

FACT SHEET

Applicant: CLECO POWER, LLC
2030 Donahue Ferry Road
Pineville, LA 71361
(318) 484-7679

Project Proposal: Permit to drill one Class V Stratigraphic Test Well

Type of Facility: N/A

Well Names: CLDV-STW1 No. 1

Project Location: Section 18, Township 5 North, Range 3 West, of Rapides

Facility Local Address: N/A

Application No.: 44451

Project Summary: The following information is prepared according to the requirements of Statewide Order No. 29-N-1, (LAC 43:XVII, Subpart 1) to briefly set forth the principal facts and significant policy questions considered in preparing a draft permit concerning an application by Cleco Power, LLC to drill one Class V stratigraphic test well in Rapides Parish, Louisiana.

The application is for the drilling of one proposed Class V stratigraphic test well. The total depth of the well is at a depth of approximately 8,101 feet below ground level.

The acquisition of geotechnical data is proposed to occur in the drilling of this well. No disposal of waste via injection will occur.

General Information: Cleco Power, LLC proposes to collect geotechnical cores, fluid samples, static pressure measurements, and other applicable information.

The base of the lowermost underground source of drinking water (USDW) is approximately 1,011 feet below ground level. There are 21 registered water wells located within a one mile radius of the proposed well location. The principal regional aquifers in the area comprise of the confined Carnahan Bayou and Catahoula Aquifers below.

The complete application consists of the application form (Form UIC-25 Stratigraphic Test); technical attachments describing the geology, hydrology, construction, completion, and financial responsibility estimate.

The draft permit conditions were based on applicable rules and regulations as set forth in Statewide Order No. 29-N-1 (LAC: 43:XVII, Subpart 1) as amended. Such rules provide for the protection and non-endangerment of USDW regarding the permitting, drilling, completing, operating and

maintaining of Classes I (nonhazardous waste), III, IV, and V injection well operations in the State of Louisiana.

Application Locations: An application package is available for inspection at the Louisiana Office of Conservation, Injection and Mining Division, LaSalle Building, 617 North Third Street, Room 817, Baton Rouge, LA 70802 from 8:00 am until 4:30 pm, Monday through Friday. To view, please ask for the Cleco Power, LLC Class V Permit Application identified at the beginning of this document. The application package is also available at the Louisiana Department of Natural Resources, Office of Conservation and Injection and Mining Division websites.

For any information concerning the application, call Scott St. Romain at (225) 342-5517, Monday through Friday, between the hours of 7:30 a.m. to 4:00 p.m.

Comment Period: The public comment period officially commences January 12, 2024 at 8:00 a.m. and concludes on February 19, 2024 at 4:30 p.m. Submit all comments in writing to Scott St. Romain, Louisiana Office of Conservation, Injection and Mining Division, 617 N. 3rd St, Baton Rouge, LA 70802. Comments may also be e-mailed to info@la.gov. Please reference Cleco Power, LLC Class V Permit, Application Number 44451.



JEFF LANDRY
GOVERNOR

State of Louisiana

TYLER GRAY
SECRETARY

DEPARTMENT OF ENERGY AND NATURAL RESOURCES OFFICE OF CONSERVATION

MONIQUE M. EDWARDS
COMMISSIONER OF CONSERVATION

January 4, 2024

Mr. Robert Breedlove
Cleco Power, LLC (C1052)
2030 Donahue Ferry Road
Pineville, LA 71361

***** APPROVAL TO CONSTRUCT *****

RE: Stratigraphic Test Well – New Drill
CLDV-STW1 No. 1
Wildcat-NO LA Monroe
Rapides Parish

Application No. 44451
Serial No. _____
API No. _____

Dear Mr. Breedlove:

The application by Cleco Power, LLC (Cleco) to drill a Class V stratigraphic test well has met the interim requirements for permitting such a well. The issuance of this Permit to Construct constitutes a final permit decision regarding the construction of this well. You are hereby granted approval to perform the work as described in the application. The approved work must be completed by _____.

Cleco is to notify the Conservation Enforcement Specialist (CES) for Rapides Parish, Sarah Hitchcock at 337-298-8726, Monday through Friday, or by calling the Injection and Mining Division at (225) 342-5515 at least 72 hours prior to commencement of work. At least 48 hours before the casing test of the long string, contact the CES to schedule a witnessed casing test.

Within twenty (20) days after completion of the work, submit the documentation requested in the enclosed Reporting Requirements to the Injection and Mining Division. PLEASE READ THE ENCLOSURES CAREFULLY.

Please be reminded that for future work on the well, a work permit approval must be obtained from this office before repairing, stimulating, plugging, or otherwise working on this well.

