DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
11/29/12		WVJ		SWD 1385	pWVJ1301752243

ABOVE THIS LINE FOR DIVISION USE ONLY

Final Date 1/16/13

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

HESS CORP, 2030-2055' Perf TUBB FM.

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Rita C. Smith	Rita C. Smith	Senior Regulatory Analyst	11-15-12
Print or Type Name	Signature	Title	Date

Digitally signed by Rita C. Smith
DN: cn=Rita C. Smith, o=Hess Corp, ou=Engineering, email=rsmith@hess.com, c=US
Date: 2012.10.31 16:07:34 -05'00'

Rita C Smith

rsmith@hess.com
e-mail Address

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-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance __x__Disposal _____Storage
Application qualifies for administrative approval? __x__Yes _____No

II. OPERATOR: Hess Corporation

ADDRESS: P.O. Box 840 Seminole, TX 79360

CONTACT PARTY: Danny Holcomb cell 575-650-0316 PHONE: (575)673-6700
Rita C. Smith office (432)758-6726 cell(432)209-1084

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes __x__No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Rita C Smith TITLE: Senior Regulatory Analyst

SIGNATURE: Rita C. Smith Digitally signed by Rita C. Smith DN: cn=Rita C. Smith, o=Hess Corp, ou=Engineering, email=rsmith@hess.com, c=US Date: 2012.10.31 16:37:01 -05'00' DATE: 10-31-2012

E-MAIL ADDRESS: rsmith@hess.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

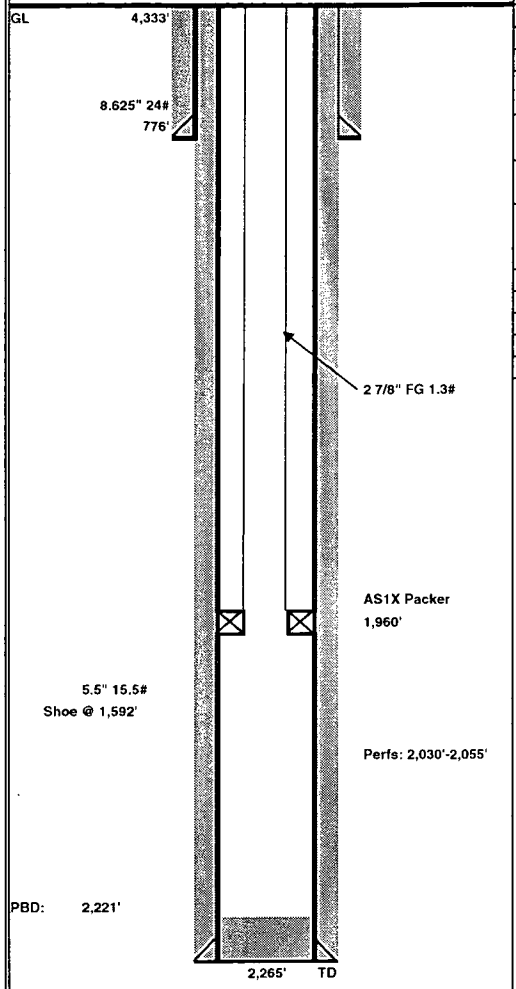
(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

WELLBORE SCHEMATIC AND HISTORY

COMPLETION SCHEMATIC



LEASE NAME	Bravo Dome West		API #	30-021-20540	WELL NO. 1830-271F
TYPE COMPLETION:	☒ SINGLE	☐ DUAL	☐		
LOCATION:	1650' FNL & 1650' FWL, Sec 27, T.18 N., R. 30 E				
TD 2,265'	PBD 2,221'		KB 4,345'	DF 4,344'	
COD	DOD 2,221'		GL 4,333'		
NO. PROD. WELLS ON LEASE	PRODUCTION SWD		Flowing		
ZONE TO BE WORKED ON:			CURRENT COMPLETION ZONE:		
CSG. PERFS: 2,030'-2,055'			Open Hole:		
CURRENT TEST (SHOW DATE)					

CASING BREAKDOWN				
SURF. 12 1/4	" hole	SIZE: 8.625" 24#	DEPTH	776'
INTER. 7 7/8	" hole	SIZE: 5.5" 15.5#	DEPTH	2,251
Liner	" hole	SIZE:	DEPTH	
TUBING		SIZE: 2 7/8" FG 1.3#	OE DEPTH	1,960'

Notes:

PREPARED BY:	Dan Cordle	1/12/2013

Side 1

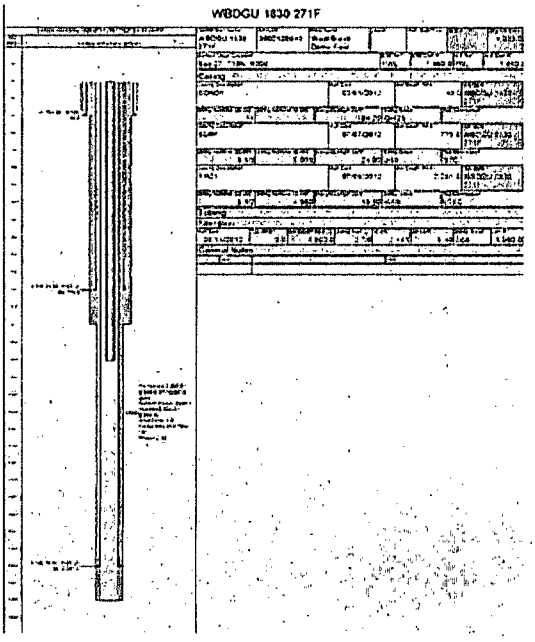
INJECTION WELL DATA SHEET

OPERATOR: Hess Corporation

WELL NAME & NUMBER: WBDU 1830 271F API # 30-021-20540

WELL LOCATION:	1650' FNL & 1650' FWL	F	27	18N	30E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12.25" Casing Size: 8 5/8"

Cemented with: 415 sx. *or* _____ ft³

Top of Cement: surface 0' Method Determined: Circ

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. *or* _____ ft³

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 7 7/8" Casing Size: 5 1/2"

Cemented with: 332 sx. *or* _____ ft³

Top of Cement: surf Method Determined: circ

Total Depth: 2251'

Injection Interval

2030' 2035' feet to 2035' perf 2055' perf

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 2 7/8" Lining Material: Fiber glass tbg.

Type of Packer: ArrowSet 1

Packer Setting Depth: 1960'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____Yes __x__No

   If no, for what purpose was the well originally drilled? CO2 well

2. Name of the Injection Formation: Tubb

3. Name of Field or Pool (if applicable): West Brave Dome CO2 Gas

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. No. This well was perforated in the upper and middle Tubb (2,030'-2,055') and produced water.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

   overlying zone Depth:Cimarron 1949' MD, Underlying zone:Granite Wash/ABO 2181' MD

   No oil or gas zones underlie or overlie the proposed injection zone.

   CO2 is produced from the Tubb Formation updip, above the GWC.

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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 July 16, 2010

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-021-20540	96387	West Bravo Dome CO2 GAS

Property Code	Property Name	Well Number
16752	West Bravo Dome Unit WBDGU 1830	271F

OGRID No.	Operator Name	Elevation
495	HESS CORPORATION	4333'

Surface Location

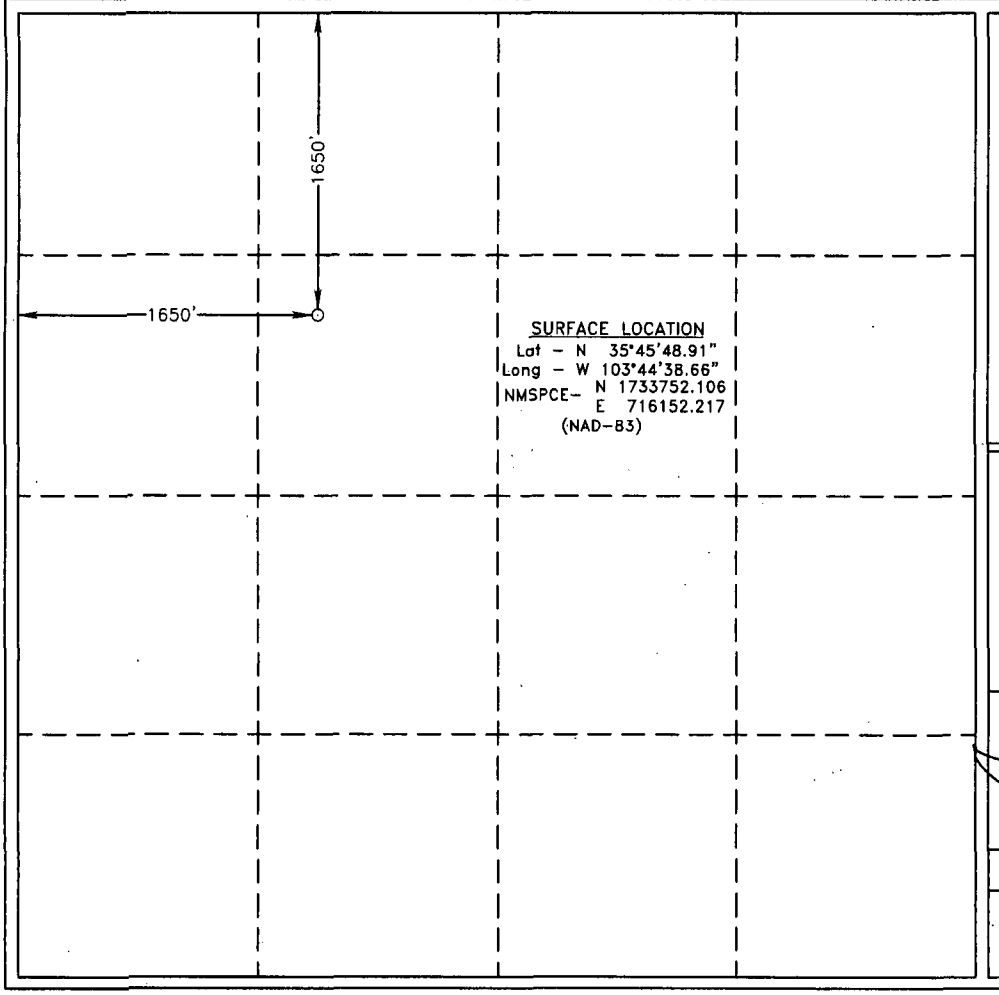
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	27	18 N	30 E	F	1650	NORTH	1650	WEST	HARDING

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.
640.00		U	

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.

Digitally signed by Rita C. Smith
DN: cn=Rita C. Smith, o=Hess Corp, ou=Engineering, email=rsmith@hess.com, c=US
Date: 2011.11.21 14:39:23 -06'00'

Rita C. Smith

Signature Date

Rita C Smith

Printed Name

rsmith@hess.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.

GARY L. JONES
JUNE 27, 2011
NEW MEXICO
7977
REGISTERED PROFESSIONAL LAND SURVEYOR

Date Surveyed

Signature & Seal of Professional Surveyor

NM PE/PS 14714

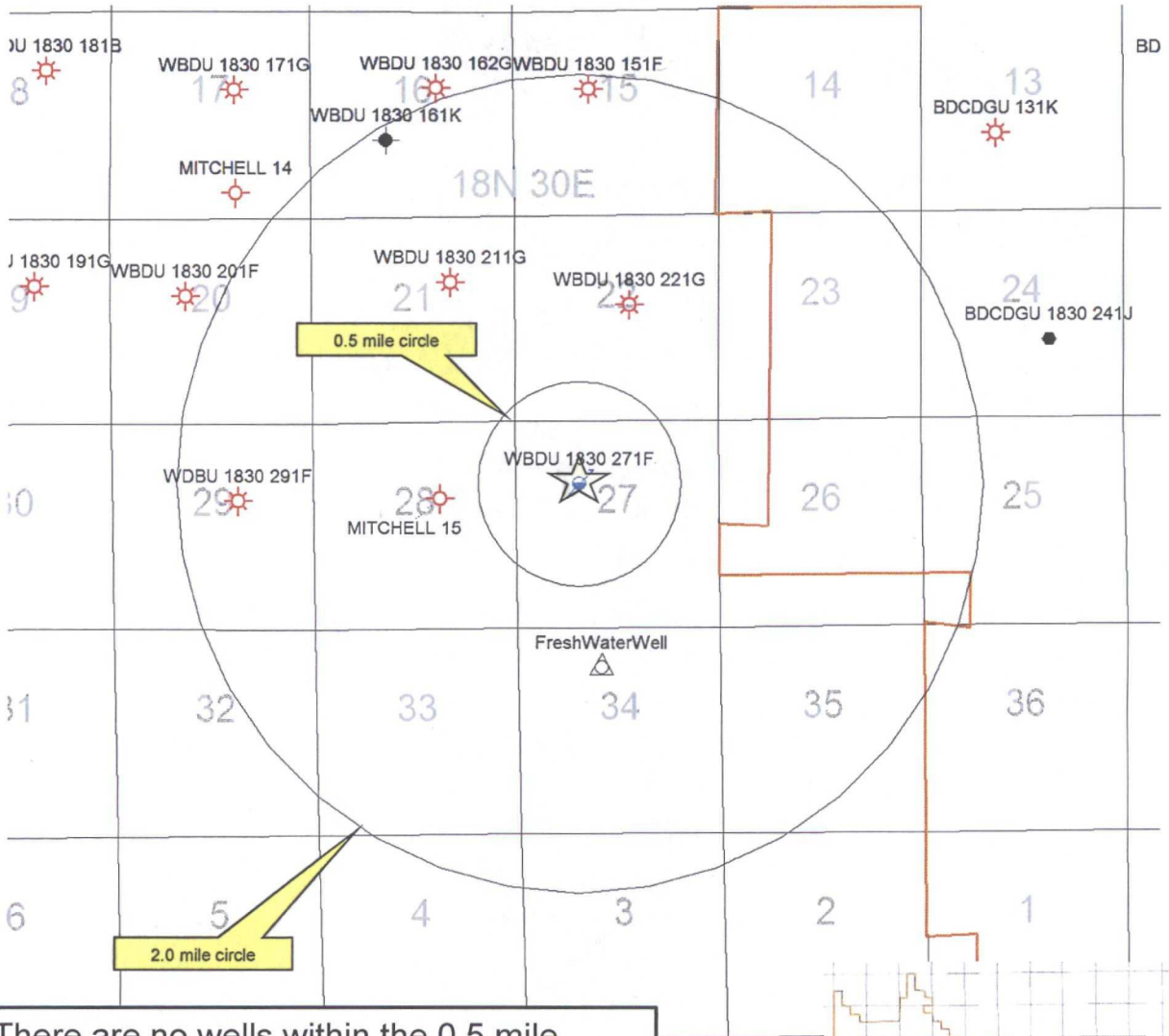
Certificate No. Gary L. Jones 7977

BASIN SURVEYS 23207

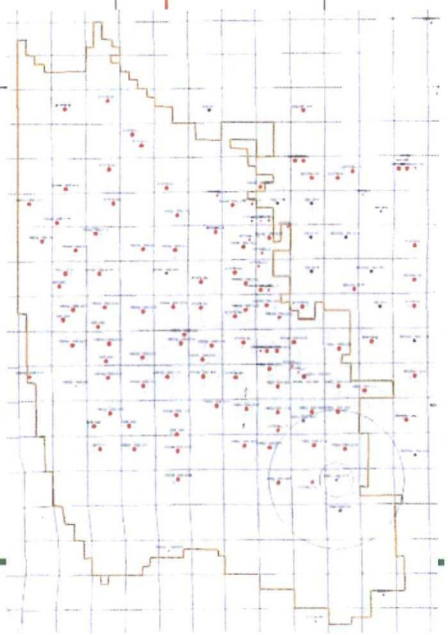
IV. Expansion of an existing project? NO

Unconventionals Business Unit – West Bravo Dome

0.5 Mile Radius Situation Map



- There are no wells within the 0.5 mile radius from this proposed SWD well.
- There is a fresh water well (windmill) approx 0.9 mi south of the proposed SWD.
- Structurally, this well is downdip from the rest of the West Bravo Dome Unit.
- All four CO2 gas wells within the 2 mile circle also produce water.
- Generally, the Tubb Formation penetrated in the southeastern portion of the WBDU has been wet.



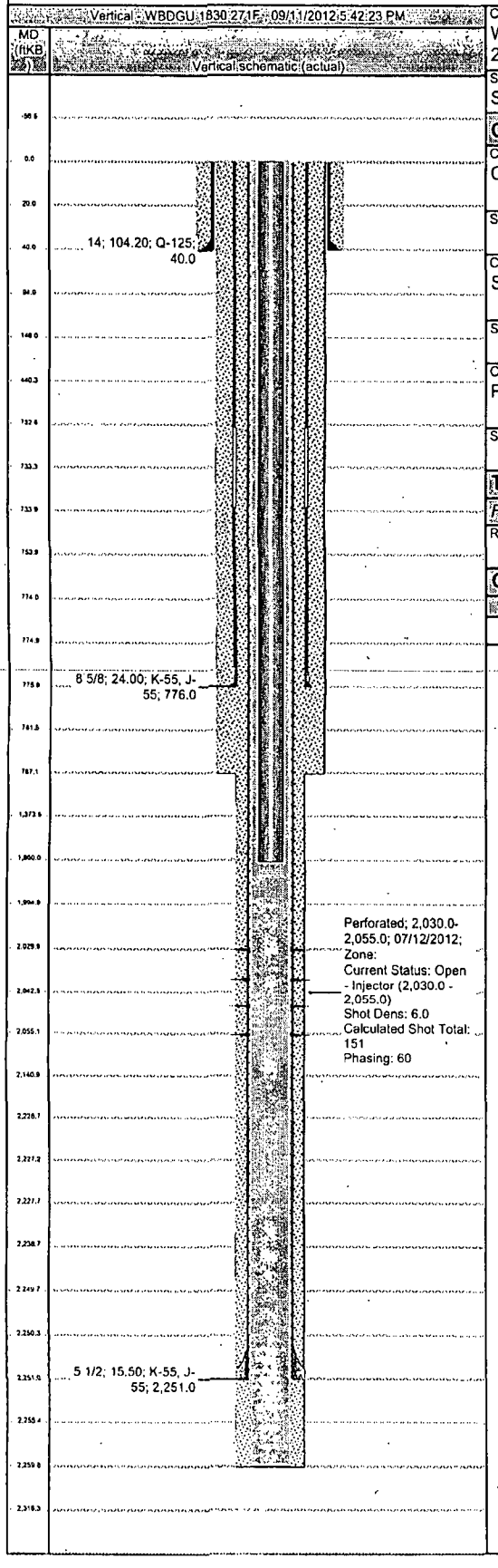
November 12, 2012

HESS CORPORATION

PERMIAN BUSINESS UNIT

Production Schematic and Well Summary

WBDGU 1830 271F



Comm Well Name	API/UWI	Field Name	Lease	Well Sub-Type	Gr Elev (ft)	Orig KB Elev...
WBDGU 1830 271F	3002120540	West Bravo Dome Field				4,333.00

Surface Legal Location	E/W Ref	E/W Dist (ft)	N/S Ref	N/S Dist (ft)
Sec 27, T18N, R30E	FWL	1,650.0	FNL	1,650.0

Casing

Casing Description	Run Date	Set Depth (ftKB)	Wellbore
COND1	03/01/2012	40.0	WBDGU 1830 271F

String Nominal OD (in)	String Nominal ID (in)	Weight/Length (lb/ft)	String Grade	Top Connection
14		104.20	Q-125	

Casing Description	Run Date	Set Depth (ftKB)	Wellbore
SURF	07/07/2012	776.0	WBDGU 1830 271F

String Nominal OD (in)	String Nominal ID (in)	Weight/Length (lb/ft)	String Grade	Top Connection
8 5/8	8.098	24.00	J-55	STC

Casing Description	Run Date	Set Depth (ftKB)	Wellbore
PRC1	07/08/2012	2,251.0	WBDGU 1830 271F

String Nominal OD (in)	String Nominal ID (in)	Weight/Length (lb/ft)	String Grade	Top Connection
5 1/2	4.950	15.50	K-55	LT&C

Tubing

Fiberglass

Run Date	Top (ftKB)	Set Depth (ftKB)	String Max...	ID (in)	Wt (lb/ft)	String Grade	Len (ft)
08/14/2012	0.0	1,960.0	2 7/8	2.441	6.40	J-55	1,960.00

General Notes

Date	Com

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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
August 1, 2011

Permit 140535

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
HESS CORPORATION P.O. Box 840 Seminole, TX 79360	495
	3. API Number 30-021- 20540

4. Property Code	5. Property Name	6. Well No.
16752	WEST BRAVO DOME UNIT	271F

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
F	27	18N	30E	F	1650	N	1650	W	HARDING

8. Pool Information

WEST BRAVO DOME CO2 GAS	96387

Additional Well Information

9. Work Type	10. Well Type	11. Cable/ Rotary	12. Lease Type	13. Ground Level Elevation
New Well	CO2		Private	4333
14. Multiple	**15. Proposed Depth**	**16. Formation**	**17. Contractor**	**18. Spud Date**
N	2209	Granite Wash		

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	12.25	8.625	24	1600	550	0
Prod	7.875	5.5	15.5	3000	360	0

Casing/Cement Program: Additional Comments

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
DoubleRam	2000	2000	Shaffer

District I
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-102
August 1, 2011

Permit 140535

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number	2. Pool Code	3. Pool Name	
30-021-20540	96387	WEST BRAVO DOME CO2 GAS	
4. Property Code	5. Property Name		6. Well No.
16752	WEST BRAVO DOME UNIT		271F
7. OGRID No.	8. Operator Name		9. Elevation
495	HESS CORPORATION		4333

10. Surface Location

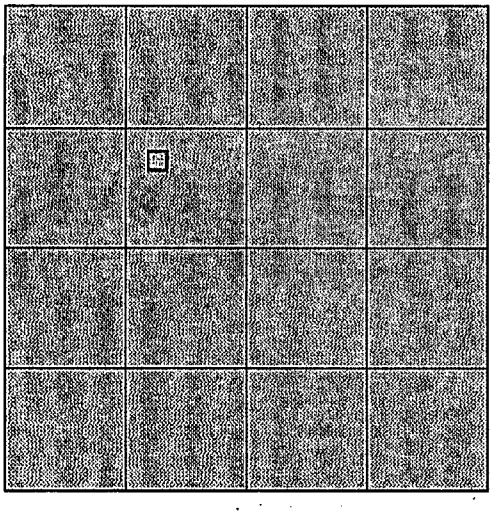
UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
F	27	18N	30E	F	1650	N	1650	W	HARDING

11. Bottom Hole Location If Different From Surface

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County

12. Dedicated Acres	13. Joint or Infill	14. Consolidation Code	15. Order No.
640.00		Unitization	

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(s) 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.

E-Signed By: Rita Smith
Title: Engineering Tech
Date: 11/21/2011

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 supervision, and that the same is true and correct to the best of my belief.

Surveyed By: Gary Jones
Date of Survey: 6/27/2011
Certificate Number: 7977

District I
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-103
August 1, 2011

Permit 154976

WELL API NUMBER	30-021-20540
5. Indicate Type of Lease	P
6. State Oil & Gas Lease No.	
7. Lease Name or Unit Agreement Name	WEST BRAVO DOME UNIT
8. Well Number	271F
9. OGRID Number	495
10. Pool name or Wildcat	

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFRENT RESERVIOR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: C

2. Name of Operator: HESS CORPORATION

3. Address of Operator: P.O. Box 840, Seminole, TX 79360

4. Well Location
Unit Letter F : 1650 feet from the N line and 1650 feet from the W line
Section 27 Township 18N Range 30E NMPM Harding County

11. Elevation (Show whether DR, KB, BT, GR, etc.)
4333 GR

Pit or Below-grade Tank Application ☐ or Closure ☐
Pit Type _____ Depth to Groundwater_____ Distance from nearest fresh water well_____ Distance from nearest surface water_____
Pit Liner Thickness:_____ mil Below-Grade Tank: Volume_____ bbls; Construction Material_____

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 ☐	ALTER CASING ☐
TEMPORARILY ABANDON ☐	CHANGE OF PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDON ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
Other:		Other: **Spud**	☒

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 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

7/6/2012 Spudded well.

spud well at 1600 hrs

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE _____ TITLE _____ DATE _____

Type or print name _____ E-mail address _____ Telephone No. _____

For State Use Only:

APPROVED BY: _____ TITLE _____ DATE _____

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 August 1, 2011

WELL API NO. 30-021-20540

5. Indicate Type of Lease STATE ☐ FEE ☐ P

6. State Oil & Gas Lease No.

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: West Bravo Dome Unit

1. Type of Well: Oil Well ☐ Gas Well ☐ Other X CO2

8. Well Number 271F

2. Name of Operator Hess Corporation

9. OGRID Number 495

3. Address of Operator PO Box 840 Seminole TX 79360

10. Pool name or Wildcat: West Bravo Dome CO2 Gas

4. Well Location
Unit Letter F : 1650 feet from the N line and 1650 feet from the W line
Section 27 Township 18N Range 30E NMPM County Harding

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 4333 GR

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	☐						
OTHER:	☐			OTHER: Deviation Survey			☒

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.

```
# Pason DataHub Deviation Survey  2012/07/13  11:23:42
# Well Dossier 1341608991 - WBDGU-1830-271F SWD
#

# Date    Depth    Deviation        Direction        TVD      Horiz
07/06/2012        504.00   0.75    0.00     0.00    0.00
07/07/2012        787.00   1.00    0.00     0.00    0.00
07/08/2012       1295.00   1.00    0.00     0.00    0.00
07/08/2012       1772.00   1.00    0.00     0.00    0.00
07/08/2012       2260.00   1.00    0.00     0.00    0.00
07/08/2012       2260.00   1.00    0.00     0.00    0.00
# EOF
```

Spud Date: 07/6/2012 Rig Release Date:

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

SIGNATURE _____ TITLE Engineer Tech DATE 7/13/2012

Type or print name Rita C Smith E-mail address: rsmith@hess.com PHONE: 432-758-6726

For State Use Only

APPROVED BY: _____ TITLE _____ DATE _____

Conditions of Approval (if any):

SWD Well Data Required

VII. Attach data on the proposed operation

1. Proposed average and maximum daily rate and volume of fluids to be disposed

See Attached Page for Rate information:
300 bbl a day was the average and
the Max would be 1,000 bbl/day

2. The system open or closed **Closed**

3. Proposed average and maximum injection pressure average and max injection pressure will be

Average injection pressure of 900 psig, maximum injection pressure of 1200 psig

AVG surface injection pressure

Average surface injection pressure of 1200 psig

4. Sources and an appropriate analysis of injection fluid and compatibility.

See attached water analysis of the offset well 1830-221G. Sources of injection fluid will be Tubb formation produced water. The proposed SWD well is completed in the Tubb formation so waters are compatible.

5. Injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, a chemical analysis.

See attached water analysis of the offset well 1830-221G. This is a representative sample of the injection fluid.

