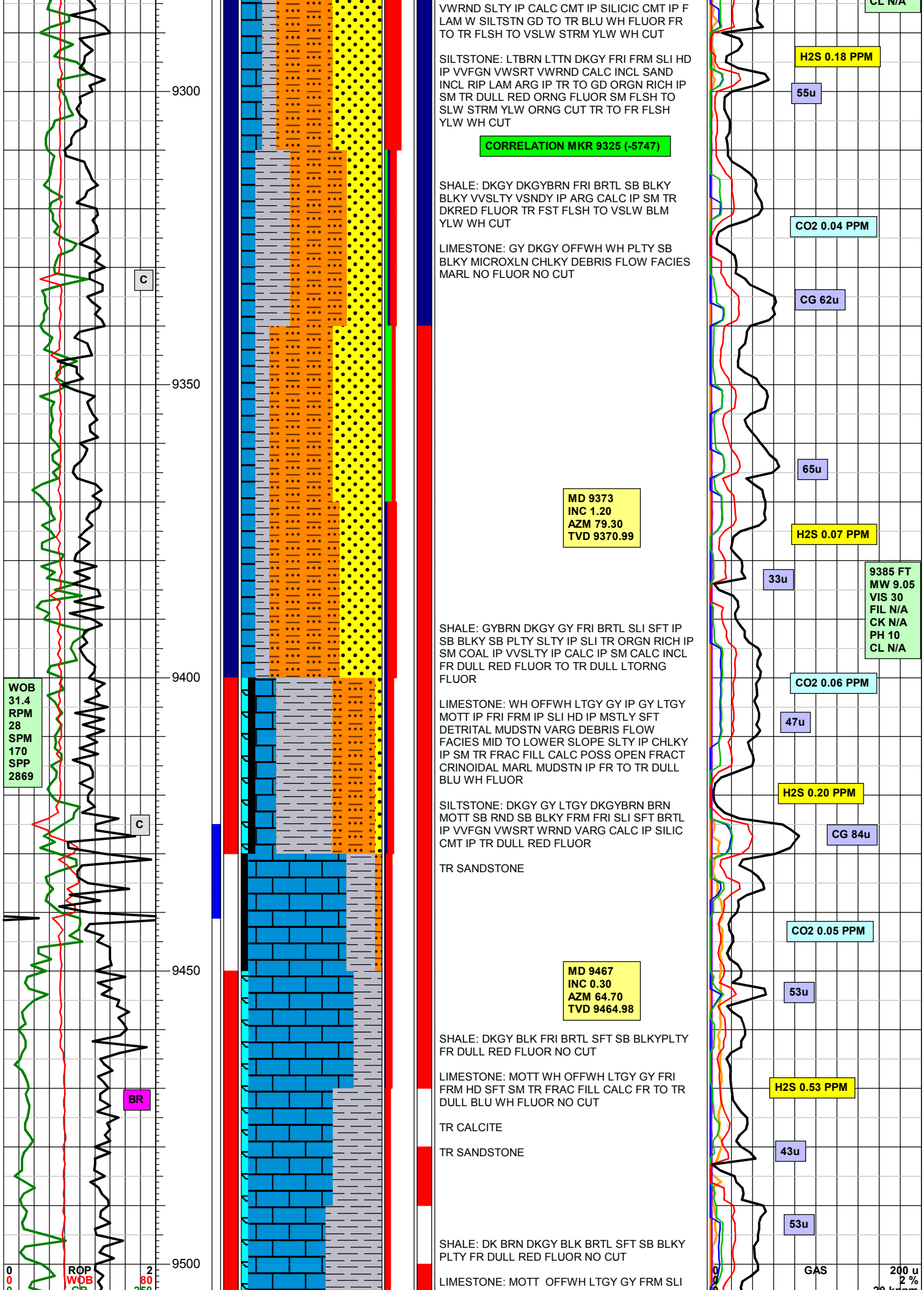

SM ORGN RICH IP VCALC RIP LAM IP F LAM IP
CALC CMT INTRXLN PYR SLI TR DULL GRN BLU
FLUOR IP FR TO GD FST FLSH VSLW STRM
YLW WH CUT
TR CALCITE
TR SANDSTONE
C
8200
CG 38u
CO2 0.45 PPM
MD 8248
INC 0.70
AZM 190.20
TVD 8246.16
H2S 0.09 PPM
11/19/16
TH
LIMESTONE: GY DKGY OFFWH MOTT FRI BRTL
SB BLKY PLTY DETRITAL MUDSTN DISTAL
MARINE FACIES SM TR CHLKY INCL RIP LAM
VVARG NO PHI NO FLUOR
53u
SHALE: DKGY MDGY SB BLKY FRM FRI BRTL
VCALC TR ORGN RICH TR DULL BLU GRN
FLUOR TR GYGRN FLUOR FR TO GD FST FLSH
MOD TO SLW STRM YLW WH CUT
8250
TR CALCITE
TR SANDSTONE
H2S 0.12 PPM
44u
WOB
35.2
RPM
26
SPM
166
SPP
3048
CO2 0.57 PPM
SANDSTONE: LTTN TN OFFWH FXLN VFXLN FRI
BRTL SBRND RND VWSRT MCONSL VCLN MOD
TO GD PHI IP GD BLU WH FLUOR TR TO GD
YLW WH TO YLW ORNG CUT
CG 66u
SCALE CHANGE
GAS
200 u
2 %
20 kppm
CO2
10
H2S
10
C
8300
SILTSTONE: DKBRN BRN GYBRN DKGY FRI
BRTL SB BLKY BLKY VARG FR TO GD DKRED
RED AND DULL LTYLW FLUOR GD YLW ORNG
CUT
1ST BSPG SS 8324 (-4748)
SHALE: DKGY DKGYBRN FRI BRTL SLI SFT IP
SB BLKY MOD SLTY MOD ORGN RICH SM TR
PYR INCL SM ARG FRAC CALC IP FR TO GD
DKRED FLUOR GD YLW ORNG CUT
97u
LIMESTONE: OFFWH LTGY DKGY FRI VBRTL
FLKY F LAM CRYPTXLN IP MUDSTN IP VARVE
LIKE NO FLUOR NO CUT
8335 FT
MW 9.05
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
H2S 0.09 PPM
8350
MD 8342
INC 0.40
AZM 102.10
TVD 8340.16
112u
SANDSTONE: LTTN CLR TRNSL IP LTGY IP
DKBRN DKGYBRN IP FRI BRTL FGN VFGN
WSRT MRND WRND IP MCONSL ARG IP SLTY
IP VCLN IP GD TO FR BLU WH FLUOR FR YLW
WH TO YLW ORNG CUT
CO2 0.52 PPM
SILTSTONE: DKBRN BRN GYBRN DKGY LTGY
FRI BRTL SB BLKY BLKY VARG SNDY IP FR TO
GD DKRED RED AND DULL LTYLW FLUOR FR
TO GD YLW ORNG TO YLW WH FLUOR
57u
SHALE: GYBRN MDGY DKGY DKGYBRN FRI
BRTL SLI SFT IP SB BLKY MOD SLTY TR TO
MOD ORGN RICH SM TR PYR INCL SM ARG
FRAC CALC IP FR TO GD DKRED FLUOR FR TO
GD YLW ORNG CUT
C
8400
CG 51u
TR LIMESTONE

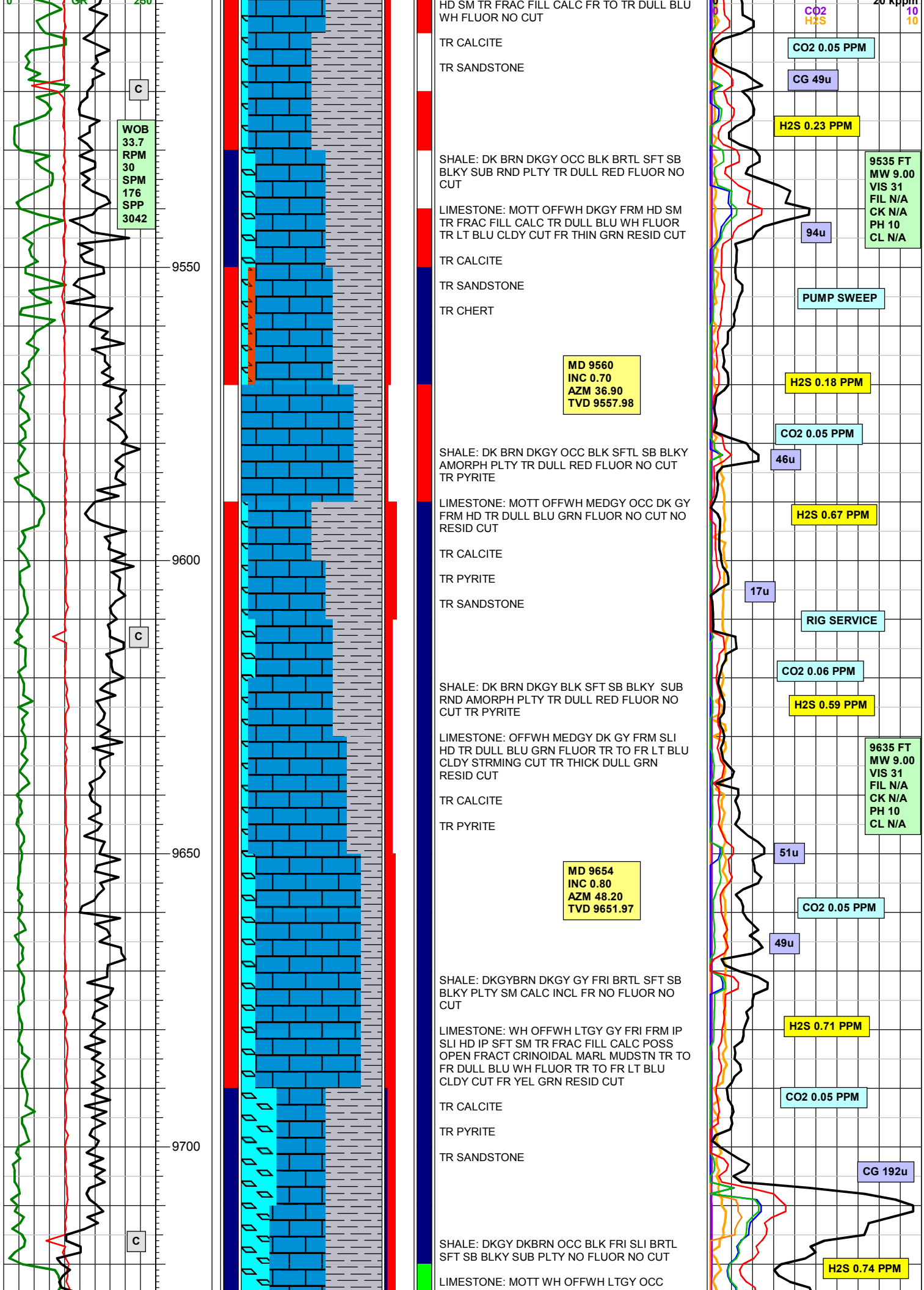

WOB
34.8
RPM
28
SPM
163
SPP
3126
8450
C
0
ROP
2
0
WOB
80
0
GR
250
8500
8550
C
8600
MD 8436
INC 0.30
AZM 145.00
TVD 8434.16
SANDSTONE: LTTN LTGY TRNSL IP LTBRN TN FRI VBRTL MOD CONSL FGN VFGN VWSRT MRND WRND SLTY IP SLI ARG IP MOD TO GD PHI IP FR TO GD LT BLU WH FLUOR SM FR TO GD LT YLW TO YLW ORNG RESID CUT
SILTSTONE: GYBRN BRN GY LTGY FRI BRTL SLI FRM IP SLI SFT IP MSTLY CONSL SLI UNCONSOL IP ARG VSLI ORGN RICH SB PLTY SM FR TO DULL BLU BRN FLUOR FR YLW GRN WH CUT
SHALE: GY DKGY MDGY VDKGY IP FRI BRTL SBBLKY BLKY VVSLTY SNDY IP TR PYR INCL MOD TO FR ORGN RICH TR DULL BLU BRN FLUOR FR YLW GRN WH CUT
TR CALCITE
TR CHERT
TR LIMESTONE
MD 8529
INC 0.80
AZM 110.00
TVD 8527.15
SHALE: DKGY VDKGY GYBRN MOTT IP FRI SLI FRM BRTL SB BLKY BLKY SND INCL PYR INCL SM TR VORGN RICH MSTLY FR ORGN RICH VSLTY TR DULL BLK BRN FLUOR GD YLW GRN WH TO YLW ORNG CUT
SANDSTONE: DKGYBRN LTTN MOTT FRI BRTL SLI FRM SB BLKY VVFGN VFGN RIP LAM MIX VARG SM FR TO TR PHI S SLI GD TO FR BLU WHI FLUOR GD TO FR YLW GRN IP YLW ORNG CUT
SILTSTONE: DKGY DKGYBRN FRI BRTL SLI FRM VVFGN VWSRT VARG RIP LAM W TR SNDSTN ABUND ARG INCL SM CALC INCL DISTAL FACIES SM CALC IP TR V DULL BLK BRN FLUOR FR TO GD YLW ORNG CUT
TR LIMESTONE
MD 8623
INC 0.90
AZM 108.20
TVD 8621.14
CORRELATION MKR 8619 (-5042)
SHALE: DKGY VDKGY FRI FRM BRTL SB PLTY SB BLKY VSLTY FR TO GD ORGN RICH ABUND
72u
PUMP SWEEP
H2S 0.01 PPM
CO2 0.47 PPM
86u
H2S 0.07 PPM
CG 83u
8500 FT
MW 9.05
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
CO2 0.50 PPM
49u
H2S 0.00 PPM
54u
67u
CO2 0.48 PPM
CG 115u
H2S 0.12 PPM
84u

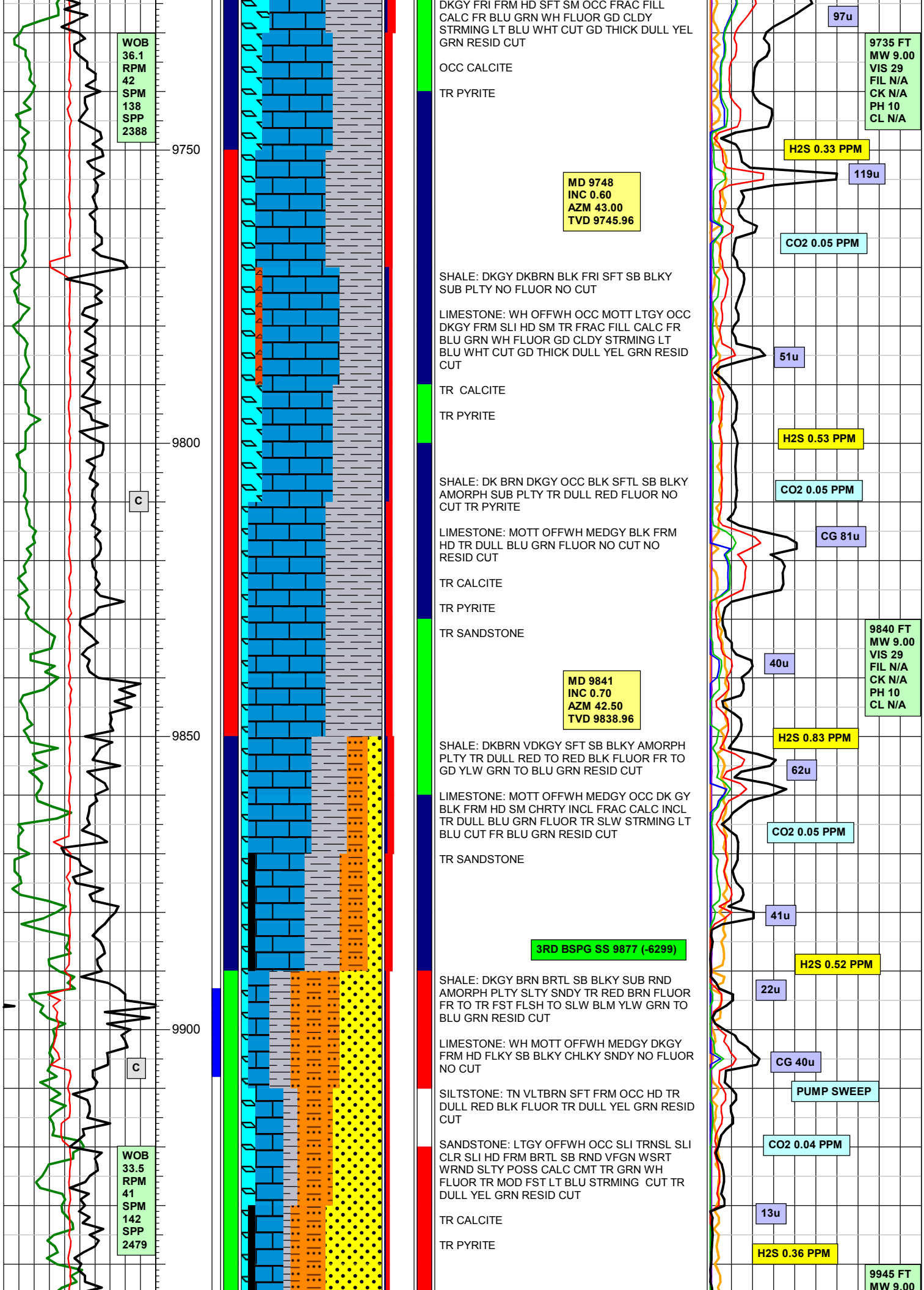

8650
8700
8750
8800
C
C
BR
TOOH @8749'
WOB 30.8
RPM 30
SPM 167
PYR INCL SM SND INCL SM TR FRAC CALC FR TO GD DULL RED FLUOR FR GRN WH RESID CUT
TR CHERT: GYBRN BRN DKBRN BLK HD BRTL BLKY CONCH FRAC SM VITR SILIC COAL IP NO FLUOR NO CUT
TR SANDSTONE
TR LIMESTONE
TR SILTSTONE
TR CALCITE
LIMESTONE: DKGY CRM GY DKGYBRN FRM FRI BRTL SB BLKY MICROXLN CRYPTXLN DETRITAL VARG RIP LAM TR V DULL ORNG FLUOR FR YLW ORNG TO LT YLW GRN RESID CUT
SHALE: DKGY MDGY DKBRN BLK FRM FRI BRTL SB BLKY BLKY CHT INCL VCALC SM FRAC FILL CALC INCL SM VITR CHTY COAL INCL MOD TO TR ORGN RICH TR TO FR RED ORNG FLUOR FR RESID CUT
CHERT: DKTN DKBRN BLK BRN VDKGYBRN HD BRTL BLKY CONCH FRAC IP CALC IP FRAC FILL IP SM TR ORGN RICH IP NO FLUOR NO CUT
TR SANDSTONE
TR SILTSTONE
MD 8717
INC 1.20
AZM 95.10
TVD 8715.13
TOOH FOR BIT. USING BIT #7 MFG:BAKER HUGHES SIZE:8 3/4" TYPE:TD507FX SN:7161826 JETS:7X13 DEPTH IN:8749'
LIMESTONE: MOT MEDGY CRM GY BRTL SLI HD SB BLKY SB RND MICROXLN CRYPTXLN TR DULL ORNG FLUOR NO CUT
SHALE: VDKGY OCC MDGY BLK FRM FRI BRTL SB BLKY RND CHT INCL VCALC SM FRAC FILL CALC INCL SM VITR CHTY COAL INCL MOD TO TR ORGN RICH TR TO FR RED ORNG FLUOR FR RESID CUT
TR CALCITE
TR CHERT
LIMESTONE: MEDGY SM LT GY FRM BRTL HD SB BLKY MICROXLN CRYPTXLN DULL ORNG FLUOR FR LT YLW GRN RESID CUT
SHALE: DKGY DKBRN TR BLK SFT BRTL SB BLKY BLKY FR RED ORNG FLUOR FR RESID CUT
CHERT: MEDTN LTBRN HD BRTL BLKY CONCH FRAC NO FLUOR NO CUT
MD 8811
INC 1.40
AZM 80.10
TVD 8809.10
LIMESTONE: MEDGY OCC MOT DKGY SM LT GY FRM BRTL SLI HD BLKY CRYPTXLN DULL ORNG FLUOR FR FST LT BLU CLDY CUT GD LT YLW GRN RESID CUT
SHALE: DKGY DKBRN BLK SFT BRTL SB BLKY
CO2 0.52 PPM
81u
TRNSF MUD FOR SWEEP
CG 24u
H2S 0.42 PPM
PUMP SWEEP
CO2 0.49 PPM
H2S 0.49 PPM
PUMP SWEEP
CO2 0.50 PPM
24u
PUMP SWEEP
TRNSF MUD F ACTIVE TO TRIP TANK
TG 37u
H2S 0.76 PPM
CG 50u
CO2 0.07 PPM
34u
GAS READINGS LOW
8815 FT
MW 9
VIS 29
FIL N/A
CK N/A
PH 9.5
CL N/A
11u
TRNSF MUD T SLUG TANK