Yours very truly,

Monique M. Edwards
Commissioner of Conservation

Stephen H. Lee, Director
Injection and Mining Division

Injection and Mining Division
617 North 3rd Street • 9th Floor • Baton Rouge, Louisiana 70802
Phone (225) 342-5515 • Injection-Mining@LA.gov • www.dnr.state.la.us/conservation
An Equal Opportunity Employer



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IMD REPORTING REQUIREMENTS >> Class V Stratigraphic Test

Drilling and construction of the well must be completed within one (1) year from the date of the permit approval letter, otherwise, the permit will expire. **Before the expiration of the permit, the operator must notify the Injection and Mining Division (IMD) if a time extension will be requested or if well will not be drilled.**

The approved application describes how the well is to be constructed. Changes in the approved construction, such as well surface location, well depth, or casing setting depths, will require prior written approval from IMD. Failure to obtain prior written approval will be cause for revoking the permit.

At least forty-eight (48) hours prior to commencement of work, the appropriate Conservation Enforcement Specialist (CES) identified below must be contacted. If you are unable to reach the CES, please call the Injection and Mining Division at (225) 342-5515 between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday.

Application No. 44451 Serial No. _____
CES Name Sarah Hitchcock CES Phone No. (225) 342-5515

Within twenty (20) days after completion of the well, the completion documents listed below must be filed with IMD for review and approval in compliance with the regulations. Please place the well's Serial Number on the log headings.

- A Class V Well History and Work Résumé Report (Form UIC-42 STRAT TEST) with an original signature from an authorized representative of the operating company and two photocopies of the form (front and back). The Form UIC-42 can be saved, filled-out, and printed by going to www.dnr.louisiana.gov/consforms >> Injection & Mining Division >> Form UIC-42.
- Two (2) copies of the wellbore schematic depicting the completed well.
- Two (2) copies of the electric log used to identify the USDW.
- Two (2) copies of the cement bond log for each respective casing string.
- An original AFFIDAVIT OF TEST OF CASING IN WELL (Form CSG-T) signed by a company representative and witnessed by a third party for each casing. Provide a copy of the properly labeled pressure chart if the Form CSG-T does not have a witnessed signature. Include the well name, well serial number, casing size, test start time and stop time, date of test, and signature of company representative. The Form CSG-T can be downloaded from www.dnr.louisiana.gov/consforms >> Injection & Mining Division >> Form CSG-T.

Send the above required documentation together in **ONE PACKAGE** to:

Office of Conservation- 9th Floor
Injection & Mining Division
617 North 3rd Street
Baton Rouge, LA 70802



FORM UIC-25 STRAT TEST

CLASS-V WELL PERMIT APPLICATION


044451

1. APPLICATION TYPE: (Check One) <input checked="" type="checkbox"/> DRILL AND COMPLETE NEW CLASS-V WELL <input type="checkbox"/> CONVERT AN EXISTING WELL TO CLASS-V <input type="checkbox"/> OTHER (SPECIFY):		LOUISIANA DEPARTMENT OF NATURAL RESOURCES - OFFICE OF CONSERVATION INJECTION & MINING DIVISION Injection-Mining@la.gov (225) 342-5515	
2. IDENTIFY WELL USE Stratigraphic test well for data collection in anticipation of a carbon dioxide geologic sequestration project.			
3. IDENTIFY FUTURE WELL USE (i.e. Conversion to Class VI, monitor well, P&A, etc.) P&A with Geophones cemented downhole for future microseismic monitoring			
4. OWNER/OPERATOR NAME Cleco Power, LLC			5. OOC OPERATOR CODE C1052
6. OWNER/OPERATOR MAILING ADDRESS 2030 Donahue Ferry Road		7. CITY, STATE, ZIP CODE Pineville, LA 71361	
8. TELEPHONE NO. 318-484-7679		9. E-MAIL ADDRESS robert.breedlove@cleco.com	
10. WELL NAME CLDV-STW1		11. WELL NO. 1	12. WELL SERIAL NO. (Well Conversions Only) N/A
13. FIELD NAME WILDCAT-NO LA MONROE DIST			14. FIELD CODE 9709
15. PARISH NAME Rapides		16. SECTION 18	17. TOWNSHIP 5N
		18. RANGE 3W	
19. LOUISIANA COORDINATE ZONE (Check One) <input checked="" type="checkbox"/> NORTH ZONE <input type="checkbox"/> SOUTH ZONE		For Item Numbers 20 Through 25, Give Coordinates in Louisiana Coordinate System 1927 and 1983	
20. LATITUDE (NORTH) NAD 1927 N 31° 24' 14.38"	21. LONGITUDE (WEST) NAD 1927 W 92° 43' 11.17"	22. LOUISIANA LAMBERT (X-Y) COORDINATES (NAD 1927) x: 1,931,432.25' y: 268,271.41'	
23. LATITUDE (NORTH) NAD 1983 N 31° 24' 15.02"	24. LONGITUDE (WEST) NAD 1983 W 92° 43' 11.71"	25. LOUISIANA LAMBERT (X-Y) COORDINATES (NAD 1983) x: 3,212,220.74' y: 328,976.71'	
26. LIST PERMITS, LICENSES, OR APPROVALS THE APPLICANT HAS RECEIVED OR APPLIED FOR WHICH SPECIFICALLY AFFECT THE APPLICANT'S LEGAL OR TECHNICAL ABILITY TO CARRY OUT THE PROPOSED ACTIVITY. INCLUDE IDENTIFICATION NUMBER OF APPLICATIONS OR, IF ISSUED, THE IDENTIFICATION NUMBER OF THE PERMIT, LICENSE, OR OTHER APPROVALS.			
Regulatory Program or Agency		Permits, Licenses, Construction, Project Approval Identification	