Step Rate Test

Cardinal Surveys Company

16-Aug-12

Hess Corporation
Well: WBDGU 1830-271F
Field; BRAVO DOME
County: Harding County, New Mexico

SC 60092
File No. 20926

Intercept @ 1,093 BPD, 2,251.8 BH PSIA & Surface Intercept @ 1,236 PSIA

Downhole PSI Tool Ser. No. CSC2601
Surface PSI Gauge Ser. No. CSC2602
Tool @ 2.040'

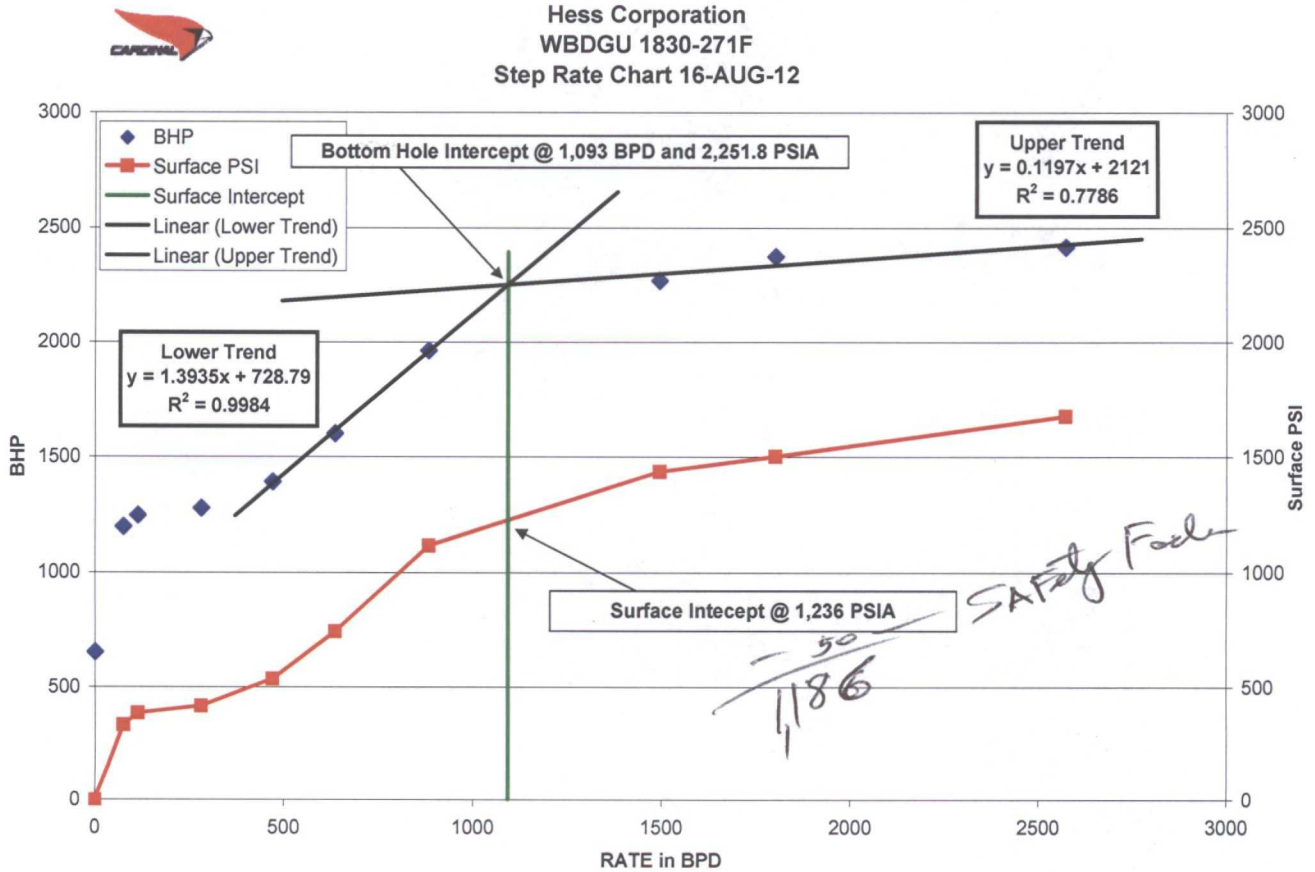
	MDST Start	MDST End	Rate	
1	10:19 AM	11:00 AM	0	2040'
2	11:00 AM	12:00 PM	100	
3	12:00 PM	1:00 PM	200	
4	1:00 PM	2:00 PM	300	
5	2:00 PM	3:00 PM	400	
6	3:00 PM	4:00 PM	600	
7	4:00 PM	5:00 PM	900	
8	5:00 PM	6:00 PM	1200	
9	6:00 PM	7:00 PM	1500	
10	7:00 PM	8:00 PM	2000	
11	8:00 PM	8:30 PM	2500	30 Min. Fall Off
12				
13				
14				
15				
16				
17				
18				

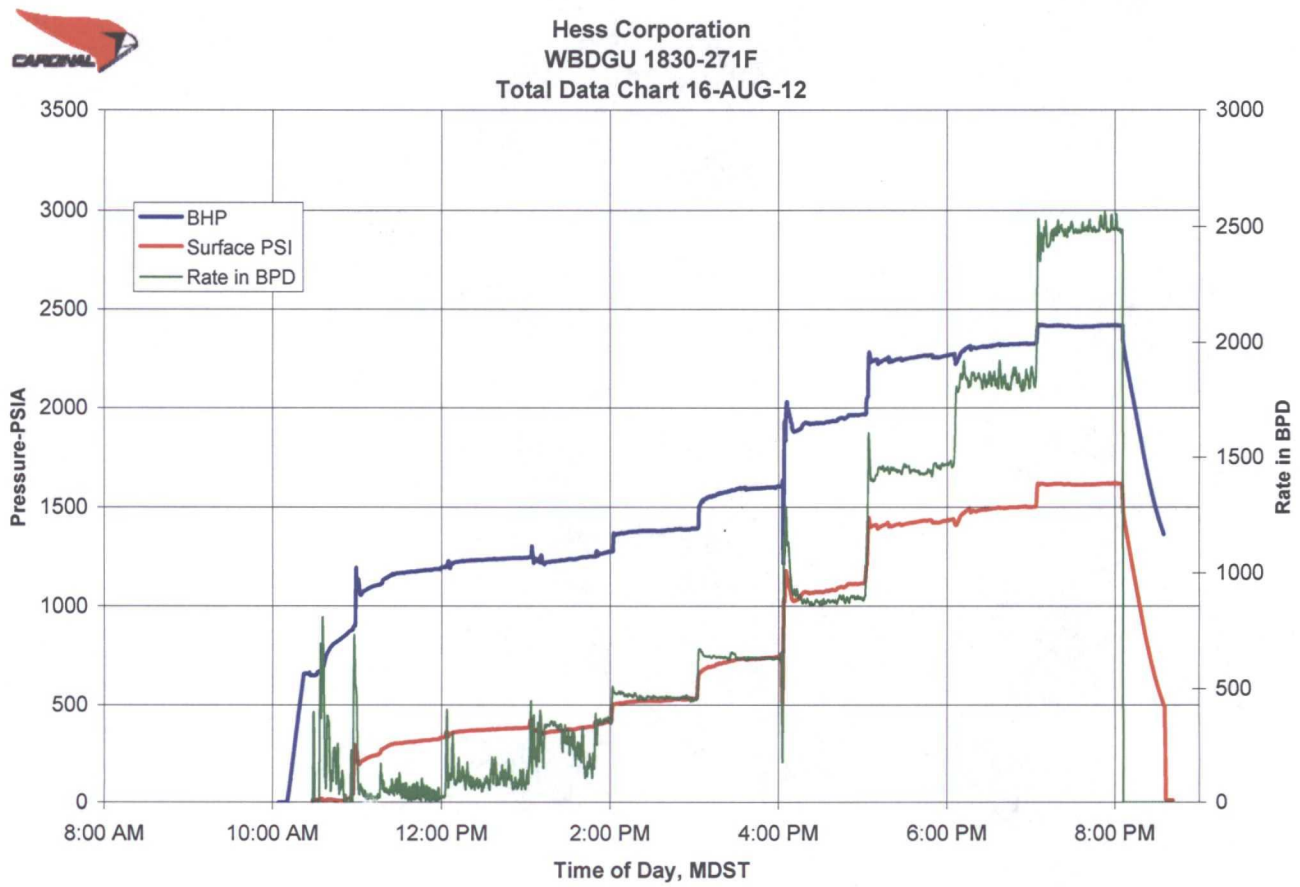
Step Rate Test
16-Aug-12

Hess Corporation
Well: WBDGU 1830-271F
Field: BRAVO DOME
Location: Harding County, New Mexico

	MDST S Time	MDST E Time	D Time Min	Last Rate BPD	Step BPD	BHP PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	10:19 AM	11:00 AM	41	0	0	652.5	0	0	0	0		
2	11:00 AM	12:00 PM	60	100	100	1197.1	334	3.1	3.1	74		
3	12:00 PM	1:00 PM	60	200	100	1246.5	386.2	7.8	4.7	113		
4	1:00 PM	2:00 PM	60	300	100	1277.1	417.3	19.5	11.7	281		
5	2:00 PM	3:00 PM	60	500	200	1392.3	535.4	39.1	19.6	470	1392.3	
6	3:00 PM	4:00 PM	60	700	200	1601.7	742.6	65.6	26.5	636	1601.7	
7	4:00 PM	5:00 PM	60	900	200	1964.9	1115.3	102.4	36.8	883	1964.9	
8	5:00 PM	6:00 PM	60	1400	500	2271.6	1436.4	164.7	62.3	1495		2271.6
9	6:00 PM	7:00 PM	60	1900	500	2376.5	1502	239.8	75.1	1802		2376.5
10	7:00 PM	8:00 PM	60	2400	500	2417.7	1677.5	347.0	107.2	2573		2417.7
11	8:00 PM	8:30 PM	30	0	0	1379.6	519.1	347.0	0.0			
12												
13												
14												
15												
16												

	1.3935	728.7
	0.1197	2121
intersect	1093.02873	BPD
BHP PSI	2251.83554	PSIA


Hess Corporation
WBDGU 1830-271F
Step Rate Chart 16-AUG-12
BHP
Surface PSI
Surface Intercept
Linear (Lower Trend)
Linear (Upper Trend)
Bottom Hole Intercept @ 1,093 BPD and 2,251.8 PSIA
Upper Trend
y = 0.1197x + 2121
R² = 0.7786
Lower Trend
y = 1.3935x + 728.79
R² = 0.9984
Surface Intecept @ 1,236 PSIA
SAFety Factor
50
1186
BHP
Surface PSI
RATE in BPD
0
500
1000
1500
2000
2500
3000


Hess Corporation
WBDGU 1830-271F
Total Data Chart 16-AUG-12
BHP
Surface PSI
Rate in BPD
Pressure-PSIA
Rate in BPD
Time of Day, MDST
3500
3000
2500
2000
1500
1000
500
0
3000
2500
2000
1500
1000
500
0
8:00 AM
10:00 AM
12:00 PM
2:00 PM
4:00 PM
6:00 PM
8:00 PM

WATER ANALYSIS WORK SHEET

Company: HESS **Lease:** WBD **Date:** 3/14/2009
Time: **Water Source:** MITCHELL 1830-221G

TOTAL DISSOLVED SOLIDS:

	Column 1 mg/l as compound		Column 2 mg/l as ions		Column 3 meg/l	
CATIONS						
A. Sodium*			11,439	as Na+ = 23.0 X	497.3	A.
B. Total hardness, as CaCO3 =	11,800					
C. Calcium, as CaCO3 =	6,750	X 0.400 =	2,700	as Ca++ X 0.050 =	135.0	C.
D. Magnesium, as CaCO3 =	5,050	X 0.243 =	1,227	as Mg++ X 0.0823 =	101.0	D.
E. Barium, as BaSO4 =	-	X 0.589 =	-	as Ba++ X 0.0146 =	0.0	E.
				Subtotal	236.0	
F. Total Cations =			15,366		733.3	F.
ANIONS						
G. Chloride, as NaCl =	37,809	X 0.607 =	22,950	as Cl- X 0.0282 =	647.2	G.
H. Sulfate, as Na2SO4 =	2,712	X 0.676 =	1,833	as SO4= X 0.0208 =	38.1	H.
I. Carbonate, as CaCO3 =	-	X 0.600 =	-	as CO3= X 0.0333 =	0.0	I.
J. Bicarbonate, as CaCO3* =	2,400	X 1.220 =	2,928	as HCO3- X 0.0164=	48.0	J.
K. Total Anions =			~~27,711~~		733.3	K.
L. Total Dissolved Solids			43,077			
M. Total Iron, as Fe			-			
N. Acidity to Phen., as CaCO3	0	X 0.440 =	-	as CO2		

OTHER PROPERTIES:

P. Sulfide, as H2S	0	T. Turbidity	
Q. Oxygen, as O2		U. Temperature, F	70.0
R. pH	6.69	V. Specific Gravity	NA
S. Conductivity (mS/cm)	58,300	W. Resistivity (10,000 / Conduct.)	0.17
X. TDS (g/L)			

Comments: Sample settled out overnight and filtered clear.

*Sodium calculated by meg/l difference, not analyzed

*Bicarbonate calculated from "M" alkalinity

District / Area: Analyst: H. Norton

Directions: **Test results entered in these cells**

Step 1: Complete tests in Column 1 and "Other Properties."

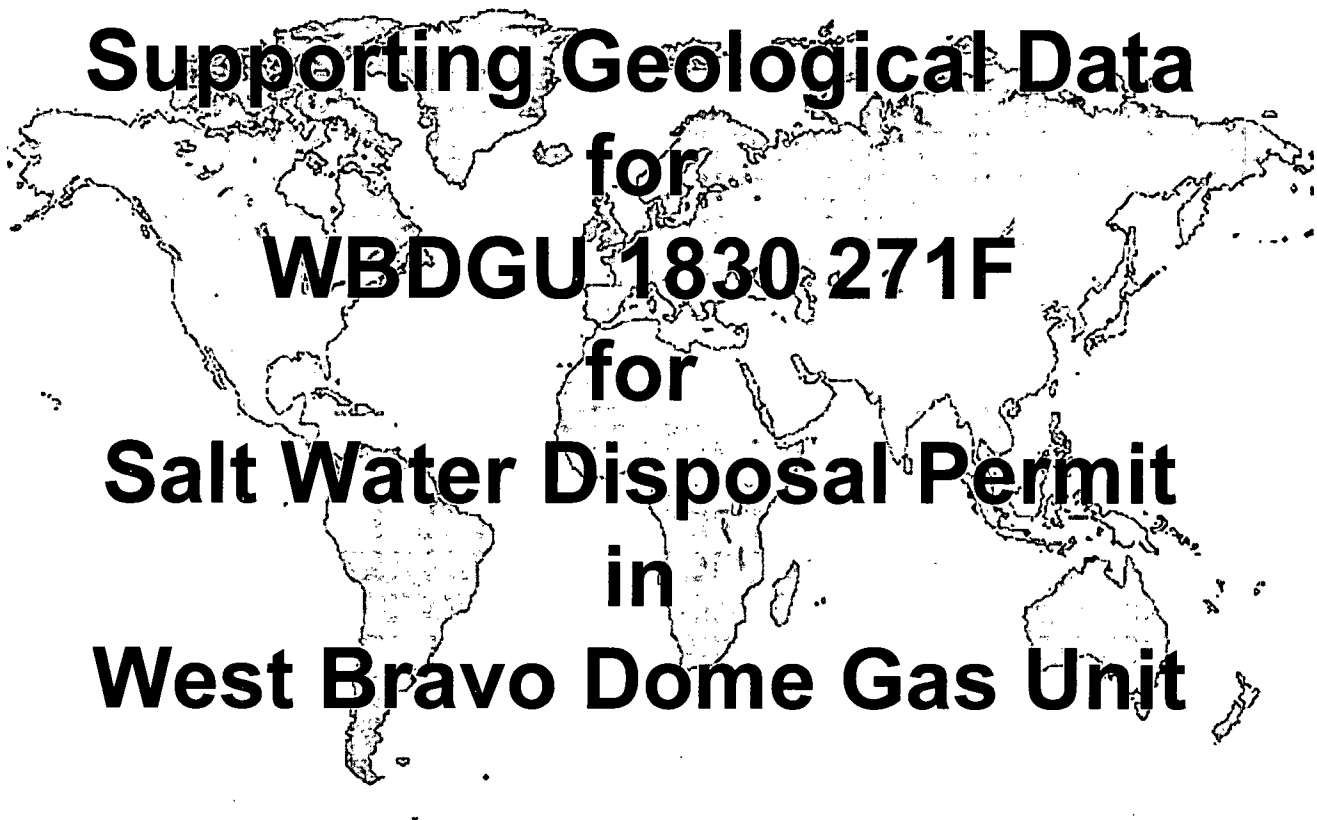
Step 2: Complete the multiplication steps for Columns 2 & 3, except A

Step 3: In Column 3, add C, D, E to get subtotal. In Column 3, add G, H, I &J and enter total in 3K.

Step 4: Subtract subtotal from 3K and enter difference in 3A. In Column 3, add 3A to subtotal and enter in 3F.

Step 5: Multiply 3A by 23.0 and enter in 2A

Step 6: Add Column 2 Cations to get Total in 2F. Add Anions to get Total in 2K. Add 2F and 2K to get 2L.



Supporting Geological Data for WBDGU 1830 271F for Salt Water Disposal Permit in West Bravo Dome Gas Unit

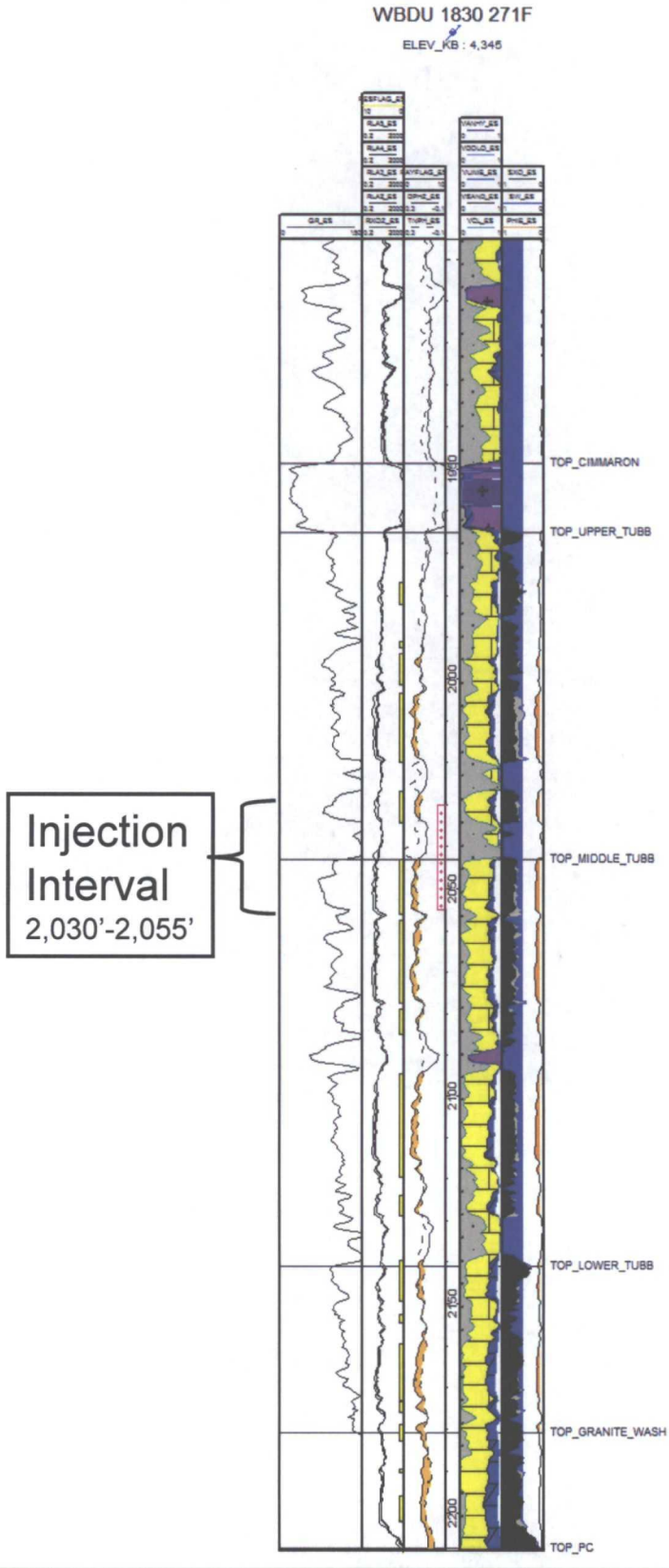
M. Valle – Nov '12

Geological Data

- **OVERLYING ZONE: Cimarron**
  - GEOLOGICAL NAME: Cimarron
  - DEPTH: 1,949 ft MD
  - THICKNESS: 16 ft
  - LITHOLOGICAL DETAIL: Tight anhydrite with rare limestone and dolomite. Porosity is extremely low (less than 1%)
  - SOURCE OF FRESH WATER: No
- **INJECTION ZONE: Tubb**
  - GEOLOGICAL NAME: Tubb
  - DEPTH: 1,965 ft MD
  - THICKNESS: 219 ft
  - LITHOLOGICAL DETAIL: fine-to-medium grained, well-sorted, reddish/orange-ish, feldspathic sandstone with minor thin-bedded, orange-to-red shale and rare dolostone. Estimated formation properties are an average 13% porosity and 65% to 100% water saturation. These saturations at this location exceed our cutoff for CO2 production.
  - SOURCE OF FRESH WATER: No (No wells in the surrounding area are using the Tubb as a fresh water source)
- **UNDERLYING ZONE: Granite Wash / Abo**
  - GEOLOGICAL NAME: Granite Wash / Abo
  - DEPTH: 2,181 ft MD
  - THICKNESS: 27 ft.
  - LITHOLOGICAL DETAIL: granite and granodiorite fragments, quartz and plagioclase. Estimated formation properties are an average 6% porosity and about 20% to 50% water saturation.
  - SOURCE OF FRESH WATER: No

Unconventionals Business Unit – West Bravo Dome

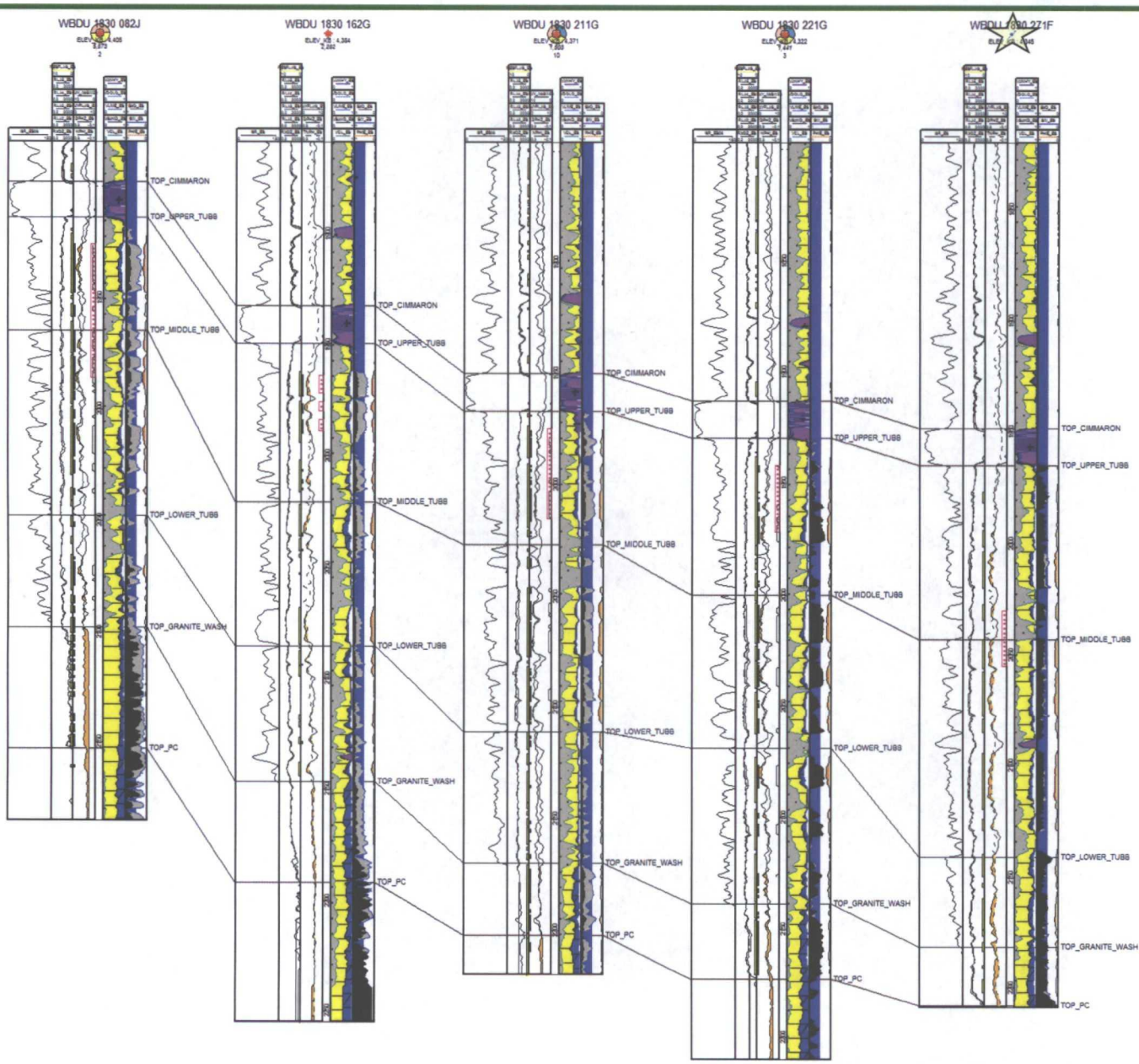
Proposed Injection Interval



November 12, 2012

Unconventionals Business Unit – West Bravo Dome

Open hole log data availability



- This cross section shows the proposed SWD well has a triple combo. The logs are on file with the NMOCD.
- Perforations are displayed adjacent to the depth track in pink.