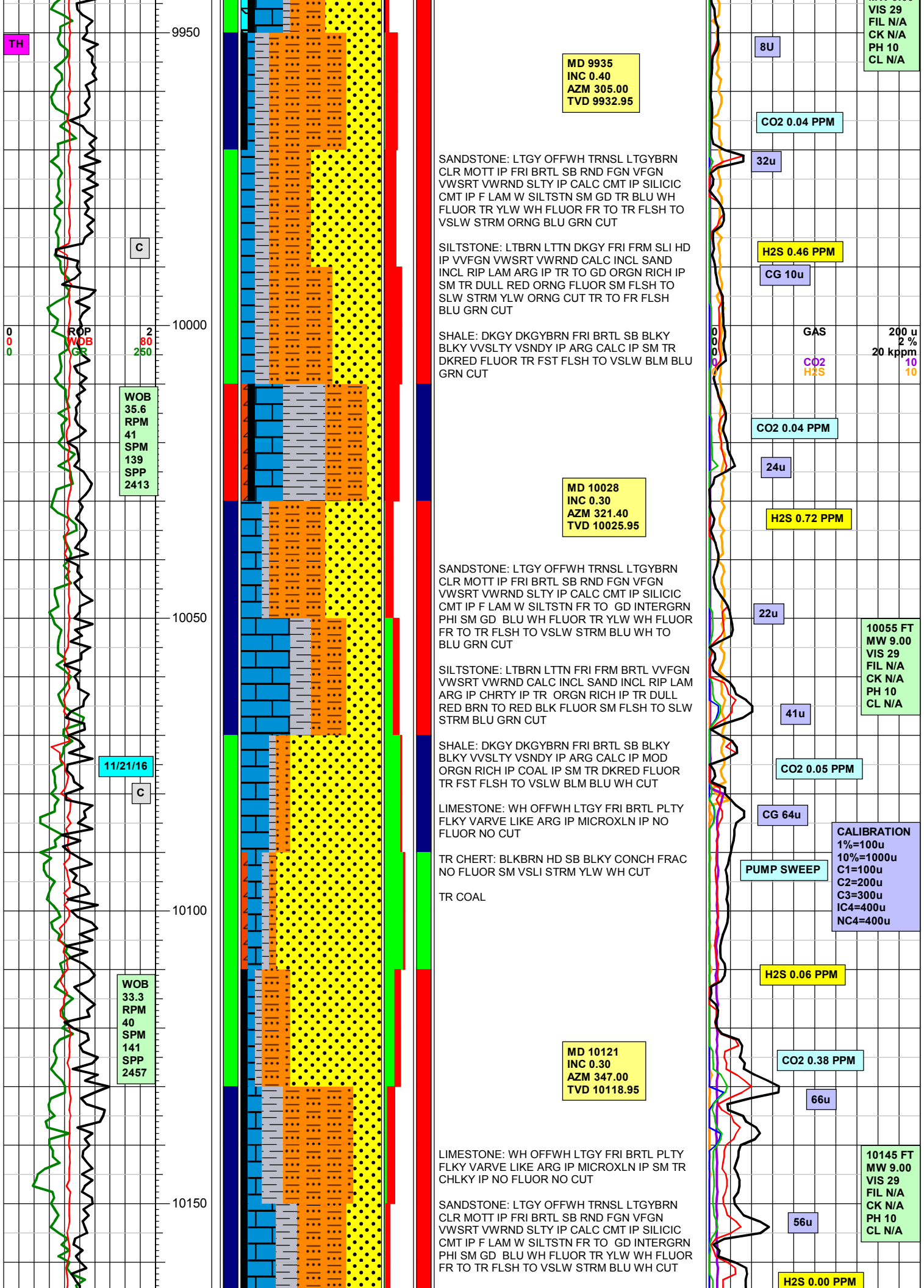

SPP 2960
8850
C
TH
8900
8950
C
11/20/16
WOB 30.6
RPM 28
SPM 167
SPP 2825
0 ROP 2
0 WOB 80
0 GR 250
9000
9050
C
PLTY AMORPH NO FLUOR NO CUT
CHERT: MEDTN LTBRN LTTAN HD BRTL BLKY TR CONCH FRAC NO FLUOR NO CUT
TR CALCITE
LIMESTONE: MEDGY DKGY TR LT GY OFF WHT FRMI HD SUB BLKY CRYPTXLN DULL YEL ORNG FLUOR FR FST LT BLU CLDY STRMING CUT GD LT YLW GRN RESID CUT
SHALE: DKGY SM BRN SFT FRI BRTL SB BLKY RND PLTY AMORPH NO FLUOR NO CUT
CHERT: LTBRN MEDTAN HD BRTL BLKY NO FLUOR NO CUT
TR CALCITE
MD 8905
INC 1.40
AZM 89.10
TVD 8903.08
SHALE: DKGY MDDKGY DKBRN GY MOTT IP FRI BRTL VBRTL SB PLTY SB BLKY SLTY IP VCALC IP MOD ORGN IP FRAC FILL CALC IP CHT INCL IP SM TR SNDY IP SM SLI TR VFN PYR INCL IP RIP LAM TR VDULL DK RED BRN YLW SPKLD FLUOR TR TO FR FLSH TO VSLW STRM YLW ORNG CUT TR RESID OIL RING
SILTSTONE: DKBRN DKGY FRI BRTL VBRTL VVFGN VWSRT VARG CLAY INCL SM TR ORGN RICH IP VCALC SLI SNDY IP RIP LAM TR VDULL DK RED BRN YLW SPKLD FLUOR TR TO FR FLSH TO VSLW STRM YLW ORNG CUT TR RESID OIL RING
SANDSTONE: OFFWH LTGY BLUGY DKGYBRN FRI BRTL SBRND SB BLKY VVFGN VFGN MSRT VWSRT VCALC CMT SILIC CMT CHT INCL RIP LAM IP TR LT BLU WH FLUOR SM TR STRM LT YLW WH CUT
LIMESTONE: GY LTGY BLUGY DKBRN TN BRN WH OFFWH VMOTT FXLN CRYPTXLN IP VFXLN MARL IP MUDSTN IP RIP LAM DETRITAL DEBRIS FLOWS FRAC FILL CALC IP SLI BLU WH FLUOR NO CUT
TR CHERT
MD 8998
INC 1.00
AZM 60.30
TVD 8996.06
LIMESTONE: LTTN GY DKGY DKBRN WH OFFWH FRI BRTL B RND CRYPTXLN MICROXLN MICRITIC IP VVSNDY VVSLTY VARG RIP LAM SANDY DEBRIS FLOW FACIES SM CHERT SM TR LT BLU FLUOR SLI FLSH TO VSLW STRM YLW ORNG CUT
SHALE: MDDKGY DKBRN FRI BRTL SB PLTY SB BLKY SLTY IP CALC IP
2ND BSPG SS 9044 (-5468)
TR ORGN IP CHT INCL IP SM TR SNDY IP SM SLI TR VFN PYR INCL IP RIP LAM TR VDULL DK RED BRN FLUOR TR TO FR FLSH TO VSLW STRM YLW ORNG CUT TR RESID OIL RING
SILTSTONE: DKBRN FRI BRTL VBRTL VVFGN VWSRT VARG CALC SLI SNDY IP RIP LAM TR VDULL DK RED BRN BLU WH SPKLD FLUOR TR TO FR FLSH TO VSLW STRM YLW ORNG CUT TR RESID OIL RING
H2S 0.01 PPM
CO2 0.07 PPM
CG 15u
H2S 0.09 PPM
TROUBLESHOOT FLOW SYSTEM
CO2 0.12 PPM
TRNSF MUD T SLUG TANK
14u
PUMP SWEEP
17u
8925 FT
MW 9
VIS 29
FIL N/A
CK N/A
PH 9.5
CL N/A
CO2 0.06 PPM
5u
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u
H2S 0.13 PPM
WORKING ON FLOW SYSTEM
CG 10u
9u
CO2 0.05 PPM
H2S 0.63 PPM
TEST FLOW SYSTEM
CG 75u
SCALE CHANGE
GAS
500 u
5 %
50 kppm
0
0
0
0
0
CO2
H2S
10
10

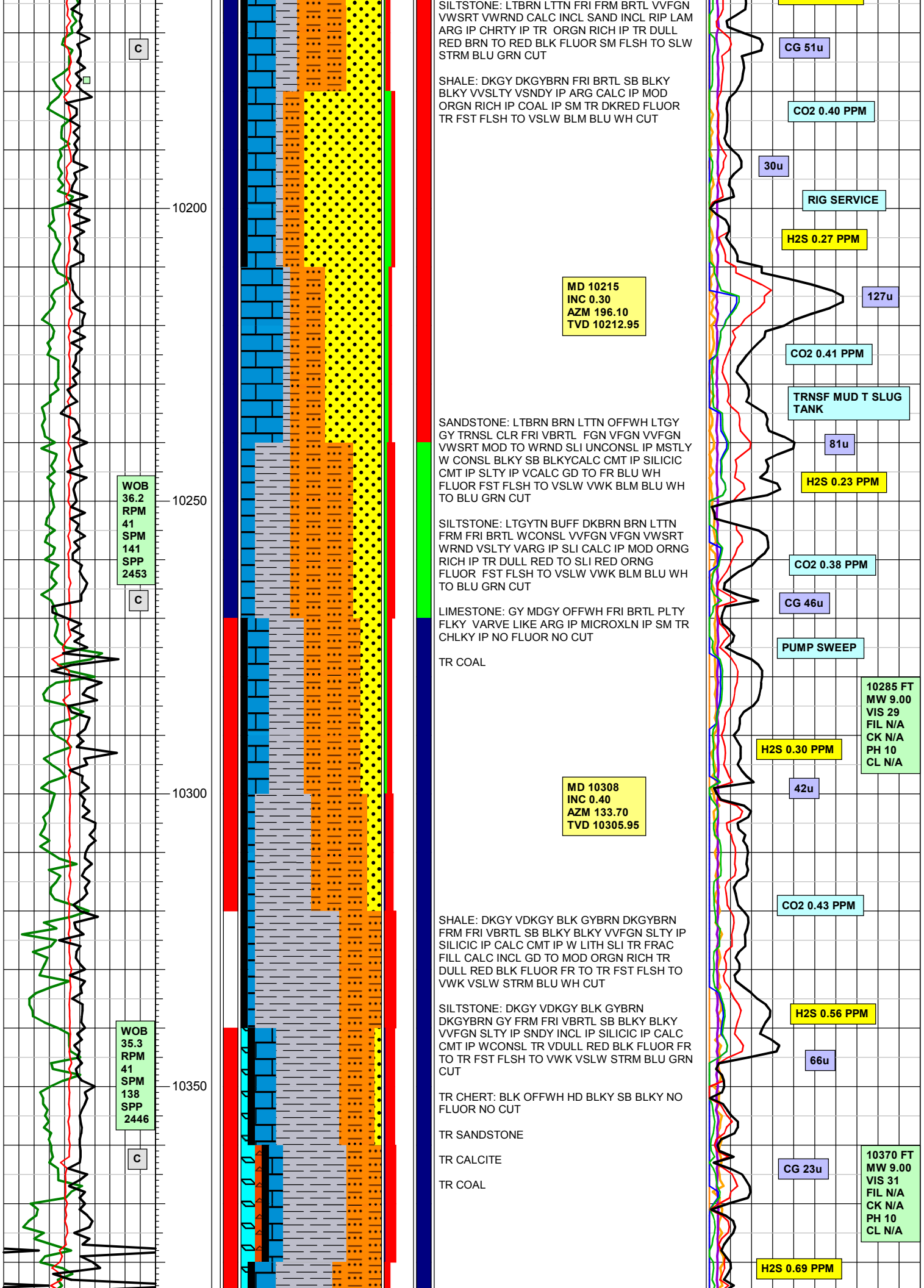

9100
9150
9200
9250
C
C
WOB
30.0
RPM
27
SPM
169
SPP
3078
WOB
39.8
RPM
26
SPM
173
SPP
3067
SANDSTONE: OFFWH LTGY BLUGY DKGYBRN FRI BRTL SBRND SB BLKY VVFGN VFGN MSRT VWSRT VCALC CMT SILIC CMT CHT INCL RIP LAM IP TR LT BLU WH FLUOR SM TR STRM LT YLW WH CUT
MD 9092
INC 1.30
AZM 88.20
TVD 9090.04
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR FRI HD FRM BRTL SB RND FGN VFGN VWSRT VWRND SLTY IP CALC CMT THRT SILICIC CMT IP RIP LAM F LAM W SILTSTN GD TO TR BLU WH FLUOR FR TO TR FLSH TO VSLW STRM YLW WH CUT
SILTSTONE: LTTN LTBRN GY FRI FRM SLI HD IP VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM SM CHTY IP SM ARG IP SM TR DULL RED BLK FLUOR SM FLSH TO SLW STRM YLW ORNG CUT TR TO FR FLSH YLW WH CUT
LIMESTONE: WH OFFWH LTGY DKGY FRI FRM BRTL PLTY FLKY SB BLKY F LAM VARVE LIKE IP CHLKY SNDY IP NO FLUOR NO CUT
SHALE: DKGY FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP SM TR RED BLK FLUOR TR FST FLSH TO VSLW BLM YLW WH CUT
MD 9185
INC 1.20
AZM 89.40
TVD 9183.02
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR MOTT IP FRI SLI HD FRM BRTL SB RND FGN VFGN VWSRT VWRND WHISPY LAM IP SLTY IP CALC CMT IP SILICIC CMT IP F LAM W SILTSTN GD TO TR BLU WH FLUOR FR TO TR FLSH TO VSLW STRM YLW WH CUT
SILTSTONE: LTBRN LTTN DKGY FRI FRM SLI HD IP VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM ARG IP TR TO GD ORGN RICH IP SM TR DULL RED ORNG FLUOR SM FLSH TO SLW STRM YLW ORNG CUT TR TO FR FLSH YLW WH CUT
SHALE: DKGY DKGYBRN FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP SM TR DKRED FLUOR TR FST FLSH TO VSLW BLM YLW WH CUT
LIMESTONE: GY DKGY OFFWH WH PLTY SB BLKY MICROXLN CHLKY DEBRIS FLOW FACIES MARL NO FLUOR NO CUT
MD 9280
INC 0.70
AZM 51.10
TVD 9278.00
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR MOTT IP FRM HD BRTL FGN VFGN VWSRT
98u
CO2 0.05 PPM
131u
H2S 0.20 PPM
PUMP SWEEP
9110 FT
MW 9
VIS 29
FIL N/A
CK N/A
PH 10
CL N/A
222u
CG 336u
CLT @ 9142'
TIME 48 MINUTES
STKS 8132
WASHOUT 48.3%
H2S 0.16 PPM
CO2 0.05 PPM
SCALE CHANGE
GAS
200 u
2 %
20 kppm
0
0
0
0
46u
CO2
H2S
10
10
H2S 0.39 PPM
70u
CO2 0.05 PPM
TRNSF MUD T SLUG TANK
CG 50u
H2S 0.48 PPM
DT 74u
CO2 0.05 PPM
9280 FT
MW 9.05
VIS 30
FIL N/A
CK N/A
PH 10
51u

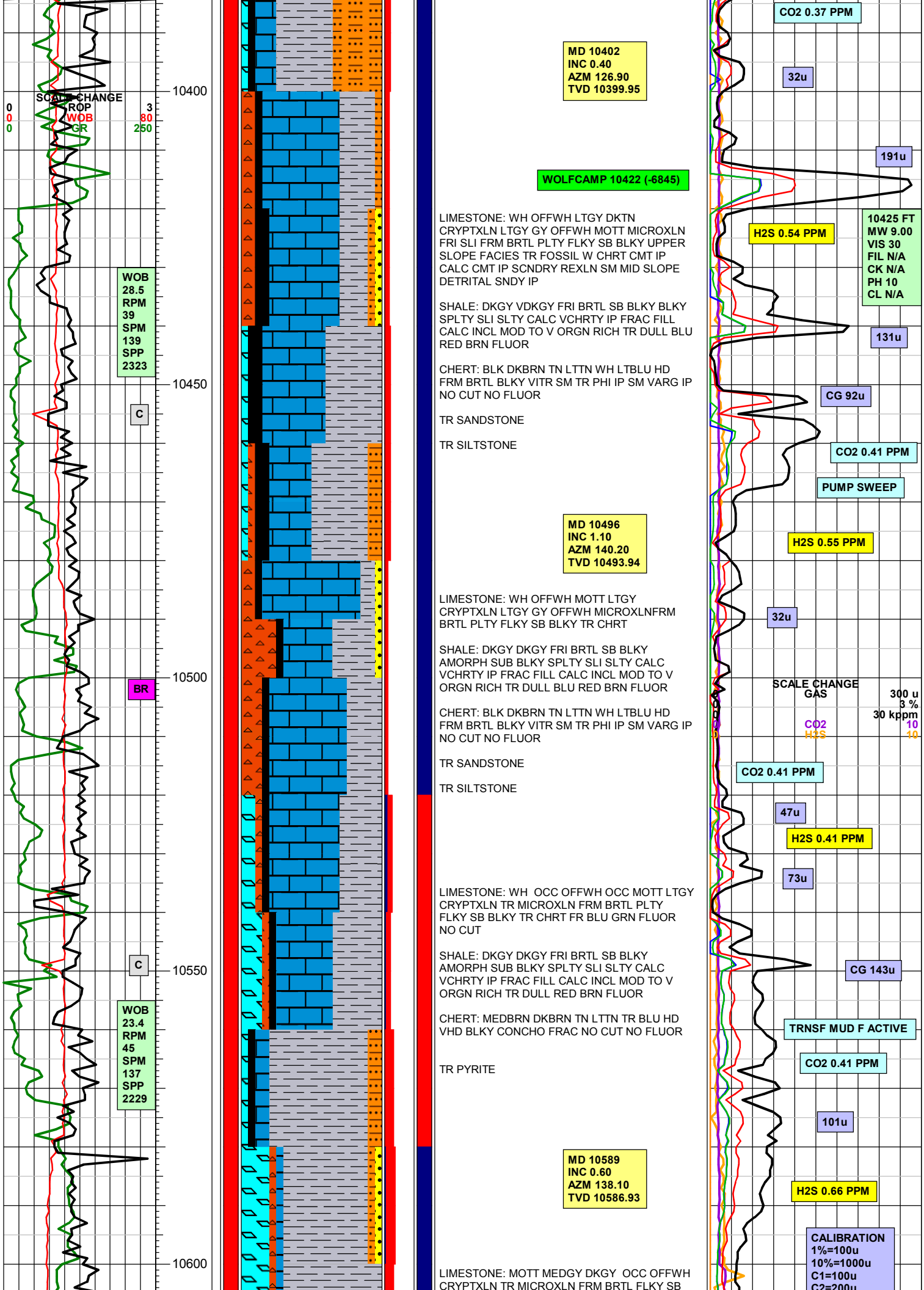

9300
9350
9400
9450
9500
C
C
BR
WOB
31.4
RPM
28
SPM
170
SPP
2869
0
ROP
2
0
WOB
80
VWRND SLTY IP CALC CMT IP SILICIC CMT IP F LAM W SILTSTN GD TO TR BLU WH FLUOR FR TO TR FLSH TO VSLW STRM YLW WH CUT
SILTSTONE: LTBRN LTTN DKGY FRI FRM SLI HD IP VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM ARG IP TR TO GD ORGN RICH IP SM TR DULL RED ORNG FLUOR SM FLSH TO SLW STRM YLW ORNG CUT TR TO FR FLSH YLW WH CUT
CORRELATION MKR 9325 (-5747)
SHALE: DKGY DKGYBRN FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP SM TR DKRED FLUOR TR FST FLSH TO VSLW BLM YLW WH CUT
LIMESTONE: GY DKGY OFFWH WH PLTY SB BLKY MICROXLN CHLKY DEBRIS FLOW FACIES MARL NO FLUOR NO CUT
MD 9373
INC 1.20
AZM 79.30
TVD 9370.99
SHALE: GYBRN DKGY GY FRI BRTL SLI SFT IP SB BLKY SB PLTY SLTY IP SLI TR ORGN RICH IP SM COAL IP VVSLTY IP CALC IP SM CALC INCL FR DULL RED FLUOR TO TR DULL LTORNG FLUOR
LIMESTONE: WH OFFWH LTGY GY IP GY LTGY MOTT IP FRI FRM IP SLI HD IP MSTLY SFT DETRITAL MUDSTN VARG DEBRIS FLOW FACIES MID TO LOWER SLOPE SLTY IP CHLKY IP SM TR FRAC FILL CALC POSS OPEN FRACT CRINOIDAL MARL MUDSTN IP FR TO TR DULL BLU WH FLUOR
SILTSTONE: DKGY GY LTGY DKGYBRN BRN MOTT SB RND SB BLKY FRM FRI SLI SFT BRTL IP VVFGN VWSRT WRND VARG CALC IP SILIC CMT IP TR DULL RED FLUOR
TR SANDSTONE
MD 9467
INC 0.30
AZM 64.70
TVD 9464.98
SHALE: DKGY BLK FRI BRTL SFT SB BLKYPLTY FR DULL RED FLUOR NO CUT
LIMESTONE: MOTT WH OFFWH LTGY GY FRI FRM HD SFT SM TR FRAC FILL CALC FR TO TR DULL BLU WH FLUOR NO CUT
TR CALCITE
TR SANDSTONE
SHALE: DK BRN DKGY BLK BRTL SFT SB BLKY PLTY FR DULL RED FLUOR NO CUT
LIMESTONE: MOTT OFFWH LTGY GY FRM SLI
CL N/A
H2S 0.18 PPM
55u
CO2 0.04 PPM
CG 62u
65u
H2S 0.07 PPM
33u
9385 FT
MW 9.05
VIS 30
FIL N/A
CK N/A
PH 10
CL N/A
CO2 0.06 PPM
47u
H2S 0.20 PPM
CG 84u
CO2 0.05 PPM
53u
H2S 0.53 PPM
43u
53u
0
GAS
200 u
2 %

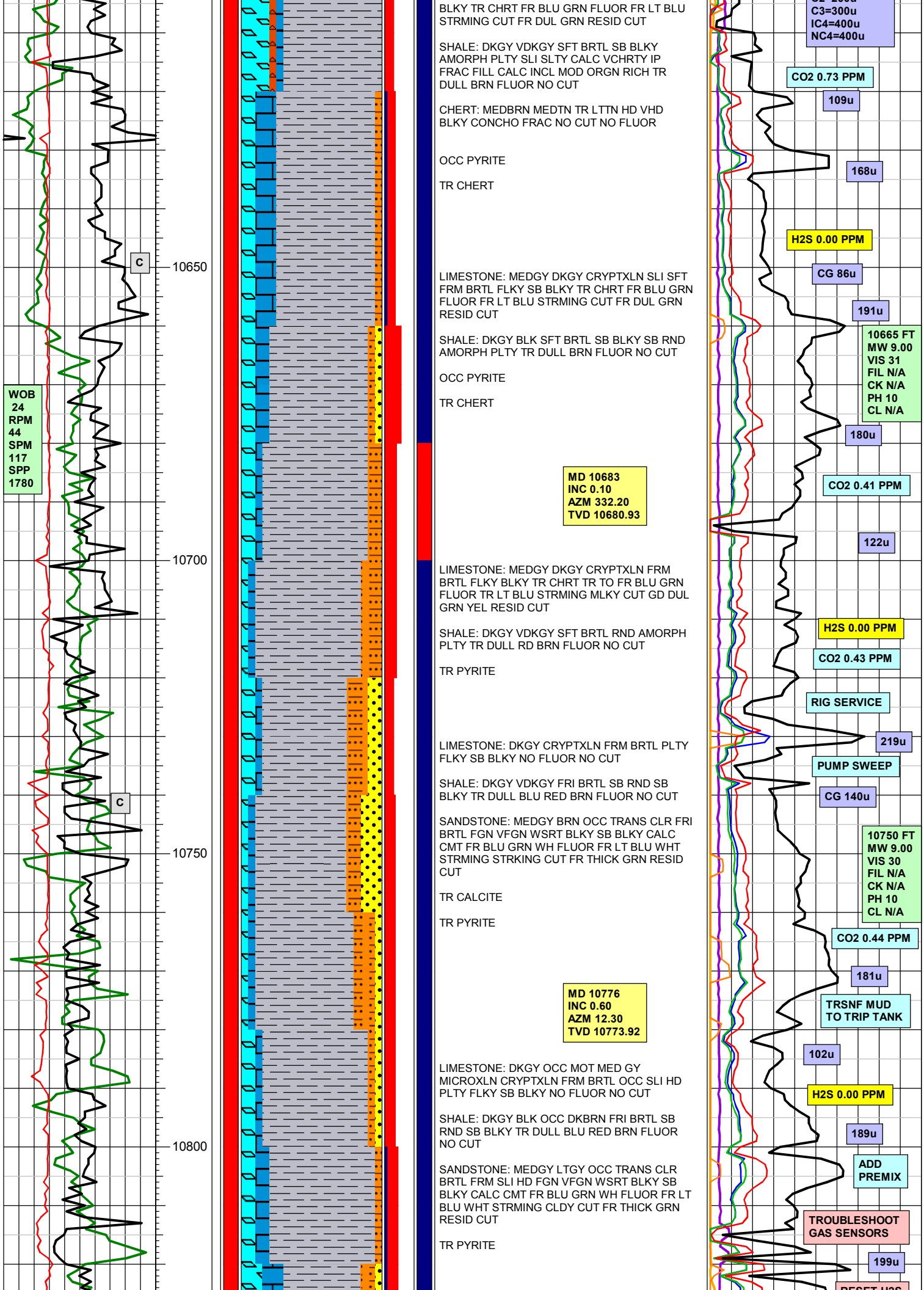

0
GR
250
C
WOB
33.7
RPM
30
SPM
176
SPP
3042
9550
9600
9650
9700
HD SM TR FRAC FILL CALC FR TO TR DULL BLU WH FLUOR NO CUT
TR CALCITE
TR SANDSTONE
SHALE: DK BRN DKGY OCC BLK BRTL SFT SB BLKY SUB RND PLTY TR DULL RED FLUOR NO CUT
LIMESTONE: MOTT OFFWH DKGY FRM HD SM TR FRAC FILL CALC TR DULL BLU WH FLUOR TR LT BLU CLDY CUT FR THIN GRN RESID CUT
TR CALCITE
TR SANDSTONE
TR CHERT
MD 9560
INC 0.70
AZM 36.90
TVD 9557.98
SHALE: DK BRN DKGY OCC BLK SFTL SB BLKY AMORPH PLTY TR DULL RED FLUOR NO CUT TR PYRITE
LIMESTONE: MOTT OFFWH MEDGY OCC DK GY FRM HD TR DULL BLU GRN FLUOR NO CUT NO RESID CUT
TR CALCITE
TR PYRITE
TR SANDSTONE
SHALE: DK BRN DKGY BLK SFT SB BLKY SUB RND AMORPH PLTY TR DULL RED FLUOR NO CUT TR PYRITE
LIMESTONE: OFFWH MEDGY DK GY FRM SLI HD TR DULL BLU GRN FLUOR TR TO FR LT BLU CLDY STRMING CUT TR THICK DULL GRN RESID CUT
TR CALCITE
TR PYRITE
MD 9654
INC 0.80
AZM 48.20
TVD 9651.97
SHALE: DKGYBRN DKGY GY FRI BRTL SFT SB BLKY PLTY SM CALC INCL FR NO FLUOR NO CUT
LIMESTONE: WH OFFWH LTGY GY FRI FRM IP SLI HD IP SFT SM TR FRAC FILL CALC POSS OPEN FRACT CRINOIDAL MARL MUDSTN TR TO FR DULL BLU WH FLUOR TR TO FR LT BLU CLDY CUT FR YEL GRN RESID CUT
TR CALCITE
TR PYRITE
TR SANDSTONE
SHALE: DKGY DKBRN OCC BLK FRI SLI BRTL SFT SB BLKY SUB PLTY NO FLUOR NO CUT
LIMESTONE: MOTT WH OFFWH LTGY OCC
0
CO2
H2S
20 kppm
10
10
CO2 0.05 PPM
CG 49u
H2S 0.23 PPM
9535 FT
MW 9.00
VIS 31
FIL N/A
CK N/A
PH 10
CL N/A
94u
PUMP SWEEP
H2S 0.18 PPM
CO2 0.05 PPM
46u
H2S 0.67 PPM
17u
RIG SERVICE
CO2 0.06 PPM
H2S 0.59 PPM
9635 FT
MW 9.00
VIS 31
FIL N/A
CK N/A
PH 10
CL N/A
51u
CO2 0.05 PPM
49u
H2S 0.71 PPM
CO2 0.05 PPM
CG 192u
H2S 0.74 PPM