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27. WELL CASING / CEMENT DATA										
CASING SIZE (OD-INCHES)	HOLE DIAMETER (INCHES)	CASING WEIGHT (LB/FT)	CASING GRADE	CASING SETTING DEPTHS		TOTAL SACKS	SACKS CEMENT (Lead/Tail)	TYPE (Lead/Tail)	YIELD (CU FT/SACK) (Lead/Tail)	CEMENT TOP
				TOP	BOTTOM					
9 5/8	12 1/4	36	J-55	0	1400	526	292/234	IL-Poz/IL	1.82/1.16	0
5 1/2	8 3/4	17	L-80	0	5317	819	489/330	CI H Poz/IntegraBond PERMA	1.8/1.54	0
20	24	94	H-40	0	80	150	150	Class A	1.2	0
28. BASE OF USDW 1011		29. WELL TOTAL DEPTH 8101		30. PLUGBACK DEPTH 8101		31. TUBING SIZE & DEPTH N/A		32. PACKER SIZE & DEPTH N/A		
33. INJECTION ZONE DEPTHS (if applicable) Top: N/A Bottom: N/A				34. COMPLETION/PERFORATION DEPTHS (if applicable) Top: 5317 Bottom: 8101			35. WELL COMPLETION (Check One) <input checked="" type="checkbox"/> OPEN HOLE <input type="checkbox"/> PERFORATIONS <input type="checkbox"/> SCREEN			
INJECTIVITY TEST INFORMATION (if applicable)										
36. TEST MATERIAL (e.g. nitrogen, brine, etc): N/A ***CO2 is prohibited as a Class V test material***				37. MAXIMUM TEST PRESSURE (psi): N/A			38. TOTAL INJECTION VOLUME (barrels): N/A			
39. Is the Well Located on Indian Lands or Other Lands Owned by or under the Jurisdiction or Protection of the Federal Government?								<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
40. Is the Well Located on State Water Bottoms or Other Lands Owned by or under the Jurisdiction or Protection of the State of Louisiana?								<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
41. AGENT OR CONTACT AUTHORIZED TO ACT ON BEHALF OF THE APPLICANT DURING THE PROCESSING OF THIS APPLICATION										
NAME: <u>Robert Rogalski</u>										
MAILING ADDRESS: <u>505 King Ave.</u>										
CITY, STATE, ZIP CODE: <u>Columbus, OH 43201</u>										
TELEPHONE NUMBER: <u>918-510-1458</u> FAX NUMBER: _____										
E-MAIL ADDRESS: <u>rogalski@battelle.org</u>										
42. CERTIFICATION BY WELL OWNER/OPERATOR										
I certify that as the owner/operator of the injection well, the person identified in Item No. 40 above is authorized to act on my behalf during the processing of this application, to submit additional information as requested, and to give oral statements in support of this application. I will grant an authorized agent of the Office of Conservation entry onto the property to inspect the injection well and related appurtenances as per LSA-R.S. 30:4. I agree to operate the well in accordance with Office of Conservation guidelines. I further certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment or both (LSA-R.S. 30:17).										
Print Name of Well Owner/Operator Robert Breedlove						Print Title of Company Official (as applicable) VP Generation Operations				
Signature of Well Owner/Operator 							Date 11/6/2023			