November 12, 2012

IX. Describe the proposed stimulation program, if any.

No additional stimulation is planned at this time

X. Attach appropriate logging and test data on the well.

Log submitted previously
Well data attached

XI. Chemical analysis Of fresh water.

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 13, 2012

DANNY HOLCOMB

Hess Corporation

P.O. Box 1570

Seminole, TX 79360

RE: WEST BRAVO DOME

Enclosed are the results of analyses for samples received by the laboratory on 11/02/12 16:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list on accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Hess Corporation P.O. Box 1570 Seminole TX, 79360	Project: WEST BRAVO DOME Project Number: WBD Project Manager: DANNY HOLCOMB Fax To: (432) 758-6715	Reported: 13-Nov-12 16:18

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FITZGERALD 1830-34 WINI	H202684-01	Water	02-Nov-12 09:00	02-Nov-12 16:00

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Hess Corporation P.O. Box 1570 Seminole TX, 79360	Project: WEST BRAVO DOME Project Number: WBD Project Manager: DANNY HOLCOMB Fax To: (432) 758-6715	Reported: 13-Nov-12 16:18

FITZGERALD 1830-34 WINDMILL

H202684-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories									
Inorganic Compounds									
Alkalinity, Bicarbonate	**1330**	5.00	mg/L	1	2110104	HM	12-Nov-12	310.1	
Calcium	**14.4**	1.60	mg/L	1	2101718	HM	13-Nov-12	SM3500Ca-D	
Alkalinity, Carbonate	**320**	0.00	mg/L	1	2110104	HM	12-Nov-12	310.1	
Chloride*	**44.0**	4.00	mg/L	1	2103007	HM	05-Nov-12	4500-Cl-B	
Conductivity*	**3240**	1.00	uS/cm	1	2110809	HM	08-Nov-12	120.1	
Magnesium	**8.75**	1.00	mg/L	1	2101718	HM	13-Nov-12	SM3500Mg-E	
pH*	**8.70**	0.100	pH Units	1	2110809	HM	08-Nov-12	150.1	
Potassium	**4.50**	1.00	mg/L	1	2101718	HM	13-Nov-12	HACH 8049	
Sodium	**902**	1.00	mg/L	1	2101718	HM	13-Nov-12	Calculation	
Sulfate*	**339**	10.0	mg/L	1	2110603	AP	06-Nov-12	375.4	
TDS*	**2220**	5.00	mg/L	1	2103009	HM	05-Nov-12	160.1	
Alkalinity, Total*	**1650**	4.00	mg/L	1	2110104	HM	12-Nov-12	310.1	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Hess Corporation P.O. Box 1570 Seminole TX, 79360	Project: WEST BRAVO DOME Project Number: WBD Project Manager: DANNY HOLCOMB Fax To: (432) 758-6715	Reported: 13-Nov-12 16:18

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2101718 - * DEFAULT PREP *** **										
Blank (2101718-BLK1)				Prepared: 17-Oct-12 Analyzed: 09-Nov-12						
Calcium	ND	1.60	mg/L							
Magnesium	ND	1.00	mg/L							
Potassium	ND	1.00	mg/L							
LCS (2101718-BS1)				Prepared: 17-Oct-12 Analyzed: 09-Nov-12						
Calcium	20.8		mg/L	20.0		104	80-120			
Magnesium	54.4		mg/L	50.0		109	80-120			
Potassium	3.00		mg/L	3.00		100	80-120			
Duplicate (2101718-DUP1)	**Source: H202593-01**			Prepared: 17-Oct-12 Analyzed: 09-Nov-12						
Calcium	6710	1.60	mg/L		6410			4.57	20	
Magnesium	1820	1.00	mg/L		1880			3.24	20	
Potassium	540	1.00	mg/L		540			0.00	20	
Batch 2103007 - General Prep - Wet Chem										
Blank (2103007-BLK1)				Prepared & Analyzed: 30-Oct-12						
Chloride	ND	4.00	mg/L							
LCS (2103007-BS1)				Prepared & Analyzed: 30-Oct-12						
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (2103007-BSD1)				Prepared & Analyzed: 30-Oct-12						
Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
Batch 2103009 - Filtration										
Blank (2103009-BLK1)				Prepared & Analyzed: 30-Oct-12						
TDS	ND	5.00	mg/L							

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Hess Corporation P.O. Box 1570 Seminole TX, 79360	Project: WEST BRAVO DOME Project Number: WBD Project Manager: DANNY HOLCOMB Fax To: (432) 758-6715	Reported: 13-Nov-12 16:18

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2103009 - Filtration										
LCS (2103009-BS1)				Prepared & Analyzed: 30-Oct-12						
TDS	260		mg/L	240		108	80-120			
Duplicate (2103009-DUP1)	**Source: H202612-05**			Prepared & Analyzed: 30-Oct-12						
TDS	522	5.00	mg/L		520			0.384	20	
Batch 2110104 - General Prep - Wet Chem										
Blank (2110104-BLK1)				Prepared & Analyzed: 31-Oct-12						
Alkalinity, Carbonate	ND	0.00	mg/L							
Alkalinity, Bicarbonate	ND	5.00	mg/L							
Alkalinity, Total	ND	4.00	mg/L							
LCS (2110104-BS1)				Prepared & Analyzed: 31-Oct-12						
Alkalinity, Carbonate	ND	0.00	mg/L				80-120			
Alkalinity, Bicarbonate	137	5.00	mg/L				80-120			
Alkalinity, Total	112	4.00	mg/L	100		112	80-120			
LCS Dup (2110104-BSD1)				Prepared & Analyzed: 31-Oct-12						
Alkalinity, Carbonate	ND	0.00	mg/L				80-120		20	
Alkalinity, Bicarbonate	137	5.00	mg/L				80-120	0.00	20	
Alkalinity, Total	112	4.00	mg/L	100		112	80-120	0.00	20	
Batch 2110603 - General Prep - Wet Chem										
Blank (2110603-BLK1)				Prepared & Analyzed: 06-Nov-12						
Sulfate	ND	10.0	mg/L							

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Hess Corporation P.O. Box 1570 Seminole TX, 79360	Project: WEST BRAVO DOME Project Number: WBD Project Manager: DANNY HOLCOMB Fax To: (432) 758-6715	Reported: 13-Nov-12 16:18

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2110603 - General Prep - Wet Chem										
LCS (2110603-BS1)				Prepared & Analyzed: 06-Nov-12						
Sulfate	18.8	10.0	mg/L	20.0		94.2	80-120			
LCS Dup (2110603-BSD1)				Prepared & Analyzed: 06-Nov-12						
Sulfate	20.7	10.0	mg/L	20.0		103	80-120	9.31	20	
Batch 2110809 - General Prep - Wet Chem										
LCS (2110809-BS1)				Prepared & Analyzed: 08-Nov-12						
Conductivity	1370		uS/cm	1410		97.2	80-120			
pH	7.05		pH Units	7.00		101	90-110			
Duplicate (2110809-DUP1)	**Source: H202684-01**			Prepared & Analyzed: 08-Nov-12						
Conductivity	3240	1.00	uS/cm		3240			0.00	20	
pH	8.71	0.100	pH Units		8.70			0.115	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Hess Corporation	**BILL TO**
Project Manager: Danny Holcomb	P.O. #: 4500464908
Address: HC 72, Box 30	Company: Hess Corporation
City: Mosquero State: NM Zip: 87733	Attn:
Phone #: 575-650-0316 Fax #: 575-673-6709	Address: P.O. Box 696417
Project #: WBD Project Owner:	City: San Antonio
Project Name: WBD	State: TX Zip: 78269
Project Location: West Bravo Dome	Phone #: 800-891-0766
Sampler Name: Danny Holcomb	Fax #: 877-409-2716

Lab I.D. (FOR LAB USE ONLY) H202684	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: CATION/ANION
-1	Fitzgerald 1830-34 Windmill	G	2	X							X		11-2-12	9:00a	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: D. Holcomb	Date: 11-2-12 Time: 9:30a	Received By: [signature]	Phone Result: ☐ Yes ☒ No Add'l Phone #:
Relinquished By: [signature]	Date: 11/2/12 Time: 4:30	Received By: Jodi Henson	Fax Result: ☐ Yes ☒ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	1.6	Sample Condition Cool / Intact ☒ Yes ☒ Yes ☐ No ☐ No	CHECKED BY: (Initials) JH

REMARKS: Email results to dholcomb@hess.com

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#76

Geological Statement

- **A statement affirming available geologic and engineering data has been examined and no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water were found**

  - All available geologic and engineering data has been examined. The well is positioned in such a way that is at least 1 mile away from the nearest productive well. There are no wells within 0.5 miles of this well.
  - There is no evidence of open faults, or any other hydrologic connection between the disposal zone and the overlying formation (Cimarron: no hydrocarbon, no CO2), additionally there is no evidence of open faults however there may be a hydrologic connection with the underlying formation (Granite Wash: no hydrocarbon, possible CO2) within a 0.5 mile radius around the SWD well location.
  - As stated in the Geological data sheet, no wells in the surrounding 0.5 mile from the SWD well location are known to use either the overlying formation (Cimarron) or the underlying formation (Granite Wash) as a source for fresh water.

WBD Geologist:

Manuel Valle

WBD Engineer:

Fady Chaban

AFFIDAVIT OF PUBLICATION

State of New Mexico
County of Union **SS.**

The undersigned, being first duly sworn according to law, on her oath deposes and says that she is the office manager of the newspaper named the *Union County Leader* and that she has personal knowledge of the facts stated herein: That the said *Union County Leader* is a weekly newspaper of general paid circulation in Union and Harding Counties published in the County of Union and State of New Mexico; entered under the second class privilege at the U.S. Post Office at Clayton, Union County, New Mexico, and having been uninterruptedly and continuously so printed and published during a period of more than six months next to the date of the printing of the first publication concerning which this affidavit is made and a copy of which is hereto attached; that the said publication, a printed copy of which is hereto attached and made a part of this affidavit, was published in said newspaper once each week for Three successive weeks, and that payment for said publication has been made or assessed as part of the court costs to which it relates; said publications having been made on the following dates, to wit:

1st publication: the 26 day of Sept ,20 12
2nd publication: the 3 day of October,20 12
3rd publication: the 17 day of October,20 12
4th publication: the ___ day of _____,20___

Union County Leader

Terry Martin

Terry Martin, Publisher/Editor

Subscribed and sworn to before me this 22 day of October, 20 12

Patricia A Herrera

Notary Public, Union County, New Mexico
My commission expires 11-5-2014

Publisher's Bill:

72 lines, 3X times $ 115.92

_____ inches, display _____ times $_____

Tax $ 9.13

Total $ 125.04

Received payment:

_____

_____

NOTICE OF APPLICATION FOR DISPOSAL WELL PERMIT

The application proposes to inject the Tubb Formation, Hess Corporation, P.O. Box 840 Seminole, TX 79360 is applying to State of New Mexico; Energy, Minerals and Natural Resources Department, Oil Conservation Division for SWD (Salt Water Disposal) permit to inject fluid into a formation.

West line in Harding County New Mexico. The Tubb Fluid will be injected into strata in the Bravo Dome Unit Granite Wash. 1830 Well No. 274F. The proposed injection well is located 13 miles east of Mosquero, NM in West Bravo Dome Unite Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505. Telephone (505)476-3470.

Requests for a public hearing from Persons who can show they are adversely affected. On 9-26-12, 10-3, 10-10, 10-17 the North line and 1650 feet from the further information

concerning any aspect of the application should be submitted in writing, within fifteen days of publication, to the Oil Conservation

Hess Corporation
Rita Smith
P. O. Box 840
100 N. W. 7th Street
Seminole, Texas 79360
Office (432) 758-6726
Fax (432) 758-6758
rsmith@hess.com

November 14, 2012

F&F Family Limited Partnership

WAIVER OF OBJECTION TO INJECT FLUID

F&F Family Limited Partnership has received notice of Hess Corporation's application for Authorization to inject fluid into the TUBB Formation, Mitchell 1820 Well No. 092F API 30-021-20540, The proposed injection well is located 15 miles east of Mosquero, NM in Mitchell field in Harding County. Lot number F, Section 27, Township 16N, Range 20E, 1650 feet from the North line and1650 feet from the West line in Harding County, New Mexico. Fluid will be injected into strata in the Tubb.

I, Michael S. Fitzgerald of F&F Family Limited Partnership, the undersigned, hereby waive the right to object to the New Mexico Oil Conservation Division's administrative approval of this Authorization to for application for SWD (Salt Water Disposal) permit.

SIGNATURE
Michael S. Fitzgerald
F&F Family Limited Partnership
11/21/12
DATE

Hess Corporation
Rita Smith
P. O. Box 840
100 N. W. 7th Street
Seminole, Texas 79360
Office (432) 758-6726
Fax (432) 758-6768
rsmith@hess.com

November 14, 2012

T. E. Mitchell & Son, Inc.

WAIVER OF OBJECTION TO INJECT FLUID

T. E. Mitchell & Son, Inc. has received notice of Hess Corporation's application for Authorization to inject fluid into the TUBB Formation, WBDGU 1830 Well No. 271F API 30-021-20540. The proposed injection well is located 15 miles east/southeast of Mosquero, NM in West Bravo Dome field in Harding County. Lot number F, Section 27, Township 18N, Range 30E, 1650 feet from the North line and1650 feet from the West line in Harding County, New Mexico. Fluid will be injected into strata in the Tubb.

I, Terry R. Mitchell, President of T.E. Mitchell & Son, Inc. the undersigned, hereby waive the right to object to the New Mexico Oil Conservation Division's administrative approval of this Authorization to for application for SWD.(Salt Water Disposal) permit.

Terry R. Mitchell
SIGNATURE

Terry R. Mitchell, President
T.E. Mitchell & Son, Inc

11-20-12
DATE

COMPANY: Hess Corporation Onshore US

WELL: WBDGU 1830 271F

FIELD: West Bravo Dome

COUNTY: Harding STATE: New Mexico

COUNTY: Harding
Field: West Bravo Dome
Location: 1650' FNL & 1650' FWL
Well: WBDGU 1830 271F
Company: Hess Corporation Onshore US

Schlumberger

Platform Express
Three Detector Litho-Density
Compensated Neutron

LOCATION: 1650' FNL & 1650' FWL

Elev.: K.B. 4345 ft
G.L. 4333 ft
D.F. 4344 ft

Permanent Datum: Ground Level Elev.: 4333 ft
Log Measured From: Kelly Bushing 12.0 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	SECTION	TOWNSHIP	RANGE
30-021-20540	27	18N	30E

Logging Date			8-Jul-2012						
Run Number			One						
Depth Driller			2260 ft						
Schlumberger Depth			2266 ft						
Bottom Log Interval			2263 ft						
Top Log Interval			775 ft						
Casing Driller Size @ Depth			8.625 in	@	776 ft			@	
Casing Schlumberger			775 ft						
Bit Size			7.875 in						
Type Fluid In Hole			Brine / Starch / Salt Gel						
MUD	Density	Viscosity	8.6 lbm/gal		31 s				
	Fluid Loss	PH			9.5				
	Source Of Sample		Circulation Tank						
RM @ Measured Temperature			0.078 ohm.m	@	91 degF			@	
RMF @ Measured Temperature			0.073 ohm.m	@	91 degF			@	
RMC @ Measured Temperature				@				@	
Source RMF	RMC		Measured						
RM @ MRT	RMF @ MRT		0.078 @ 91		0.073 @ 91			@	@
Maximum Recorded Temperatures			91 degF						
Circulation Stopped		Time	8-Jul-2012			13:00			
Logger On Bottom		Time	8-Jul-2012			15:55			
Unit Number	Location		2323	Roswell, N.M.					
Recorded By			James Lamb						
Witnessed By			Mike Pierce, Gus Gusstafson						

	Run 1	Run 2	Run 3	Run 4

Logging Date					
Run Number					
Depth Driller					
Schlumberger Depth					
Bottom Log Interval					
Top Log Interval					
Casing Driller Size @ Depth		@		@	
Casing Schlumberger					
Bit Size					
Type Fluid In Hole					
MUD Density	Viscosity				
MUD Fluid Loss	PH				
MUD Source Of Sample					
RM @ Measured Temperature		@		@	
RMF @ Measured Temperature		@		@	
RMC @ Measured Temperature		@		@	
Source RMF	RMC				
RM @ MRT	RMF @ MRT	@	@	@	@
Maximum Recorded Temperatures					
Circulation Stopped	Time				
Logger On Bottom	Time				
Unit Number	Location				
Recorded By					
Witnessed By					

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: PEX-HRLA	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Two 0.125" Wear Rings used on HGNS	
Two 1.5" Standoffs used on HRLA	
Porosities Computed on Limestone Matrix (2.71 g/cc)	
Crew: Tom Freidrich	
Rig: Trinidad #416	

RUN 1			RUN 2		
SERVICE ORDER #:	C13G-00057		SERVICE ORDER #:		
PROGRAM VERSION:	19C0-187		PROGRAM VERSION:		
FLUID LEVEL:	0 ft		FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

RUN 2

SURFACE EQUIPMENT

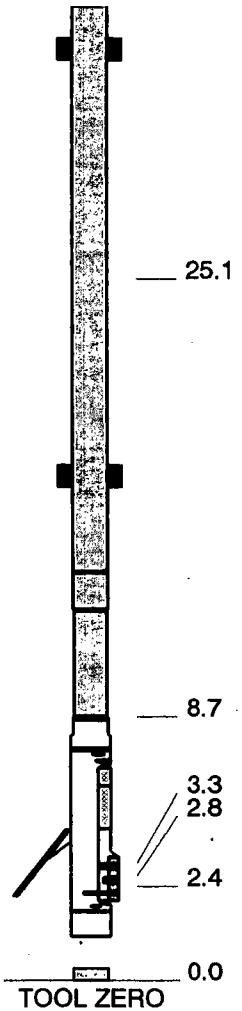
GSR-U/Y 587
NCT-B 262
CNB-AB
NCS-VB

WITM (DTS)-A

DOWNHOLE EQUIPMENT

LEH-Q 1276 LEH-Q 1276			60.9
AH-369 AH-369			58.7
DTC-H 8378 ECH-KC 9454 DTCH0-A 8378	CTEM TelStatus ToolStatu	56.4 54.3	57.3
SPA-A SPA-A	SP SPARC HGNS HTEM HMCA	52.3 50.3	54.3
HILTB-FTB HGNSD-B 951 HMCA 991 HGNH 1899 NLS-KL NSR-F 5043 HACCZ 678 HCNT HGR AH-107 AH-107 HRLT-B DUMMY-A AH-270 HRCC-B 952	HGNS Gamm HGNS Neut HGNS Neut HGNS sens	49.6 43.7 43.2 40.9	50.3

GLS-VJ 5073
MCFL Device 3889
HILT Nucl. LS 42767
HILT Nucl. SS 42767
HILT Nucl. BS 42767
BOW-SPR
NPV-N



BNS-CCS

0.5

MAXIMUM STRING DIAMETER 6.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

DEPTH SUMMARY LISTING

Date Created: 8-JUL-2012 16:41:52

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-BA	Type:	CMTD-B/A	Type:	7-46P XS
Serial Number:	6736	Serial Number:	3072	Serial Number:	7071
Calibration Date:	06-July-2012	Calibration Date:	06-July-2012	Length:	21000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	78125		
Calibration Cable Type:	7-46P	Number of Calibration Points:	0	Conveyance Method:	Wireline
Wheel Correction 1:	-7			Rig Type:	LAND
Wheel Correction 2:	-5				

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	295.00 FT
Rig Up Length At Bottom:	294.70 FT
Rig Up Length Correction:	0.30 FT
Stretch Correction:	3.10 FT
Tool Zero Check At Surface:	0.30 FT

Depth Control Remarks

1. IDW used as Primary Depth Control
2. Primary Depth Control Procedures Followed
3. Z-Chart used as Secondary Depth Control
4. Secondary Depth Control Procedures Followed
5.
6.

Company: Hess Corporation Onshore US | Well: WBDGU 1830 271F

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53	2282.0 FT	80.0 FT
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53	2282.0 FT	80.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 594.02 F3

Cement Volume = 349.11 F3 (assuming 5.50 IN casing O.D.)

Computed from 2260.0 FT to 776.0 FT using data channel(s) HCAL

OP System Version: 19C0-187

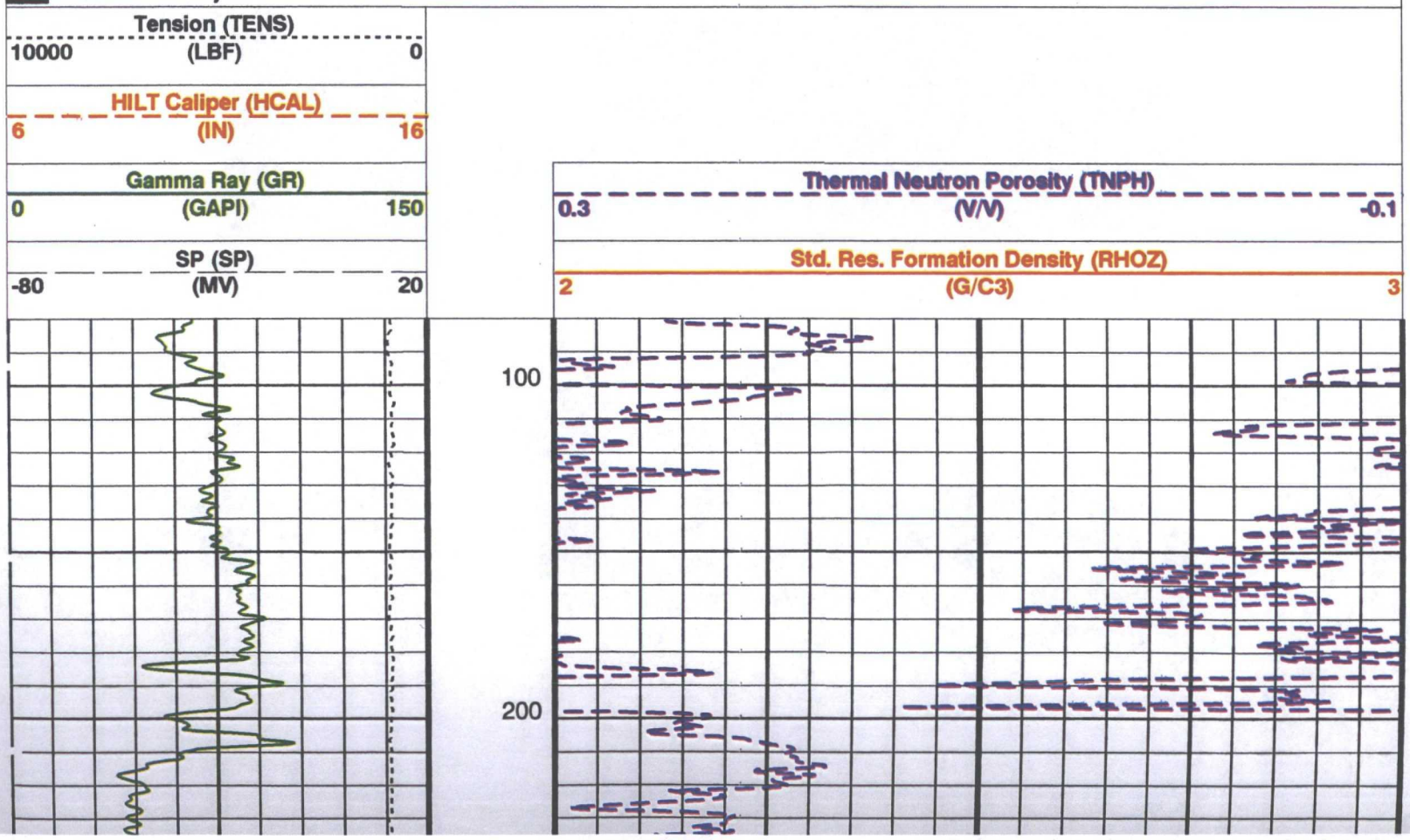
HILTB-FTB	19C0-187	SPA-A	19C0-187

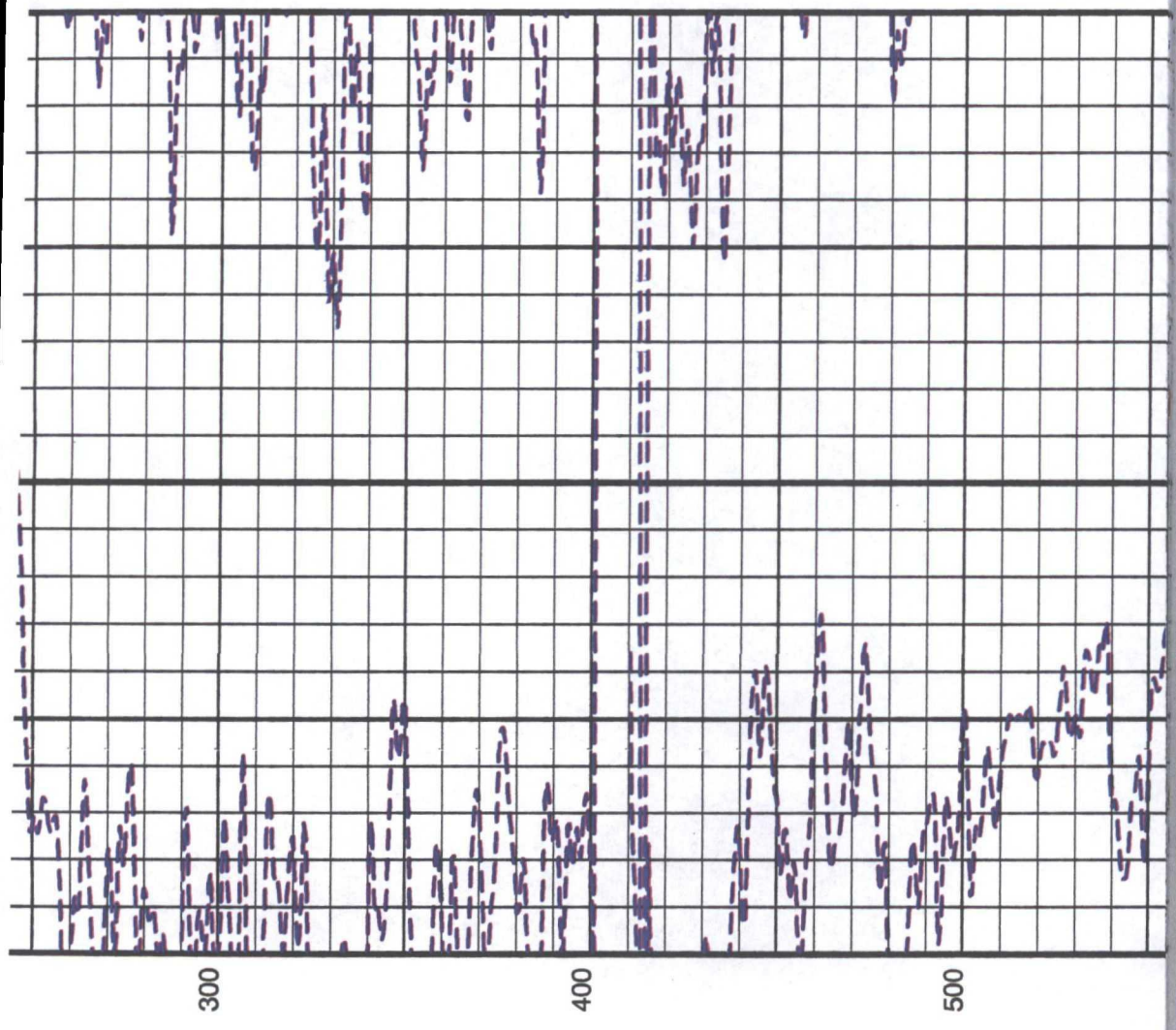
DTC-H 19C0-187

PIP SUMMARY

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

Time Mark Every 60 S

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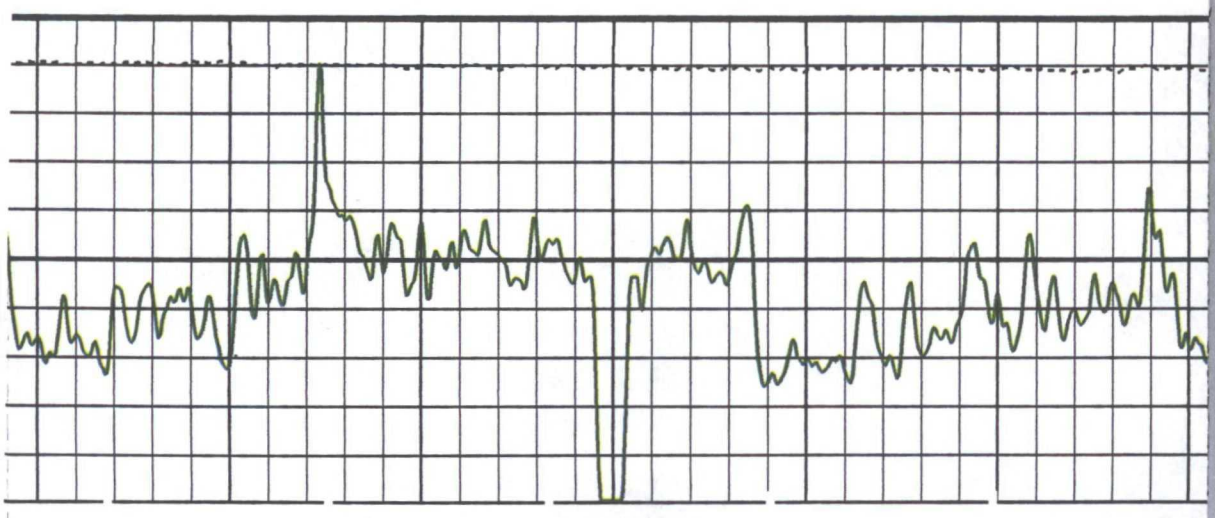