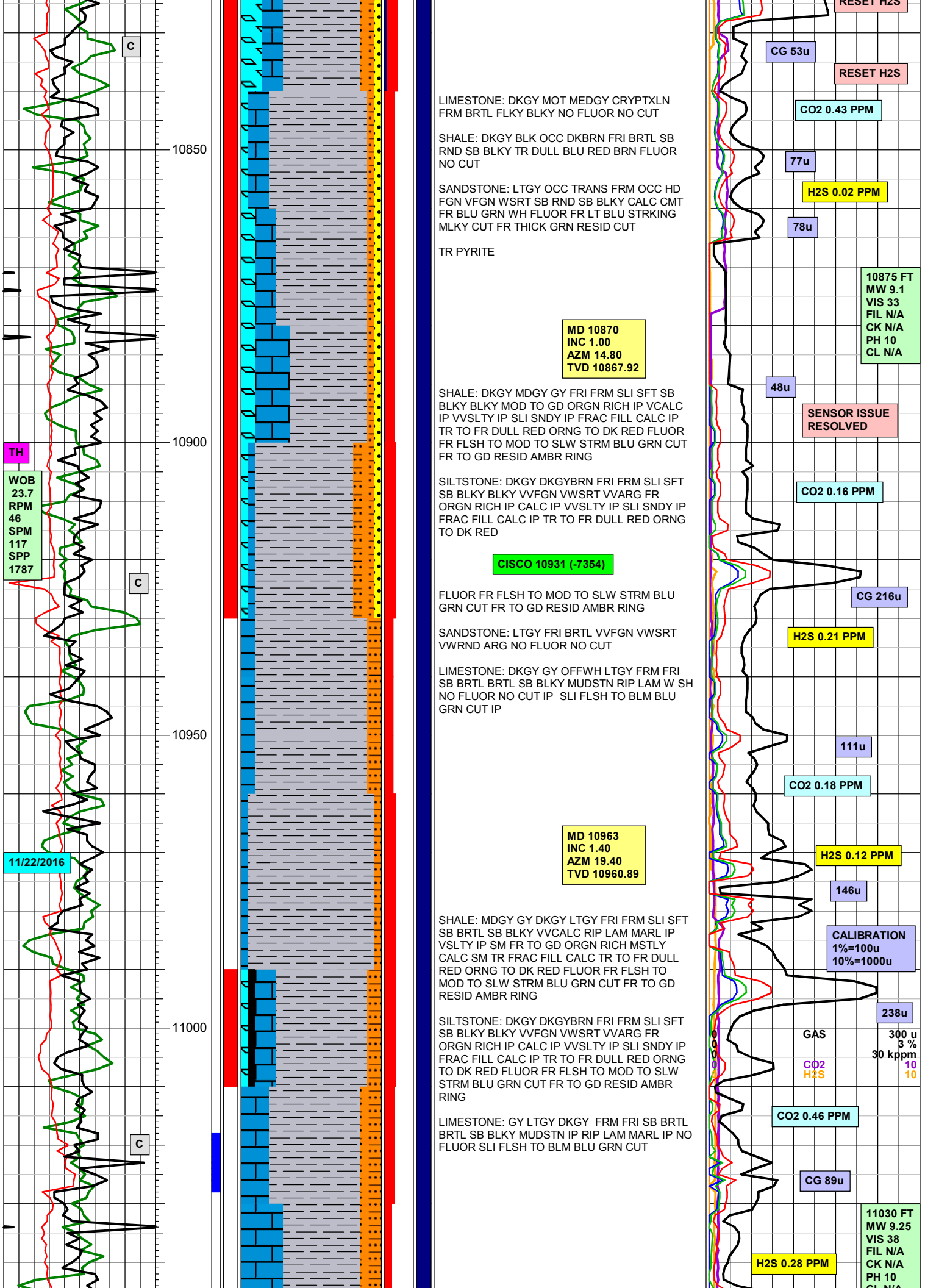

WOB 36.1 RPM 42 SPM 138 SPP 2388
9750
9800
9850
9900
C
C
WOB 33.5 RPM 41 SPM 142 SPP 2479
DKGY FRI FRM HD SFT SM OCC FRAC FILL CALC FR BLU GRN WH FLUOR GD CLDY STRMING LT BLU WHT CUT GD THICK DULL YEL GRN RESID CUT
OCC CALCITE
TR PYRITE
MD 9748 INC 0.60 AZM 43.00 TVD 9745.96
SHALE: DKGY DKBRN BLK FRI SFT SB BLKY SUB PLTY NO FLUOR NO CUT
LIMESTONE: WH OFFWH OCC MOTT LTGY OCC DKGY FRM SLI HD SM TR FRAC FILL CALC FR BLU GRN WH FLUOR GD CLDY STRMING LT BLU WHT CUT GD THICK DULL YEL GRN RESID CUT
TR CALCITE
TR PYRITE
SHALE: DK BRN DKGY OCC BLK SFTL SB BLKY AMORPH SUB PLTY TR DULL RED FLUOR NO CUT TR PYRITE
LIMESTONE: MOTT OFFWH MEDGY BLK FRM HD TR DULL BLU GRN FLUOR NO CUT NO RESID CUT
TR CALCITE
TR PYRITE
TR SANDSTONE
MD 9841 INC 0.70 AZM 42.50 TVD 9838.96
SHALE: DKBRN VDKGY SFT SB BLKY AMORPH PLTY TR DULL RED TO RED BLK FLUOR FR TO GD YLW GRN TO BLU GRN RESID CUT
LIMESTONE: MOTT OFFWH MEDGY OCC DK GY BLK FRM HD SM CHRTY INCL FRAC CALC INCL TR DULL BLU GRN FLUOR TR SLW STRMING LT BLU CUT FR BLU GRN RESID CUT
TR SANDSTONE
3RD BSPG SS 9877 (-6299)
SHALE: DKGY BRN BRTL SB BLKY SUB RND AMORPH PLTY SLTY SNDY TR RED BRN FLUOR FR TO TR FST FLSH TO SLW BLM YLW GRN TO BLU GRN RESID CUT
LIMESTONE: WH MOTT OFFWH MEDGY DKGY FRM HD FLKY SB BLKY CHLKY SNDY NO FLUOR NO CUT
SILTSTONE: TN VLTBRN SFT FRM OCC HD TR DULL RED BLK FLUOR TR DULL YEL GRN RESID CUT
SANDSTONE: LTGY OFFWH OCC SLI TRNSL SLI CLR SLI HD FRM BRTL SB RND VFGN WSRT WRND SLTY POSS CALC CMT TR GRN WH FLUOR TR MOD FST LT BLU STRMING CUT TR DULL YEL GRN RESID CUT
TR CALCITE
TR PYRITE
97u
9735 FT MW 9.00 VIS 29 FIL N/A CK N/A PH 10 CL N/A
H2S 0.33 PPM
119u
CO2 0.05 PPM
51u
H2S 0.53 PPM
CO2 0.05 PPM
CG 81u
9840 FT MW 9.00 VIS 29 FIL N/A CK N/A PH 10 CL N/A
40u
H2S 0.83 PPM
62u
CO2 0.05 PPM
41u
H2S 0.52 PPM
22u
CG 40u
PUMP SWEEP
CO2 0.04 PPM
13u
H2S 0.36 PPM
9945 FT MW 9.00

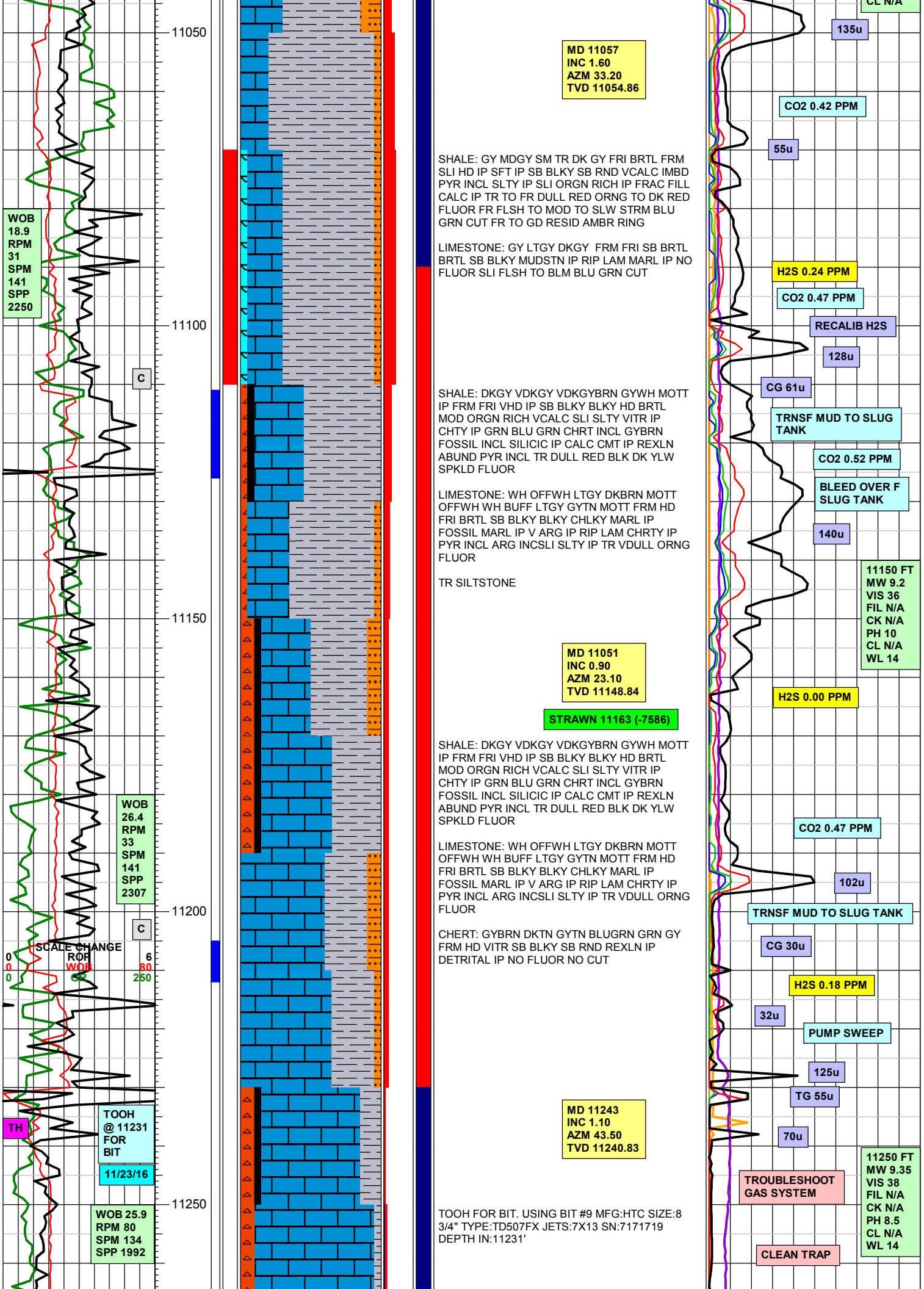

TH
9950
C
0 ROP 2
0 WOB 80
0 GR 250
10000
WOB 35.6 RPM 41 SPM 139 SPP 2413
MD 9935 INC 0.40 AZM 305.00 TVD 9932.95
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR MOTT IP FRI BRTL SB RND FGN VFGN VWSRT VWRND SLTY IP CALC CMT IP SILICIC CMT IP F LAM W SILTSTN SM GD TR BLU WH FLUOR TR YLW WH FLUOR FR TO TR FLSH TO VSLW STRM ORNG BLU GRN CUT
SILTSTONE: LTBRN LTTN DKGY FRI FRM SLI HD IP VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM ARG IP TR TO GD ORGN RICH IP SM TR DULL RED ORNG FLUOR SM FLSH TO SLW STRM YLW ORNG CUT TR TO FR FLSH BLU GRN CUT
SHALE: DKGY DKGYBRN FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP SM TR DKRED FLUOR TR FST FLSH TO VSLW BLM BLU GRN CUT
8U
CO2 0.04 PPM
32u
H2S 0.46 PPM
CG 10u
0 GAS 200 u
0 2 %
0 20 kppm
CO2 10
H2S 10
CO2 0.04 PPM
24u
MD 10028 INC 0.30 AZM 321.40 TVD 10025.95
H2S 0.72 PPM
10050
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR MOTT IP FRI BRTL SB RND FGN VFGN VWSRT VWRND SLTY IP CALC CMT IP SILICIC CMT IP F LAM W SILTSTN FR TO GD INTERGRN PHI SM GD BLU WH FLUOR TR YLW WH FLUOR FR TO TR FLSH TO VSLW STRM BLU WH TO BLU GRN CUT
SILTSTONE: LTBRN LTTN FRI FRM BRTL VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM ARG IP CHRTY IP TR ORGN RICH IP TR DULL RED BRN TO RED BLK FLUOR SM FLSH TO SLW STRM BLU GRN CUT
SHALE: DKGY DKGYBRN FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP MOD ORGN RICH IP COAL IP SM TR DKRED FLUOR TR FST FLSH TO VSLW BLM BLU WH CUT
LIMESTONE: WH OFFWH LTGY FRI BRTL PLTY FLKY VARVE LIKE ARG IP MICROXLN IP NO FLUOR NO CUT
TR CHERT: BLKBRN HD SB BLKY CONCH FRAC NO FLUOR SM VSLI STRM YLW WH CUT
TR COAL
22u
10055 FT MW 9.00 VIS 29 FIL N/A CK N/A PH 10 CL N/A
41u
CO2 0.05 PPM
11/21/16
C
CG 64u
CALIBRATION 1%=100u 10%=1000u C1=100u C2=200u C3=300u IC4=400u NC4=400u
PUMP SWEEP
10100
WOB 33.3 RPM 40 SPM 141 SPP 2457
H2S 0.06 PPM
MD 10121 INC 0.30 AZM 347.00 TVD 10118.95
CO2 0.38 PPM
66u
LIMESTONE: WH OFFWH LTGY FRI BRTL PLTY FLKY VARVE LIKE ARG IP MICROXLN IP SM TR CHLKY IP NO FLUOR NO CUT
SANDSTONE: LTGY OFFWH TRNSL LTGYBRN CLR MOTT IP FRI BRTL SB RND FGN VFGN VWSRT VWRND SLTY IP CALC CMT IP SILICIC CMT IP F LAM W SILTSTN FR TO GD INTERGRN PHI SM GD BLU WH FLUOR TR YLW WH FLUOR FR TO TR FLSH TO VSLW STRM BLU WH CUT
10145 FT MW 9.00 VIS 29 FIL N/A CK N/A PH 10 CL N/A
56u
10150
H2S 0.00 PPM

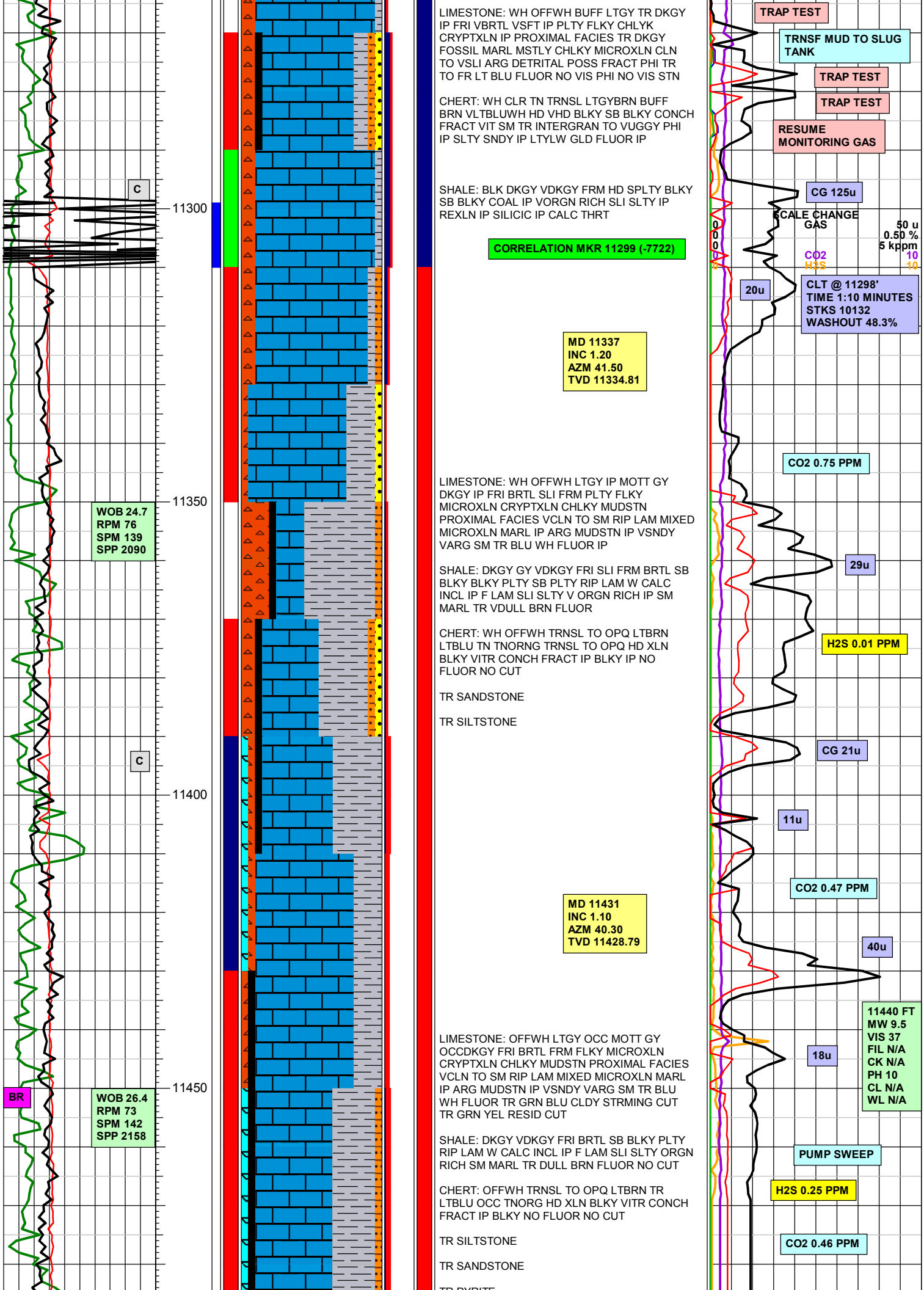

C
10200
WOB 36.2 RPM 41 SPM 141 SPP 2453
C
10250
10300
WOB 35.3 RPM 41 SPM 138 SPP 2446
C
10350
SILTSTONE: LTBRN LTTN FRI FRM BRTL VVFGN VWSRT VWRND CALC INCL SAND INCL RIP LAM ARG IP CHRTY IP TR ORGN RICH IP TR DULL RED BRN TO RED BLK FLUOR SM FLSH TO SLW STRM BLU GRN CUT
SHALE: DKGY DKGYBRN FRI BRTL SB BLKY BLKY VVSLTY VSNDY IP ARG CALC IP MOD ORGN RICH IP COAL IP SM TR DKRED FLUOR TR FST FLSH TO VSLW BLM BLU WH CUT
MD 10215 INC 0.30 AZM 196.10 TVD 10212.95
SANDSTONE: LTBRN BRN LTTN OFFWH LTGY GY TRNSL CLR FRI VBRTL FGN VFGN VVFGN VWSRT MOD TO WRND SLI UNCONSL IP MSTLY W CONSL BLKY SB BLKYCALC CMT IP SILICIC CMT IP SLTY IP VCALC GD TO FR BLU WH FLUOR FST FLSH TO VSLW VWK BLM BLU WH TO BLU GRN CUT
SILTSTONE: LTGYTN BUFF DKBRN BRN LTTN FRM FRI BRTL WCONSL VVFGN VFGN VWSRT WRND VSLTY VARG IP SLI CALC IP MOD ORNG RICH IP TR DULL RED TO SLI RED ORNG FLUOR FST FLSH TO VSLW VWK BLM BLU WH TO BLU GRN CUT
LIMESTONE: GY MDGY OFFWH FRI BRTL PLTY FLKY VARVE LIKE ARG IP MICROXLN IP SM TR CHLKY IP NO FLUOR NO CUT
TR COAL
MD 10308 INC 0.40 AZM 133.70 TVD 10305.95
SHALE: DKGY VDKGY BLK GYBRN DKGYBRN FRM FRI VBRTL SB BLKY BLKY VVFGN SLTY IP SILICIC IP CALC CMT IP W LITH SLI TR FRAC FILL CALC INCL GD TO MOD ORGN RICH TR DULL RED BLK FLUOR FR TO TR FST FLSH TO VWK VSLW STRM BLU WH CUT
SILTSTONE: DKGY VDKGY BLK GYBRN DKGYBRN GY FRM FRI VBRTL SB BLKY BLKY VVFGN SLTY IP SNDY INCL IP SILICIC IP CALC CMT IP WCONSL TR VDULL RED BLK FLUOR FR TO TR FST FLSH TO VWK VSLW STRM BLU GRN CUT
TR CHERT: BLK OFFWH HD BLKY SB BLKY NO FLUOR NO CUT
TR SANDSTONE
TR CALCITE
TR COAL
CG 51u
CO2 0.40 PPM
30u
RIG SERVICE
H2S 0.27 PPM
127u
CO2 0.41 PPM
TRNSF MUD T SLUG TANK
81u
H2S 0.23 PPM
CO2 0.38 PPM
CG 46u
PUMP SWEEP
10285 FT MW 9.00 VIS 29 FIL N/A CK N/A PH 10 CL N/A
H2S 0.30 PPM
42u
CO2 0.43 PPM
H2S 0.56 PPM
66u
CG 23u
10370 FT MW 9.00 VIS 31 FIL N/A CK N/A PH 10 CL N/A
H2S 0.69 PPM