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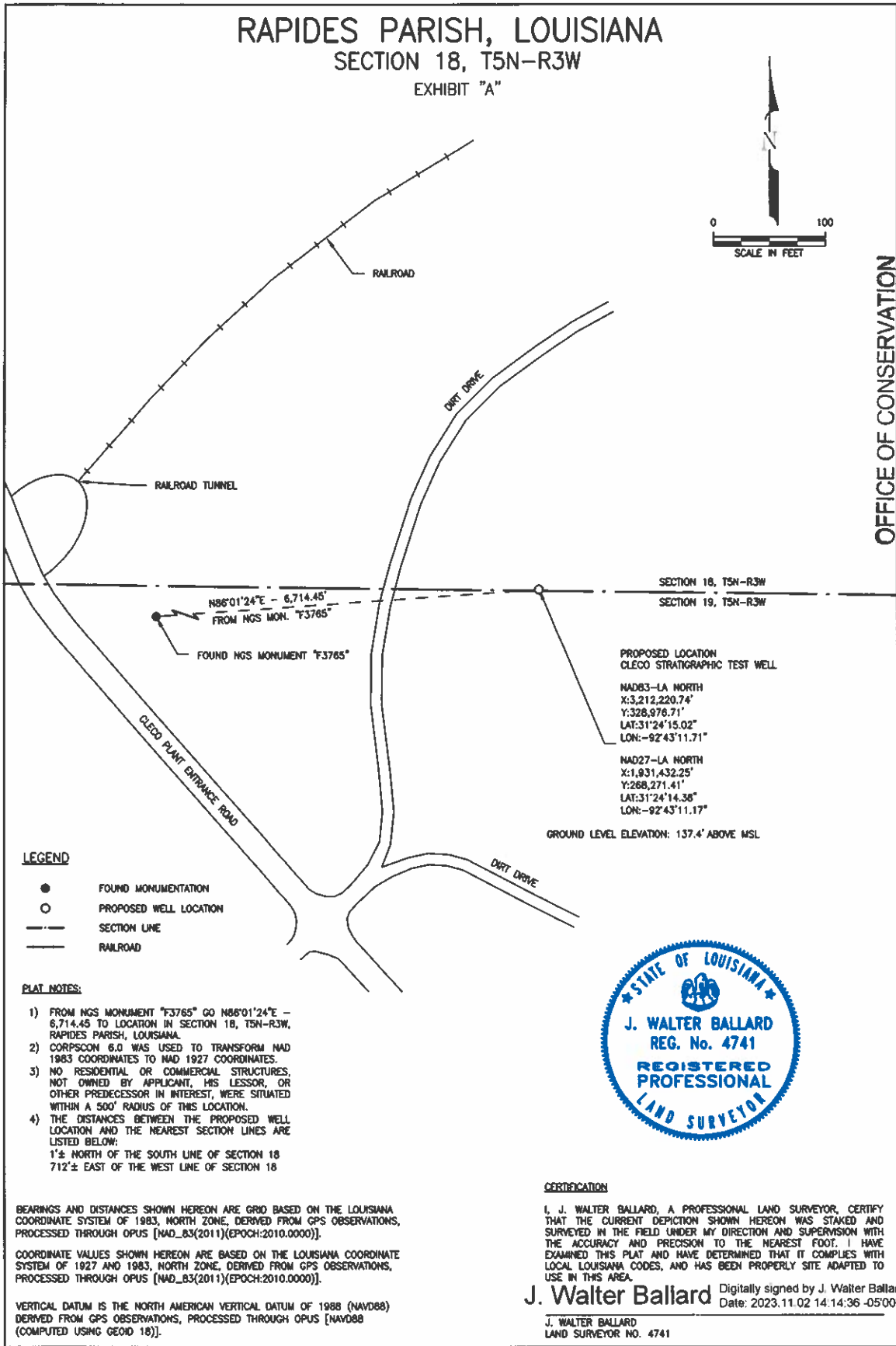
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INJECTION & MINING DIVISION

044451

Application No.
044451

RAPIDES PARISH, LOUISIANA
SECTION 18, T5N-R3W
EXHIBIT "A"



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NOV 6 2023

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LEGEND

- FOUND MONUMENTATION
- PROPOSED WELL LOCATION
- - - SECTION LINE
- RAILROAD

PLAT NOTES:

- 1) FROM NGS MONUMENT "F3765" GO N86°01'24"E - 6,714.45 TO LOCATION IN SECTION 18, T5N-R3W, RAPIDES PARISH, LOUISIANA.
- 2) CORPSCON 6.0 WAS USED TO TRANSFORM NAD 1983 COORDINATES TO NAD 1927 COORDINATES.
- 3) NO RESIDENTIAL OR COMMERCIAL STRUCTURES, NOT OWNED BY APPLICANT, HIS LESSOR, OR OTHER PREDECESSOR IN INTEREST, WERE SITUATED WITHIN A 500' RADIUS OF THIS LOCATION.
- 4) THE DISTANCES BETWEEN THE PROPOSED WELL LOCATION AND THE NEAREST SECTION LINES ARE LISTED BELOW:
1'± NORTH OF THE SOUTH LINE OF SECTION 18
712'± EAST OF THE WEST LINE OF SECTION 18