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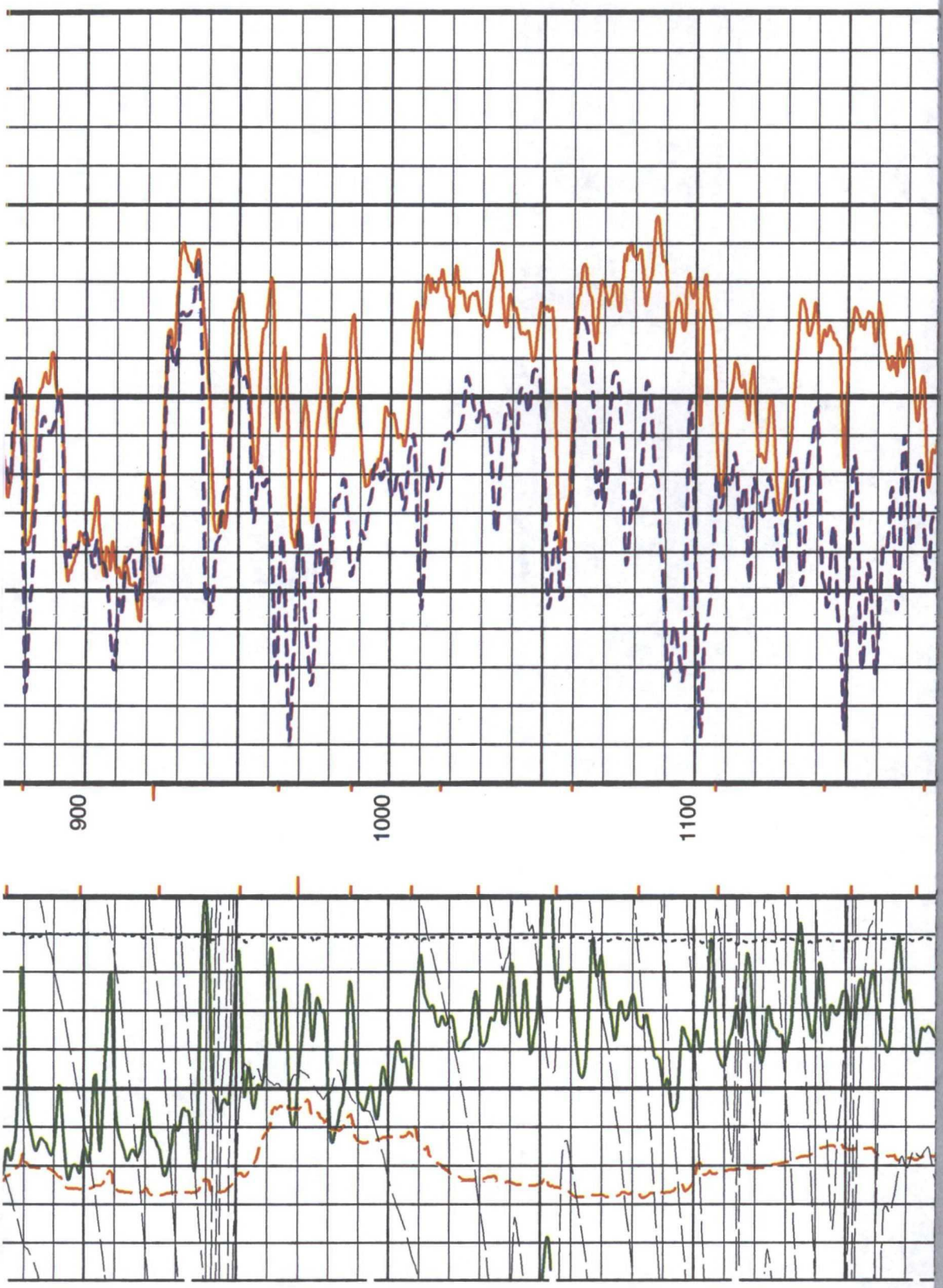
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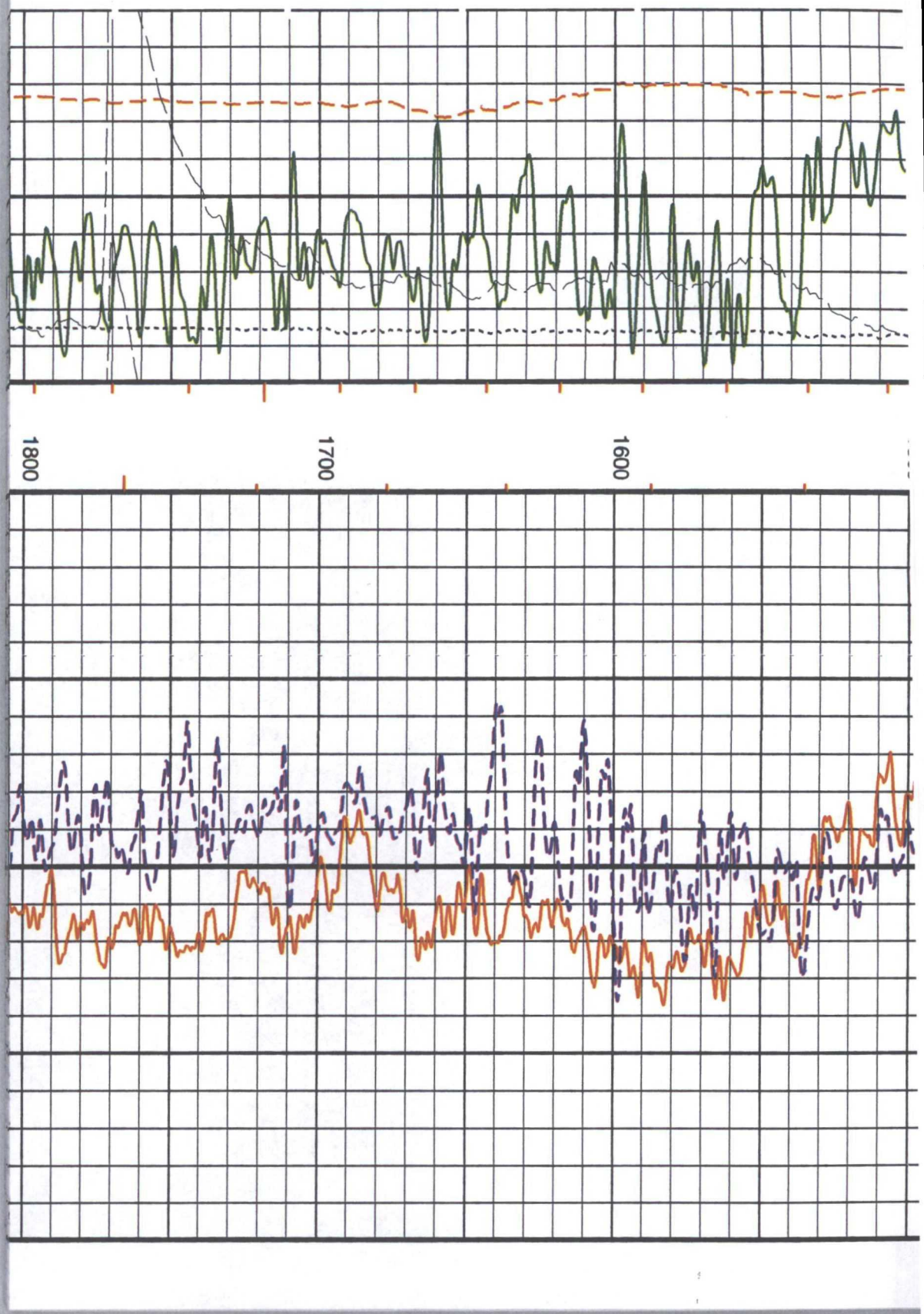
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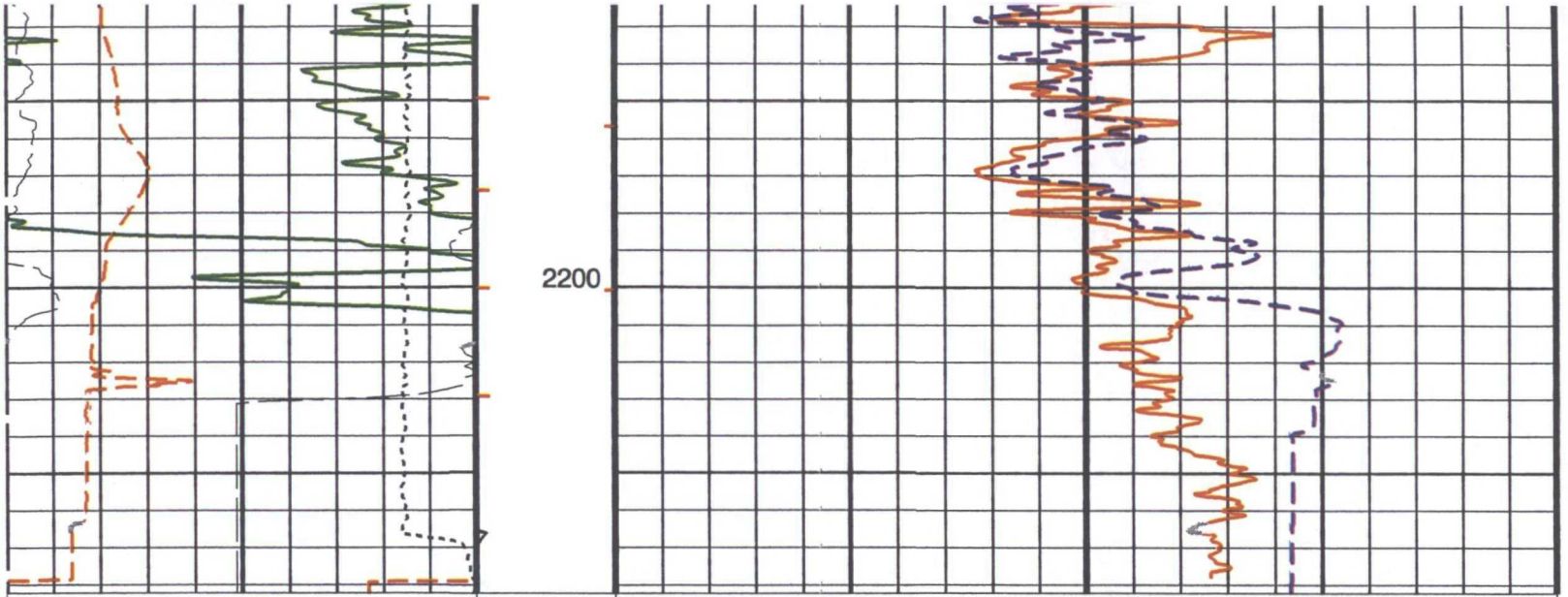


SP (SP)
-80 (MV) 20

Gamma Ray (GR)
0 (GAPI) 150

HILT Caliper (HCAL)
6 (IN) 16

Tension (TENS)
10000 (LBF) 0

Std. Res. Formation Density (RHOZ)
2 (G/C3) 3

Thermal Neutron Porosity (TNPH)
0.3 (V/V) -0.1

PIP SUMMARY

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

Time Mark Every 60 S

Format: 2_nuc Vertical Scale: 2" per 100 Graphics File Created: 08-Jul-2012 15:53

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53	
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53	

Company: Hess Corporation Onshore US Well: WBDGU 1830 271F

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53	2282.0 FT	80.0 FT
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53	2282.0 FT	80.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 594.02 F3
Cement Volume = 349.11 F3 (assuming 5.50 IN casing O.D.)
Computed from 2260.0 FT to 776.0 FT using data channel(s) HCAL

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BHS	CASED	OPEN	746.4 16:20:59
BHT	91.1 DEGF	97.226 DEGF	931.4 16:17:55

TDL 2266.00 FT 2260.00 FT 948.0 16:17:38

PIP SUMMARY

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

Time Mark Every 60 S

Env.Corr.Thermal Neutron Porosity (TNPH)
0.3 (V/V) -0.1

Tension (TENS)
10000 (LBF) 0

Hilt Porosity CrossPlot (PXND_HILT)
0.3 (V/V) -0.1

HILT Caliper (HCAL)
6 (IN) 16

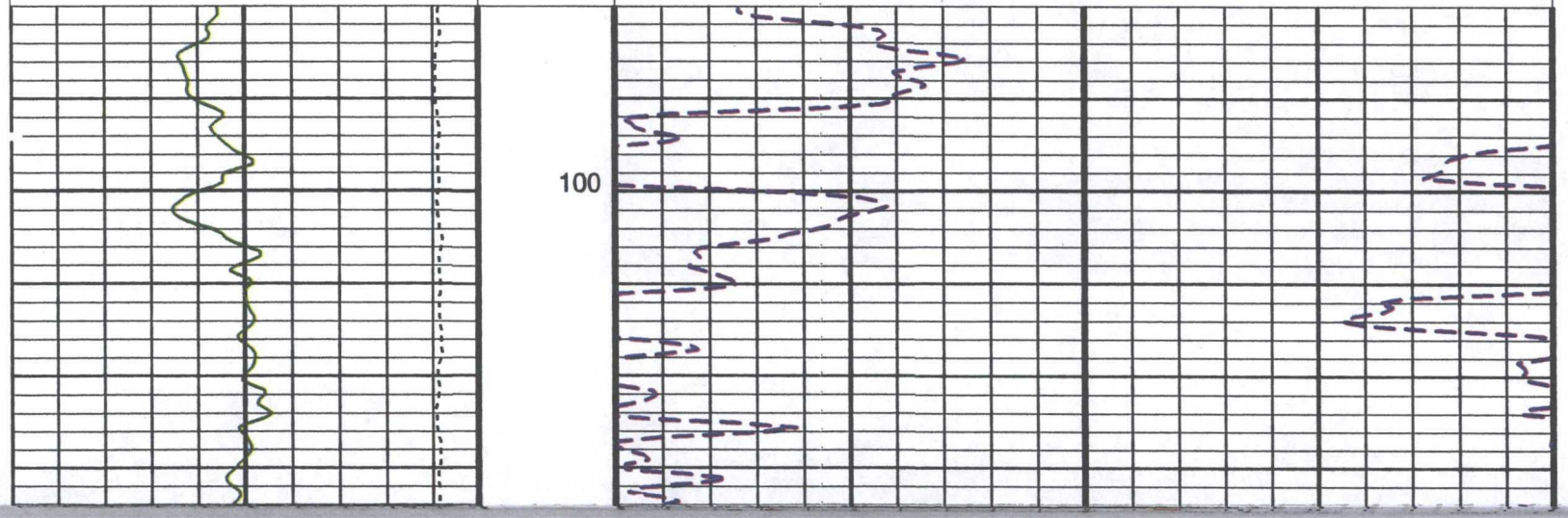
Std. Res. Formation Pe (PEFZ)
0 (----) 10

Gamma Ray (GR)
0 (GAPI) 150

Density Correction (HDRA)
-0.05 (G/C3) 0.45

SP (SP)
-80 (MV) 20

Std. Res. Density Porosity (DPHZ)
0.3 (V/V) -0.1



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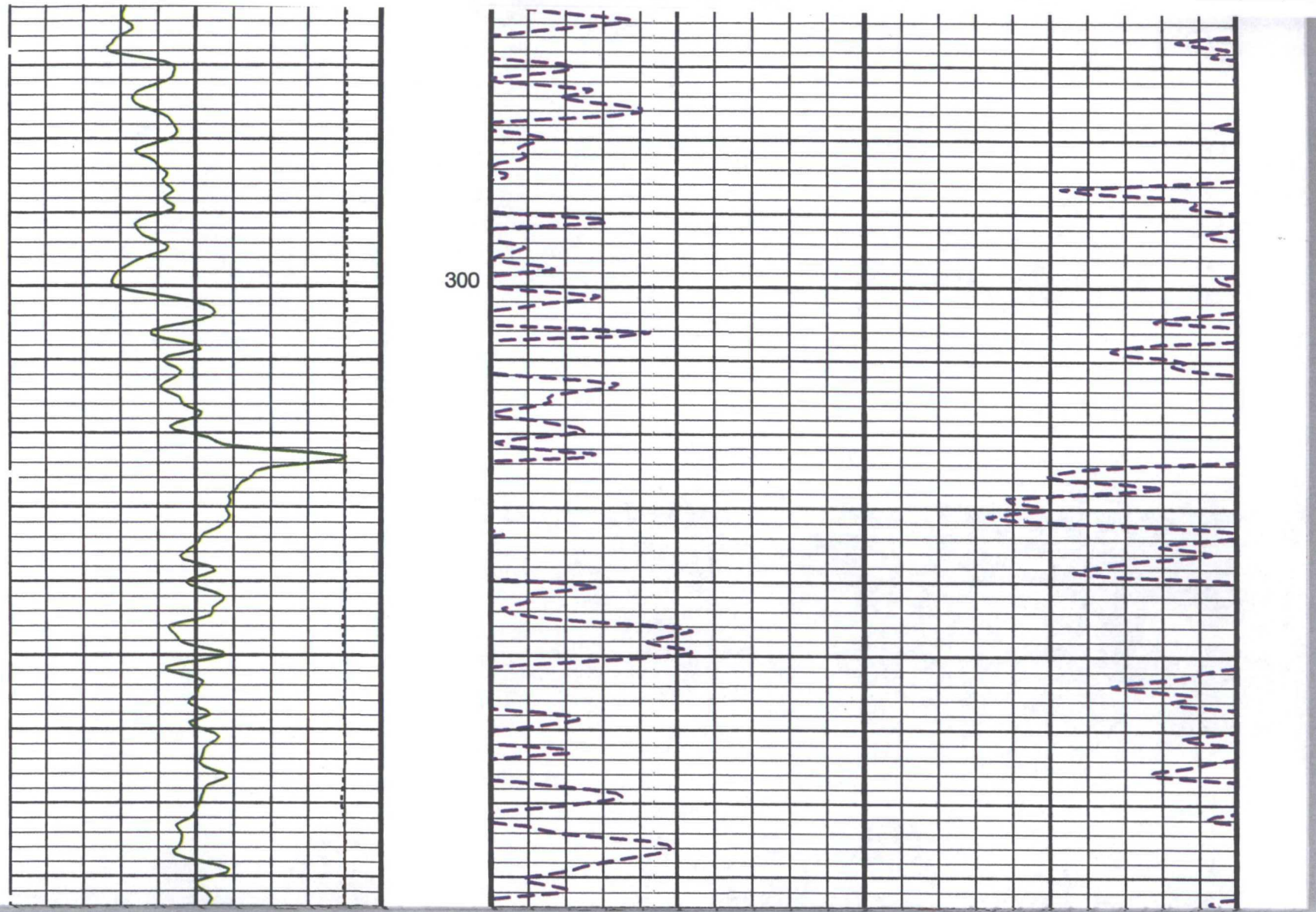
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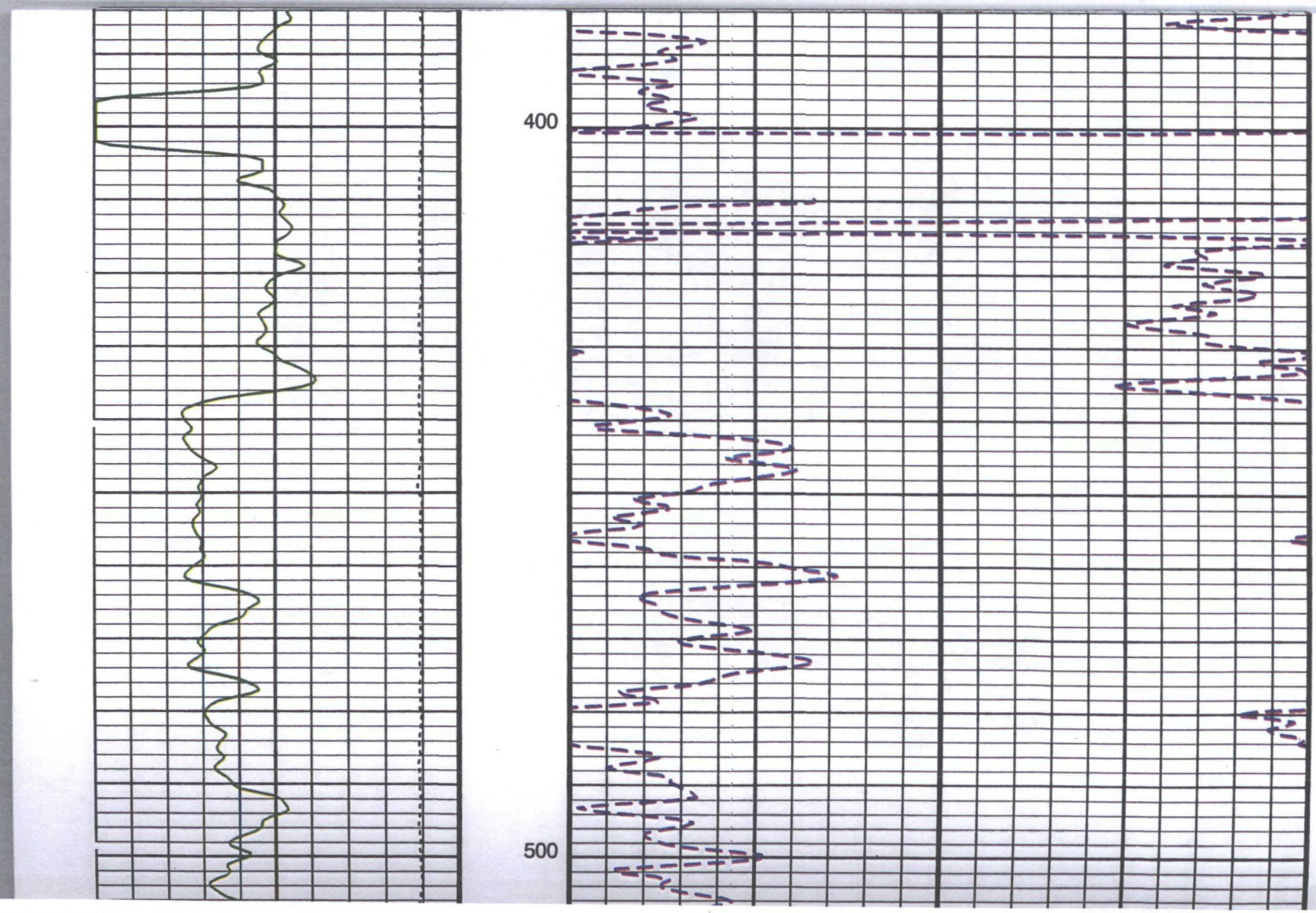
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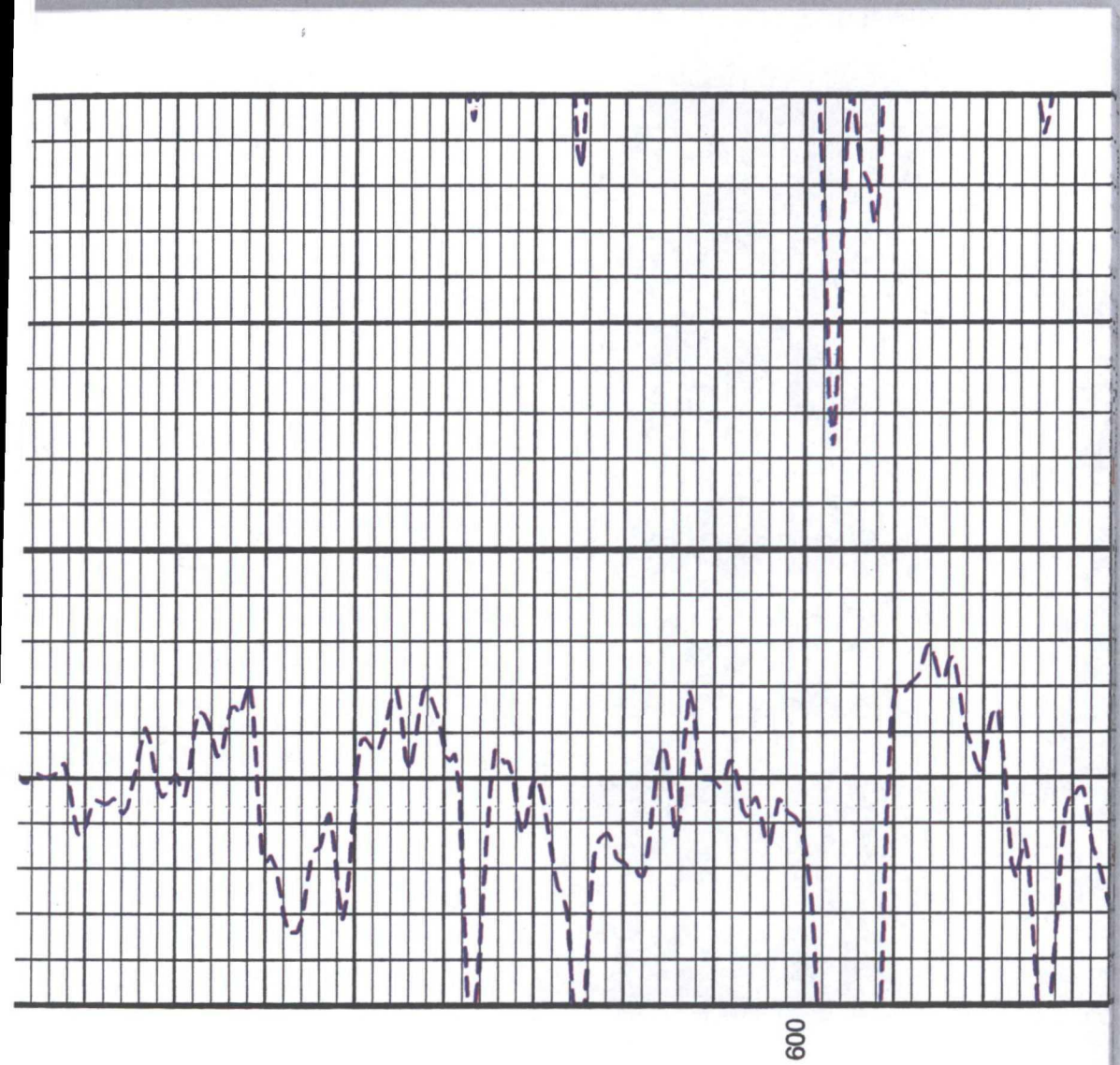
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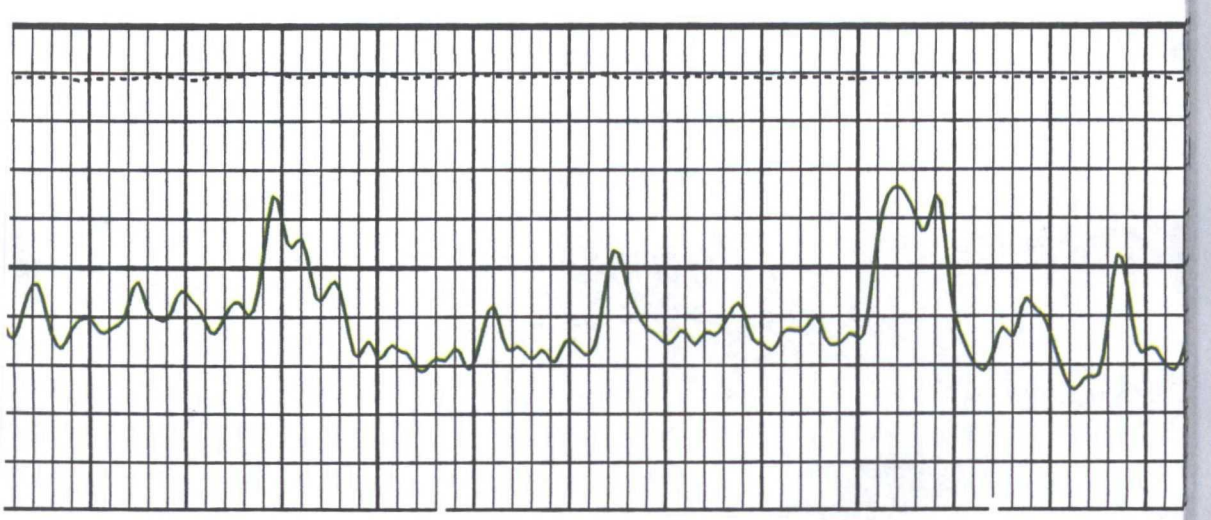