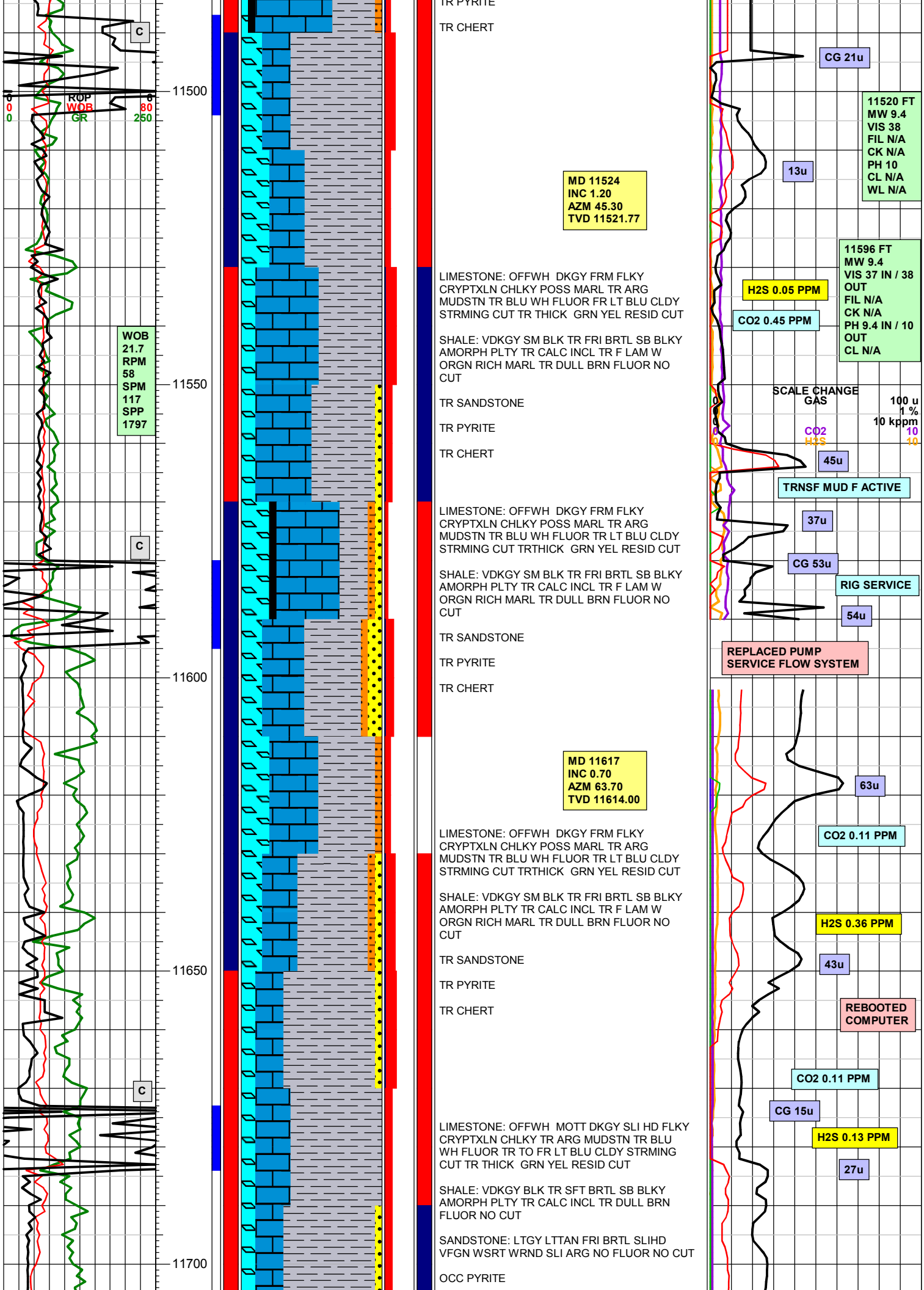

SCALE CHANGE
0 ROP 3
0 WOB 80
0 GR 250
10400
10450
10500
10550
10600
WOB 28.5 RPM 39 SPM 139 SPP 2323
C
BR
C
WOB 23.4 RPM 45 SPM 137 SPP 2229
MD 10402 INC 0.40 AZM 126.90 TVD 10399.95
WOLFCAMP 10422 (-6845)
LIMESTONE: WH OFFWH LTGY DKTN CRYPTXLN LTGY GY OFFWH MOTT MICROXLN FRI SLI FRM BRTL PLTY FLKY SB BLKY UPPER SLOPE FACIES TR FOSSIL W CHRT CMT IP CALC CMT IP SCNDRY REXLN SM MID SLOPE DETRITAL SNDY IP
SHALE: DKGY VDKGY FRI BRTL SB BLKY BLKY SPLTY SLI SLTY CALC VCHRTY IP FRAC FILL CALC INCL MOD TO V ORGN RICH TR DULL BLU RED BRN FLUOR
CHERT: BLK DKBRN TN LTTN WH LTBLU HD FRM BRTL BLKY VITR SM TR PHI IP SM VARG IP NO CUT NO FLUOR
TR SANDSTONE
TR SILTSTONE
MD 10496 INC 1.10 AZM 140.20 TVD 10493.94
LIMESTONE: WH OFFWH MOTT LTGY CRYPTXLN LTGY GY OFFWH MICROXLNFRM BRTL PLTY FLKY SB BLKY TR CHRT
SHALE: DKGY DKGY FRI BRTL SB BLKY AMORPH SUB BLKY SPLTY SLI SLTY CALC VCHRTY IP FRAC FILL CALC INCL MOD TO V ORGN RICH TR DULL BLU RED BRN FLUOR
CHERT: BLK DKBRN TN LTTN WH LTBLU HD FRM BRTL BLKY VITR SM TR PHI IP SM VARG IP NO CUT NO FLUOR
TR SANDSTONE
TR SILTSTONE
LIMESTONE: WH OCC OFFWH OCC MOTT LTGY CRYPTXLN TR MICROXLN FRM BRTL PLTY FLKY SB BLKY TR CHRT FR BLU GRN FLUOR NO CUT
SHALE: DKGY DKGY FRI BRTL SB BLKY AMORPH SUB BLKY SPLTY SLI SLTY CALC VCHRTY IP FRAC FILL CALC INCL MOD TO V ORGN RICH TR DULL RED BRN FLUOR
CHERT: MEDBRN DKBRN TN LTTN TR BLU HD VHD BLKY CONCHO FRAC NO CUT NO FLUOR
TR PYRITE
MD 10589 INC 0.60 AZM 138.10 TVD 10586.93
LIMESTONE: MOTT MEDGY DKGY OCC OFFWH CRYPTXLN TR MICROXLN FRM BRTL FLKY SB
CO2 0.37 PPM
32u
191u
H2S 0.54 PPM
10425 FT MW 9.00 VIS 30 FIL N/A CK N/A PH 10 CL N/A
131u
CG 92u
CO2 0.41 PPM
PUMP SWEEP
H2S 0.55 PPM
32u
SCALE CHANGE
GAS 300 u
3 %
30 kppm
CO2 10
H2S 10
CO2 0.41 PPM
47u
H2S 0.41 PPM
73u
CG 143u
TRNSF MUD F ACTIVE
CO2 0.41 PPM
101u
H2S 0.66 PPM
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u

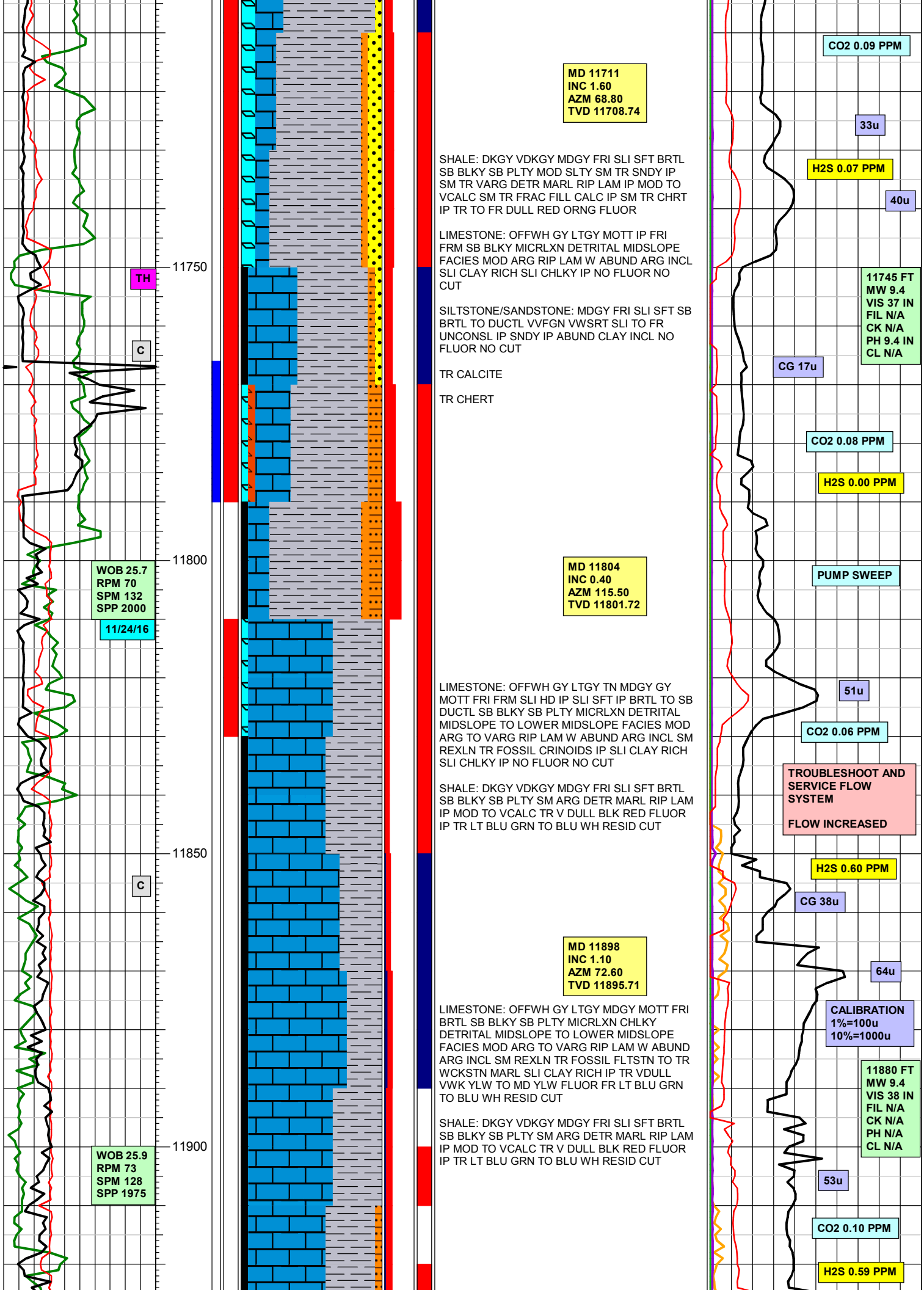

C
10650
WOB
24
RPM
44
SPM
117
SPP
1780
C
10700
C
10750
10800
BLKY TR CHRT FR BLU GRN FLUOR FR LT BLU STRMING CUT FR DUL GRN RESID CUT
SHALE: DKGY VDKGY SFT BRTL SB BLKY AMORPH PLTY SLI SLTY CALC VCHRTY IP FRAC FILL CALC INCL MOD ORGN RICH TR DULL BRN FLUOR NO CUT
CHERT: MEDBRN MEDTN TR LTTN HD VHD BLKY CONCHO FRAC NO CUT NO FLUOR
OCC PYRITE
TR CHERT
LIMESTONE: MEDGY DKGY CRYPTXLN SLI SFT FRM BRTL FLKY SB BLKY TR CHRT FR BLU GRN FLUOR FR LT BLU STRMING CUT FR DUL GRN RESID CUT
SHALE: DKGY BLK SFT BRTL SB BLKY SB RND AMORPH PLTY TR DULL BRN FLUOR NO CUT
OCC PYRITE
TR CHERT
MD 10683
INC 0.10
AZM 332.20
TVD 10680.93
LIMESTONE: MEDGY DKGY CRYPTXLN FRM BRTL FLKY BLKY TR CHRT TR TO FR BLU GRN FLUOR TR LT BLU STRMING MLKY CUT GD DUL GRN YEL RESID CUT
SHALE: DKGY VDKGY SFT BRTL RND AMORPH PLTY TR DULL RD BRN FLUOR NO CUT
TR PYRITE
LIMESTONE: DKGY CRYPTXLN FRM BRTL PLTY FLKY SB BLKY NO FLUOR NO CUT
SHALE: DKGY VDKGY FRI BRTL SB RND SB BLKY TR DULL BLU RED BRN FLUOR NO CUT
SANDSTONE: MEDGY BRN OCC TRANS CLR FRI BRTL FGN VFGN WSRT BLKY SB BLKY CALC CMT FR BLU GRN WH FLUOR FR LT BLU WHT STRMING STRKING CUT FR THICK GRN RESID CUT
TR CALCITE
TR PYRITE
MD 10776
INC 0.60
AZM 12.30
TVD 10773.92
LIMESTONE: DKGY OCC MOT MED GY MICROXLN CRYPTXLN FRM BRTL OCC SLI HD PLTY FLKY SB BLKY NO FLUOR NO CUT
SHALE: DKGY BLK OCC DKBRN FRI BRTL SB RND SB BLKY TR DULL BLU RED BRN FLUOR NO CUT
SANDSTONE: MEDGY LTGY OCC TRANS CLR BRTL FRM SLI HD FGN VFGN WSRT BLKY SB BLKY CALC CMT FR BLU GRN WH FLUOR FR LT BLU WHT STRMING CLDY CUT FR THICK GRN RESID CUT
TR PYRITE
C3=300u
IC4=400u
NC4=400u
CO2 0.73 PPM
109u
168u
H2S 0.00 PPM
CG 86u
191u
10665 FT
MW 9.00
VIS 31
FIL N/A
CK N/A
PH 10
CL N/A
180u
CO2 0.41 PPM
122u
H2S 0.00 PPM
CO2 0.43 PPM
RIG SERVICE
219u
PUMP SWEEP
CG 140u
10750 FT
MW 9.00
VIS 30
FIL N/A
CK N/A
PH 10
CL N/A
CO2 0.44 PPM
181u
TRSNF MUD TO TRIP TANK
102u
H2S 0.00 PPM
189u
ADD PREMIX
TROUBLESHOOT GAS SENSORS
199u

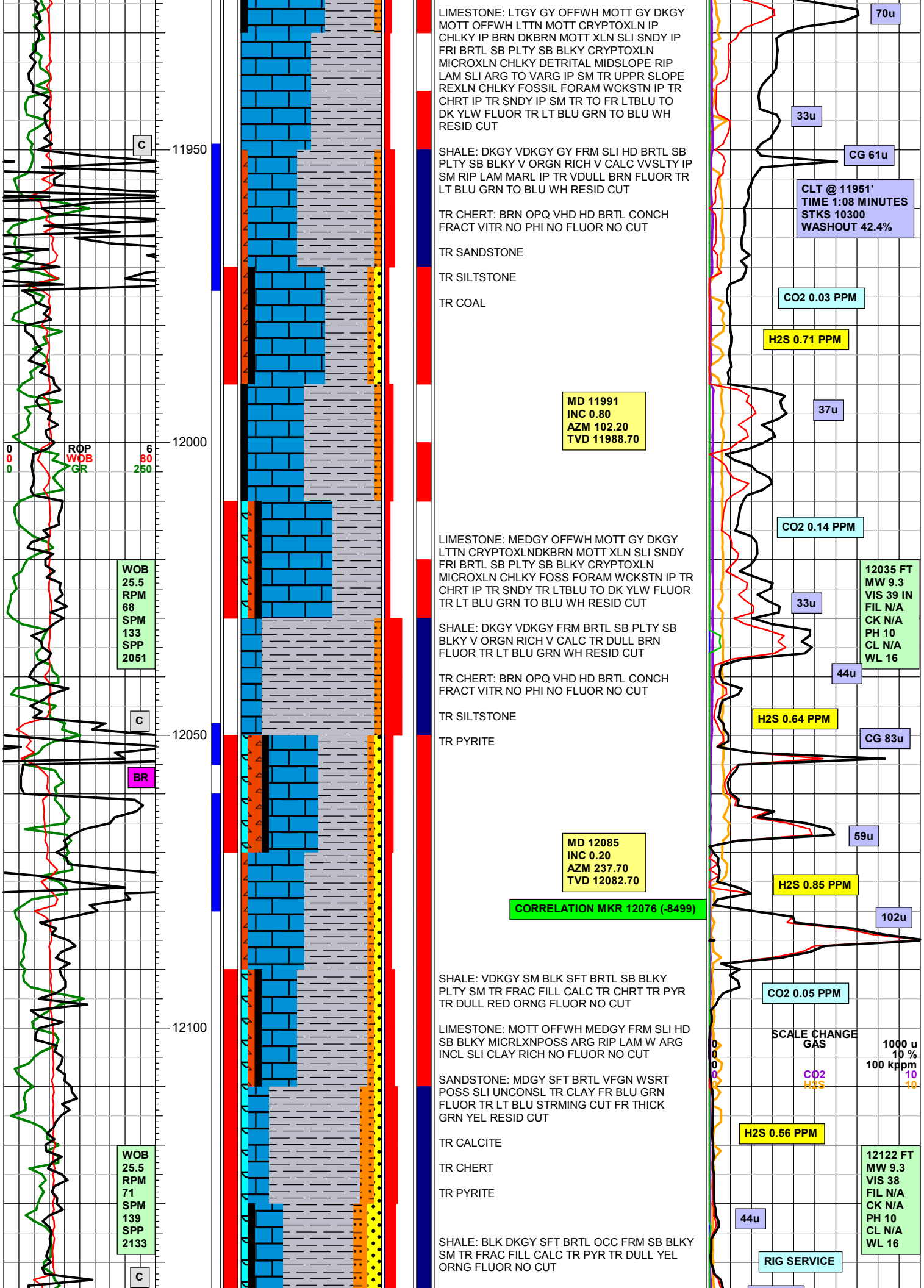

C
10850
10900
TH
WOB
23.7
RPM
46
SPM
117
SPP
1787
C
10950
11/22/2016
11000
C
LIMESTONE: DKGY MOT MEDGY CRYPTXLN FRM BRTL FLKY BLKY NO FLUOR NO CUT
SHALE: DKGY BLK OCC DKBRN FRI BRTL SB RND SB BLKY TR DULL BLU RED BRN FLUOR NO CUT
SANDSTONE: LTGY OCC TRANS FRM OCC HD FGN VFGN WSRT SB RND SB BLKY CALC CMT FR BLU GRN WH FLUOR FR LT BLU STRKING MLKY CUT FR THICK GRN RESID CUT
TR PYRITE
MD 10870
INC 1.00
AZM 14.80
TVD 10867.92
SHALE: DKGY MDGY GY FRI FRM SLI SFT SB BLKY BLKY MOD TO GD ORGN RICH IP VCALC IP VVSLTY IP SLI SNDY IP FRAC FILL CALC IP TR TO FR DULL RED ORNG TO DK RED FLUOR FR FLSH TO MOD TO SLW STRM BLU GRN CUT FR TO GD RESID AMBR RING
SILTSTONE: DKGY DKGYBRN FRI FRM SLI SFT SB BLKY BLKY VVFGN VWSRT VVARG FR ORGN RICH IP CALC IP VVSLTY IP SLI SNDY IP FRAC FILL CALC IP TR TO FR DULL RED ORNG TO DK RED
CISCO 10931 (-7354)
FLUOR FR FLSH TO MOD TO SLW STRM BLU GRN CUT FR TO GD RESID AMBR RING
SANDSTONE: LTGY FRI BRTL VVFGN VWSRT VWRND ARG NO FLUOR NO CUT
LIMESTONE: DKGY GY OFFWH LTGY FRM FRI SB BRTL BRTL SB BLKY MUDSTN RIP LAM W SH NO FLUOR NO CUT IP SLI FLSH TO BLM BLU GRN CUT IP
MD 10963
INC 1.40
AZM 19.40
TVD 10960.89
SHALE: MDGY GY DKGY LTGY FRI FRM SLI SFT SB BRTL SB BLKY VVCALC RIP LAM MARL IP VSLTY IP SM FR TO GD ORGN RICH MSTLY CALC SM TR FRAC FILL CALC TR TO FR DULL RED ORNG TO DK RED FLUOR FR FLSH TO MOD TO SLW STRM BLU GRN CUT FR TO GD RESID AMBR RING
SILTSTONE: DKGY DKGYBRN FRI FRM SLI SFT SB BLKY BLKY VVFGN VWSRT VVARG FR ORGN RICH IP CALC IP VVSLTY IP SLI SNDY IP FRAC FILL CALC IP TR TO FR DULL RED ORNG TO DK RED FLUOR FR FLSH TO MOD TO SLW STRM BLU GRN CUT FR TO GD RESID AMBR RING
LIMESTONE: GY LTGY DKGY FRM FRI SB BRTL BRTL SB BLKY MUDSTN IP RIP LAM MARL IP NO FLUOR SLI FLSH TO BLM BLU GRN CUT
RESET H2S
CG 53u
RESET H2S
CO2 0.43 PPM
77u
H2S 0.02 PPM
78u
10875 FT
MW 9.1
VIS 33
FIL N/A
CK N/A
PH 10
CL N/A
48u
SENSOR ISSUE RESOLVED
CO2 0.16 PPM
CG 216u
H2S 0.21 PPM
111u
CO2 0.18 PPM
H2S 0.12 PPM
146u
CALIBRATION
1%=100u
10%=1000u
238u
0
0
0
0
GAS
CO2
H2S
300 u
3 %
30 kppm
10
10
CO2 0.46 PPM
CG 89u
11030 FT
MW 9.25
VIS 38
FIL N/A
CK N/A
PH 10
H2S 0.28 PPM