PROPOSED LOCATION
CLECO STRATIGRAPHIC TEST WELL

NAD83-LA NORTH
X:3,212,220.74'
Y:328,976.71'
LAT:31°24'15.02"
LON:-92°43'11.71"

NAD27-LA NORTH
X:1,931,432.25'
Y:268,271.41'
LAT:31°24'14.38"
LON:-92°43'11.17"

GROUND LEVEL ELEVATION: 137.4' ABOVE MSL



CERTIFICATION

I, J. WALTER BALLARD, A PROFESSIONAL LAND SURVEYOR, CERTIFY THAT THE CURRENT DEPICTION SHOWN HEREON WAS STAKED AND SURVEYED IN THE FIELD UNDER MY DIRECTION AND SUPERVISION WITH THE ACCURACY AND PRECISION TO THE NEAREST FOOT. I HAVE EXAMINED THIS PLAT AND HAVE DETERMINED THAT IT COMPLIES WITH LOCAL LOUISIANA CODES, AND HAS BEEN PROPERLY SITE ADAPTED TO USE IN THIS AREA.

J. Walter Ballard Digitally signed by J. Walter Ballard
Date: 2023.11.02 14:14:36 -0500'

J. WALTER BALLARD
LAND SURVEYOR NO. 4741

BEARINGS AND DISTANCES SHOWN HEREON ARE GRID BASED ON THE LOUISIANA COORDINATE SYSTEM OF 1983, NORTH ZONE, DERIVED FROM GPS OBSERVATIONS, PROCESSED THROUGH OPUS [NAD_83(2011)(EPOCH:2010.0000)].

COORDINATE VALUES SHOWN HEREON ARE BASED ON THE LOUISIANA COORDINATE SYSTEM OF 1927 AND 1983, NORTH ZONE, DERIVED FROM GPS OBSERVATIONS, PROCESSED THROUGH OPUS [NAD_83(2011)(EPOCH:2010.0000)].

VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) DERIVED FROM GPS OBSERVATIONS, PROCESSED THROUGH OPUS [NAVD88 (COMPUTED USING GEOID 18)].

HGA HUNT, GUILLOT & ASSOCIATES, L.L.C.
603 REYNOLDS DRIVE
RUSTON, LA 71270
PHONE: 318-255-6825

FIRM LICENSE NO. VF.0000715

CLECO	
WELL LOCATION SURVEY RAPIDES PARISH, LOUISIANA	
DRAWN BY: BWG	DATE: 8/31/23
CHECKED BY: JWB	DATE: 8/31/23
SCALE: 1"=100'	APP.: JWB
DWG. NO.	REV.
8.230123.00.0-PLT-001	2

REV.	DATE	BY	DESCRIPTION	CHK.
3	10/31/23	JMH	REVISED LAT AND LONG FORMAT FOR WELL LOCATION	JWB
2	10/20/23	JWB	ADDED VERTICAL DATUM NOTE	JWB
1	9/05/23	JMH	WELL NAME REVISION	JWB
0	8/31/23	BWG	ISSUED	JWB



044451

Application No. 044451

WELL NUMBER: #1
FIELD: CLDV STW

Project: Cleco Diamond Vault
API # Pending

SURFACE LOCATION:
S18 T5N R3W
Rapides Parish, Louisiana
1' FSL & 712' FWL
Latitude (NAD83): N 31° 24' 15.02"
Longitude (NAD83): W 92° 43' 11.71"

OBJECTIVE: Stratigraphic Test Well
ELEVATION: 137.4 ft ground level above MSL

Proposed Well	CLDV-STW1	
Formation	MD-(ft)	Correlated Well Serial #
Undiff.	141	USGS R-1228
Fleming Fm.	183	USGS R-1228
Catahoula Fm.	623	46533
Base of USDW	1,011	29600
Vicksburg Gp.	1,011	29600
Cockfield	1,702	29600
Cook Mountain	2,508	29600
Sparta	2,769	29600
Cane River	3,376	29600
Carrizo	3,703	29600
Wilcox 1	3,879	29600
Wilcox 2/Base Big Shale	5,252	29600
Midway	8,001	217433
Well Total Depth	8,101	-

(Note: USGS well is from the USGS National Water Information System)