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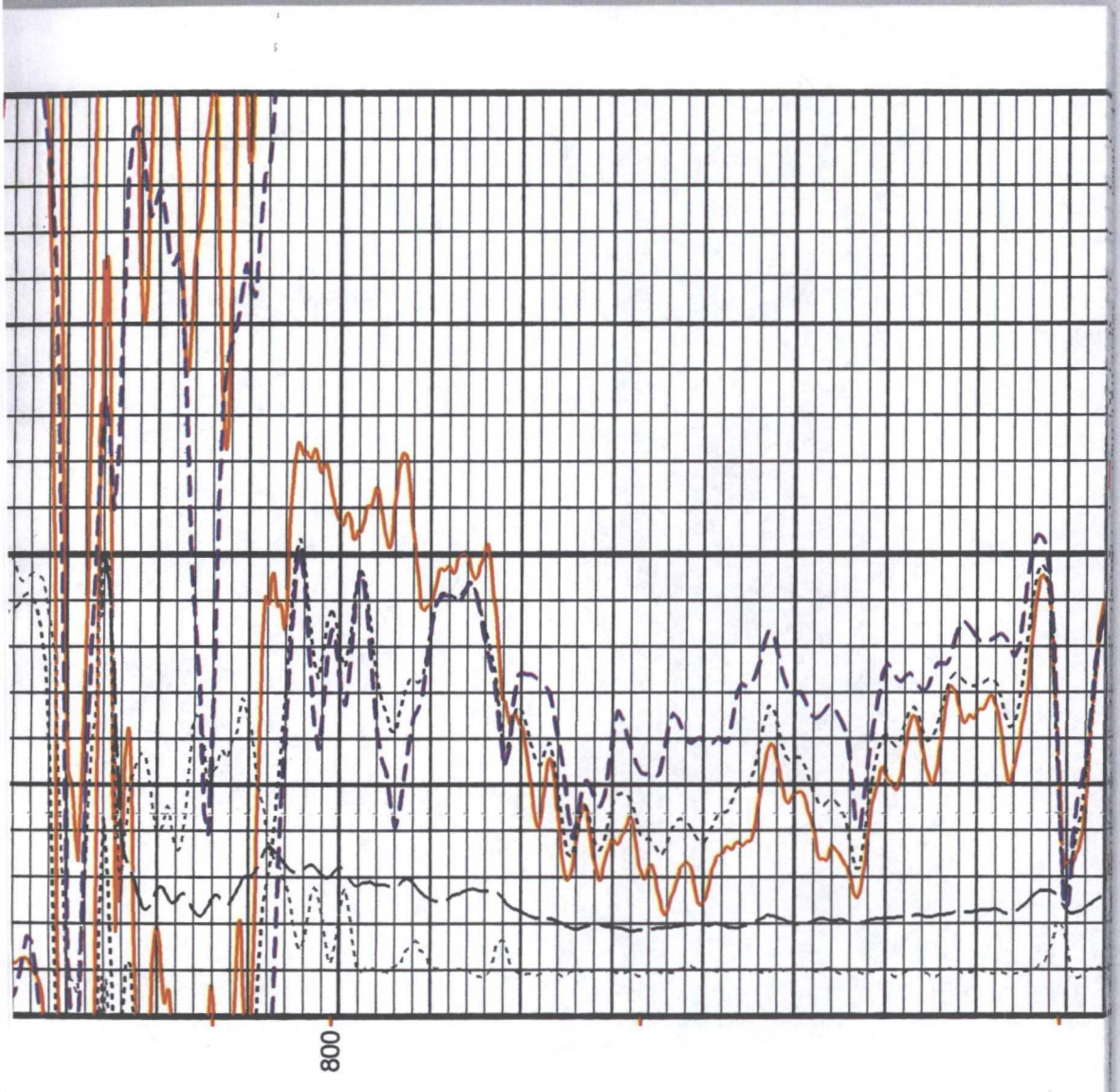
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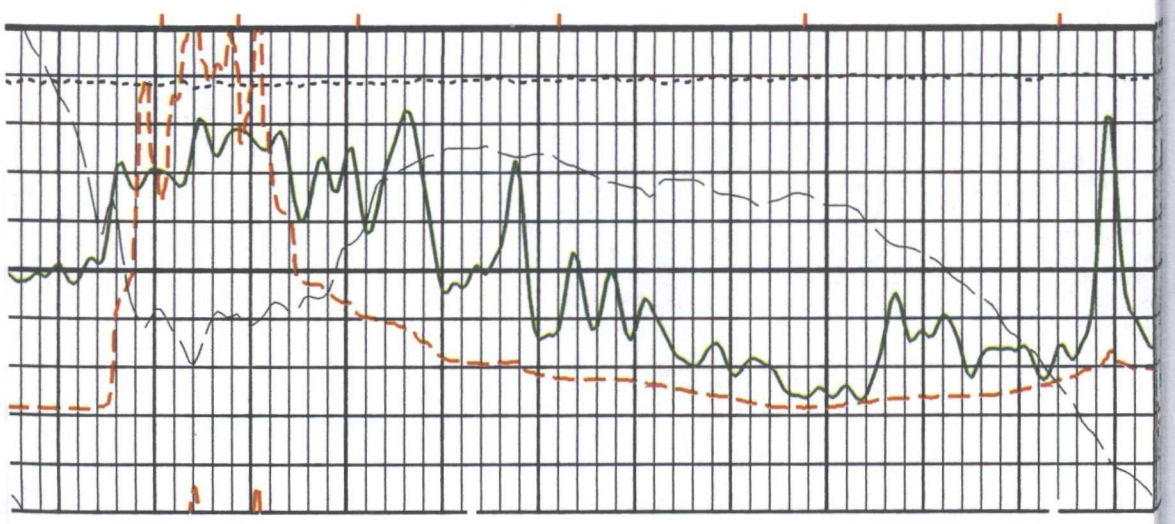

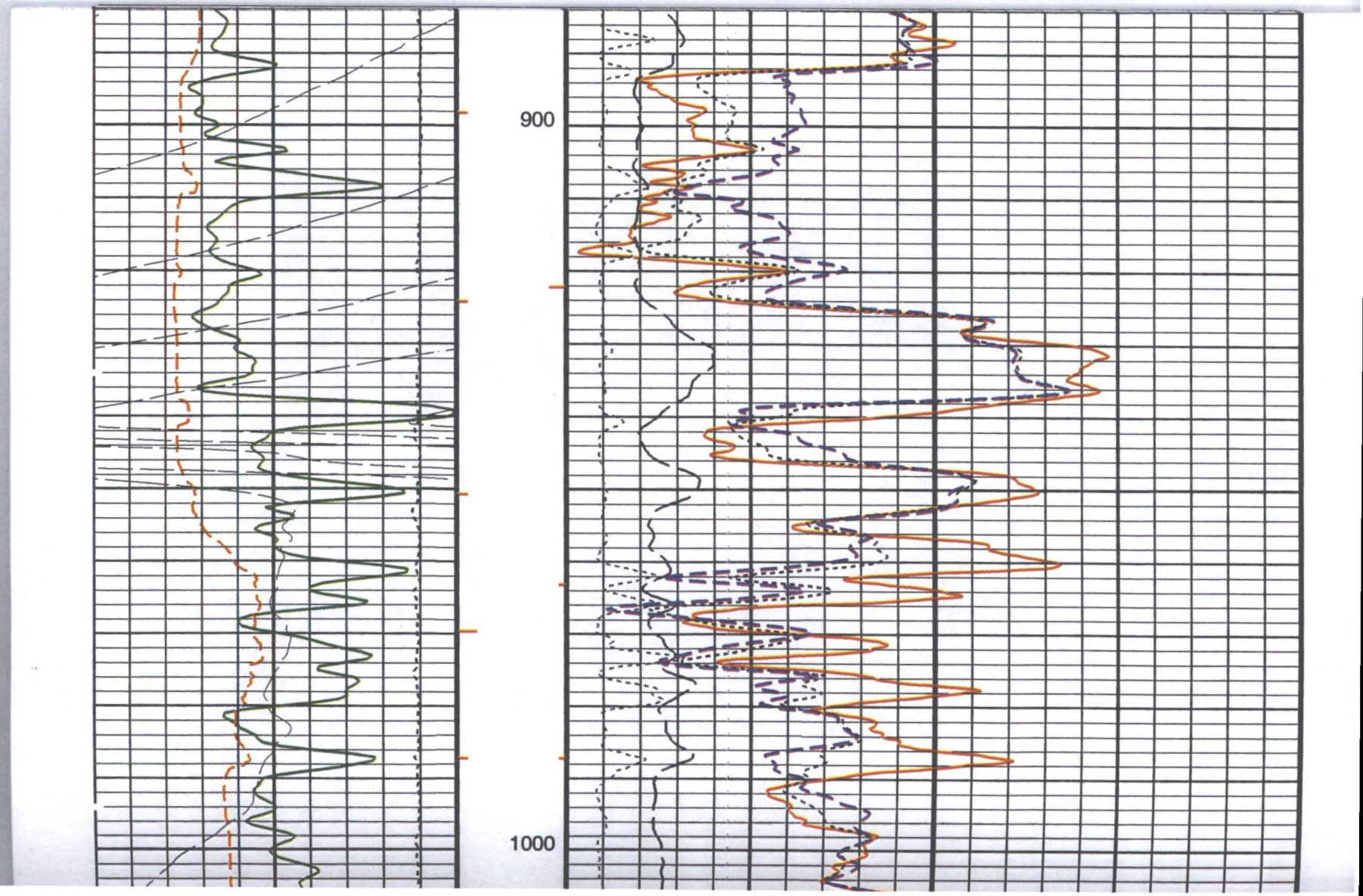
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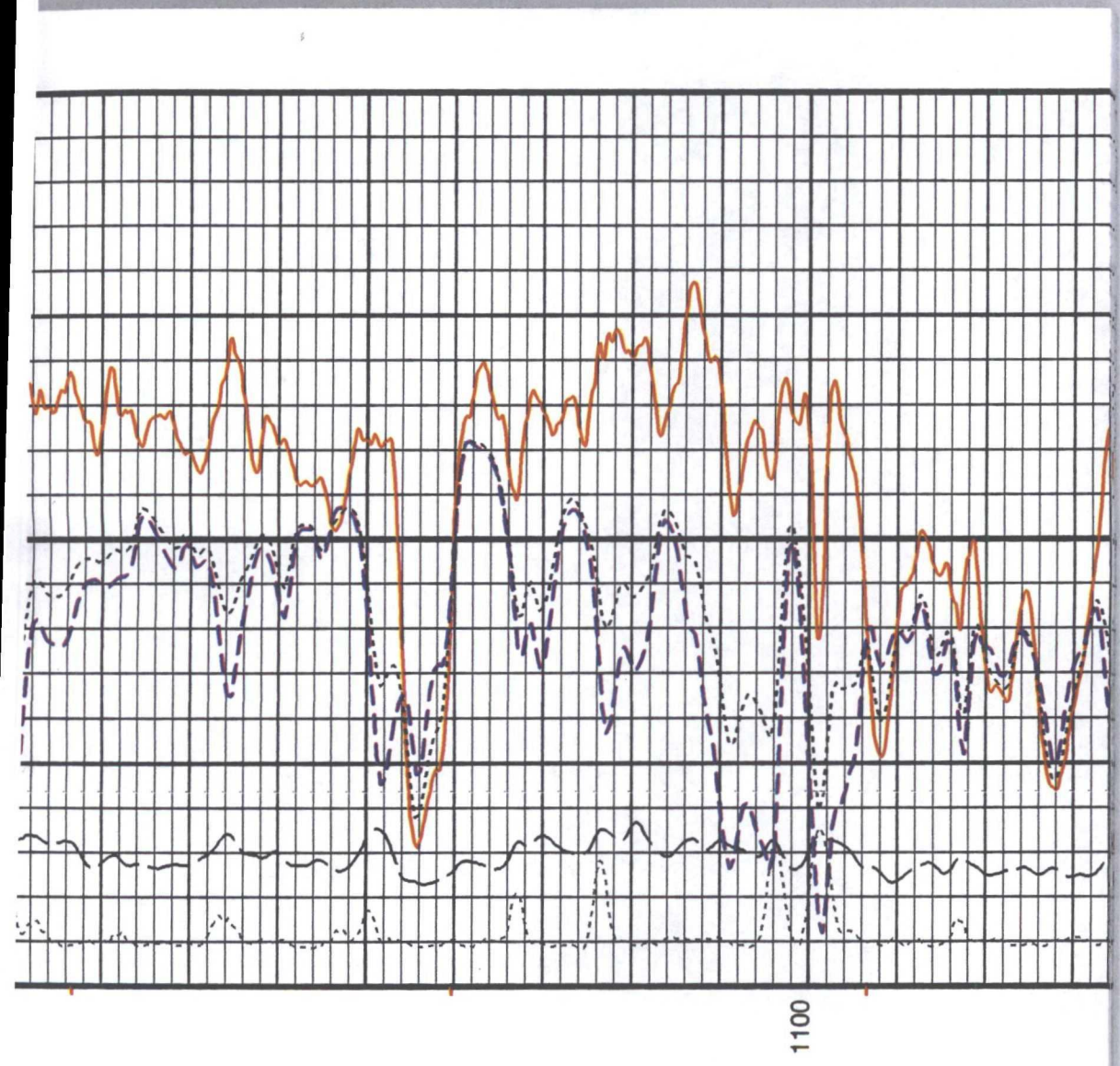
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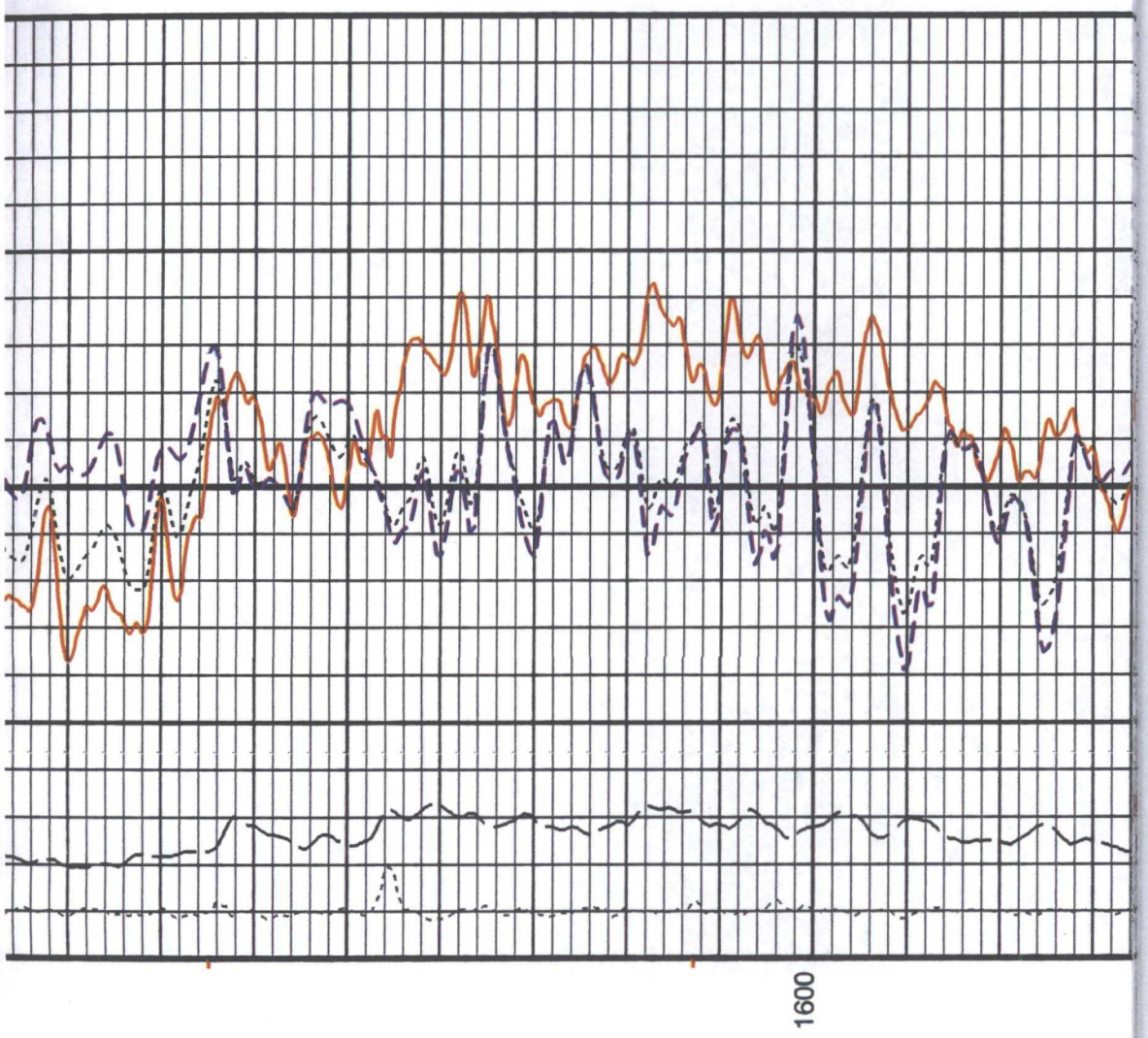
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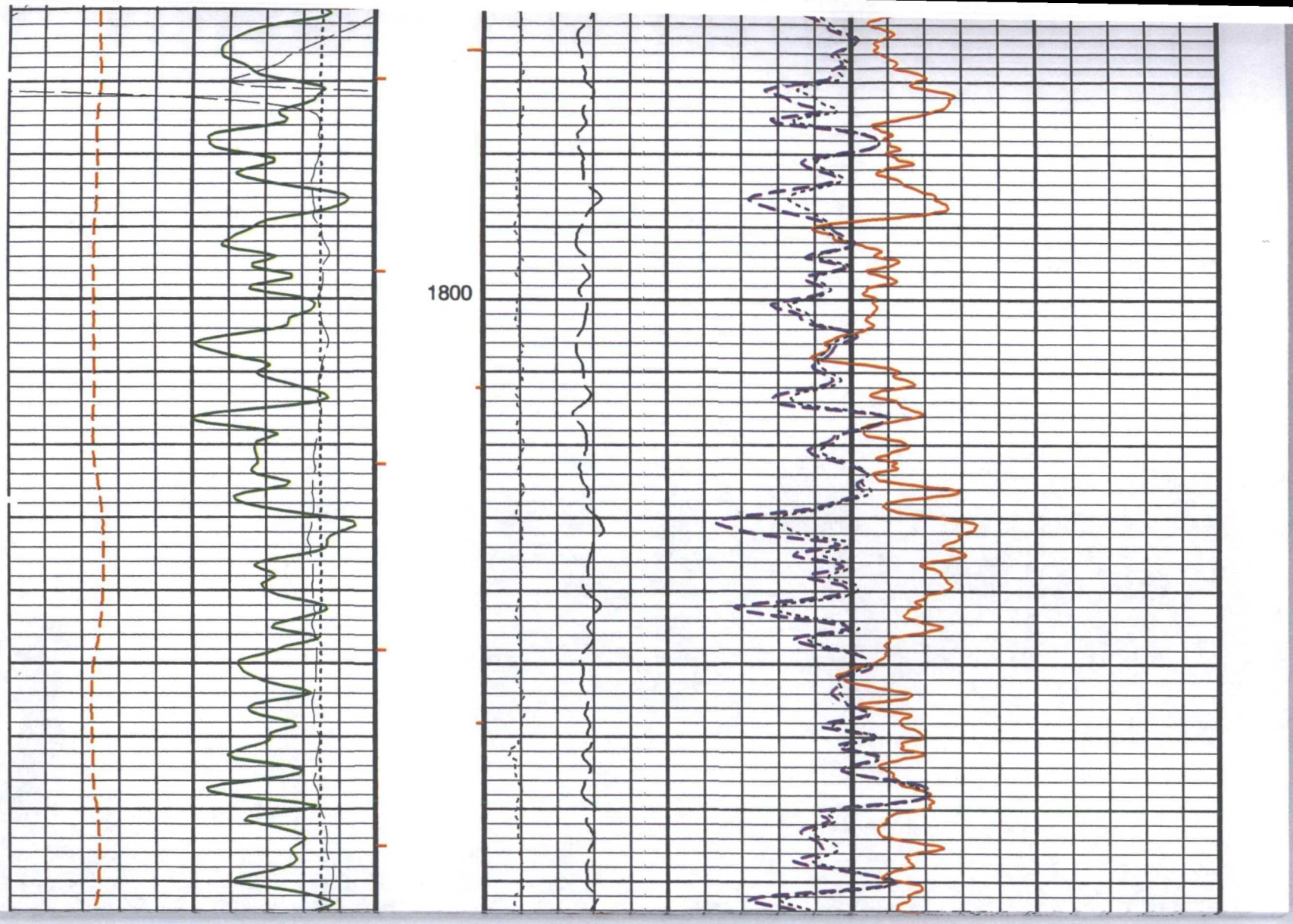
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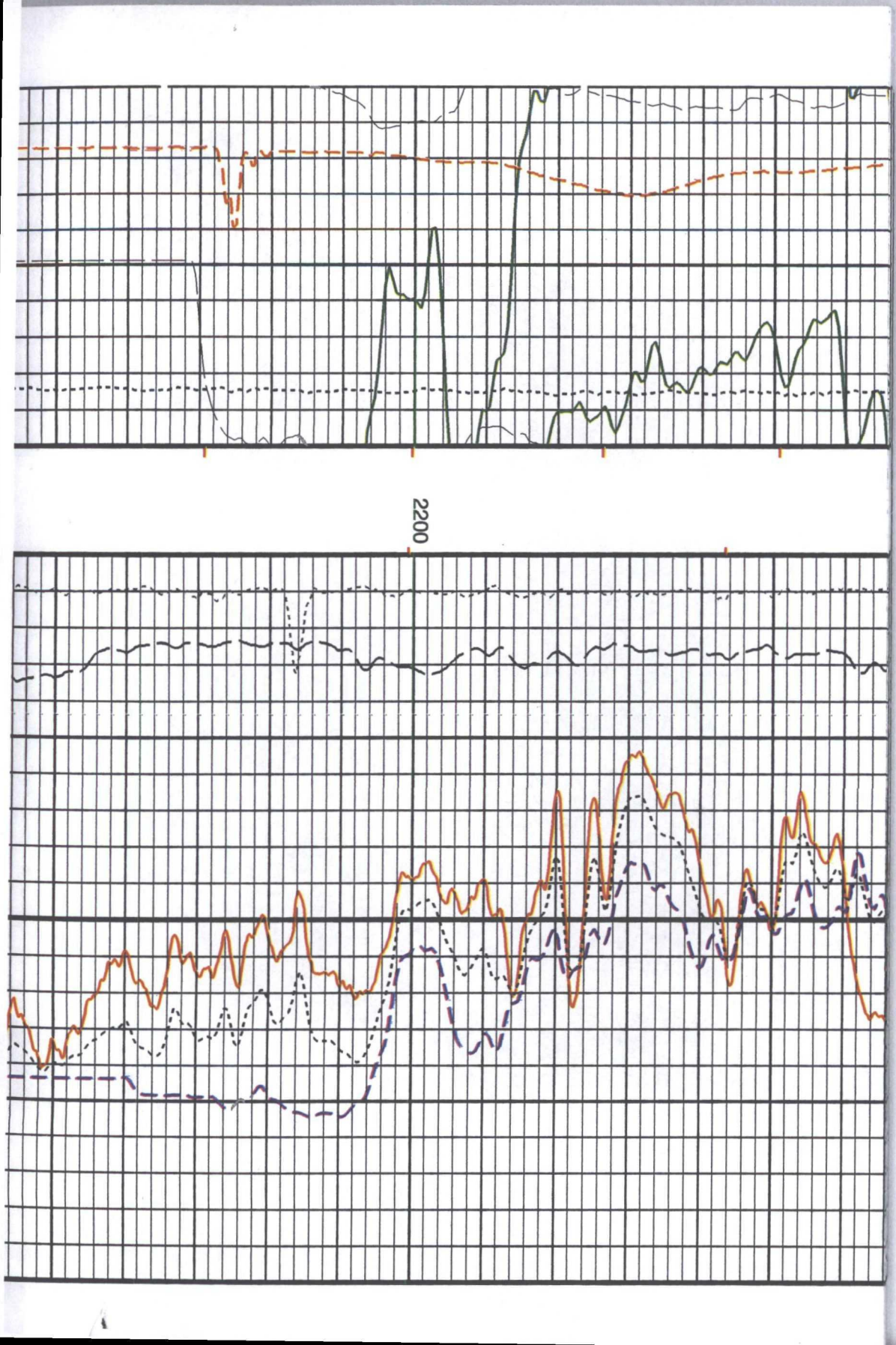
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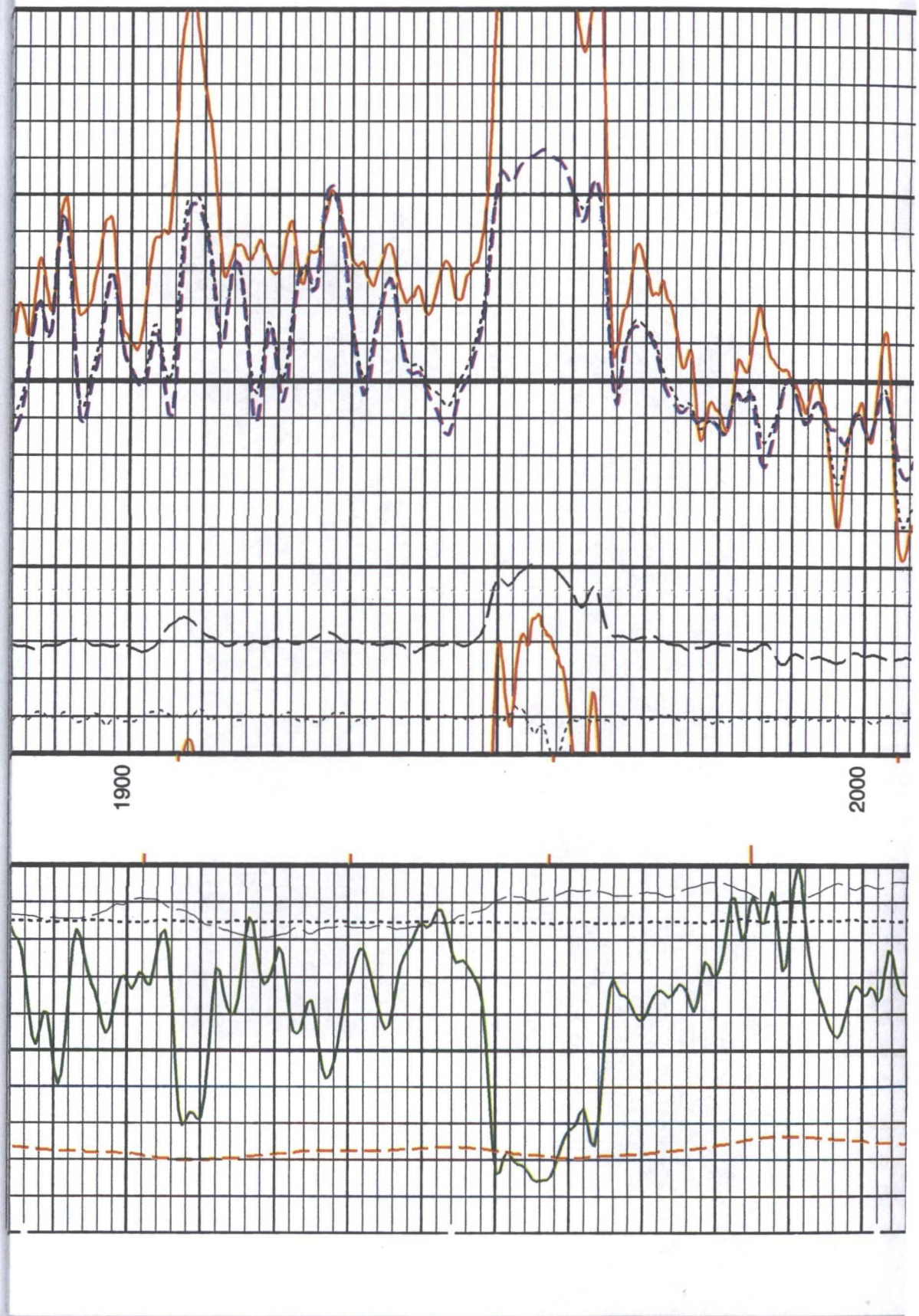
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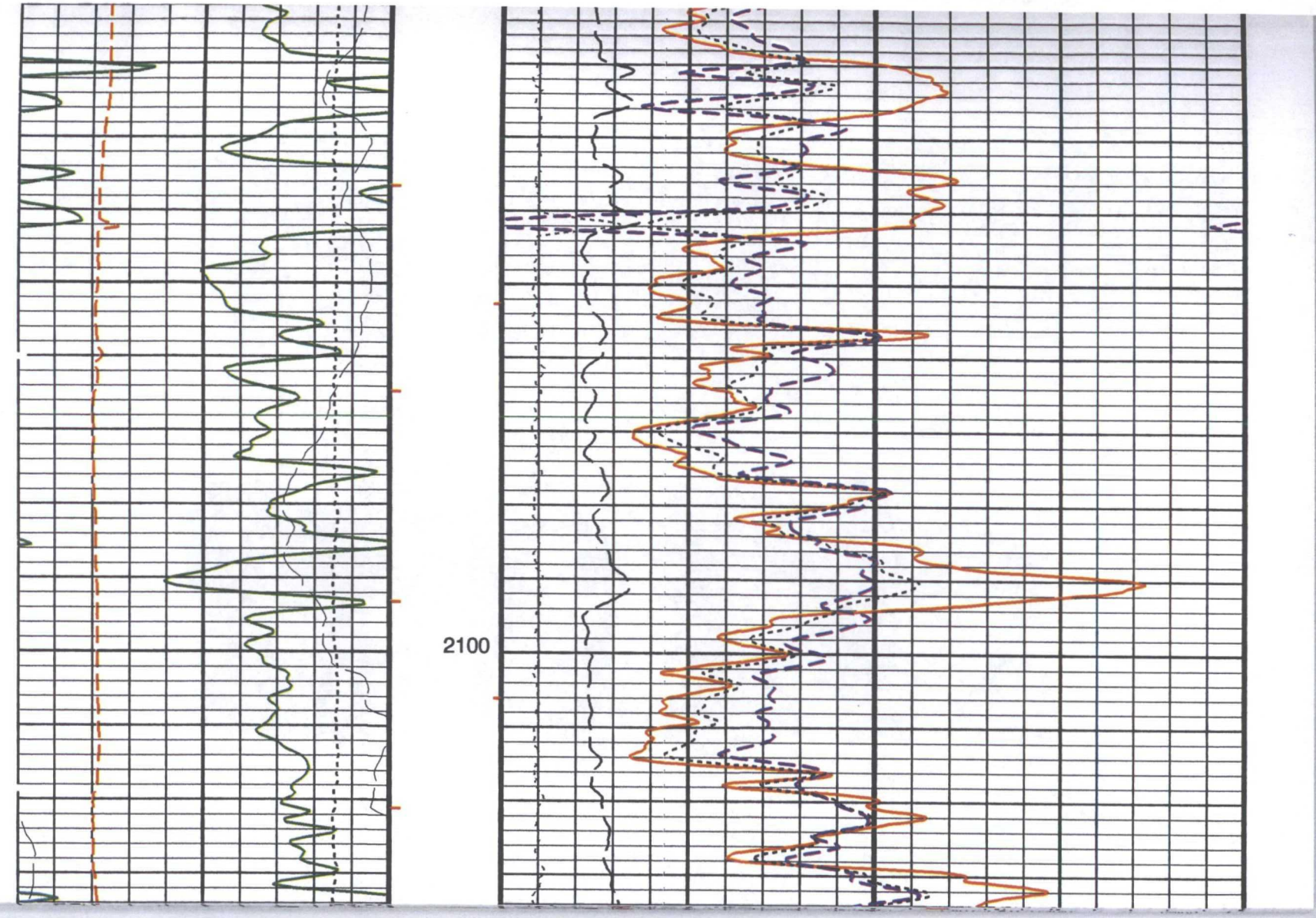
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CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_FILE	
HART	Accelerometer Reference Temperature	32	DEGF
HDCOD	HILT Density Coal detection	2	G/C3
HDSAD	HILT Density Salt detection	2.1	G/C3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	G/C3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	45	PU
HNSAD	HILT Neutron Salt detection	5	PU
HPHIECUT	HILT effective Porosity Cutoff	5	PU
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
[illegible]	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	

LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	G/C3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	YES	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	35	PU
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro-Resistivity Selection	RXOZ	
PROCMSO	Mechanical Standoff Fin Size	1.5	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Eccentered	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	100	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
SPA-A: SP ADAPTOR			
SPNV	SP Next Value	0	MV
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	97.226	DEGF
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	100	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	NONE	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	2260.00	FT
TDL	Total Depth - Logger	2260.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	

BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	12000.00	PPM
CSIZ	Current Casing Size	8.625	IN
CWEI	Casing Weight	24.00	LB/F
DFD	Drilling Fluid Density	8.60	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	90.60	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	0.0734	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2260	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: 5_nuc Vertical Scale: 5" per 100' Graphics File Created: 08-Jul-2012 15:53

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53

Company: Hess Corporation Onshore US Well: WBDGU 1830 271F

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_008PUP	FN:10	PRODUCER	08-Jul-2012 15:52	2276.5 FT	1902.5 FT

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53

OP System Version: 19C0-187

HILTB-PTB 19C0-187 SPA-A 19C0-187
DTC-H 19C0-187

PIP SUMMARY

REPEAT ANALYSIS

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

TNPH_REP Curve (TNPH_REP)
0.3 (V/V) -0.1

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

PXND_HILT_REP Curve (PXND_HILT_REP)
0.3 (V/V) -0.1

SP_REP Curve (SP_REP)
-80 (MV) 20

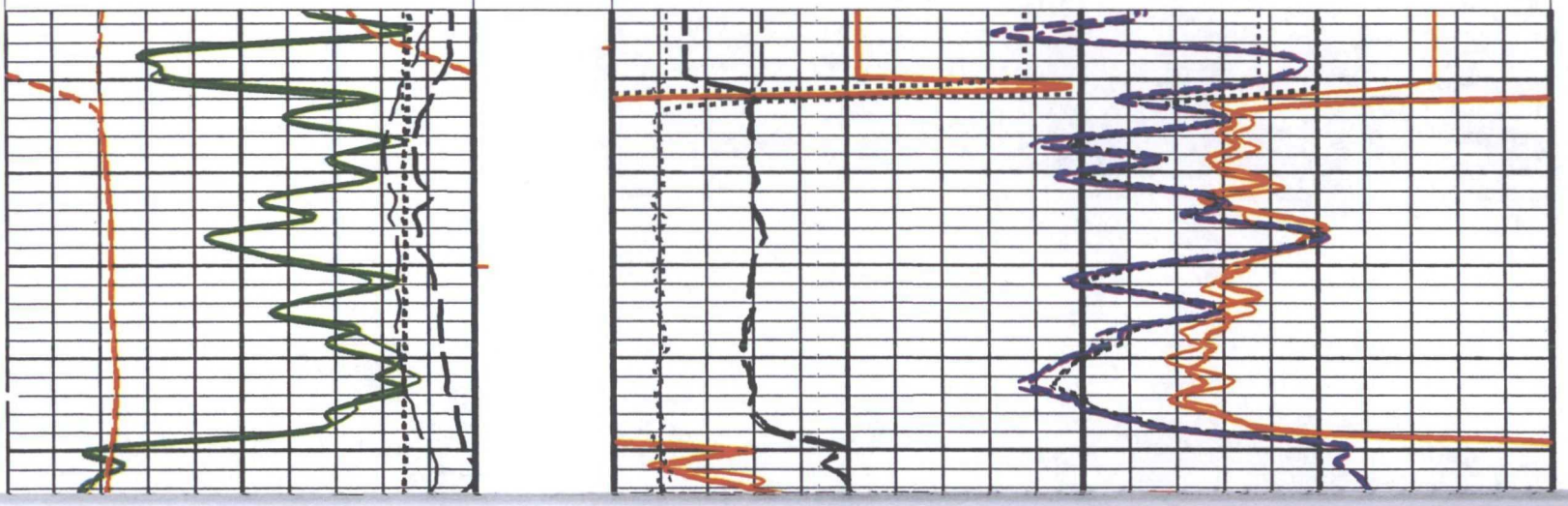
PEFZ_REP Curve (PEFZ_REP)
0 (----) 10

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

HDRA_REP Curve (HDRA_REP)
-0.05 (G/C3) 0.45

GR_REP Curve (GR_REP)
0 (GAPI) 150

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) -0.1



HILTB-PTB 19C0-187 SPA-A 19C0-187
DTC-H 19C0-187

PIP SUMMARY

REPEAT ANALYSIS

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

TNPH_REP Curve (TNPH_REP)
0.3 (V/V) -0.1

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

PXND_HILT_REP Curve (PXND_HILT_REP)
0.3 (V/V) -0.1

SP_REP Curve (SP_REP)
-80 (MV) 20

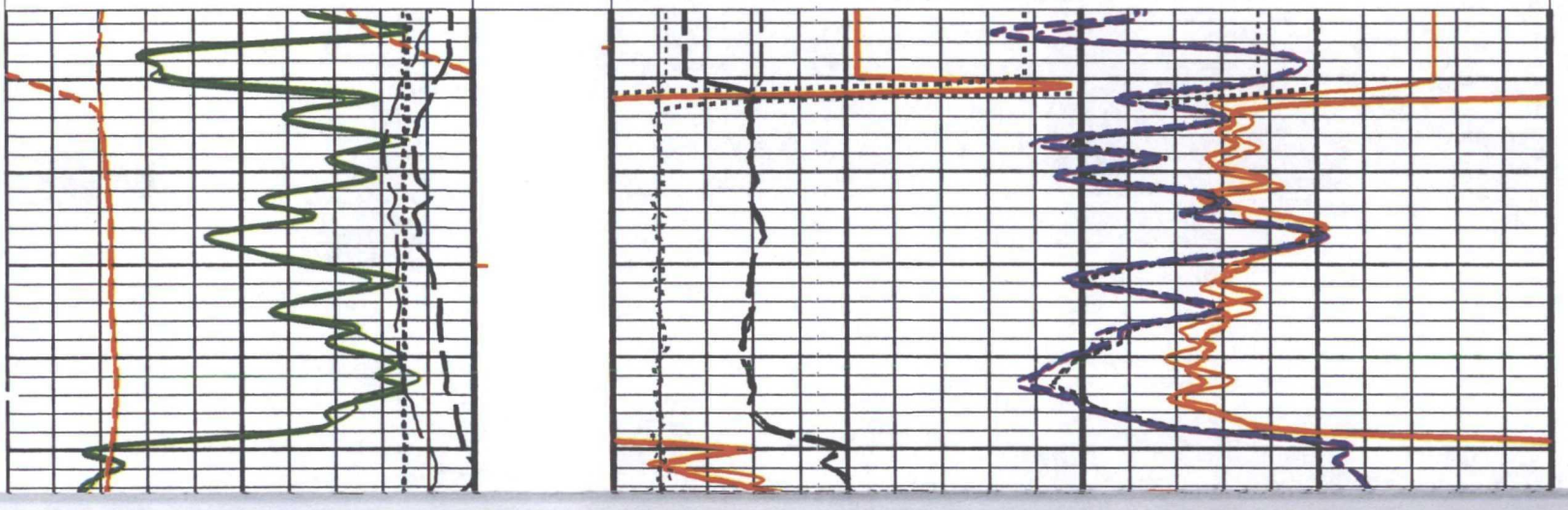
PEFZ_REP Curve (PEFZ_REP)
0 (----) 10

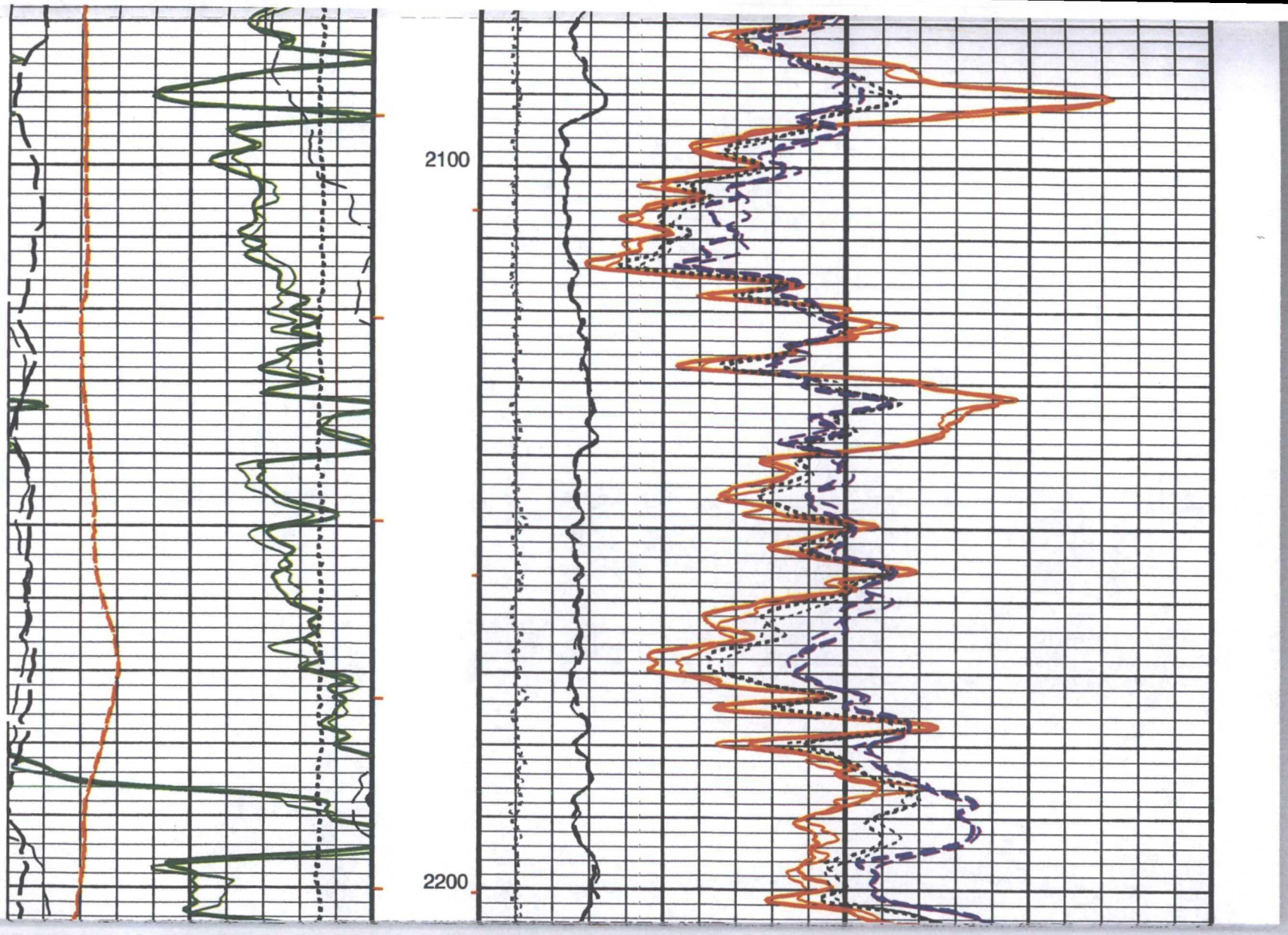
HCAL_REP Curve (HCAL_REP)
6 (IN) 16

HDRA_REP Curve (HDRA_REP)
-0.05 (G/C3) 0.45

GR_REP Curve (GR_REP)
0 (GAPI) 150

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) -0.1

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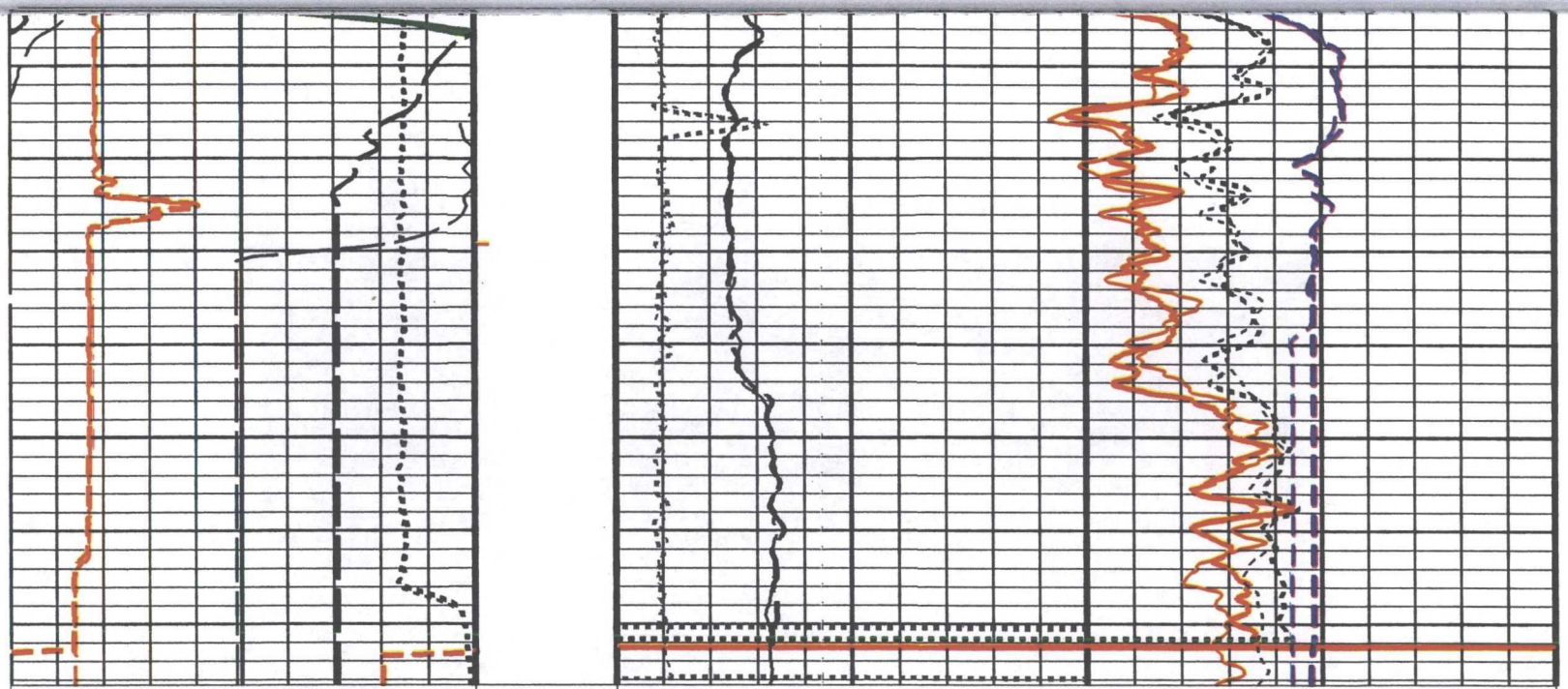


GR_REP Curve (GR_REP)
0 (GAPI) 150

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

SP_REP Curve (SP_REP)
-80 (MV) 20

TENS_REP Curve (TENS_REP)
10000 (LBF) 0

DPHZ_REP Curve (DPHZ_REP)
0.3 (V/V) -0.1

HDRA_REP Curve (HDRA_REP)
-0.05 (G/C3) 0.45

PEFZ_REP Curve (PEFZ_REP)
0 (----) 10

PXND_HILT_REP Curve (PXND_HILT_REP)
0.3 (V/V) -0.1

TNPH_REP Curve (TNPH_REP)
0.3 (V/V) -0.1

PIP SUMMARY

Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HILTB-FTB: High resolution Integrated Logging Tool-DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	97.226	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	103.1	DEGF
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_FILE	
HART	Accelerometer Reference Temperature	32	DEGF
HDCOD	HILT Density Coal detection	2	G/C3
HDSAD	HILT Density Salt detection	2.1	G/C3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	G/C3

HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	45	PU
HNSAD	HILT Neutron Salt detection	5	PU
HPHIECUT	HILT effective Porosity Cutoff	5	PU
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	G/C3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	YES	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	35	PU
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro-Resistivity Selection	RXOZ	
PROCMSO	Mechanical Standoff Fin Size	1.5	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Eccentered	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	100	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
SPA-A: SP ADAPTOR			
SPNV	SP Next Value	0	MV

BHS	Borehole Status		
BHT	Bottom Hole Temperature (used in calculations)	97.226	DEGF
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	100	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	NONE	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	2260.00	FT
TDL	Total Depth - Logger	2260.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	12000.00	PPM
CSIZ	Current Casing Size	8.625	IN
CWEI	Casing Weight	24.00	LB/F
DFD	Drilling Fluid Density	8.60	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	90.60	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	0.0734	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2260	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: 5_nuc_REP Vertical Scale: 5" per 100' Graphics File Created: 08-Jul-2012 15:53

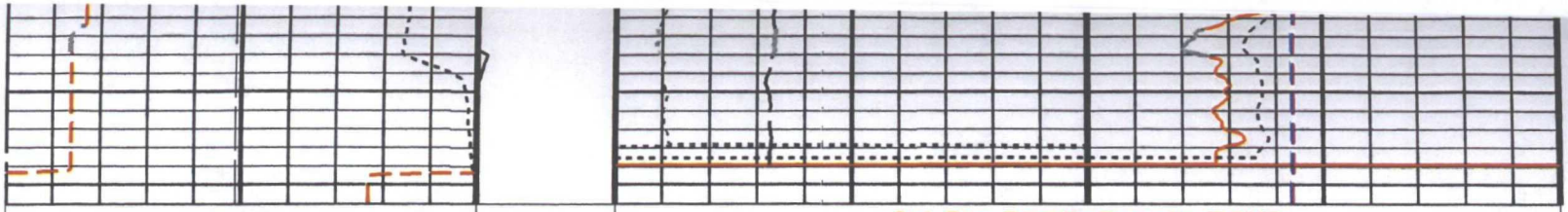
OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_008PUP	FN:10	PRODUCER	08-Jul-2012 15:52	2276.5 FT	1902.5 FT

Output DLIS Files



SP (SP)
-80 (MV) 20

Gamma Ray (GR)
0 (GAPI) 150

HILT Caliper (HCAL)
6 (IN) 16

Tension (TENS)
10000 (LBF) 0

Std. Res. Density Porosity (DPHZ)
0.3 (V/V) -0.1

Density Correction (HDRA)
-0.05 (G/C3) 0.45

Std. Res. Formation Pe (PEFZ)
0 (----) 10

Hilt Porosity CrossPlot (PXND_HILT)
0.3 (V/V) -0.1

Env.Corr.Thermal Neutron Porosity (TNPH)
0.3 (V/V) -0.1

PIP SUMMARY

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

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HILTB-FTB: High resolution Integrated Logging Tool-DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	97.226	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	103.1	DEGF

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53

Company: Hess Corporation Onshore US | Well: WBDGU 1830 271F

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_007LUP	FN:8	PRODUCER	08-Jul-2012 15:43	2275.5 FT	1901.5 FT

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_008PUP	FN:10	PRODUCER	08-Jul-2012 15:52	2276.5 FT	1902.5 FT
RTB	TLD_MCFL_CNL_008PUP	FN:11	PRODUCER	08-Jul-2012 15:52	2276.5 FT	1902.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 127.65 F3
Cement Volume = 68.67 F3 (assuming 5.50 IN casing O.D.)
Computed from 2260.0 FT to 1903.0 FT using data channel(s) HCAL