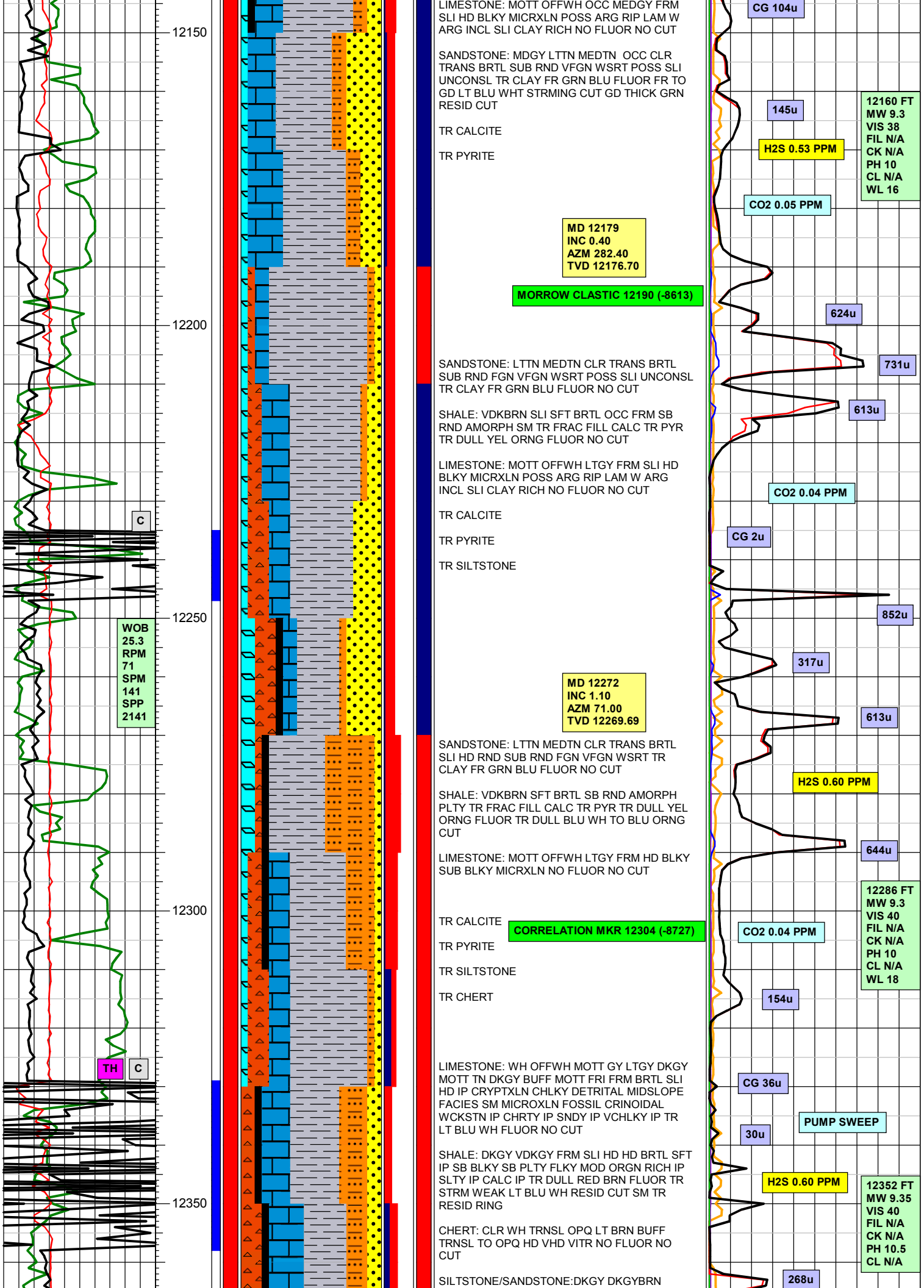

11050
11100
11150
11200
11250
WOB 18.9 RPM 31 SPM 141 SPP 2250
C
WOB 26.4 RPM 33 SPM 141 SPP 2307
C
SCALE CHANGE
0 ROP 6
0 WOB 80
0 SPP 250
TH
TOOH @ 11231 FOR BIT
11/23/16
WOB 25.9 RPM 80 SPM 134 SPP 1992
MD 11057 INC 1.60 AZM 33.20 TVD 11054.86
SHALE: GY MDGY SM TR DK GY FRI BRTL FRM SLI HD IP SFT IP SB BLKY SB RND VCALC IMBD PYR INCL SLTY IP SLI ORGN RICH IP FRAC FILL CALC IP TR TO FR DULL RED ORNG TO DK RED FLUOR FR FLSH TO MOD TO SLW STRM BLU GRN CUT FR TO GD RESID AMBR RING
LIMESTONE: GY LTGY DKGY FRM FRI SB BRTL BRTL SB BLKY MUDSTN IP RIP LAM MARL IP NO FLUOR SLI FLSH TO BLM BLU GRN CUT
SHALE: DKGY VDKGY VDKGYBRN GYWH MOTT IP FRM FRI VHD IP SB BLKY BLKY HD BRTL MOD ORGN RICH VCALC SLI SLTY VITR IP CHTY IP GRN BLU GRN CHRT INCL GYBRN FOSSIL INCL SILICIC IP CALC CMT IP REXLN ABUND PYR INCL TR DULL RED BLK DK YLW SPKLD FLUOR
LIMESTONE: WH OFFWH LTGY DKBRN MOTT OFFWH WH BUFF LTGY GYTN MOTT FRM HD FRI BRTL SB BLKY BLKY CHLKY MARL IP FOSSIL MARL IP V ARG IP RIP LAM CHRTY IP PYR INCL ARG INCSLI SLTY IP TR VDULL ORNG FLUOR
TR SILTSTONE
MD 11051 INC 0.90 AZM 23.10 TVD 11148.84
STRAWN 11163 (-7586)
SHALE: DKGY VDKGY VDKGYBRN GYWH MOTT IP FRM FRI VHD IP SB BLKY BLKY HD BRTL MOD ORGN RICH VCALC SLI SLTY VITR IP CHTY IP GRN BLU GRN CHRT INCL GYBRN FOSSIL INCL SILICIC IP CALC CMT IP REXLN ABUND PYR INCL TR DULL RED BLK DK YLW SPKLD FLUOR
LIMESTONE: WH OFFWH LTGY DKBRN MOTT OFFWH WH BUFF LTGY GYTN MOTT FRM HD FRI BRTL SB BLKY BLKY CHLKY MARL IP FOSSIL MARL IP V ARG IP RIP LAM CHRTY IP PYR INCL ARG INCSLI SLTY IP TR VDULL ORNG FLUOR
CHERT: GYBRN DKTN GYTN BLUGRN GRN GY FRM HD VITR SB BLKY SB RND REXLN IP DETRITAL IP NO FLUOR NO CUT
MD 11243 INC 1.10 AZM 43.50 TVD 11240.83
TOOH FOR BIT. USING BIT #9 MFG:HTC SIZE:8 3/4" TYPE:TD507FX JETS:7X13 SN:7171719 DEPTH IN:11231'
CL N/A
135u
CO2 0.42 PPM
55u
H2S 0.24 PPM
CO2 0.47 PPM
RECALIB H2S
128u
CG 61u
TRNSF MUD TO SLUG TANK
CO2 0.52 PPM
BLEED OVER F SLUG TANK
140u
11150 FT MW 9.2 VIS 36 FIL N/A CK N/A PH 10 CL N/A WL 14
H2S 0.00 PPM
CO2 0.47 PPM
102u
TRNSF MUD TO SLUG TANK
CG 30u
H2S 0.18 PPM
32u
PUMP SWEEP
125u
TG 55u
70u
11250 FT MW 9.35 VIS 38 FIL N/A CK N/A PH 8.5 CL N/A WL 14
TROUBLESHOOT GAS SYSTEM
CLEAN TRAP

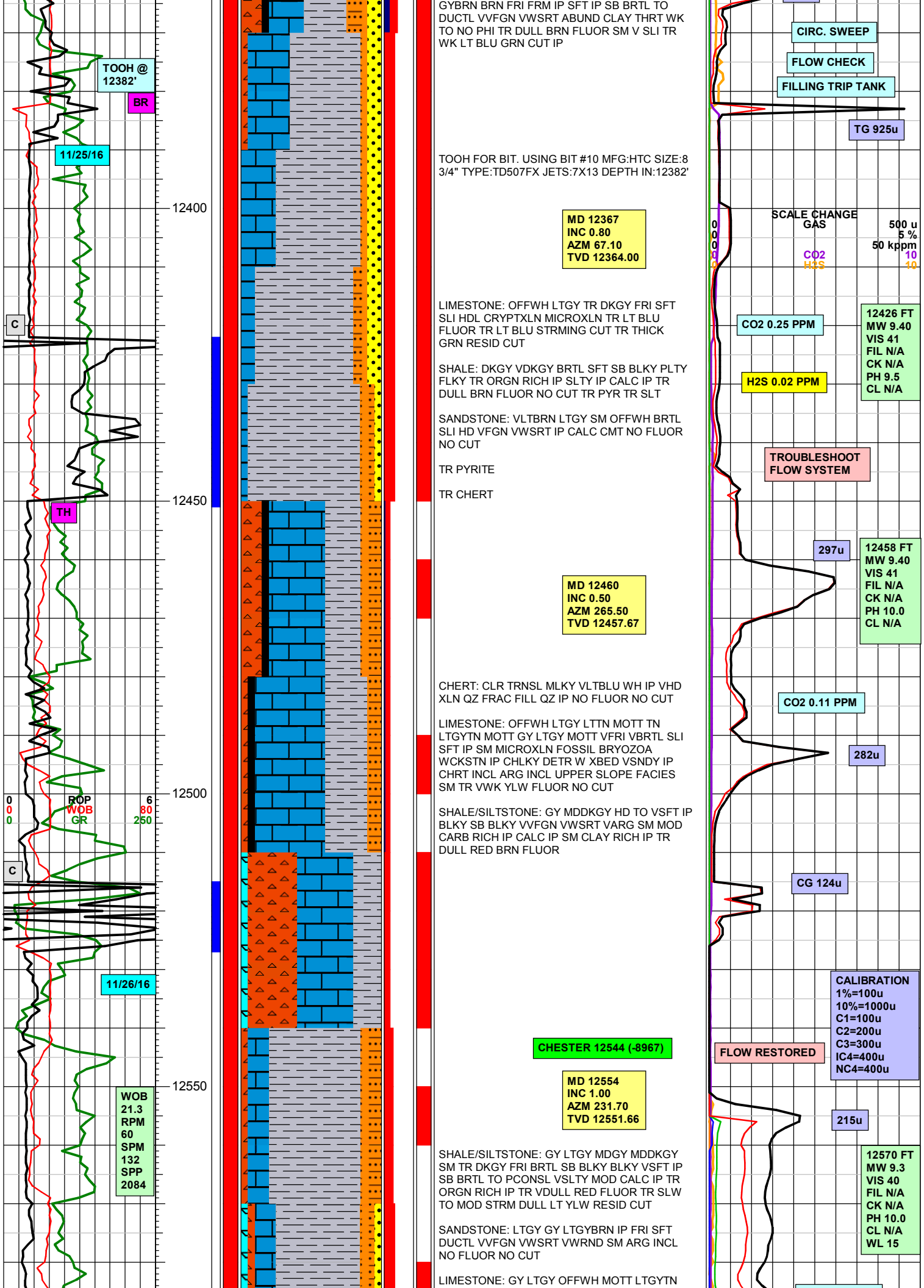

C
11300
11350
WOB 24.7
RPM 76
SPM 139
SPP 2090
C
11400
BR
11450
WOB 26.4
RPM 73
SPM 142
SPP 2158
LIMESTONE: WH OFFWH BUFF LTGY TR DKGY IP FRI VBRTL VSFT IP PLTY FLKY CHLYK CRYPTXLN IP PROXIMAL FACIES TR DKGY FOSSIL MARL MSTLY CHLKY MICROXLN CLN TO VSLI ARG DETRITAL POSS FRACT PHI TR TO FR LT BLU FLUOR NO VIS PHI NO VIS STN
CHERT: WH CLR TN TRNSL LTGYBRN BUFF BRN VLTBLUWH HD VHD BLKY SB BLKY CONCH FRACT VIT SM TR INTERGRAN TO VUGGY PHI IP SLTY SNDY IP LTYLW GLD FLUOR IP
SHALE: BLK DKGY VDKGY FRM HD SPLTY BLKY SB BLKY COAL IP VORGN RICH SLI SLTY IP REXLN IP SILICIC IP CALC THRT
CORRELATION MKR 11299 (-7722)
MD 11337
INC 1.20
AZM 41.50
TVD 11334.81
LIMESTONE: WH OFFWH LTGY IP MOTT GY DKGY IP FRI BRTL SLI FRM PLTY FLKY MICROXLN CRYPTXLN CHLKY MUDSTN PROXIMAL FACIES VCLN TO SM RIP LAM MIXED MICROXLN MARL IP ARG MUDSTN IP VSNDY VARG SM TR BLU WH FLUOR IP
SHALE: DKGY GY VDKGY FRI SLI FRM BRTL SB BLKY BLKY PLTY SB PLTY RIP LAM W CALC INCL IP F LAM SLI SLTY V ORGN RICH IP SM MARL TR VDULL BRN FLUOR
CHERT: WH OFFWH TRNSL TO OPQ LTBRN LTBLU TN TNORNG TRNSL TO OPQ HD XLN BLKY VITR CONCH FRACT IP BLKY IP NO FLUOR NO CUT
TR SANDSTONE
TR SILTSTONE
MD 11431
INC 1.10
AZM 40.30
TVD 11428.79
LIMESTONE: OFFWH LTGY OCC MOTT GY OCCDKGY FRI BRTL FRM FLKY MICROXLN CRYPTXLN CHLKY MUDSTN PROXIMAL FACIES VCLN TO SM RIP LAM MIXED MICROXLN MARL IP ARG MUDSTN IP VSNDY VARG SM TR BLU WH FLUOR TR GRN BLU CLDY STRMING CUT TR GRN YEL RESID CUT
SHALE: DKGY VDKGY FRI BRTL SB BLKY PLTY RIP LAM W CALC INCL IP F LAM SLI SLTY ORGN RICH SM MARL TR DULL BRN FLUOR NO CUT
CHERT: OFFWH TRNSL TO OPQ LTBRN TR LTBLU OCC TNORG HD XLN BLKY VITR CONCH FRACT IP BLKY NO FLUOR NO CUT
TR SILTSTONE
TR SANDSTONE
TRAP TEST
TRNSF MUD TO SLUG TANK
TRAP TEST
TRAP TEST
RESUME MONITORING GAS
CG 125u
SCALE CHANGE GAS
0
0
0
0
50 u
0.50 %
5 kppm
CO2
H2S
10
10
20u
CLT @ 11298'
TIME 1:10 MINUTES
STKS 10132
WASHOUT 48.3%
CO2 0.75 PPM
29u
H2S 0.01 PPM
CG 21u
11u
CO2 0.47 PPM
40u
11440 FT
MW 9.5
VIS 37
FIL N/A
CK N/A
PH 10
CL N/A
WL N/A
18u
PUMP SWEEP
H2S 0.25 PPM
CO2 0.46 PPM

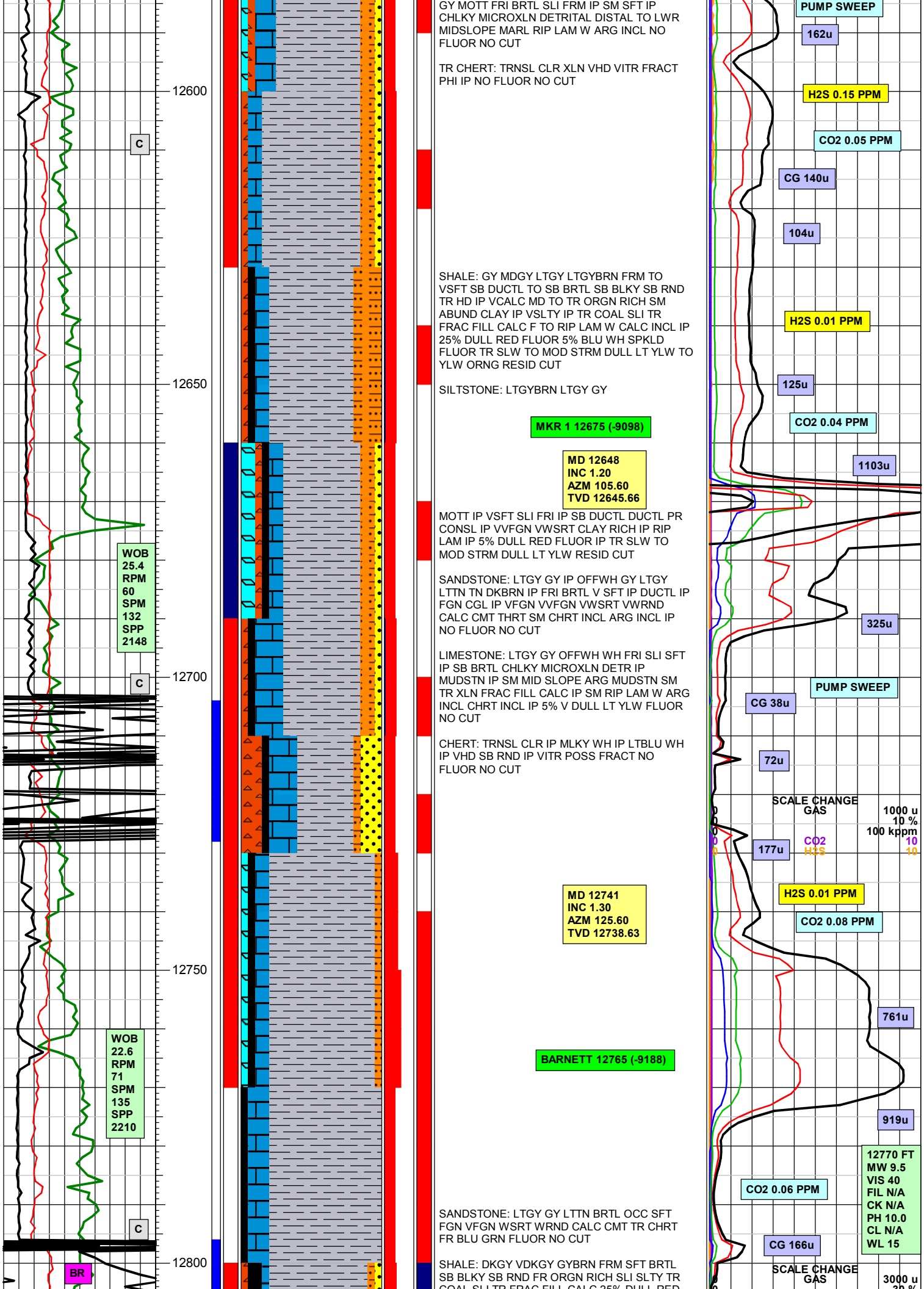

C
0 ROP 6
0 WOB 80
0 GR 250
11500
WOB 21.7
RPM 58
SPM 117
SPP 1797
11550
C
11600
C
11650
C
11700
TR PYRITE
TR CHERT
MD 11524
INC 1.20
AZM 45.30
TVD 11521.77
LIMESTONE: OFFWH DKGY FRM FLKY CRYPTXLN CHLKY POSS MARL TR ARG MUDSTN TR BLU WH FLUOR FR LT BLU CLDY STRMING CUT TR THICK GRN YEL RESID CUT
SHALE: VDKGY SM BLK TR FRI BRTL SB BLKY AMORPH PLTY TR CALC INCL TR F LAM W ORGN RICH MARL TR DULL BRN FLUOR NO CUT
TR SANDSTONE
TR PYRITE
TR CHERT
LIMESTONE: OFFWH DKGY FRM FLKY CRYPTXLN CHLKY POSS MARL TR ARG MUDSTN TR BLU WH FLUOR TR LT BLU CLDY STRMING CUT TRTHICK GRN YEL RESID CUT
SHALE: VDKGY SM BLK TR FRI BRTL SB BLKY AMORPH PLTY TR CALC INCL TR F LAM W ORGN RICH MARL TR DULL BRN FLUOR NO CUT
TR SANDSTONE
TR PYRITE
TR CHERT
MD 11617
INC 0.70
AZM 63.70
TVD 11614.00
LIMESTONE: OFFWH DKGY FRM FLKY CRYPTXLN CHLKY POSS MARL TR ARG MUDSTN TR BLU WH FLUOR TR LT BLU CLDY STRMING CUT TRTHICK GRN YEL RESID CUT
SHALE: VDKGY SM BLK TR FRI BRTL SB BLKY AMORPH PLTY TR CALC INCL TR F LAM W ORGN RICH MARL TR DULL BRN FLUOR NO CUT
TR SANDSTONE
TR PYRITE
TR CHERT
LIMESTONE: OFFWH MOTT DKGY SLI HD FLKY CRYPTXLN CHLKY TR ARG MUDSTN TR BLU WH FLUOR TR TO FR LT BLU CLDY STRMING CUT TR THICK GRN YEL RESID CUT
SHALE: VDKGY BLK TR SFT BRTL SB BLKY AMORPH PLTY TR CALC INCL TR DULL BRN FLUOR NO CUT
SANDSTONE: LTGY LTTAN FRI BRTL SLIHD VFGN WSRT WRND SLI ARG NO FLUOR NO CUT
OCC PYRITE
CG 21u
11520 FT
MW 9.4
VIS 38
FIL N/A
CK N/A
PH 10
CL N/A
WL N/A
13u
11596 FT
MW 9.4
VIS 37 IN / 38 OUT
FIL N/A
CK N/A
PH 9.4 IN / 10 OUT
CL N/A
H2S 0.05 PPM
CO2 0.45 PPM
SCALE CHANGE
GAS 0 100 u
0 1 %
0 10 kppm
CO2 0 10
H2S 0 10
45u
TRNSF MUD F ACTIVE
37u
CG 53u
RIG SERVICE
54u
REPLACED PUMP SERVICE FLOW SYSTEM
63u
CO2 0.11 PPM
H2S 0.36 PPM
43u
REBOOTED COMPUTER
CO2 0.11 PPM
CG 15u
H2S 0.13 PPM
27u

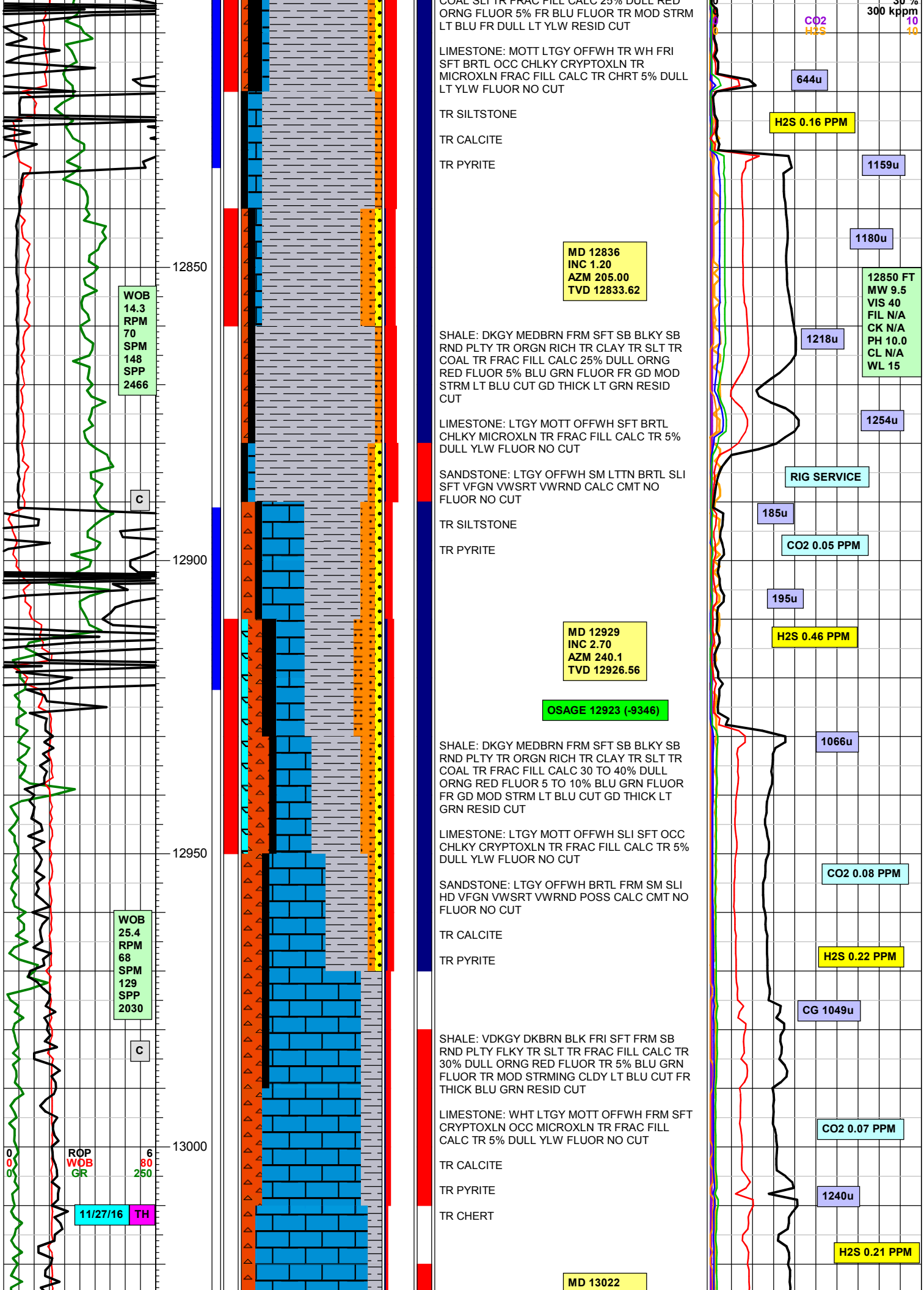

11750
11800
11850
11900
TH
C
C
WOB 25.7
RPM 70
SPM 132
SPP 2000
11/24/16
WOB 25.9
RPM 73
SPM 128
SPP 1975
MD 11711
INC 1.60
AZM 68.80
TVD 11708.74
SHALE: DKGY VDKGY MDGY FRI SLI SFT BRTL SB BLKY SB PLTY MOD SLTY SM TR SNDY IP SM TR VARG DETR MARL RIP LAM IP MOD TO VCALC SM TR FRAC FILL CALC IP SM TR CHRT IP TR TO FR DULL RED ORNG FLUOR
LIMESTONE: OFFWH GY LTGY MOTT IP FRI FRM SB BLKY MICRLXN DETRITAL MIDSLOPE FACIES MOD ARG RIP LAM W ABUND ARG INCL SLI CLAY RICH SLI CHLKY IP NO FLUOR NO CUT
SILTSTONE/SANDSTONE: MDGY FRI SLI SFT SB BRTL TO DUCTL VVFGN VWSRT SLI TO FR UNCONSL IP SNDY IP ABUND CLAY INCL NO FLUOR NO CUT
TR CALCITE
TR CHERT
MD 11804
INC 0.40
AZM 115.50
TVD 11801.72
LIMESTONE: OFFWH GY LTGY TN MDGY GY MOTT FRI FRM SLI HD IP SLI SFT IP BRTL TO SB DUCTL SB BLKY SB PLTY MICRLXN DETRITAL MIDSLOPE TO LOWER MIDSLOPE FACIES MOD ARG TO VARG RIP LAM W ABUND ARG INCL SM REXLN TR FOSSIL CRINOIDS IP SLI CLAY RICH SLI CHLKY IP NO FLUOR NO CUT
SHALE: DKGY VDKGY MDGY FRI SLI SFT BRTL SB BLKY SB PLTY SM ARG DETR MARL RIP LAM IP MOD TO VCALC TR V DULL BLK RED FLUOR IP TR LT BLU GRN TO BLU WH RESID CUT
MD 11898
INC 1.10
AZM 72.60
TVD 11895.71
LIMESTONE: OFFWH GY LTGY MDGY MOTT FRI BRTL SB BLKY SB PLTY MICRLXN CHLKY DETRITAL MIDSLOPE TO LOWER MIDSLOPE FACIES MOD ARG TO VARG RIP LAM W ABUND ARG INCL SM REXLN TR FOSSIL FLTSTN TO TR WCKSTN MARL SLI CLAY RICH IP TR VDULL VWK YLW TO MD YLW FLUOR FR LT BLU GRN TO BLU WH RESID CUT
SHALE: DKGY VDKGY MDGY FRI SLI SFT BRTL SB BLKY SB PLTY SM ARG DETR MARL RIP LAM IP MOD TO VCALC TR V DULL BLK RED FLUOR IP TR LT BLU GRN TO BLU WH RESID CUT
CO2 0.09 PPM
33u
H2S 0.07 PPM
40u
11745 FT
MW 9.4
VIS 37 IN
FIL N/A
CK N/A
PH 9.4 IN
CL N/A
CG 17u
CO2 0.08 PPM
H2S 0.00 PPM
PUMP SWEEP
51u
CO2 0.06 PPM
TROUBLESHOOT AND SERVICE FLOW SYSTEM
FLOW INCREASED
H2S 0.60 PPM
CG 38u
64u
CALIBRATION
1%=100u
10%=1000u
11880 FT
MW 9.4
VIS 38 IN
FIL N/A
CK N/A
PH N/A
CL N/A
53u
CO2 0.10 PPM
H2S 0.59 PPM