Table 1: Geological Prognosis

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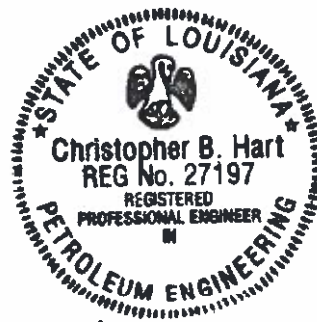
NOV 6 2023

INJECTION & MINING DIVISION

Drilling Schematics and Procedures

Claco Diamond Vault CLDV STW #3 Proposed Schematic											
Formation Top MD/TVD	Formation	Lithology	Planned Logging Prog Open / Cased	Conv Coring	Depth MD/TVD		Casing Detail	Hole Size	Mud Weight	FIT (ppg)	Cement
					80'		20" line pipe Conductor Casing	24"	n/a	n/a	n/a
1011'	Base of lowest USDW		GR-SP Resistivity Conductivity OH Caliper GR-Temp CBL-VDL		1400'		9-5/8", 36 ppf J55, API connection Surface Casing	12.25"	WBM LSND 8.6-9.0 ppg	~12	Class II, 60% excess Lead: 292 sks 12.7 ppg Tail: 234 sks 15.6 ppg Top-out slurry: 15.6 ppg
1702'	Cockfield										
2508'	Cook Mtn										
2769'	Sparta										
3376'	Cane River			Core #1	3450-3540'						
3703'	Carrizo Wilcox 1		MWD-GR BHA	Core #2	3810-3900'						
3879'				Core #3	4100-4190'						
5252'	Wilcox 2		Spectral GR Resistivity Den-Neu-NMR Imager Sonic Scanner MSCT OH Caliper MDT-VSP	Core #4	5225-5315' 5317'		5-1/2", 17 ppf L80, API connection Production Casing Stage Cementing Tool ECP set @ Wilcox-2 (+50')				
8001'	Midway Grp			Core #5 Core #6	6000-6090' 7300-7390'				WBM LSND 9.0-9.4 ppg	n/a	Lead: 65/35 Cl H Poz 480 sks 12.8 ppg Tail: IntegraBond PERMA 330 sks 14.5 ppg

Figure 1: Proposed Well Schematic



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NOV 6 2023
INJECTION & MINING DIVISION

Christopher B. Hart
11/6/2023

CANARY

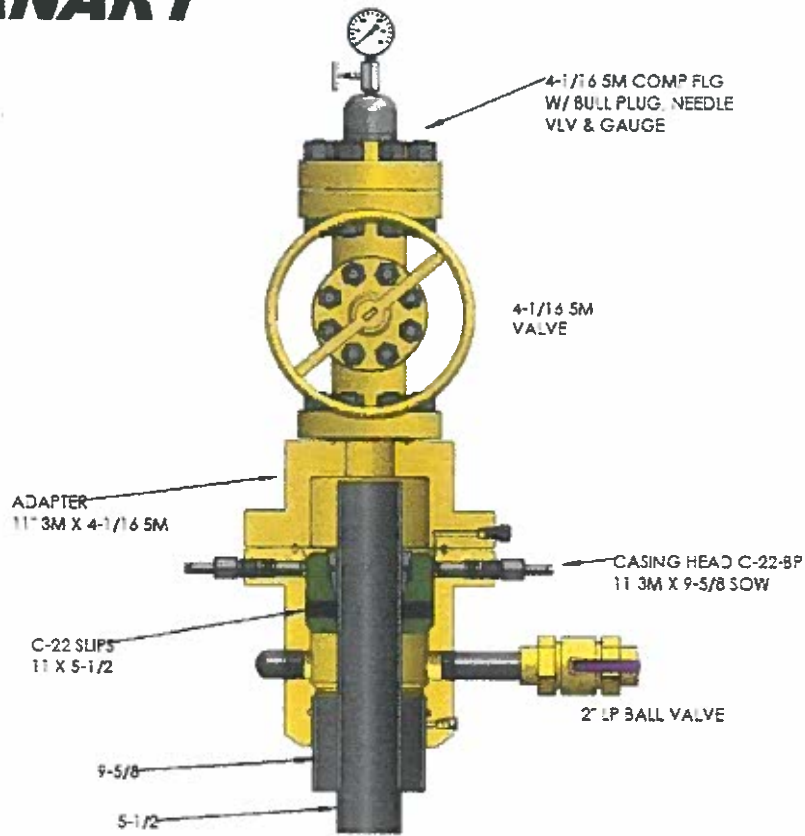
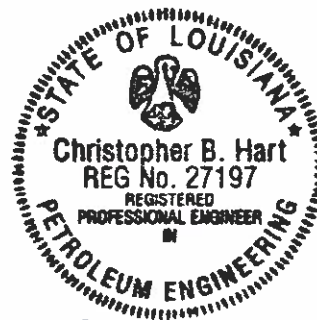


Figure 2: Proposed Wellhead Schematic

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SEP 07 2023

INJECTION & MINING DIVISION



Christopher B. Hart
9/5/2023

OBJECTIVES:

- 1) Focused effort by all parties to eliminate all accidents during the drilling/data gathering operation.
- 2) Drill, case surface/intermediate, and evaluate within AFE budget.
- 3) Successfully run open hole log suite for evaluation purposes in Cane River and Wilcox intervals.