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

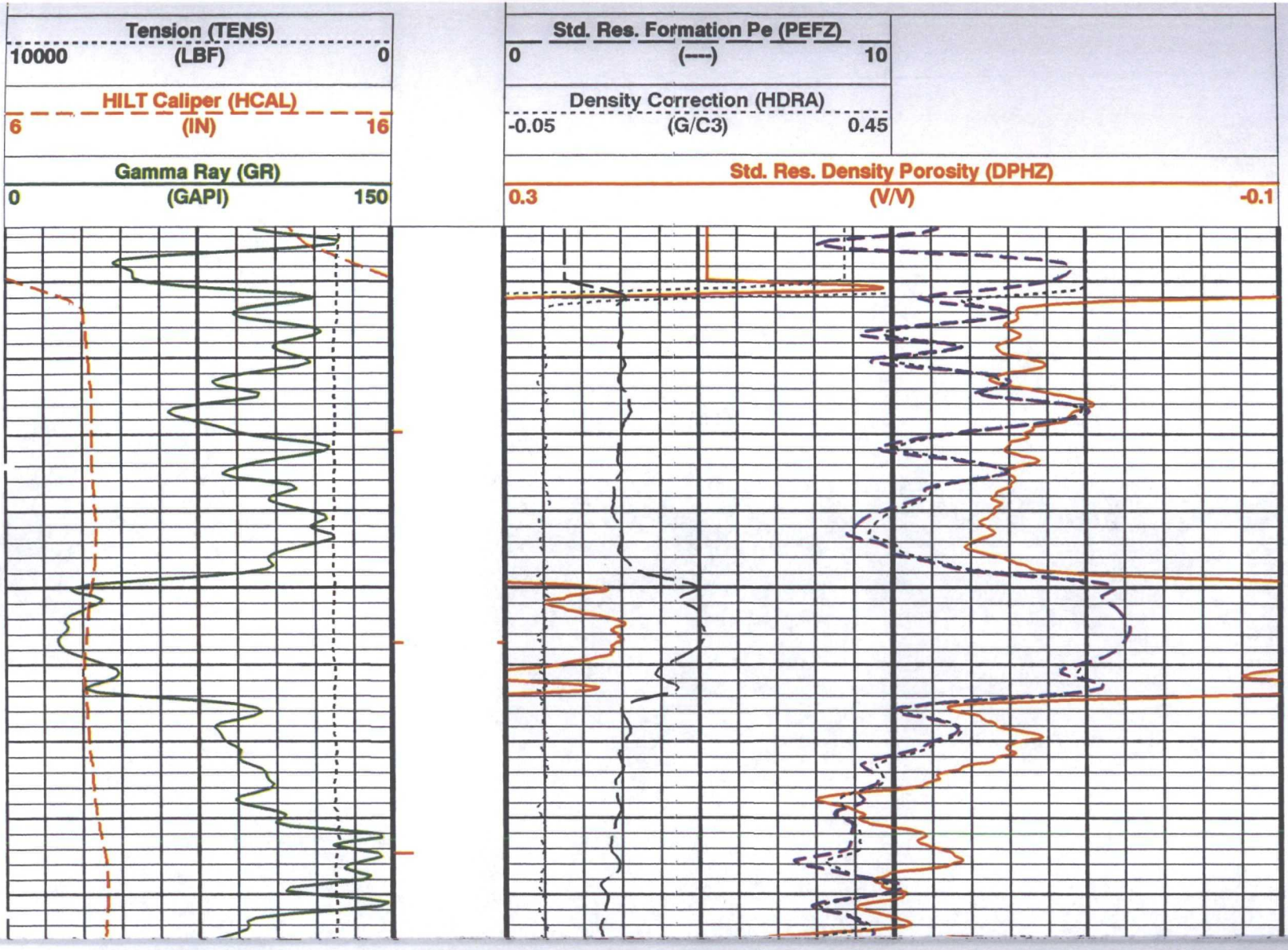
PIP SUMMARY

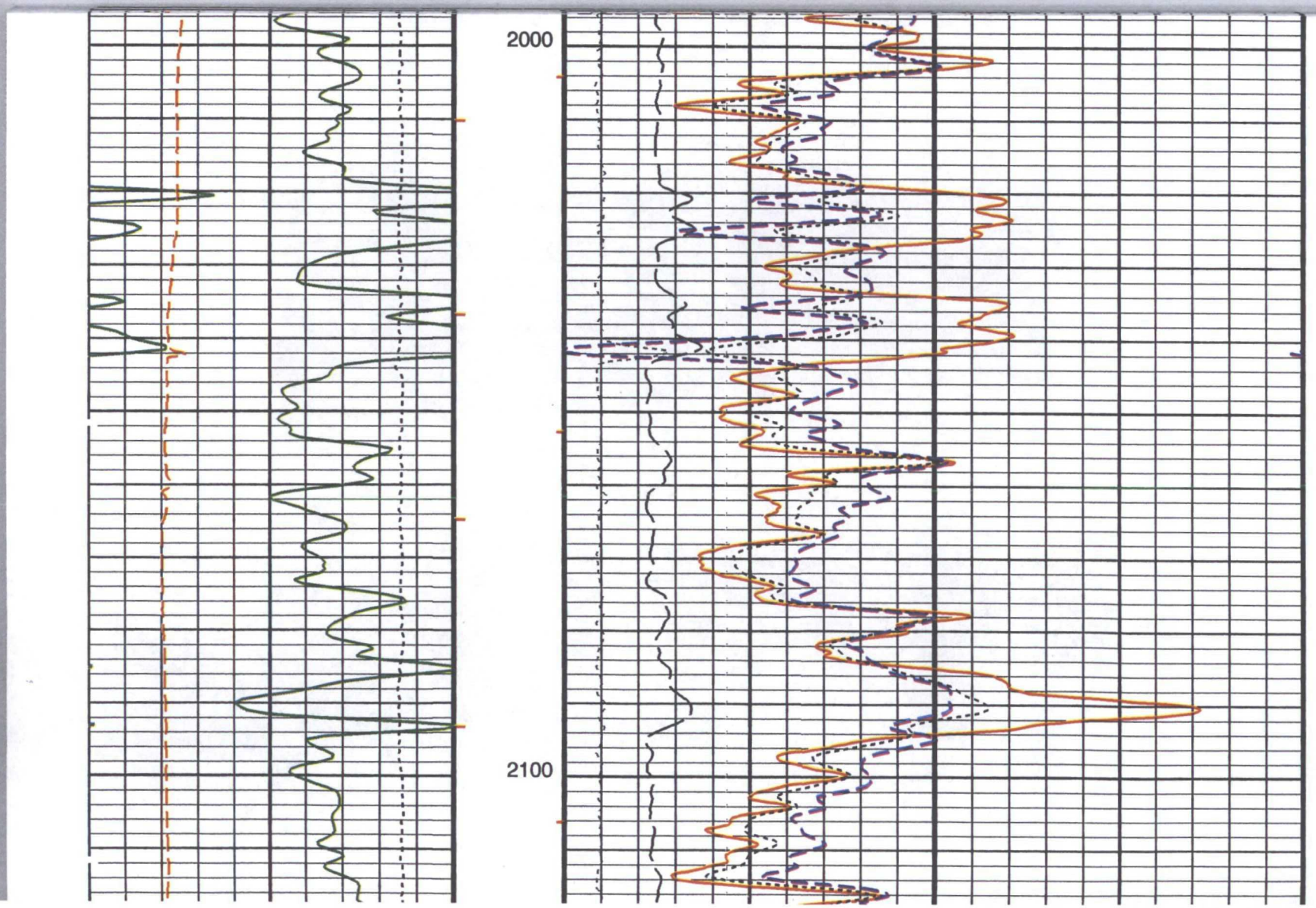
REPEAT SECTION

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

Time Mark Every 60 S

Env.Corr.Thermal Neutron Porosity (TNPH)
0.3 (V/V) -0.1


Tension (TENS)
10000 (LBF) 0
HILT Caliper (HCAL)
6 (IN) 16
Gamma Ray (GR)
0 (GAPI) 150
Std. Res. Formation Pe (PEFZ)
0 (----) 10
Density Correction (HDRA)
-0.05 (G/C3) 0.45
Std. Res. Density Porosity (DPHZ)
0.3 (V/V) -0.1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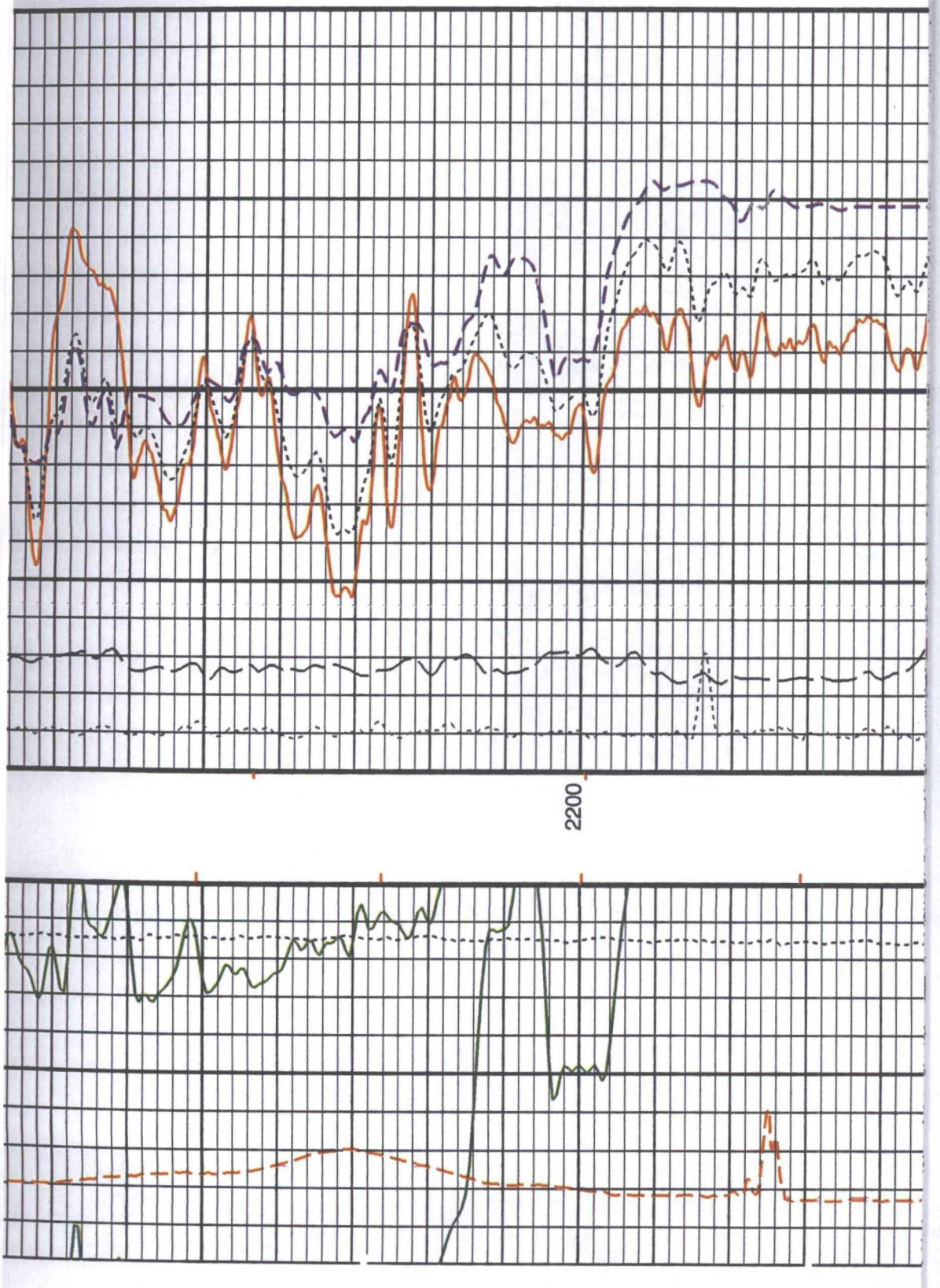
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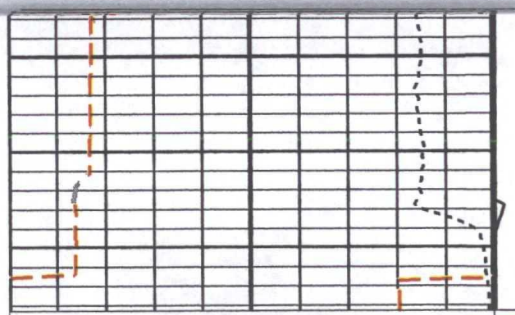
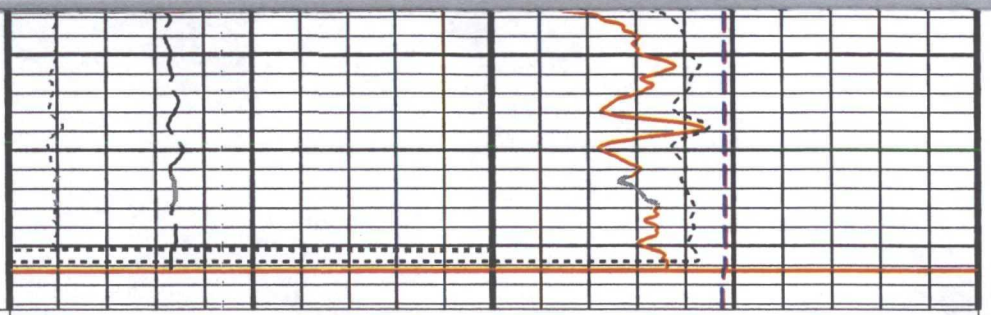


Gamma Ray (GR)
0 (GAPI) 150

HILT Caliper (HCAL)
6 (IN) 16

Tension (TENS)
10000 (LBF) 0



Std. Res. Density Porosity (DPHZ)
0.3 (V/V) -0.1

Density Correction (HDRA)
-0.05 (G/C3) 0.45

Std. Res. Formation Pe (PEFZ)
0 (----) 10

Hilt Porosity CrossPlot (PXND_HILT)
0.3 (V/V) -0.1

Env.Corr.Thermal Neutron Porosity (TNPH)
0.3 (V/V) -0.1

PIP SUMMARY

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

REPEAT SECTION

Time Mark Every 60 S

Format: extra_nuc Vertical Scale: 5" per 100' Graphics File Created: 08-Jul-2012 15:52

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

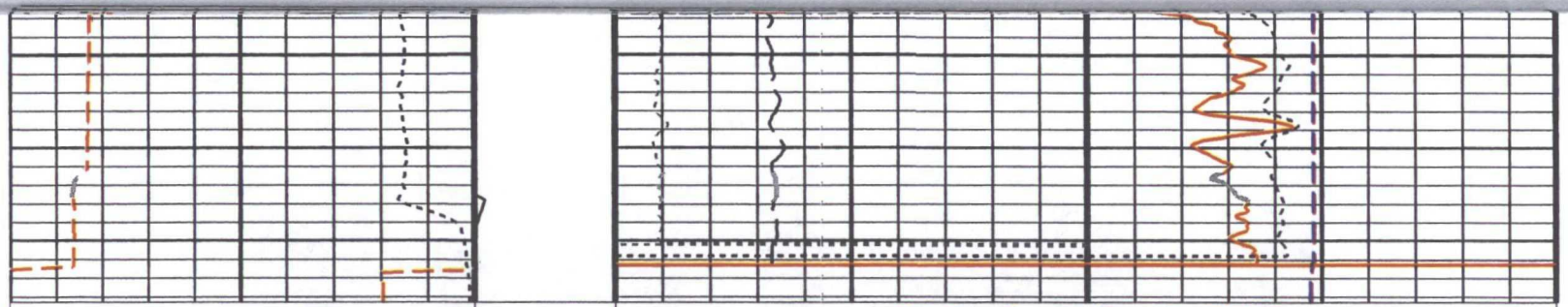
DEFAULT	TLD_MCFL_CNL_007LUP	FN:8	PRODUCER	08-Jul-2012 15:43	2275.5 FT	1901.5 FT

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_008PUP	FN:10	PRODUCER	08-Jul-2012 15:52
RTB	TLD_MCFL_CNL_008PUP	FN:11	PRODUCER	08-Jul-2012 15:52

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Stab Measurement Summary							
Before: 8-Jul-2012 6:30							
BS Window Ratio	0.7577	N/A	0.7622	N/A	N/A	N/A	
BS Window Sum	9216	N/A	9224	N/A	N/A	N/A	CPS
SS Window Ratio	0.4810	N/A	0.4839	N/A	N/A	N/A	
SS Window Sum	9137	N/A	9126	N/A	N/A	N/A	CPS
LS Window Ratio	0.2906	N/A	0.2916	N/A	N/A	N/A	
LS Window Sum	1007	N/A	1006	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: 8-Jul-2012 6:30							
BS PM High Voltage (Command)	1661	N/A	1641	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1682	N/A	1679	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1270	N/A	1269	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Quality Resolutions Calibration							
Before: 8-Jul-2012 6:30							
BS Crystal Resolution	10.59	N/A	10.56	N/A	N/A	N/A	%
SS Crystal Resolution	8.631	N/A	8.882	N/A	N/A	N/A	%
LS Crystal Resolution	8.664	N/A	8.572	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration							
Before: 8-Jul-2012 6:37							
Raw B0 Resistivity	3875	N/A	3854	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3799	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3832	N/A	N/A	N/A	OHMM



Gamma Ray (GR)		
0	(GAPI)	150
HILT Caliper (HCAL)		
6	(IN)	16
Tension (TENS)		
10000	(LBF)	0

Std. Res. Density Porosity (DPHZ)		
0.3	(V/V)	-0.1
Density Correction (HDRA)		
-0.05	(G/C3)	0.45
Std. Res. Formation Pe (PEFZ)		
0	(---)	10
Hilt Porosity CrossPlot (PXND_HILT)		
0.3	(V/V)	-0.1
Env.Corr.Thermal Neutron Porosity (TNPH)		
0.3	(V/V)	-0.1

PIP SUMMARY

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

REPEAT SECTION

Time Mark Every 60 S

Format: extra_nuc Vertical Scale: 5" per 100' Graphics File Created: 08-Jul-2012 15:52

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

DEFAULT	TLD_MCFL_CNL_007LUP	FN:8	PRODUCER	08-Jul-2012 15:43	2275.5 FT	1901.5 FT

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_008PUP	FN:10	PRODUCER	08-Jul-2012 15:52
RTB	TLD_MCFL_CNL_008PUP	FN:11	PRODUCER	08-Jul-2012 15:52

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Stab Measurement Summary							
Before: 8-Jul-2012 6:30							
BS Window Ratio	0.7577	N/A	0.7622	N/A	N/A	N/A	
BS Window Sum	9216	N/A	9224	N/A	N/A	N/A	CPS
SS Window Ratio	0.4810	N/A	0.4839	N/A	N/A	N/A	
SS Window Sum	9137	N/A	9126	N/A	N/A	N/A	CPS
LS Window Ratio	0.2906	N/A	0.2916	N/A	N/A	N/A	
LS Window Sum	1007	N/A	1006	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: 8-Jul-2012 6:30							
BS PM High Voltage (Command)	1661	N/A	1641	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1682	N/A	1679	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1270	N/A	1269	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Quality Resolutions Calibration							
Before: 8-Jul-2012 6:30							
BS Crystal Resolution	10.59	N/A	10.56	N/A	N/A	N/A	%
SS Crystal Resolution	8.631	N/A	8.882	N/A	N/A	N/A	%
LS Crystal Resolution	8.664	N/A	8.572	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration							
Before: 8-Jul-2012 6:37							
Raw B0 Resistivity	3875	N/A	3854	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3799	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3832	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT Caliper Calibration
Before: 8-Jul-2012 6:22

HILT Caliper Zero Measurement	8.000	N/A	8.287	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.50	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT M01
Before: 8-Jul-2012 14:54

HRLT M0-M1 Voltage Plus - 0	0	N/A	-319.5	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 1	0	N/A	-318.0	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 2	0	N/A	-329.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 3	0	N/A	-310.8	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 4	0	N/A	-319.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 5	0	N/A	-321.9	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 6	0	N/A	317.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 7	0	N/A	-322.7	N/A	N/A	9.681	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT M12
Before: 8-Jul-2012 14:54

HRLT M1-M2 Voltage Plus - 0	0	N/A	1757	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 1	0	N/A	1756	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 2	0	N/A	1811	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 3	0	N/A	1709	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 4	0	N/A	1754	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 5	0	N/A	1769	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 6	0	N/A	-1759	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT M23
Before: 8-Jul-2012 14:54

HRLT M2-M3 Voltage Plus - 0	0	N/A	1744	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 1	0	N/A	1753	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 2	0	N/A	1809	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 3	0	N/A	1710	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 4	0	N/A	1751	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 5	0	N/A	1768	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 6	0	N/A	-1745	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT V34
Before: 8-Jul-2012 14:54

HRLT A3-A4 Voltage Plus - 0	0	N/A	68640	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 1	0	N/A	69250	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 2	0	N/A	71690	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 3	0	N/A	67860	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 4	0	N/A	69320	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 5	0	N/A	69900	N/A	N/A	2100	UV

HRLT A3-A4 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT V45
Before: 8-Jul-2012 14:54

HRLT A4-A5 Voltage Plus - 0	0	N/A	68530	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 1	0	N/A	69210	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 2	0	N/A	71630	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 3	0	N/A	67800	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 4	0	N/A	69230	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 5	0	N/A	69800	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 6	0	N/A	-67970	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT V56
Before: 8-Jul-2012 14:54

HRLT A5-A6 Voltage Plus - 0	0	N/A	68960	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 1	0	N/A	69090	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 2	0	N/A	71670	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 3	0	N/A	67940	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 4	0	N/A	69540	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 5	0	N/A	70200	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 6	0	N/A	-67830	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT VTP
Before: 8-Jul-2012 14:54

HRLT Torpedo-M0 Voltage - 0	0	N/A	-68210	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 1	0	N/A	-68870	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 2	0	N/A	-71390	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 3	0	N/A	-67690	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 4	0	N/A	-69280	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 5	0	N/A	-69910	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 6	0	N/A	67560	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT VBD
Before: 8-Jul-2012 14:54

HRLT Bridle#9-M0 Voltage - 0	0	N/A	-68200	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 1	0	N/A	-68870	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 2	0	N/A	-71390	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 3	0	N/A	-67680	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 4	0	N/A	-69260	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 5	0	N/A	-69900	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 6	0	N/A	67560	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT ISO							
Before: 8-Jul-2012 14:54							
HRLT Source Current Plus - 0	0	N/A	285.2	N/A	N/A	8.520	UA
HRLT Source Current Plus - 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 7	0	N/A	281.1	N/A	N/A	8.520	UA
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HRLT MV							
Before: 8-Jul-2012 14:54							
HRLT Vertical Voltage Pl - 0	0	N/A	-321.9	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 1	0	N/A	-313.4	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 2	0	N/A	-323.2	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 3	0	N/A	-303.9	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 4	0	N/A	-309.4	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 5	0	N/A	-326.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 6	0	N/A	324.9	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 7	0	N/A	-322.7	N/A	N/A	9.681	UV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration							
Before: 8-Jul-2012 6:22							
Gamma Ray Background	30.00	N/A	57.84	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkgd)	165.0	N/A	170.2	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement							
Master: 7-Jun-2012 10:24 Before: 8-Jul-2012 6:23							
CNTC Background	26.97	26.97	29.39	N/A	N/A	4.046	CPS
CFTC Background	24.17	24.17	24.96	N/A	N/A	3.626	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Ratio Measurement							
Master: 7-Jun-2012 10:24							
Thermal Near Corr. (Tank)	5800	4958	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	1999	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.480	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Accelerometer Calibration							
Before: 8-Jul-2012 14:54							
Z-Axis Acceleration	32.19	N/A	32.12	N/A	N/A	N/A	F/S2
High resolution Integrated Logging Tool-DTS Master Calibration - Inversion results							
Master: 5-Jul-2012 17:37							
Rho Aluminum	2.596	2.602	--	--	--	--	G/C3

Pe Magnesium	2.650	2.633	--	--	--	--	

High resolution Integrated Logging Tool-DTS Master Calibration - Deviation Summary
Master: 5-Jul-2012 17:37

BS Average Deviation	0	0.4250	--	--	--	--	%
BS Max Deviation	0	1.173	--	--	--	--	%
SS Average Deviation	0	0.4220	--	--	--	--	%
SS Max Deviation	0	2.127	--	--	--	--	%
LS Average Deviation	0	0.8075	--	--	--	--	%
LS Max Deviation	0	1.934	--	--	--	--	%

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	78.2	DEGF.
Thermal Housing Size	3.340	IN.
NSR-F serial number	5043	

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:		
HILT high-Resolution Mechanical Sonde	HRMS - H	4785
HILT Rxo Gamma-ray Device	HRGD -	1731
HILT Micro Cylindrically Focused Log Dev	MCFL -	3889
GR Logging Source	GLS - VJ	5073
HILT High Res. Control Cartridge	HRCC - B	952
High Resolution Laterolog Array - B	HRLT - B	
HRLT IP Dummy Cartridge	DUMM - A	
HILT Gamma-Ray Neutron Sonde-DTS	HGNS - B	951
Auxiliary Equipment:		
Neutron Calibration Tank	NCT - B	262
Gamma Source Radioactive	GSR - U/Y	587
HGNS Housing	HGNH -	1899

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.7622	Before		0.4839	Before		0.2916
	0.7198 (Minimum) 0.7577 (Nominal) 0.7956 (Maximum)			0.4569 (Minimum) 0.4810 (Nominal) 0.5050 (Maximum)			0.2760 (Minimum) 0.2906 (Nominal) 0.3051 (Maximum)	
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		9224	Before		9126	Before		1006
	8755 (Minimum) 9216 (Nominal) 9676 (Maximum)			8680 (Minimum) 9137 (Nominal) 9593 (Maximum)			956.7 (Minimum) 1007 (Nominal) 1057 (Maximum)	

Before: 8-Jul-2012 6:30

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1641	Before		1679	Before		1269
	1561 (Minimum) 1661 (Nominal) 1761 (Maximum)			1582 (Minimum) 1682 (Nominal) 1782 (Maximum)			1170 (Minimum) 1270 (Nominal) 1370 (Maximum)	

Before: 8-Jul-2012 6:30

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		10.56	Before		8.882	Before		8.572
	9.587 (Minimum) 10.59 (Nominal) 11.59 (Maximum)			7.631 (Minimum) 8.631 (Nominal) 9.631 (Maximum)			7.664 (Minimum) 8.664 (Nominal) 9.664 (Maximum)	

Before: 8-Jul-2012 6:30

High resolution Integrated Logging Tool-DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3854	Before		3799	Before		3832
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 8-Jul-2012 6:37

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Phase	HILT Caliper Zero Measurement IN	Value
Before		8.287
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)	

Phase	HILT Caliper Plus Measurement IN	Value
Before		12.50
	9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 8-Jul-2012 6:22

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT M01

Idx	Phase	HRLT M0-M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-319.5	-322.7	-280.7	-379.7
1	Before		-318.0	-322.7	-280.7	-379.7
2	Before		-329.3	-322.7	-280.7	-379.7
3	Before		-310.8	-322.7	-280.7	-379.7
4	Before		-319.3	-322.7	-280.7	-379.7
5	Before		-321.9	-322.7	-280.7	-379.7
6	Before		317.3	322.7	379.7	280.7
7	Before		-322.7	-322.7	-280.7	-379.7
		(Minimum) (Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

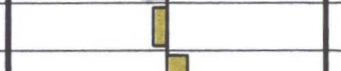
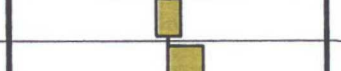
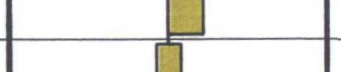
High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT M12

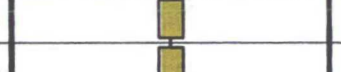
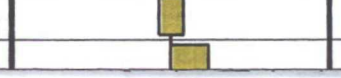
Idx	Phase	HRLT M1-M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1757	1781	2095	1549
1	Before		1756	1781	2095	1549
2	Before		1811	1781	2095	1549
3	Before		1709	1781	2095	1549
4	Before		1754	1781	2095	1549
5	Before		1769	1781	2095	1549