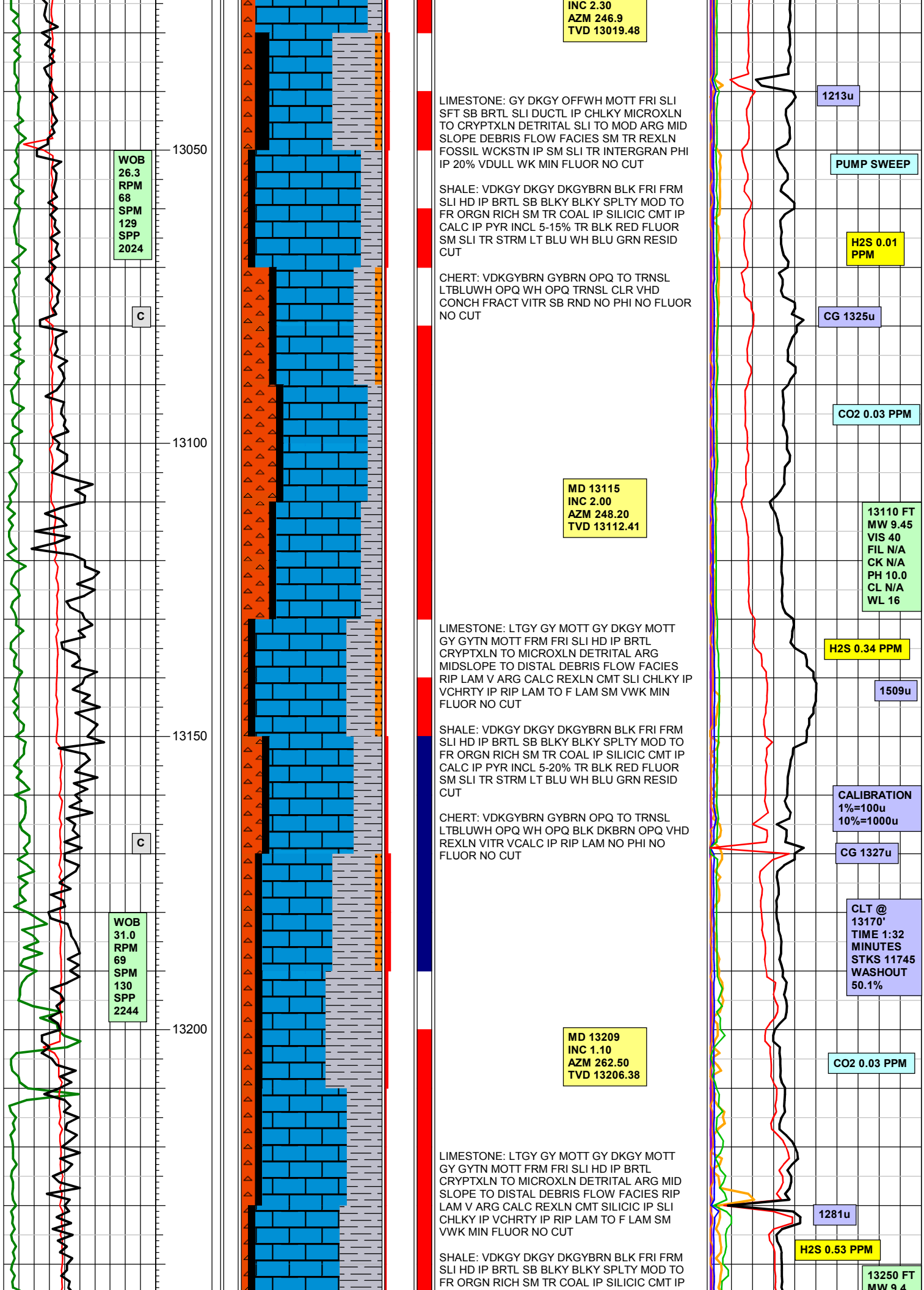

11950
12000
12050
12100
C
BR
0 ROP 6
0 WOB 80
0 GR 250
WOB 25.5 RPM 68 SPM 133 SPP 2051
WOB 25.5 RPM 71 SPM 139 SPP 2133
LIMESTONE: LTGY GY OFFWH MOTT GY DKGY MOTT OFFWH LTTN MOTT CRYPTOXLN IP CHLKY IP BRN DKBRN MOTT XLN SLI SNDY IP FRI BRTL SB PLTY SB BLKY CRYPTOXLN MICROXLN CHLKY DETRITAL MIDSLOPE RIP LAM SLI ARG TO VARG IP SM TR UPPR SLOPE REXLN CHLKY FOSSIL FORAM WCKSTN IP TR CHRT IP TR SNDY IP SM TR TO FR LTBLU TO DK YLW FLUOR TR LT BLU GRN TO BLU WH RESID CUT
SHALE: DKGY VDKGY GY FRM SLI HD BRTL SB PLTY SB BLKY V ORGN RICH V CALC VVSLTY IP SM RIP LAM MARL IP TR VDULL BRN FLUOR TR LT BLU GRN TO BLU WH RESID CUT
TR CHERT: BRN OPQ VHD HD BRTL CONCH FRACT VITR NO PHI NO FLUOR NO CUT
TR SANDSTONE
TR SILTSTONE
TR COAL
MD 11991 INC 0.80 AZM 102.20 TVD 11988.70
LIMESTONE: MEDGY OFFWH MOTT GY DKGY LTTN CRYPTOXLNDKBRN MOTT XLN SLI SNDY FRI BRTL SB PLTY SB BLKY CRYPTOXLN MICROXLN CHLKY FOSS FORAM WCKSTN IP TR CHRT IP TR SNDY TR LTBLU TO DK YLW FLUOR TR LT BLU GRN TO BLU WH RESID CUT
SHALE: DKGY VDKGY FRM BRTL SB PLTY SB BLKY V ORGN RICH V CALC TR DULL BRN FLUOR TR LT BLU GRN WH RESID CUT
TR CHERT: BRN OPQ VHD HD BRTL CONCH FRACT VITR NO PHI NO FLUOR NO CUT
TR SILTSTONE
TR PYRITE
MD 12085 INC 0.20 AZM 237.70 TVD 12082.70
CORRELATION MKR 12076 (-8499)
SHALE: VDKGY SM BLK SFT BRTL SB BLKY PLTY SM TR FRAC FILL CALC TR CHRT TR PYR TR DULL RED ORNG FLUOR NO CUT
LIMESTONE: MOTT OFFWH MEDGY FRM SLI HD SB BLKY MICRLXNPOSS ARG RIP LAM W ARG INCL SLI CLAY RICH NO FLUOR NO CUT
SANDSTONE: MDGY SFT BRTL VFGN WSRT POSS SLI UNCONSL TR CLAY FR BLU GRN FLUOR TR LT BLU STRMING CUT FR THICK GRN YEL RESID CUT
TR CALCITE
TR CHERT
TR PYRITE
SHALE: BLK DKGY SFT BRTL OCC FRM SB BLKY SM TR FRAC FILL CALC TR PYR TR DULL YEL ORNG FLUOR NO CUT
70u
33u
CG 61u
CLT @ 11951'
TIME 1:08 MINUTES
STKS 10300
WASHOUT 42.4%
CO2 0.03 PPM
H2S 0.71 PPM
37u
CO2 0.14 PPM
12035 FT
MW 9.3
VIS 39 IN
FIL N/A
CK N/A
PH 10
CL N/A
WL 16
33u
44u
H2S 0.64 PPM
CG 83u
59u
H2S 0.85 PPM
102u
CO2 0.05 PPM
SCALE CHANGE
GAS
0 1000 u
0 10 %
0 100 kppm
0 CO2 10
0 H2S 10
H2S 0.56 PPM
12122 FT
MW 9.3
VIS 38
FIL N/A
CK N/A
PH 10
CL N/A
WL 16
44u
RIG SERVICE

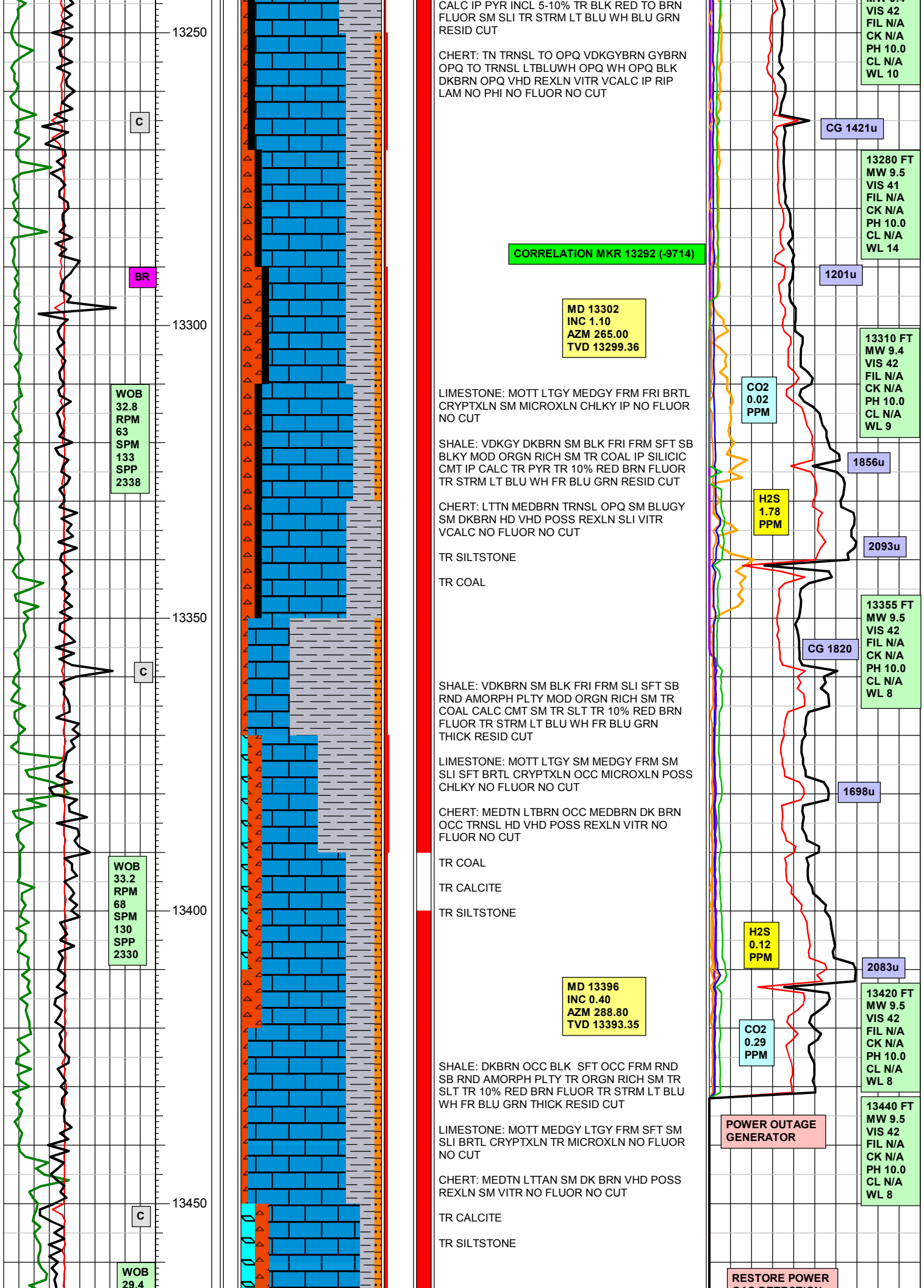

12150
12200
12250
12300
12350
C
WOB 25.3
RPM 71
SPM 141
SPP 2141
TH
C
LIMESTONE: MOTT OFFWH OCC MEDGY FRM SLI HD BLKY MICRXLN POSS ARG RIP LAM W ARG INCL SLI CLAY RICH NO FLUOR NO CUT
SANDSTONE: MDGY LTTN MEDTN OCC CLR TRANS BRTL SUB RND VFGN WSRT POSS SLI UNCONSL TR CLAY FR GRN BLU FLUOR FR TO GD LT BLU WHT STRMING CUT GD THICK GRN RESID CUT
TR CALCITE
TR PYRITE
MD 12179
INC 0.40
AZM 282.40
TVD 12176.70
MORROW CLASTIC 12190 (-8613)
SANDSTONE: LTTN MEDTN CLR TRANS BRTL SUB RND FGN VFGN WSRT POSS SLI UNCONSL TR CLAY FR GRN BLU FLUOR NO CUT
SHALE: VDKBRN SLI SFT BRTL OCC FRM SB RND AMORPH SM TR FRAC FILL CALC TR PYR TR DULL YEL ORNG FLUOR NO CUT
LIMESTONE: MOTT OFFWH LTGY FRM SLI HD BLKY MICRXLN POSS ARG RIP LAM W ARG INCL SLI CLAY RICH NO FLUOR NO CUT
TR CALCITE
TR PYRITE
TR SILTSTONE
MD 12272
INC 1.10
AZM 71.00
TVD 12269.69
SANDSTONE: LTTN MEDTN CLR TRANS BRTL SLI HD RND SUB RND FGN VFGN WSRT TR CLAY FR GRN BLU FLUOR NO CUT
SHALE: VDKBRN SFT BRTL SB RND AMORPH PLTY TR FRAC FILL CALC TR PYR TR DULL YEL ORNG FLUOR TR DULL BLU WH TO BLU ORNG CUT
LIMESTONE: MOTT OFFWH LTGY FRM HD BLKY SUB BLKY MICRXLN NO FLUOR NO CUT
TR CALCITE
CORRELATION MKR 12304 (-8727)
TR PYRITE
TR SILTSTONE
TR CHERT
LIMESTONE: WH OFFWH MOTT GY LTGY DKGY MOTT TN DKGY BUFF MOTT FRI FRM BRTL SLI HD IP CRYPTXLN CHLKY DETRITAL MIDSLOPE FACIES SM MICROXLN FOSSIL CRINOIDAL WCKSTN IP CHRTY IP SNDY IP VCHLKY IP TR LT BLU WH FLUOR NO CUT
SHALE: DKGY VDKGY FRM SLI HD HD BRTL SFT IP SB BLKY SB PLTY FLKY MOD ORGN RICH IP SLTY IP CALC IP TR DULL RED BRN FLUOR TR STRM WEAK LT BLU WH RESID CUT SM TR RESID RING
CHERT: CLR WH TRNSL OPQ LT BRN BUFF TRNSL TO OPQ HD VHD VITR NO FLUOR NO CUT
SILTSTONE/SANDSTONE:DKGY DKGYBRN
CG 104u
145u
12160 FT
MW 9.3
VIS 38
FIL N/A
CK N/A
PH 10
CL N/A
WL 16
H2S 0.53 PPM
CO2 0.05 PPM
624u
731u
613u
CO2 0.04 PPM
CG 2u
852u
317u
613u
H2S 0.60 PPM
644u
12286 FT
MW 9.3
VIS 40
FIL N/A
CK N/A
PH 10
CL N/A
WL 18
CO2 0.04 PPM
154u
CG 36u
PUMP SWEEP
30u
H2S 0.60 PPM
12352 FT
MW 9.35
VIS 40
FIL N/A
CK N/A
PH 10.5
CL N/A
268u

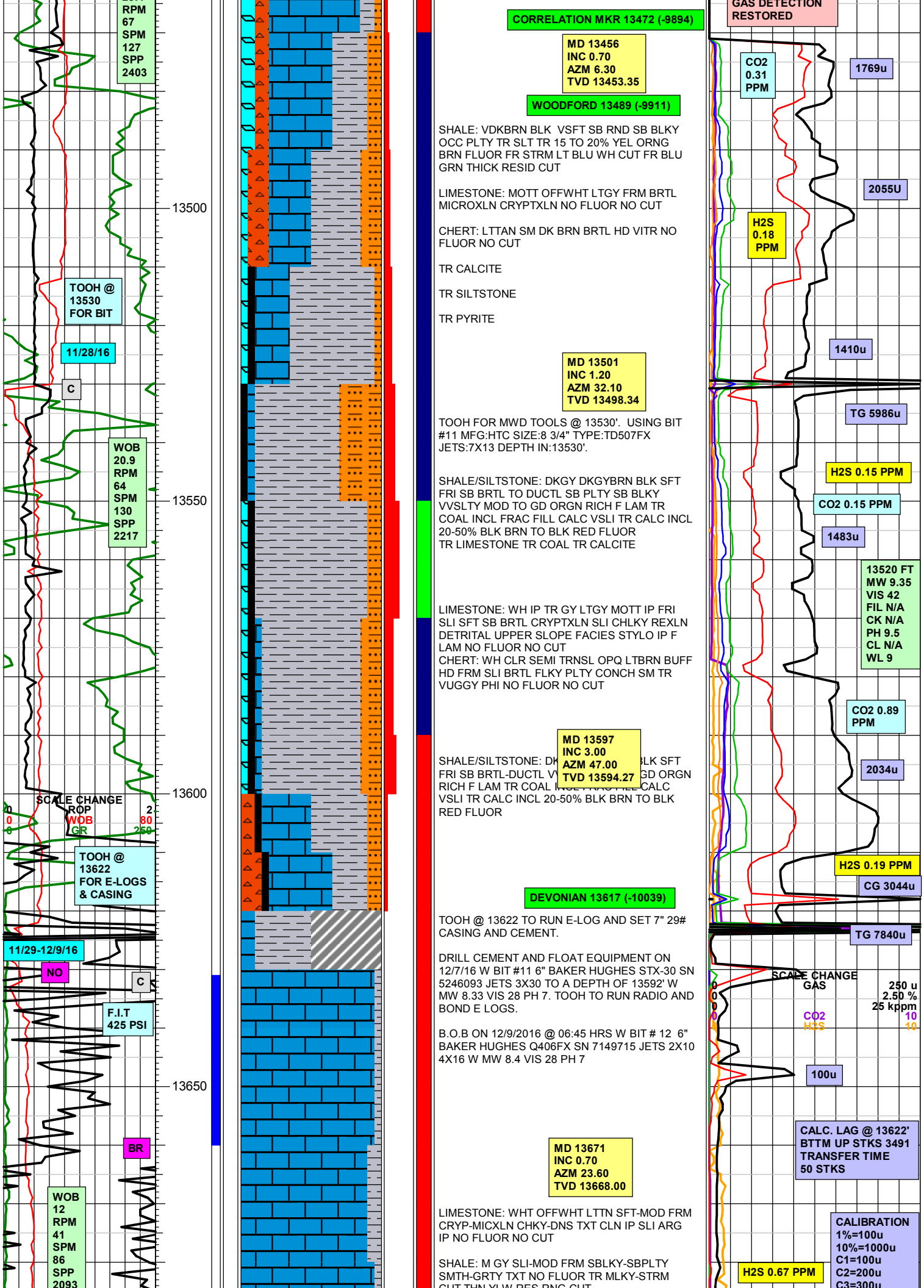

TOOH @ 12382'
BR
11/25/16
12400
C
12450
TH
0 ROP 6
0 WOB 80
0 GR 250
C
12500
11/26/16
12550
WOB 21.3
RPM 60
SPM 132
SPP 2084
GYBRN BRN FRI FRM IP SFT IP SB BRTL TO DUCTL VVFGN VWSRT ABUND CLAY THRT WK TO NO PHI TR DULL BRN FLUOR SM V SLI TR WK LT BLU GRN CUT IP
TOOH FOR BIT. USING BIT #10 MFG:HTC SIZE:8 3/4" TYPE:TD507FX JETS:7X13 DEPTH IN:12382'
MD 12367
INC 0.80
AZM 67.10
TVD 12364.00
LIMESTONE: OFFWH LTGY TR DKGY FRI SFT SLI HDL CRYPTXLN MICROXLN TR LT BLU FLUOR TR LT BLU STRMING CUT TR THICK GRN RESID CUT
SHALE: DKGY VDKGY BRTL SFT SB BLKY PLTY FLKY TR ORGN RICH IP SLTY IP CALC IP TR DULL BRN FLUOR NO CUT TR PYR TR SLT
SANDSTONE: VLTBRN LTGY SM OFFWH BRTL SLI HD VFGN VWSRT IP CALC CMT NO FLUOR NO CUT
TR PYRITE
TR CHERT
MD 12460
INC 0.50
AZM 265.50
TVD 12457.67
CHERT: CLR TRNSL MLKY VLTBLU WH IP VHD XLN QZ FRAC FILL QZ IP NO FLUOR NO CUT
LIMESTONE: OFFWH LTGY LTTN MOTT TN LTGYTN MOTT GY LTGY MOTT VFRI VBRTL SLI SFT IP SM MICROXLN FOSSIL BRYOZOA WCKSTN IP CHLKY DETR W XBED VSNDY IP CHRT INCL ARG INCL UPPER SLOPE FACIES SM TR VWK YLW FLUOR NO CUT
SHALE/SILTSTONE: GY MDDKGY HD TO VSFT IP BLKY SB BLKY VVFGN VWSRT VARG SM MOD CARB RICH IP CALC IP SM CLAY RICH IP TR DULL RED BRN FLUOR
CHESTER 12544 (-8967)
MD 12554
INC 1.00
AZM 231.70
TVD 12551.66
SHALE/SILTSTONE: GY LTGY MDGY MDDKGY SM TR DKGY FRI BRTL SB BLKY BLKY VSFT IP SB BRTL TO PCONSL VSLTY MOD CALC IP TR ORGN RICH IP TR VDULL RED FLUOR TR SLW TO MOD STRM DULL LT YLW RESID CUT
SANDSTONE: LTGY GY LTGYBRN IP FRI SFT DUCTL VVFGN VWSRT VWRND SM ARG INCL NO FLUOR NO CUT
LIMESTONE: GY LTGY OFFWH MOTT LTGYTN
CIRC. SWEEP
FLOW CHECK
FILLING TRIP TANK
TG 925u
SCALE CHANGE
GAS
0 500 u
0 5 %
0 50 kppm
0 CO2 10
0 H2S 10
CO2 0.25 PPM
12426 FT
MW 9.40
VIS 41
FIL N/A
CK N/A
PH 9.5
CL N/A
H2S 0.02 PPM
TROUBLESHOOT FLOW SYSTEM
297u
12458 FT
MW 9.40
VIS 41
FIL N/A
CK N/A
PH 10.0
CL N/A
CO2 0.11 PPM
282u
CG 124u
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u
FLOW RESTORED
215u
12570 FT
MW 9.3
VIS 40
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 15