NOTE: Clean, drift, and visually inspect casing.
All depths listed are GL.

MEASUREMENT DATUM POINT: Ground Elevation

TUBULAR Body/Joint	Depth (ft)	Size (in)	Weight (lb/ft)	Grade	Thread	Collapse/Burst (psi)	Tensile (x1000lbs)
Conductor	0-80	20	94	H-40	ST&C	520/1,530	1,077/581
Surface Casing	0-1400	9 5/8	36	J-55	LT&C	2,020/3,520	564/394
Production Casing	0-5317	5 1/2	17	L-80	LT&C	6,290/7,740	397/338

Table 2: Proposed casing specifications

DRILLING PROCEDURAL CONSIDERATIONS

Pre-spud Considerations

1. Approved drilling permit must be posted in the doghouse at all times.
2. Emergency Response Plan: contact numbers of emergency and non-emergency regulatory authorities, location lat/long and directions to/from the nearest hospital to be posted in doghouse and company man shack. See Appendix 1.
3. MSDS sheets for all chemicals on location to be maintained on site.

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OCT 30 2023

Reporting and Cost Tracking

1. Daily drilling reports to be sent by 6:30 am CST every morning.
2. Daily operational update call at 7:00 am CST every morning.
3. Daily drilling reports should accurately capture any and all rig downtime.
4. All services should submit field tickets to company man prior to leaving location at the conclusion of service. Ensure field ticket accurately reflects services provided.
5. Accurate daily time and cost tracking is crucial to future invoice approval.

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Casing Handling

1. All casing to be cleaned, drifted and tallied prior to running.
2. Rig crew is to independently tally the casing to confirm count.

OFFICE OF CONSERVATION

OCT 30 2023

INJECTION & MINING DIVISION



BATTELLE

OFFICE OF CONSERVATION

RECOMMENDED DRILLING PROCEDURE

OCT 30 2023

CONDUCTOR HOLE

1. Prepare surface pad location install well cellar.
2. Drill permitted water supply well.
3. Auger 24" hole to 80', install 20" casing and grout annular space from set depth to surface with concrete.

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SURFACE HOLE

4. MIRU drilling rig
5. Rig up for 12.25" hole. Notify Louisiana DNR prior to spud.
6. Build drilling fluid per mud company recommendations and instructions.
7. Pick up 12.25" bit and the bottom hole assembly (BHA), 8" drill collars, 6.5" drill collars, and 4.0" drill pipe.
8. Drill 12.25" hole to approximately 1,400'. Take deviation surveys every 300'. Confirm surface casing TD with Geologist.
9. Notify Louisiana DNR at least 24 hours prior to setting and cementing surface casing.
10. Circulate and condition as necessary to clean the hole. Pull out of hole.
11. RU WL and run open hole logs over interval as per logging prog.
12. Run and cement 9-5/8" casing according to the contractor cement design. Have top job cement available if required.
 - a. Tag bottom with casing then pull up a few inches.
 - b. Have additional tanks on hand to recover any excess mud or cement that may be circulated to surface.
 - c. Designate a qualified person to observe the circulating system and monitor drilling fluid at all times during the cementing procedure. An accurate accounting of volumes is critical information in the event that circulation is lost.
 - d. Rig up circulating equipment and perform a pressure test on the lines. Circulate and condition the drilling fluid to ensure correct fluid properties for the cementing procedure.
 - e. Cement the casing in place. Details of the cement blends proposed are located in the contractor cementing program design.
13. Wait on cement 4 hours, cut off the surface and conductor pipe and install a 9-5/8" casing head. Perform a pressure test on the casing head after installation. Digitally record the test and maintain the test results on location.