1	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration						
HRLT V45						
Idx	Phase	HRLT A4-A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68530	70000	82360	60900
1	Before		69210	70000	82360	60900
2	Before		71630	70000	82360	60900
3	Before		67800	70000	82360	60900
4	Before		69230	70000	82360	60900
5	Before		69800	70000	82360	60900
6	Before		-67970	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration						
HRLT V56						
Idx	Phase	HRLT A5-A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68960	70000	82360	60900
1	Before		69090	70000	82360	60900
2	Before		71670	70000	82360	60900
3	Before		67940	70000	82360	60900
4	Before		69540	70000	82360	60900
5	Before		70200	70000	82360	60900
6	Before		-67830	-70000	-60900	-82360

6	Before		-1759	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
	(Minimum)	(Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2-M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1744	1781	2095	1549
1	Before		1753	1781	2095	1549
2	Before		1809	1781	2095	1549
3	Before		1710	1781	2095	1549
4	Before		1751	1781	2095	1549
5	Before		1768	1781	2095	1549
6	Before		-1745	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
	(Minimum)	(Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3-A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68640	70000	82360	60900
1	Before		69250	70000	82360	60900
2	Before		71690	70000	82360	60900
3	Before		67860	70000	82360	60900
4	Before		69320	70000	82360	60900
5	Before		69900	70000	82360	60900

7	Before	70000	70000	82360	60900
	(Minimum) (Nominal) (Maximum)				

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT VTP

Idx	Phase	HRLT Torpedo-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68210	-70000	-60900	-82360
1	Before		-68870	-70000	-60900	-82360
2	Before		-71390	-70000	-60900	-82360
3	Before		-67690	-70000	-60900	-82360
4	Before		-69280	-70000	-60900	-82360
5	Before		-69910	-70000	-60900	-82360
6	Before		67560	70000	82360	60900
7	Before		-70000	-70000	-60900	-82360
	(Minimum) (Nominal) (Maximum)					

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT VBD

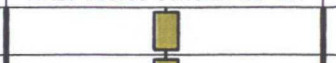
Idx	Phase	HRLT Bridle#9-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68200	-70000	-60900	-82360
1	Before		-68870	-70000	-60900	-82360
2	Before		-71390	-70000	-60900	-82360
3	Before		-67680	-70000	-60900	-82360
4	Before		-69260	-70000	-60900	-82360
5	Before		-69900	-70000	-60900	-82360

7	Before		-70000	-70000	-60900	-82360
	(Minimum) (Nominal) (Maximum)					

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

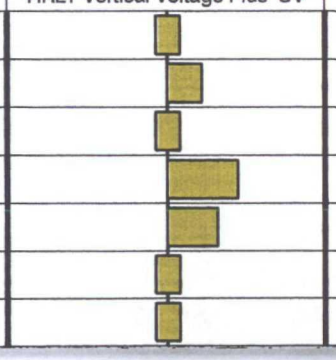
HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		285.2	284.0	334.1	247.0
1	Before		281.1	281.1	330.7	244.4
2	Before		281.1	281.1	330.7	244.4
3	Before		281.1	281.1	330.7	244.4
4	Before		281.1	281.1	330.7	244.4
5	Before		281.1	281.1	330.7	244.4
6	Before		281.1	281.1	330.7	244.4
7	Before		281.1	281.1	330.7	244.4
	(Minimum) (Nominal) (Maximum)					

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-321.9	-322.7	-280.7	-379.7
1	Before		-313.4	-322.7	-280.7	-379.7
2	Before		-323.2	-322.7	-280.7	-379.7
3	Before		-303.9	-322.7	-280.7	-379.7
4	Before		-309.4	-322.7	-280.7	-379.7
5	Before		-326.8	-322.7	-280.7	-379.7
6	Before		324.9	322.7	379.7	280.7

7	Before		-322.7	-322.7	-280.7	-379.7
	(Minimum)	(Nominal)	(Maximum)			

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkgd) GAPI	Value
Before		57.84	Before		170.2
	0 (Minimum) / 30.00 (Nominal) / 120.0 (Maximum)			157.1 (Minimum) / 165.0 (Nominal) / 206.3 (Maximum)	

Before: 8-Jul-2012 6:22

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		26.97	Master		24.17
Before		29.39	Before		24.96
	5.000 (Minimum) / 26.97 (Nominal) / 40.00 (Maximum)			5.000 (Minimum) / 24.17 (Nominal) / 40.00 (Maximum)	

Master: 7-Jun-2012 10:24 Before: 8-Jul-2012 6:23

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		4958	Master		1999	Master		2.480
	4700 (Minimum) / 5800 (Nominal) / 6900 (Maximum)			1900 (Minimum) / 2400 (Nominal) / 2900 (Maximum)			2.120 (Minimum) / 2.159 (Nominal) / 2.540 (Maximum)	

Master: 7-Jun-2012 10:24

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration F/S2	Value
Before		32.12
	31.53 / 32.19 / 32.84	

Before: 8-Jul-2012 14:54

High resolution Integrated Logging Tool-DTS Master Calibration

Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.602	Master		1.687
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	

Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.568	Master		2.633
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum)	

Master: 5-Jul-2012 17:37

High resolution Integrated Logging Tool-DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.4250	Master		0.4220	Master		0.8075
	-0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			-1.500 (Minimum) 0 (Nominal) 1.500 (Maximum)	

Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		1.173	Master		2.127	Master		1.934
	-1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			-2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			-3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)	

Master: 5-Jul-2012 17:37

High resolution Integrated Logging Tool-DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		26.97	Master		24.17
	5.000 (Minimum) 26.97 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 24.17 (Nominal) 40.00 (Maximum)	

Master: 7-Jun-2012 10:24

High resolution Integrated Logging Tool-DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		4958	Master		1999	Master		2.480
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 7-Jun-2012 10:24

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC-H Auxiliary Cartridge	DTCH - A	8378
DTC-H Telemetry Cartridge	DTCH - A	8378
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH - KC	9454

COMPANY:	Hess Corporation Onshore US
WELL:	WBDGU 1830 271F
FIELD:	West Bravo Dome
COUNTY:	Harding
STATE:	New Mexico

BOTTOM LOG INTERVAL	2263 ft
SCHLUMBERGER DEPTH	2266 ft
DEPTH DRILLER	2260 ft
KELLY BUSHING	4345 ft
DRILL FLOOR	4344 ft
GROUND LEVEL	4333 ft

Schlumberger

Platform Express
Three Detector Litho-Density
Compensated Neutron

Output DLIS Files

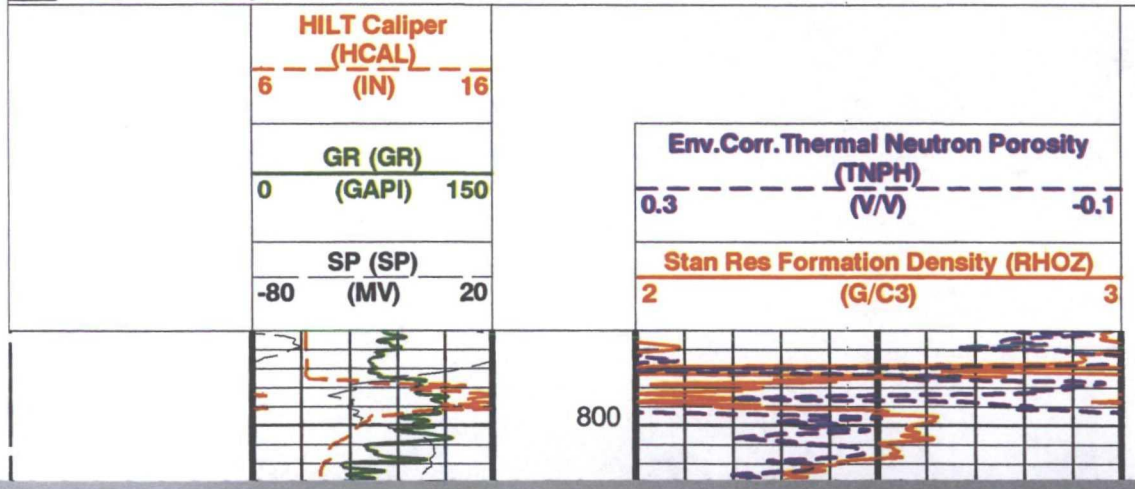
DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53

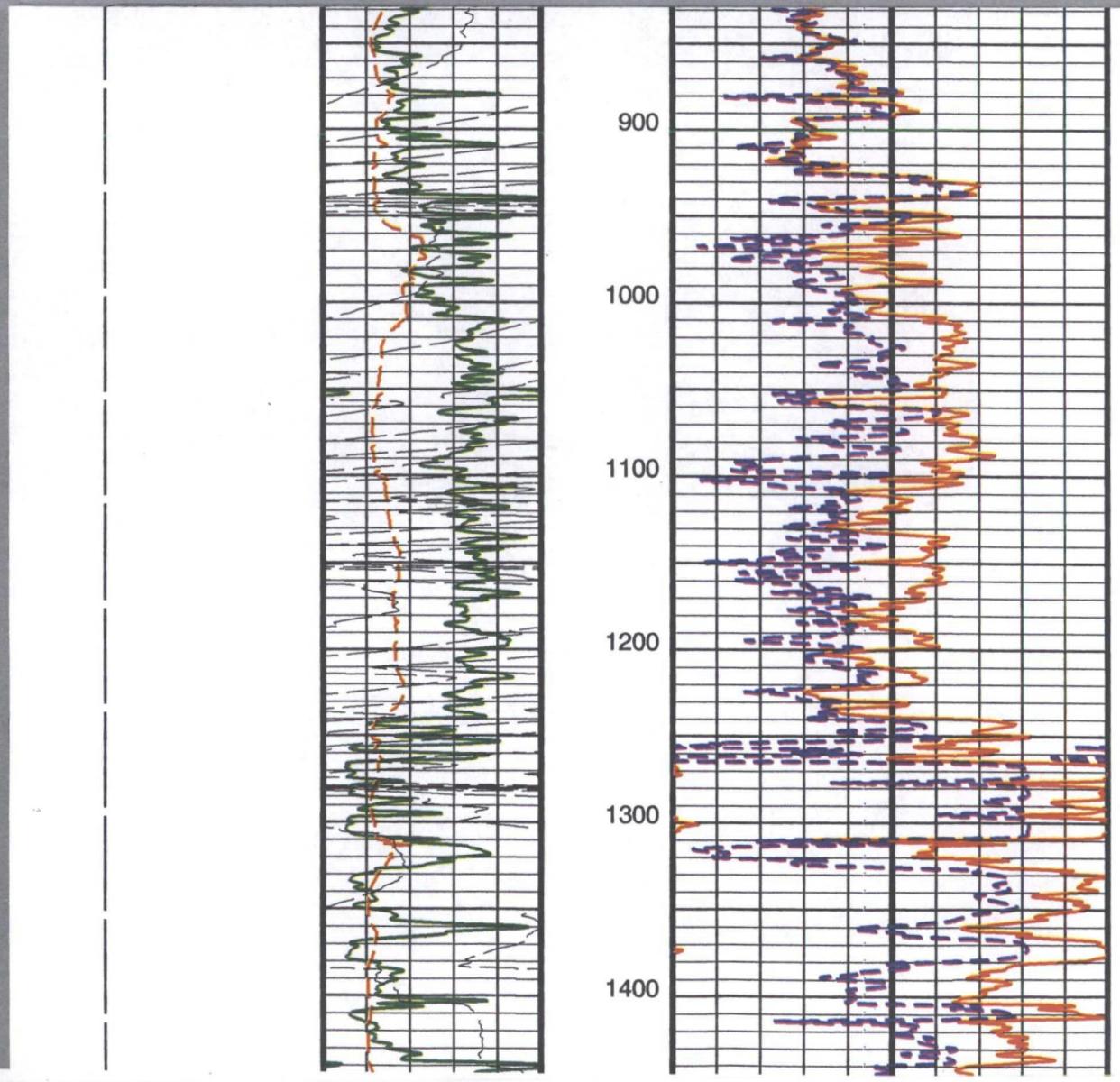
OP System Version: 19C0-187

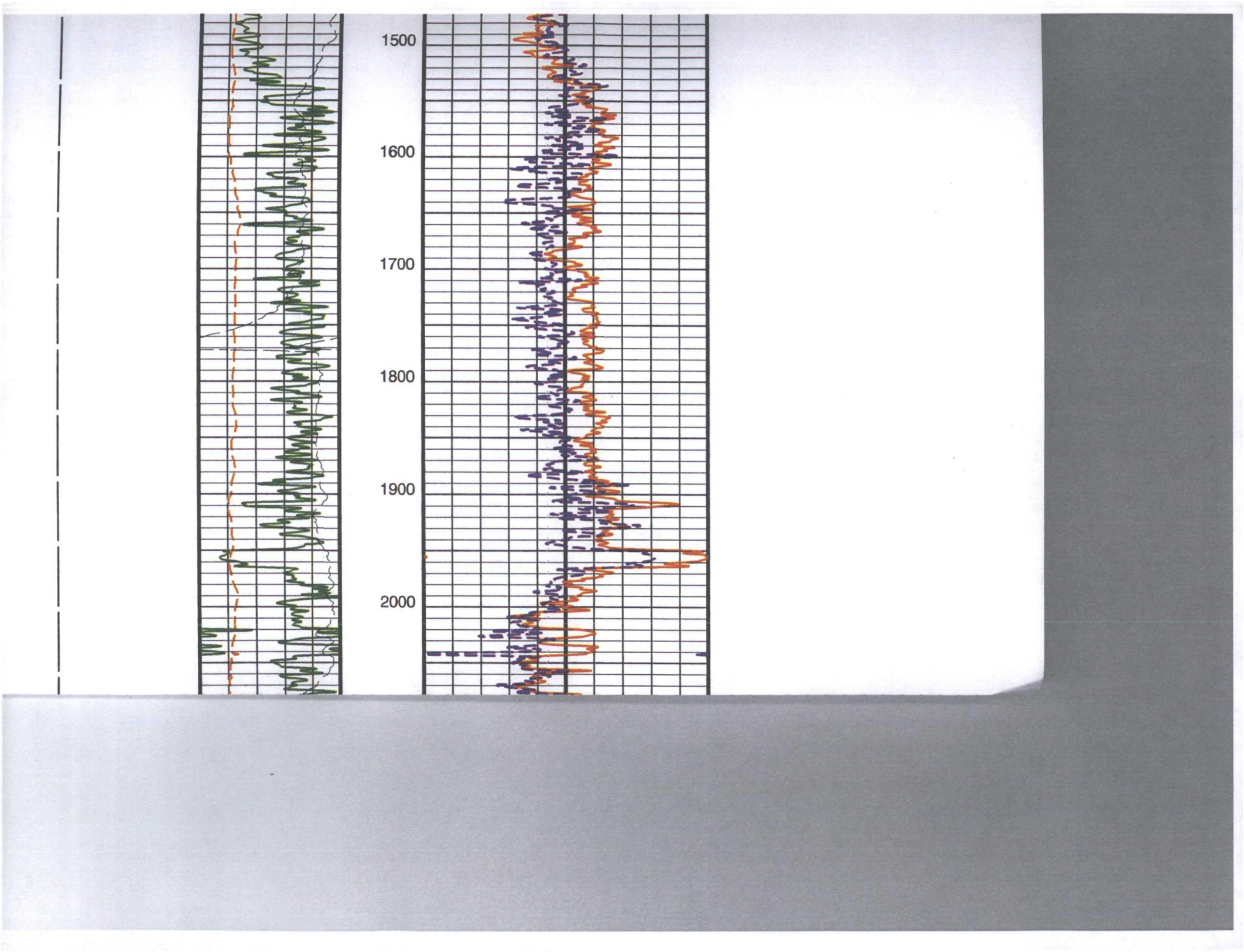
HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

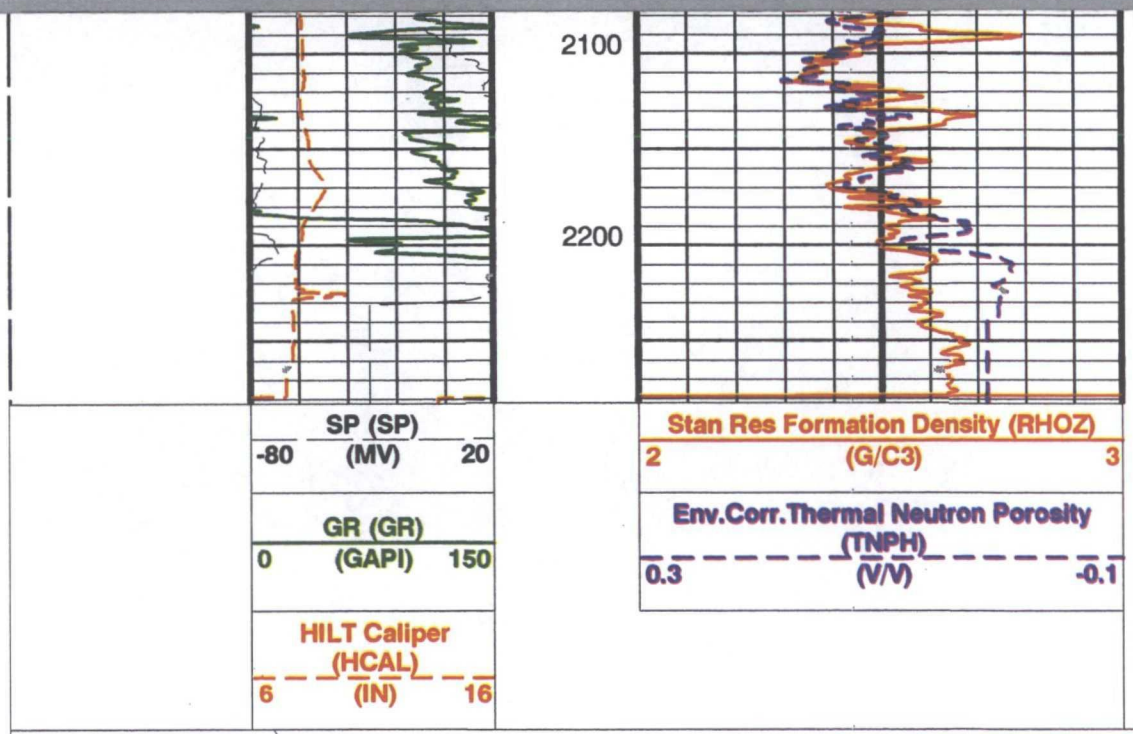
PIP SUMMARY

Time Mark Every 60 S




900
1000
1100
1200
1300
1400


1500
1600
1700
1800
1900
2000



PIP SUMMARY

Time Mark Every 60 S

Format: 1_nuc	Vertical Scale: 1" per 100'	Graphics File Created: 08-Jul-2012 15:53

OP System Version: 19C0-187

HILTB-FTB	19C0-187	SPA-A	19C0-187
DTC-H	19C0-187		

Output DLIS Files

DEFAULT	TLD_MCFL_CNL_009LUP	FN:12	PRODUCER	08-Jul-2012 15:53
RTB	TLD_MCFL_CNL_009LUP	FN:13	PRODUCER	08-Jul-2012 15:53

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Wednesday, January 02, 2013 11:18 AM
To: 'rsmith@hess.com'
Cc: Ezeanyim, Richard, EMNRD; Martin, Ed, EMNRD
Subject: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Hello Rita,
Happy New Year!

Just reviewed this application and all looks well – a couple points to clear up so all items are in the application.

a. From the well file, I believe the surface owner of the well site is F & F Cattle Co. but wanted to make sure?
b. Who is T.E. Mitchell and why were they noticed?
c. How deep is the potable waters in this area and what is the formation name of the water sands?
d. Please email or mail a wellbore diagram of the well as equipped for disposal with tubing and packer in the hole.
e. Will the disposal tubing be fiberglass lined 2-7/8 inch steel oil field tubing?

The Step Rate Test;

This yielded a surface pressure break of 1186 psi after we subtract the 50 psi safety margin. You may have gotten more pressure allowable if you had related the friction experienced through the workstring (what size and type was it?) with the expected friction of the lined disposal tubing. If you folks need more capacity in the future, you could consider this – but you would need to make application for that increase in pressure allowable by showing the friction charts.

All looks good to me,

Thank You,

William V. Jones, P.E.
505-476-3448W 505-476-3462F
Engineering Bureau, Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Tuesday, January 15, 2013 5:33 PM
To: 'rsmith@hess.com'
Cc: Ezeanyim, Richard, EMNRD
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Hello Ms. Smith,
I received the wellbore diagram – thank you.
If you have already sent answers to the other questions, forgive me.
I do lose stuff!

If you haven't sent them – and need to talk about this, I should be in this week.

Will

From: Jones, William V., EMNRD
Sent: Wednesday, January 02, 2013 11:18 AM
To: 'rsmith@hess.com'
Cc: Ezeanyim, Richard, EMNRD; Martin, Ed, EMNRD
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William V. Jones, P.E.
505-476-3448W 505-476-3462F
Engineering Bureau, Oil Conservation Division

Jones, William V., EMNRD

From: Smith, Rita <rsmith@Hess.com>
Sent: Wednesday, January 16, 2013 7:29 AM
To: Jones, William V., EMNRD
Cc: Ezeanyim, Richard, EMNRD
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Mr. Jones
The other questions were answered on the same email that I sent the wellbore diagram.
I have attached the answers to the question you asked.
Thanks
Rita

A. The surface owner is F & F Family Limited Partnership. F & F Cattle Company name changed to F & F Family Limited Partnership 4 or 5 years ago.
B. T. E. Mitchell & Company & Son, Inc. is the mineral lessor of our lease. They were noticed because they are our lessor.
C. The potable water well is producing from the Upper Chinle Formation at depths between 100'-220' MD.
D wellbore diagram is attached. I have attached a pdf and xlsx
E. The disposal tubing is fiberglass **2 7/8" FG 1.3#**

From: Jones, William V., EMNRD [mailto:William.V.Jones@state.nm.us]
Sent: Tuesday, January 15, 2013 6:33 PM
To: Smith, Rita
Cc: Ezeanyim, Richard, EMNRD
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Hello Ms. Smith,
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Will

From: Jones, William V., EMNRD
Sent: Wednesday, January 02, 2013 11:18 AM
To: 'rsmith@hess.com'
Cc: Ezeanyim, Richard, EMNRD; Martin, Ed, EMNRD
Subject: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

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This yielded a surface pressure break of 1186 psi after we subtract the 50 psi safety margin. You may have gotten more pressure allowable if you had related the friction experienced through the workstring (what size and type was it?) with the expected friction of the lined disposal tubing. If you folks need more capacity in the future, you could consider this – but you would need to make application for that increase in pressure allowable by showing the friction charts.

All looks good to me,

Thank You,

William V. Jones, P.E.
505-476-3448W 505-476-3462F
Engineering Bureau, Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Wednesday, January 16, 2013 1:40 PM
To: 'Smith, Rita'
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Thank You!!

From: Smith, Rita [mailto:rsmith@Hess.com]
Sent: Wednesday, January 16, 2013 9:48 AM
To: Jones, William V., EMNRD
Subject: FW: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Mr. Jones, please see the note below from the Engineer in charge of this project.
Thanks
Rita

From: Cordle, Daniel
Sent: Wednesday, January 16, 2013 10:21 AM
To: Smith, Rita
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Rita,
Short answer....Yes. The FG tubing is:

Part #:	T2025AS
Manf.:	Star Downhole tubing (AKA: Fiberglass Systems "NOV")
Series:	2000
I.D.:	2.36"
Rating:	2000 psi

This is the very tubing we used to do the SRT with. Once we get the approved Surface Injection Pressure, we will set our pumps to that pressure so that it will kick out before exceeding them.

Regards,

Dan Cordle
Operations Engineer
Hess Corporation
Office 432.758.6734
Cell 281.799.1484
dcordle@hess.com

From: Smith, Rita
Sent: Wednesday, January 16, 2013 9:25 AM
To: Cordle, Daniel
Subject: FW: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Dan, please see the note below from Mr. Jones

Thanks

From: Jones, William V., EMNRD [mailto:William.V.Jones@state.nm.us]
Sent: Wednesday, January 16, 2013 9:23 AM
To: Smith, Rita
Subject: RE: Disposal application from Hess Corporation: West Bravo Dome Unit Well No. 271F 30-021-20540 Tubb disposal perfs from 2030 to 2055 feet

Rita,
Thank You....

Since the tubing is not steel with plastic coating, I better ask,
Will this fiberglass tubing handle the pressures needed for disposal into this well?

Will

11/29/12 (1/2/13 Letter) West Bravo Dome UNIT (1/18/13 Final Data)

Injection Permit Checklist (11/16/2010)

WFX________ PMX________ SWD 1385 Permit Date 1/17/13 UIC Qtr J (F/M)

\# Wells 1 Well Name(s): ~~WBDGU 1830~~ #271F

API Num: 30-0 21-20540 Spud Date: 7/6/12 New/Old: N (UIC primacy March 7, 1982)

Footages 1650 FNL/1650 FWL Unit F Sec 27 Tsp 18N Rge 30E County HARDING

General Location: West Bravo Dome

Operator: Hess CORPORATION Contact DANNY HOLCOMB / RITA C. SMITH

OGRID: 495 RULE 5.9 Compliance (Wells) 0/79 (Finan Assur) OK IS 5.9 OK? OK

Well File Reviewed ✓ Current Status: Drilled/Equipped

Planned Work to Well: Commence Disposal

Diagrams: Before Conversion____ After Conversion____ Elogs in Imaging File: ✓

Well Details:	Sizes Hole.......Pipe	Setting Depths	Stage Tool	Cement Sx or Cf	Cement Top and Determination Method
New __Existing __Surface	12 1/4 - 8 5/8	776/787	—	415 SX	CIRC
New__Existing __Interm					
New__Existing __ LongSt	7 7/8 - 5 1/2	2251 TD	—	332 SX	CIRC
New__Existing __ Liner					
New__Existing __ OpenHole					

Depths/Formations:	Depths, Ft.	Formation	Tops?	
Formation(s) Above	1949 / 1965	Cimarron / TUBB	✓ / ✓	Step Rate Test
Injection TOP:	2030	TUBB	Max. PSI ~~406~~ 1156 ~~OpenHole~~ Perfs ✓	
Injection BOTTOM:	2055	"	Tubing Size 2 7/8 Packer Depth 1960'	
Formation(s) Below	2181	Granite Wash	✓	(1.3 PPF)

~~Capitan Reef?~~ ~~(Potash?~~ ~~Noticed?~~ ~~) [WIPP?~~ ~~Noticed?~~ ~~] Salado Top/Bot~~ ~~Cliff House?~~

Fresh Water: Depths: 100-220 Formation CHINLE Wells? yes Analysis? ✓ Affirmative Statement ✓

Disposal Fluid Analysis? ✓ Sources: TUBB - Same as Destination

Disposal Interval: Analysis? Same as other Production Potential/Testing: Total water; all wells within 2 mi Produce water; Below GWC.

Notice: Newspaper Date 9/26/12 Surface Owner Mineral Owner(s)

RULE 26.7(A) Affected Persons: Zivanes (F&F) (T.E. MITCHELL)

AOR: Maps? ✓ Well List? ✓ Producing in Interval? NO Wellbore Diagrams? —

.......Active Wells 0 Repairs? — WhichWells? —

.........P&A Wells 0 Repairs? — Which Wells? —

Issues: Request Sent ________ Reply: ________