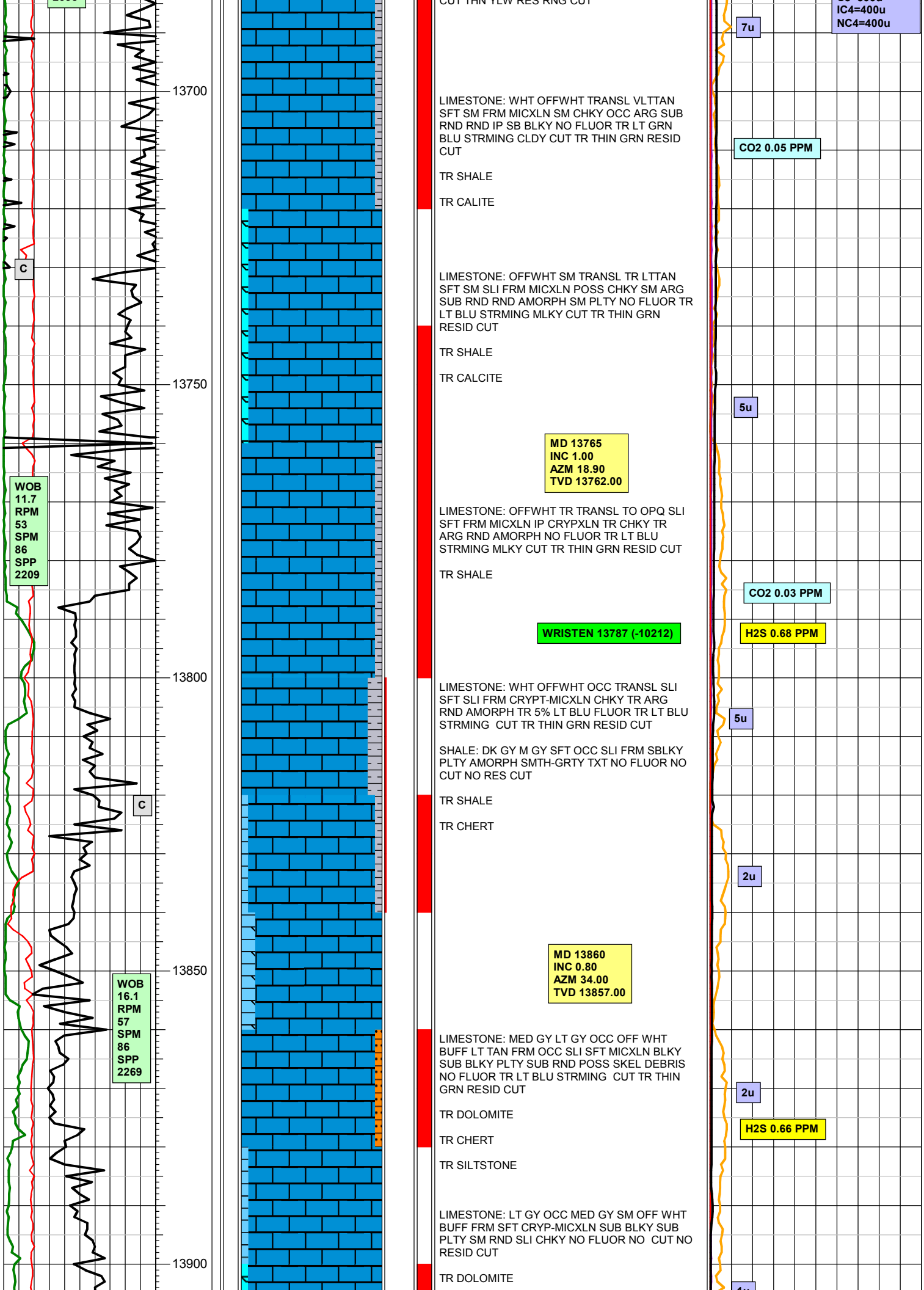

12600
12650
12700
12750
12800
C
C
C
BR
WOB
25.4
RPM
60
SPM
132
SPP
2148
WOB
22.6
RPM
71
SPM
135
SPP
2210
GY MOTT FRI BRTL SLI FRM IP SM SFT IP CHLKY MICROXLN DETRITAL DISTAL TO LWR MIDSLOPE MARL RIP LAM W ARG INCL NO FLUOR NO CUT
TR CHERT: TRNSL CLR XLN VHD VITR FRACT PHI IP NO FLUOR NO CUT
SHALE: GY MDGY LTGY LTGYBRN FRM TO VSFT SB DUCTL TO SB BRTL SB BLKY SB RND TR HD IP VCALC MD TO TR ORGN RICH SM ABUND CLAY IP VSLTY IP TR COAL SLI TR FRAC FILL CALC F TO RIP LAM W CALC INCL IP 25% DULL RED FLUOR 5% BLU WH SPKLD FLUOR TR SLW TO MOD STRM DULL LT YLW TO YLW ORNG RESID CUT
SILTSTONE: LTGYBRN LTGY GY
MKR 1 12675 (-9098)
MD 12648
INC 1.20
AZM 105.60
TVD 12645.66
MOTT IP VSFT SLI FRI IP SB DUCTL DUCTL PR CONSL IP VVFGN VWSRT CLAY RICH IP RIP LAM IP 5% DULL RED FLUOR IP TR SLW TO MOD STRM DULL LT YLW RESID CUT
SANDSTONE: LTGY GY IP OFFWH GY LTGY LTTN TN DKBRN IP FRI BRTL V SFT IP DUCTL IP FGN CGL IP VFGN VVFGN VWSRT VWRND CALC CMT THRT SM CHRT INCL ARG INCL IP NO FLUOR NO CUT
LIMESTONE: LTGY GY OFFWH WH FRI SLI SFT IP SB BRTL CHLKY MICROXLN DETR IP MUDSTN IP SM MID SLOPE ARG MUDSTN SM TR XLN FRAC FILL CALC IP SM RIP LAM W ARG INCL CHRT INCL IP 5% V DULL LT YLW FLUOR NO CUT
CHERT: TRNSL CLR IP MLKY WH IP LTBLU WH IP VHD SB RND IP VITR POSS FRACT NO FLUOR NO CUT
MD 12741
INC 1.30
AZM 125.60
TVD 12738.63
BARNETT 12765 (-9188)
SANDSTONE: LTGY GY LTTN BRTL OCC SFT FGN VFGN WSRT WRND CALC CMT TR CHRT FR BLU GRN FLUOR NO CUT
SHALE: DKGY VDKGY GYBRN FRM SFT BRTL SB BLKY SB RND FR ORGN RICH SLI SLTY TR
PUMP SWEEP
162u
H2S 0.15 PPM
CO2 0.05 PPM
CG 140u
104u
H2S 0.01 PPM
125u
CO2 0.04 PPM
1103u
325u
PUMP SWEEP
CG 38u
72u
SCALE CHANGE
GAS
1000 u
10 %
100 kppm
CO2
H2S
177u
H2S 0.01 PPM
CO2 0.08 PPM
761u
919u
12770 FT
MW 9.5
VIS 40
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 15
CO2 0.06 PPM
CG 166u
SCALE CHANGE
GAS
3000 u

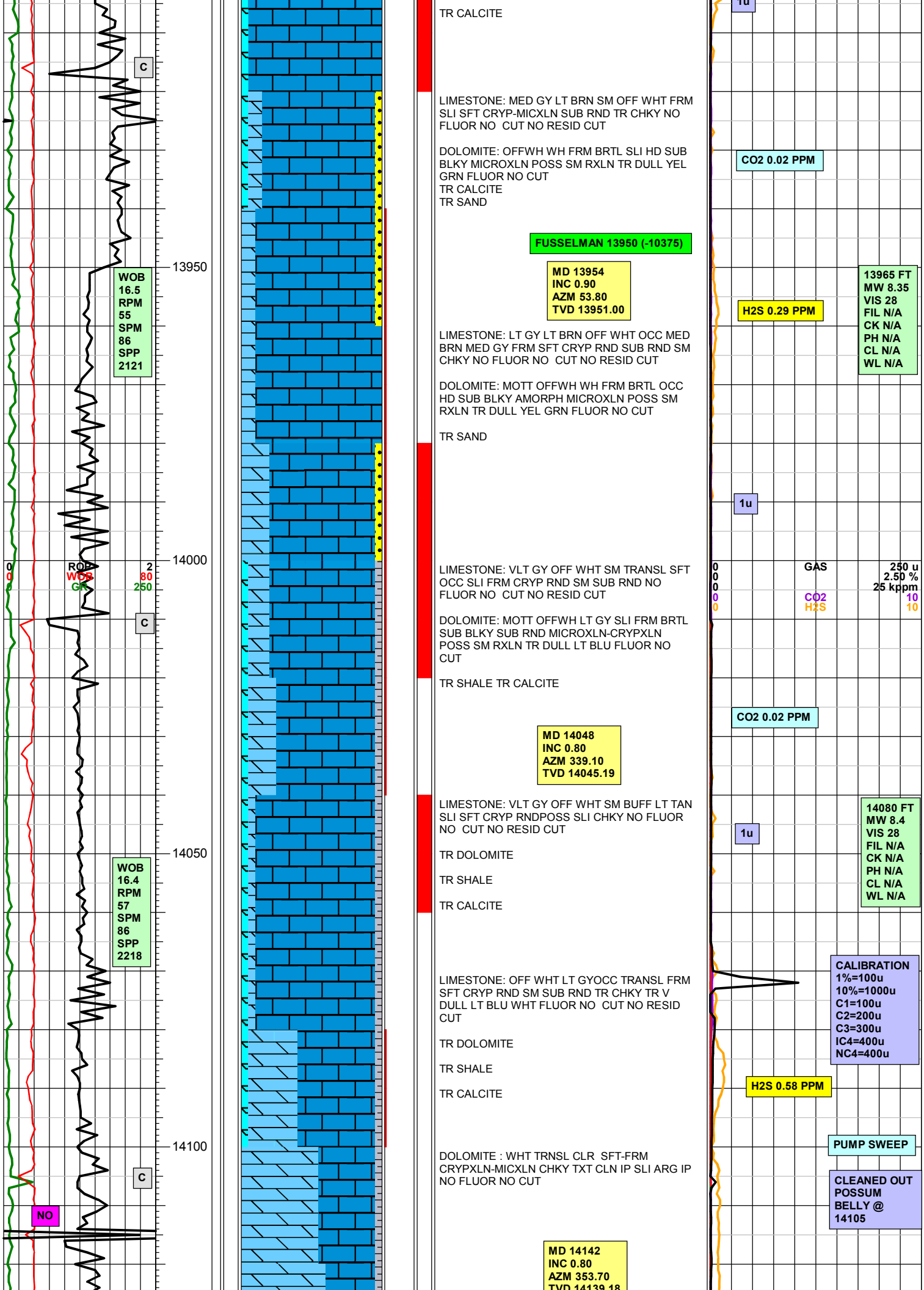

ORNG FLUOR 5% FR BLU FLUOR TR MOD STRM LT BLU FR DULL LT YLW RESID CUT
LIMESTONE: MOTT LTGY OFFWH TR WH FRI SFT BRTL OCC CHLKY CRYPTOXLN TR MICROXLN FRAC FILL CALC TR CHRT 5% DULL LT YLW FLUOR NO CUT
TR SILTSTONE
TR CALCITE
TR PYRITE
MD 12836
INC 1.20
AZM 205.00
TVD 12833.62
SHALE: DKGY MEDBRN FRM SFT SB BLKY SB RND PLTY TR ORGN RICH TR CLAY TR SLT TR COAL TR FRAC FILL CALC 25% DULL ORNG RED FLUOR 5% BLU GRN FLUOR FR GD MOD STRM LT BLU CUT GD THICK LT GRN RESID CUT
LIMESTONE: LTGY MOTT OFFWH SFT BRTL CHLKY MICROXLN TR FRAC FILL CALC TR 5% DULL YLW FLUOR NO CUT
SANDSTONE: LTGY OFFWH SM LTTN BRTL SLI SFT VFGN VWSRT VWRND CALC CMT NO FLUOR NO CUT
TR SILTSTONE
TR PYRITE
MD 12929
INC 2.70
AZM 240.1
TVD 12926.56
OSAGE 12923 (-9346)
SHALE: DKGY MEDBRN FRM SFT SB BLKY SB RND PLTY TR ORGN RICH TR CLAY TR SLT TR COAL TR FRAC FILL CALC 30 TO 40% DULL ORNG RED FLUOR 5 TO 10% BLU GRN FLUOR FR GD MOD STRM LT BLU CUT GD THICK LT GRN RESID CUT
LIMESTONE: LTGY MOTT OFFWH SLI SFT OCC CHLKY CRYPTOXLN TR FRAC FILL CALC TR 5% DULL YLW FLUOR NO CUT
SANDSTONE: LTGY OFFWH BRTL FRM SM SLI HD VFGN VWSRT VWRND POSS CALC CMT NO FLUOR NO CUT
TR CALCITE
TR PYRITE
SHALE: VDKGY DKBRN BLK FRI SFT FRM SB RND PLTY FLKY TR SLT TR FRAC FILL CALC TR 30% DULL ORNG RED FLUOR TR 5% BLU GRN FLUOR TR MOD STRMING CLDY LT BLU CUT FR THICK BLU GRN RESID CUT
LIMESTONE: WHT LTGY MOTT OFFWH FRM SFT CRYPTOXLN OCC MICROXLN TR FRAC FILL CALC TR 5% DULL YLW FLUOR NO CUT
TR CALCITE
TR PYRITE
TR CHERT
MD 13022
12850
12900
12950
13000
WOB 14.3 RPM 70 SPM 148 SPP 2466
WOB 25.4 RPM 68 SPM 129 SPP 2030
C
C
0 ROP 6
0 WOB 80
0 GR 250
11/27/16 TH
CO2 10
H2S 10
644u
H2S 0.16 PPM
1159u
1180u
12850 FT
MW 9.5
VIS 40
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 15
1218u
1254u
RIG SERVICE
185u
CO2 0.05 PPM
195u
H2S 0.46 PPM
1066u
CO2 0.08 PPM
H2S 0.22 PPM
CG 1049u
CO2 0.07 PPM
1240u
H2S 0.21 PPM

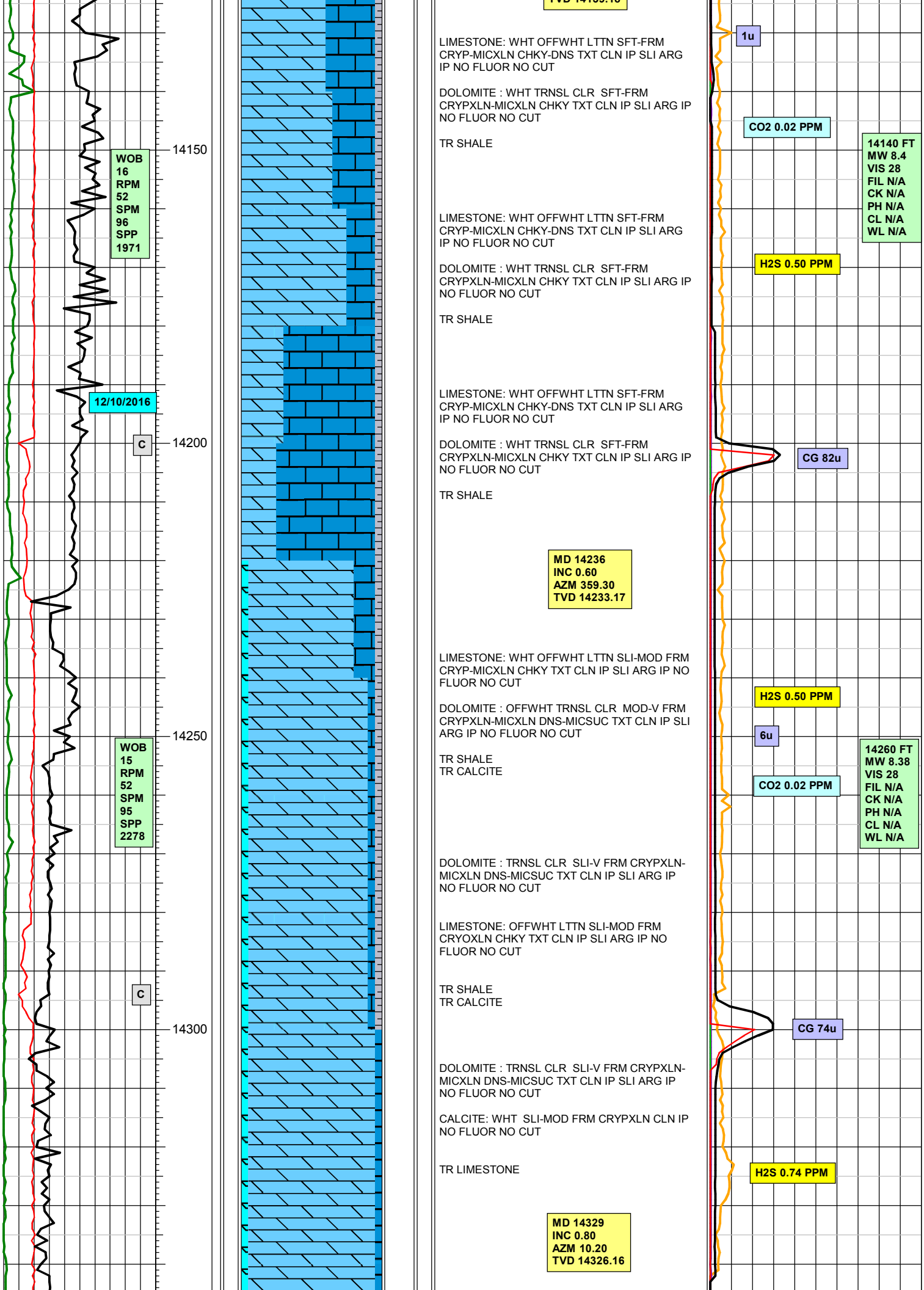

13050
13100
13150
13200
WOB 26.3 RPM 68 SPM 129 SPP 2024
C
C
WOB 31.0 RPM 69 SPM 130 SPP 2244
INC 2.30 AZM 246.9 TVD 13019.48
LIMESTONE: GY DKGY OFFWH MOTT FRI SLI SFT SB BRTL SLI DUCTL IP CHLKY MICROXLN TO CRYPTXLN DETRITAL SLI TO MOD ARG MID SLOPE DEBRIS FLOW FACIES SM TR REXLN FOSSIL WCKSTN IP SM SLI TR INTERGRAN PHI IP 20% VDULL WK MIN FLUOR NO CUT
SHALE: VDKGY DKGY DKGYBRN BLK FRI FRM SLI HD IP BRTL SB BLKY BLKY SPLTY MOD TO FR ORGN RICH SM TR COAL IP SILICIC CMT IP CALC IP PYR INCL 5-15% TR BLK RED FLUOR SM SLI TR STRM LT BLU WH BLU GRN RESID CUT
CHERT: VDKGYBRN GYBRN OPQ TO TRNSL LTBLUWH OPQ WH OPQ TRNSL CLR VHD CONCH FRACT VITR SB RND NO PHI NO FLUOR NO CUT
MD 13115 INC 2.00 AZM 248.20 TVD 13112.41
LIMESTONE: LTGY GY MOTT GY DKGY MOTT GY GYTN MOTT FRM FRI SLI HD IP BRTL CRYPTXLN TO MICROXLN DETRITAL ARG MIDSLOPE TO DISTAL DEBRIS FLOW FACIES RIP LAM V ARG CALC REXLN CMT SLI CHLKY IP VCHRTY IP RIP LAM TO F LAM SM VWK MIN FLUOR NO CUT
SHALE: VDKGY DKGY DKGYBRN BLK FRI FRM SLI HD IP BRTL SB BLKY BLKY SPLTY MOD TO FR ORGN RICH SM TR COAL IP SILICIC CMT IP CALC IP PYR INCL 5-20% TR BLK RED FLUOR SM SLI TR STRM LT BLU WH BLU GRN RESID CUT
CHERT: VDKGYBRN GYBRN OPQ TO TRNSL LTBLUWH OPQ WH OPQ BLK DKBRN OPQ VHD REXLN VITR VCALC IP RIP LAM NO PHI NO FLUOR NO CUT
MD 13209 INC 1.10 AZM 262.50 TVD 13206.38
LIMESTONE: LTGY GY MOTT GY DKGY MOTT GY GYTN MOTT FRM FRI SLI HD IP BRTL CRYPTXLN TO MICROXLN DETRITAL ARG MID SLOPE TO DISTAL DEBRIS FLOW FACIES RIP LAM V ARG CALC REXLN CMT SILICIC IP SLI CHLKY IP VCHRTY IP RIP LAM TO F LAM SM VWK MIN FLUOR NO CUT
SHALE: VDKGY DKGY DKGYBRN BLK FRI FRM SLI HD IP BRTL SB BLKY BLKY SPLTY MOD TO FR ORGN RICH SM TR COAL IP SILICIC CMT IP
1213u
PUMP SWEEP
H2S 0.01 PPM
CG 1325u
CO2 0.03 PPM
13110 FT MW 9.45 VIS 40 FIL N/A CK N/A PH 10.0 CL N/A WL 16
H2S 0.34 PPM
1509u
CALIBRATION 1%=100u 10%=1000u
CG 1327u
CLT @ 13170' TIME 1:32 MINUTES STKS 11745 WASHOUT 50.1%
CO2 0.03 PPM
1281u
H2S 0.53 PPM
13250 FT MW 9.4

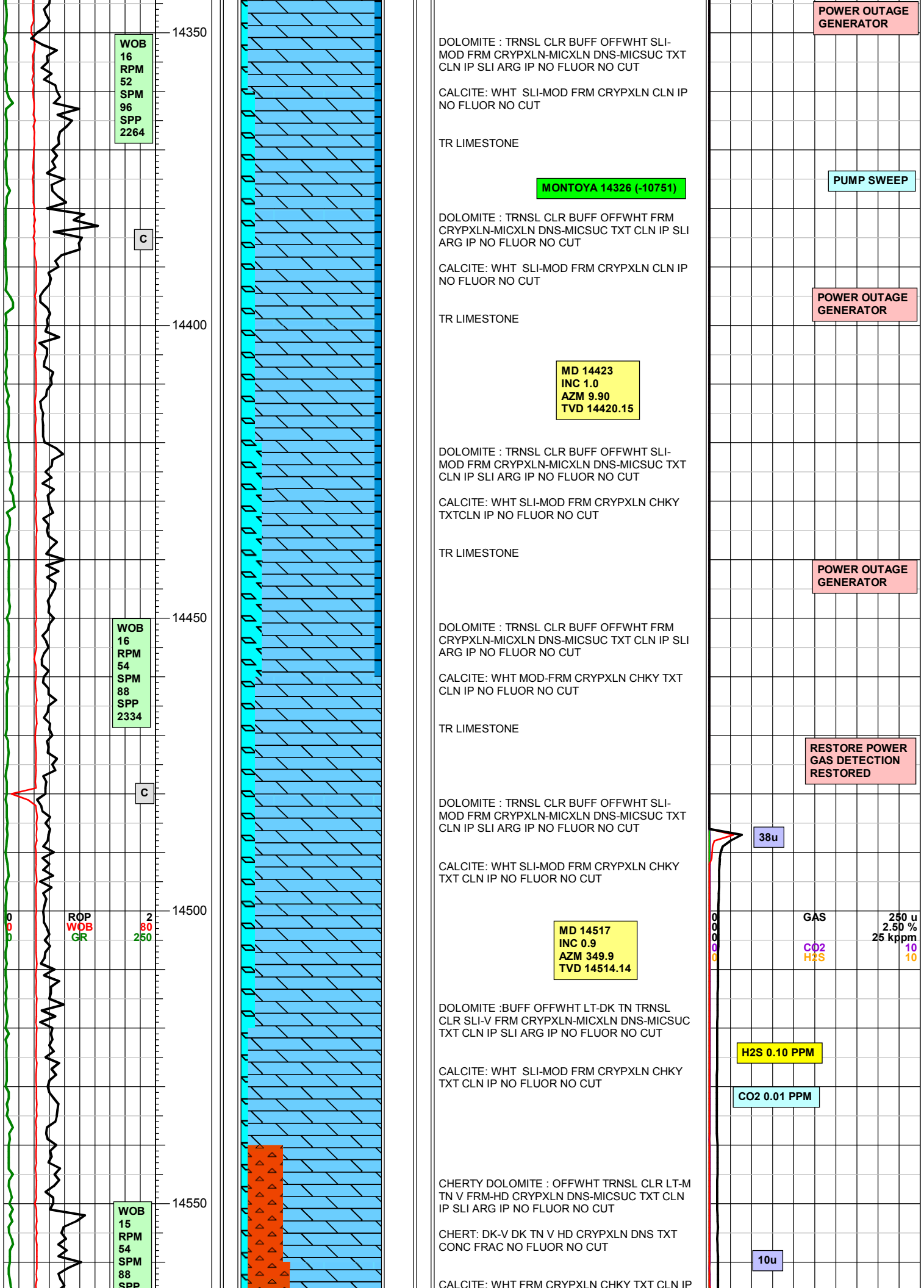

13250
13300
13350
13400
13450
C
BR
C
C
WOB
32.8
RPM
63
SPM
133
SPP
2338
WOB
33.2
RPM
68
SPM
130
SPP
2330
WOB
29.4
CALC IP PYR INCL 5-10% TR BLK RED TO BRN FLUOR SM SLI TR STRM LT BLU WH BLU GRN RESID CUT
CHERT: TN TRNSL TO OPQ VDKGYBRN GYBRN OPQ TO TRNSL LTBLUWH OPQ WH OPQ BLK DKBRN OPQ VHD REXLN VITR VCALC IP RIP LAM NO PHI NO FLUOR NO CUT
CORRELATION MKR 13292 (-9714)
MD 13302
INC 1.10
AZM 265.00
TVD 13299.36
LIMESTONE: MOTT LTGY MEDGY FRM FRI BRTL CRYPTXLN SM MICROXLN CHLKY IP NO FLUOR NO CUT
SHALE: VDKGY DKBRN SM BLK FRI FRM SFT SB BLKY MOD ORGN RICH SM TR COAL IP SILICIC CMT IP CALC TR PYR TR 10% RED BRN FLUOR TR STRM LT BLU WH FR BLU GRN RESID CUT
CHERT: LTTN MEDBRN TRNSL OPQ SM BLUGY SM DKBRN HD VHD POSS REXLN SLI VITR VCALC NO FLUOR NO CUT
TR SILTSTONE
TR COAL
SHALE: VDKBRN SM BLK FRI FRM SLI SFT SB RND AMORPH PLTY MOD ORGN RICH SM TR COAL CALC CMT SM TR SLT TR 10% RED BRN FLUOR TR STRM LT BLU WH FR BLU GRN THICK RESID CUT
LIMESTONE: MOTT LTGY SM MEDGY FRM SM SLI SFT BRTL CRYPTXLN OCC MICROXLN POSS CHLKY NO FLUOR NO CUT
CHERT: MEDTN LTBRN OCC MEDBRN DK BRN OCC TRNSL HD VHD POSS REXLN VITR NO FLUOR NO CUT
TR COAL
TR CALCITE
TR SILTSTONE
MD 13396
INC 0.40
AZM 288.80
TVD 13393.35
SHALE: DKBRN OCC BLK SFT OCC FRM RND SB RND AMORPH PLTY TR ORGN RICH SM TR SLT TR 10% RED BRN FLUOR TR STRM LT BLU WH FR BLU GRN THICK RESID CUT
LIMESTONE: MOTT MEDGY LTGY FRM SFT SM SLI BRTL CRYPTXLN TR MICROXLN NO FLUOR NO CUT
CHERT: MEDTN LTTAN SM DK BRN VHD POSS REXLN SM VITR NO FLUOR NO CUT
TR CALCITE
TR SILTSTONE
VIS 42
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 10
CG 1421u
13280 FT
MW 9.5
VIS 41
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 14
1201u
13310 FT
MW 9.4
VIS 42
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 9
CO2
0.02
PPM
1856u
H2S
1.78
PPM
2093u
13355 FT
MW 9.5
VIS 42
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 8
CG 1820
1698u
H2S
0.12
PPM
2083u
13420 FT
MW 9.5
VIS 42
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 8
CO2
0.29
PPM
13440 FT
MW 9.5
VIS 42
FIL N/A
CK N/A
PH 10.0
CL N/A
WL 8
POWER OUTAGE GENERATOR
RESTORE POWER

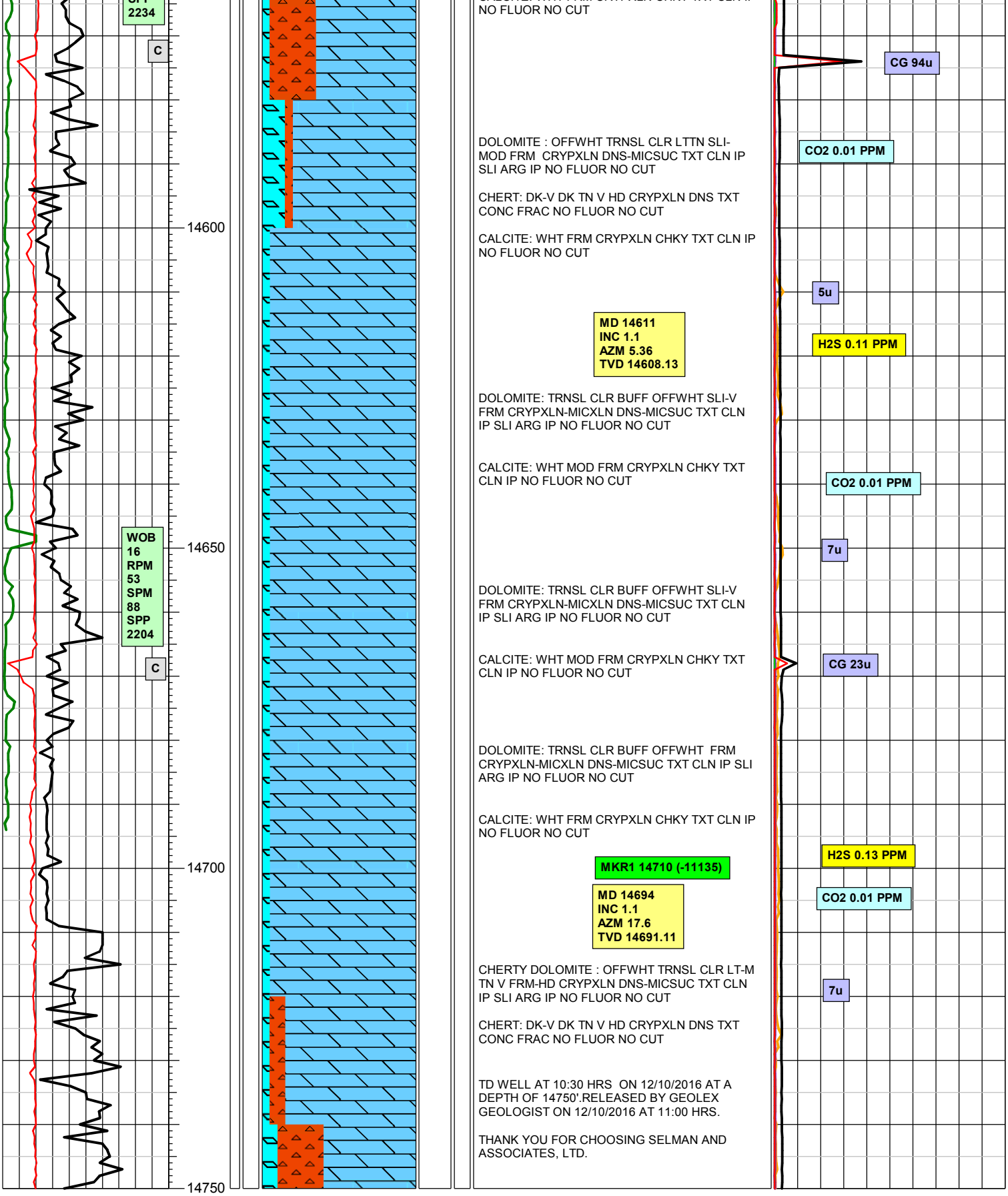

RPM 67
SPM 127
SPP 2403
13500
TOOH @ 13530 FOR BIT
11/28/16
C
WOB 20.9
RPM 64
SPM 130
SPP 2217
13550
13600
SCALE CHANGE
ROP
WOB
GR
TOOH @ 13622 FOR E-LOGS & CASING
11/29-12/9/16
NO
C
F.I.T 425 PSI
13650
BR
WOB 12
RPM 41
SPM 86
SPP 2093
CORRELATION MKR 13472 (-9894)
MD 13456
INC 0.70
AZM 6.30
TVD 13453.35
WOODFORD 13489 (-9911)
SHALE: VDKBRN BLK VSFT SB RND SB BLKY OCC PLTY TR SLT TR 15 TO 20% YEL ORNG BRN FLUOR FR STRM LT BLU WH CUT FR BLU GRN THICK RESID CUT
LIMESTONE: MOTT OFFWHT LTGY FRM BRTL MICROXLN CRYPTXLN NO FLUOR NO CUT
CHERT: LTTAN SM DK BRN BRTL HD VITR NO FLUOR NO CUT
TR CALCITE
TR SILTSTONE
TR PYRITE
MD 13501
INC 1.20
AZM 32.10
TVD 13498.34
TOOH FOR MWD TOOLS @ 13530'. USING BIT #11 MFG:HTC SIZE:8 3/4" TYPE:TD507FX JETS:7X13 DEPTH IN:13530'.
SHALE/SILTSTONE: DKGY DKGYBRN BLK SFT FRI SB BRTL TO DUCTL SB PLTY SB BLKY VVSLTY MOD TO GD ORGN RICH F LAM TR COAL INCL FRAC FILL CALC VSLI TR CALC INCL 20-50% BLK BRN TO BLK RED FLUOR
TR LIMESTONE TR COAL TR CALCITE
LIMESTONE: WH IP TR GY LTGY MOTT IP FRI SLI SFT SB BRTL CRYPTXLN SLI CHLKY REXLN DETRITAL UPPER SLOPE FACIES STYLO IP F LAM NO FLUOR NO CUT
CHERT: WH CLR SEMI TRNSL OPQ LTBRN BUFF HD FRM SLI BRTL FLKY PLTY CONCH SM TR VUGGY PHI NO FLUOR NO CUT
MD 13597
INC 3.00
AZM 47.00
TVD 13594.27
SHALE/SILTSTONE: DK BLK SFT FRI SB BRTL-DUCTL VV GD ORGN RICH F LAM TR COAL CALC VSLI TR CALC INCL 20-50% BLK BRN TO BLK RED FLUOR
DEVONIAN 13617 (-10039)
TOOH @ 13622 TO RUN E-LOG AND SET 7" 29# CASING AND CEMENT.
DRILL CEMENT AND FLOAT EQUIPMENT ON 12/7/16 W BIT #11 6" BAKER HUGHES STX-30 SN 5246093 JETS 3X30 TO A DEPTH OF 13592' W MW 8.33 VIS 28 PH 7. TOOH TO RUN RADIO AND BOND E LOGS.
B.O.B ON 12/9/2016 @ 06:45 HRS W BIT # 12 6" BAKER HUGHES Q406FX SN 7149715 JETS 2X10 4X16 W MW 8.4 VIS 28 PH 7
MD 13671
INC 0.70
AZM 23.60
TVD 13668.00
LIMESTONE: WHT OFFWHT LTTN SFT-MOD FRM CRYP-MICXLN CHKY-DNS TXT CLN IP SLI ARG IP NO FLUOR NO CUT
SHALE: M GY SLI-MOD FRM SBLKY-SBPLTY SMTH-GRTY TXT NO FLUOR TR MLKY-STRM
GAS DETECTION RESTORED
CO2 0.31 PPM
1769u
2055U
H2S 0.18 PPM
1410u
TG 5986u
H2S 0.15 PPM
CO2 0.15 PPM
1483u
13520 FT
MW 9.35
VIS 42
FIL N/A
CK N/A
PH 9.5
CL N/A
WL 9
CO2 0.89 PPM
2034u
H2S 0.19 PPM
CG 3044u
TG 7840u
SCALE CHANGE
GAS
CO2
H2S
100u
CALC. LAG @ 13622'
BTTM UP STKS 3491
TRANSFER TIME
50 STKS
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
H2S 0.67 PPM


CUT THIN YLW RES RNG CUT
IC4=400u
NC4=400u
7u
13700
LIMESTONE: WHT OFFWHT TRANSL VLTTAN SFT SM FRM MICXLN SM CHKY OCC ARG SUB RND RND IP SB BLKY NO FLUOR TR LT GRN BLU STRMING CLDY CUT TR THIN GRN RESID CUT
CO2 0.05 PPM
TR SHALE
TR CALITE
C
LIMESTONE: OFFWHT SM TRANSL TR LTTAN SFT SM SLI FRM MICXLN POSS CHKY SM ARG SUB RND RND AMORPH SM PLTY NO FLUOR TR LT BLU STRMING MLKY CUT TR THIN GRN RESID CUT
TR SHALE
TR CALCITE
13750
5u
MD 13765
INC 1.00
AZM 18.90
TVD 13762.00
WOB 11.7
RPM 53
SPM 86
SPP 2209
LIMESTONE: OFFWHT TR TRANSL TO OPQ SLI SFT FRM MICXLN IP CRYPXLN TR CHKY TR ARG RND AMORPH NO FLUOR TR LT BLU STRMING MLKY CUT TR THIN GRN RESID CUT
TR SHALE
CO2 0.03 PPM
WRISTEN 13787 (-10212)
H2S 0.68 PPM
13800
LIMESTONE: WHT OFFWHT OCC TRANSL SLI SFT SLI FRM CRYPT-MICXLN CHKY TR ARG RND AMORPH TR 5% LT BLU FLUOR TR LT BLU STRMING CUT TR THIN GRN RESID CUT
5u
SHALE: DK GY M GY SFT OCC SLI FRM SBLKY PLTY AMORPH SMTH-GRTY TXT NO FLUOR NO CUT NO RES CUT
TR SHALE
TR CHERT
C
2u
MD 13860
INC 0.80
AZM 34.00
TVD 13857.00
13850
WOB 16.1
RPM 57
SPM 86
SPP 2269
LIMESTONE: MED GY LT GY OCC OFF WHT BUFF LT TAN FRM OCC SLI SFT MICXLN BLKY SUB BLKY PLTY SUB RND POSS SKEL DEBRIS NO FLUOR TR LT BLU STRMING CUT TR THIN GRN RESID CUT
2u
TR DOLOMITE
H2S 0.66 PPM
TR CHERT
TR SILTSTONE
LIMESTONE: LT GY OCC MED GY SM OFF WHT BUFF FRM SFT CRYP-MICXLN SUB BLKY SUB PLTY SM RND SLI CHKY NO FLUOR NO CUT NO RESID CUT
13900
TR DOLOMITE


C
13950
WOB
16.5
RPM
55
SPM
86
SPP
2121
0
ROP
2
0
WOB
80
0
GR
250
14000
C
14050
WOB
16.4
RPM
57
SPM
86
SPP
2218
14100
C
NO
TR CALCITE
LIMESTONE: MED GY LT BRN SM OFF WHT FRM SLI SFT CRYP-MICXLN SUB RND TR CHKY NO FLUOR NO CUT NO RESID CUT
DOLOMITE: OFFWH WH FRM BRTL SLI HD SUB BLKY MICROXLN POSS SM RXLN TR DULL YEL GRN FLUOR NO CUT
TR CALCITE
TR SAND
FUSSELMAN 13950 (-10375)
MD 13954
INC 0.90
AZM 53.80
TVD 13951.00
LIMESTONE: LT GY LT BRN OFF WHT OCC MED BRN MED GY FRM SFT CRYP RND SUB RND SM CHKY NO FLUOR NO CUT NO RESID CUT
DOLOMITE: MOTT OFFWH WH FRM BRTL OCC HD SUB BLKY AMORPH MICROXLN POSS SM RXLN TR DULL YEL GRN FLUOR NO CUT
TR SAND
LIMESTONE: VLT GY OFF WHT SM TRANSL SFT OCC SLI FRM CRYP RND SM SUB RND NO FLUOR NO CUT NO RESID CUT
DOLOMITE: MOTT OFFWH LT GY SLI FRM BRTL SUB BLKY SUB RND MICROXLN-CRYPXLN POSS SM RXLN TR DULL LT BLU FLUOR NO CUT
TR SHALE TR CALCITE
MD 14048
INC 0.80
AZM 339.10
TVD 14045.19
LIMESTONE: VLT GY OFF WHT SM BUFF LT TAN SLI SFT CRYP RNDPOSS SLI CHKY NO FLUOR NO CUT NO RESID CUT
TR DOLOMITE
TR SHALE
TR CALCITE
LIMESTONE: OFF WHT LT GYOCC TRANSL FRM SFT CRYP RND SM SUB RND TR CHKY TR V DULL LT BLU WHT FLUOR NO CUT NO RESID CUT
TR DOLOMITE
TR SHALE
TR CALCITE
DOLOMITE : WHT TRNSL CLR SFT-FRM CRYPXLN-MICXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
MD 14142
INC 0.80
AZM 353.70
TVD 14139.18
1u
CO2 0.02 PPM
H2S 0.29 PPM
13965 FT
MW 8.35
VIS 28
FIL N/A
CK N/A
PH N/A
CL N/A
WL N/A
1u
0
GAS
250 u
0
2.50 %
0
25 kppm
0
CO2
10
0
H2S
10
CO2 0.02 PPM
1u
14080 FT
MW 8.4
VIS 28
FIL N/A
CK N/A
PH N/A
CL N/A
WL N/A
CALIBRATION
1%=100u
10%=1000u
C1=100u
C2=200u
C3=300u
IC4=400u
NC4=400u
H2S 0.58 PPM
PUMP SWEEP
CLEANED OUT POSSUM BELLY @ 14105


14150
14200
14250
14300
WOB
16
RPM
52
SPM
96
SPP
1971
12/10/2016
C
WOB
15
RPM
52
SPM
95
SPP
2278
C
LIMESTONE: WHT OFFWHT LTTN SFT-FRM CRYP-MICXLN CHKY-DNS TXT CLN IP SLI ARG IP NO FLUOR NO CUT
DOLOMITE : WHT TRNSL CLR SFT-FRM CRYPXLN-MICXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
TR SHALE
LIMESTONE: WHT OFFWHT LTTN SFT-FRM CRYP-MICXLN CHKY-DNS TXT CLN IP SLI ARG IP NO FLUOR NO CUT
DOLOMITE : WHT TRNSL CLR SFT-FRM CRYPXLN-MICXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
TR SHALE
LIMESTONE: WHT OFFWHT LTTN SFT-FRM CRYP-MICXLN CHKY-DNS TXT CLN IP SLI ARG IP NO FLUOR NO CUT
DOLOMITE : WHT TRNSL CLR SFT-FRM CRYPXLN-MICXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
TR SHALE
MD 14236
INC 0.60
AZM 359.30
TVD 14233.17
LIMESTONE: WHT OFFWHT LTTN SLI-MOD FRM CRYP-MICXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
DOLOMITE : OFFWHT TRNSL CLR MOD-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
TR SHALE
TR CALCITE
DOLOMITE : TRNSL CLR SLI-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
LIMESTONE: OFFWHT LTTN SLI-MOD FRM CRYOXLN CHKY TXT CLN IP SLI ARG IP NO FLUOR NO CUT
TR SHALE
TR CALCITE
DOLOMITE : TRNSL CLR SLI-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CLN IP NO FLUOR NO CUT
TR LIMESTONE
MD 14329
INC 0.80
AZM 10.20
TVD 14326.16
1u
CO2 0.02 PPM
14140 FT
MW 8.4
VIS 28
FIL N/A
CK N/A
PH N/A
CL N/A
WL N/A
H2S 0.50 PPM
CG 82u
H2S 0.50 PPM
6u
14260 FT
MW 8.38
VIS 28
FIL N/A
CK N/A
PH N/A
CL N/A
WL N/A
CO2 0.02 PPM
CG 74u
H2S 0.74 PPM


14350
14400
14450
14500
14550
WOB 16 RPM 52 SPM 96 SPP 2264
C
WOB 16 RPM 54 SPM 88 SPP 2334
C
WOB 15 RPM 54 SPM 88 SPP
0 ROP 2
0 WOB 80
0 GR 250
DOLOMITE : TRNSL CLR BUFF OFFWHT SLI-MOD FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CLN IP NO FLUOR NO CUT
TR LIMESTONE
MONTOYA 14326 (-10751)
DOLOMITE : TRNSL CLR BUFF OFFWHT FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CLN IP NO FLUOR NO CUT
TR LIMESTONE
MD 14423
INC 1.0
AZM 9.90
TVD 14420.15
DOLOMITE : TRNSL CLR BUFF OFFWHT SLI-MOD FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CHKY TXTCLN IP NO FLUOR NO CUT
TR LIMESTONE
DOLOMITE : TRNSL CLR BUFF OFFWHT FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT MOD-FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
TR LIMESTONE
DOLOMITE : TRNSL CLR BUFF OFFWHT SLI-MOD FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
MD 14517
INC 0.9
AZM 349.9
TVD 14514.14
DOLOMITE :BUFF OFFWHT LT-DK TN TRNSL CLR SLI-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT SLI-MOD FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
CHERTY DOLOMITE : OFFWHT TRNSL CLR LT-M TN V FRM-HD CRYPXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CHERT: DK-V DK TN V HD CRYPXLN DNS TXT CONC FRAC NO FLUOR NO CUT
CALCITE: WHT FRM CRYPXLN CHKY TXT CLN IP
POWER OUTAGE GENERATOR
PUMP SWEEP
POWER OUTAGE GENERATOR
POWER OUTAGE GENERATOR
RESTORE POWER GAS DETECTION RESTORED
38u
0 GAS 250 u
0 2.50 %
0 25 kppm
0 CO2 10
0 H2S 10
H2S 0.10 PPM
CO2 0.01 PPM
10u


SPP
2234
C
14600
WOB
16
RPM
53
SPM
88
SPP
2204
C
14650
14700
14750
NO FLUOR NO CUT
CG 94u
DOLOMITE : OFFWHT TRNSL CLR LTTN SLI-MOD FRM CRYPXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CO2 0.01 PPM
CHERT: DK-V DK TN V HD CRYPXLN DNS TXT CONC FRAC NO FLUOR NO CUT
CALCITE: WHT FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
5u
MD 14611
INC 1.1
AZM 5.36
TVD 14608.13
H2S 0.11 PPM
DOLOMITE: TRNSL CLR BUFF OFFWHT SLI-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT MOD FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
CO2 0.01 PPM
7u
DOLOMITE: TRNSL CLR BUFF OFFWHT SLI-V FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT MOD FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
CG 23u
DOLOMITE: TRNSL CLR BUFF OFFWHT FRM CRYPXLN-MICXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
CALCITE: WHT FRM CRYPXLN CHKY TXT CLN IP NO FLUOR NO CUT
H2S 0.13 PPM
MKR1 14710 (-11135)
CO2 0.01 PPM
MD 14694
INC 1.1
AZM 17.6
TVD 14691.11
CHERTY DOLOMITE : OFFWHT TRNSL CLR LT-M TN V FRM-HD CRYPXLN DNS-MICSUC TXT CLN IP SLI ARG IP NO FLUOR NO CUT
7u
CHERT: DK-V DK TN V HD CRYPXLN DNS TXT CONC FRAC NO FLUOR NO CUT
TD WELL AT 10:30 HRS ON 12/10/2016 AT A DEPTH OF 14750'.RELEASED BY GEOLEX GEOLOGIST ON 12/10/2016 AT 11:00 HRS.
THANK YOU FOR CHOOSING SELMAN AND ASSOCIATES, LTD.