PRODUCTION HOLE

14. NU BOPE and test to 250 psi low and 3000 psi high.
- Ensure pipe rams match drill pipe.
 - Per LAC 43.XIX.111.C test BOP stack and choke manifold with a third party tester to ensure well control during drilling operations. If pressure drops more than 10%, the test is failed and corrective action is to be taken. BOPE is to be visually inspected daily and re-tested within every 14 days.
15. Build drilling fluid per mud company recommendations and instructions.
16. Pick up 8-3/4" bit, mud motor, MWD w/GR, 16x 6.25" collars and 4" drill pipe. Be sure to run float. Strap in hole to keep accurate drilling depth at all times.
17. Test surface casing to 1000 psi per LAC 43.XIX.109.B.1. Hold the pressure for 30 minutes, if a 5% drop in pressure is observed the test is failed and corrective action is required. Fill out and sign Affidavit of Test of Casing in Well FORM CSG-T.
18. Drill out shoe track and 10' formation.
- Perform FIT to 12 PPGe.
19. Drill ahead to core point #1 (~3450') based on Geo-technical team guidance.

Core Point	1	2	3	4	5	6
Top Depth (MD, GL)	3450	3810	4100	5225	6000	7300
Length (Feet)	90	90	90	90	90	90

Proposed depths to be confirmed by MWD-GR while drilling

20. PU Canamera coring system with 90' core barrel.
- Core per Canamera coring procedures.
 - Anticipated coring ROP of 10 ft/hr.
21. PU 8-3/4" bit and BHA. Drill ahead to core point #2 (~3810') based on Geo-technical team guidance
22. PU Canamera coring system with 90' core barrel.
- Core per Canamera coring procedures.
 - Anticipated coring ROP of 10 ft/hr.
23. PU 8-3/4" bit and BHA. Drill ahead to core point #3 (~4100') based on Geo-technical team guidance
24. PU Canamera coring system with 90' core barrel.
- Core per Canamera coring procedures.
 - Anticipated coring ROP of 10 ft/hr.
25. PU 8-3/4" bit and BHA. Drill ahead to core point #4 (~5225') based on Geo-technical team guidance
26. PU Canamera coring system with 90' core barrel.
- Core per Canamera coring procedures.
 - Anticipated coring ROP of 10 ft/hr.

27. PU 8-3/4" bit and BHA. Drill ahead to core point #5 (~6000') based on Geo-technical team guidance
28. PU Canamera coring system with 90' core barrel.
 - a. Core per Canamera coring procedures.
 - b. Anticipated coring ROP of 10 ft/hr.
29. PU 8-3/4" bit and BHA. Drill ahead to core point #6 (~7300') based on Geo-technical team guidance
30. PU Canamera coring system with 90' core barrel.
 - a. Core per Canamera coring procedures.
 - b. Anticipated coring ROP of 10 ft/hr.
31. After final coring run, PU 8-3/4" bit and BHA. Drill ahead to TD ~8101' per Geo-technical team guidance.
 - a. Gamma ray and cuttings to be used to determine TD.
 - b. TD recommended at ~100' below base of Wilcox-2.
32. Circulate and condition hole as necessary for production logging run.
33. Verify tally on way out of the hole to be confirmed by WL run.
34. RU WL and run open hole logs over interval as per logging prog.
35. Clean out trip to be run before running wireline MDT.
36. Notify Louisiana DNR at least 24 hours prior to setting and cementing production casing.
37. Trip in the hole for clean out and conditioning run prior to running casing.
38. Circulate and condition as necessary to clean the hole, minimum 2x hole volume. Pull out of hole.
39. Run and cement 5-1/2" casing according to the contractor cement design. ECP and cement stage tool to be located at bottom of 5-1/2". ECP set depth targeted 50' below Wilcox-2 top, exact depth TBD from caliper log.
 - a. Centralize: Place centralizers every other joint in open hole and every fourth joint inside surface casing
 - b. Excess tank volume: Have additional tanks on hand to recover any excess mud or cement that may be circulated to surface.
 - c. Excess cement volume: Confirm excess volumes with Battelle engineering based on caliper logs
 - d. Observation: Designate a qualified person to observe the circulating system and monitor drilling fluid at all times during the cementing procedure. An accurate accounting of volumes is critical information in the event that circulation is lost.
 - e. Test and condition: Rig up circulating equipment and perform a pressure test on the lines. Circulate and condition the drilling fluid to ensure correct fluid properties for the cementing procedure.

- f. Cement casing: Details of the cement blends proposed are located in the contractor cementing program design. Cement blend of tail is CO₂ resistant cement to protect casing.
40. Release pressure and ensure floats are holding.
a. If cement did not circulate, run temperature log.
41. Nipple down and set slips.
42. ND BOPE and NU WH
43. RD and release drilling rig

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LOGGING & TESTING PROGRAM

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Section	Log Type	Depths (ft)	
12-1/4" to 1,400 ft	OPEN HOLE:		
	Induction	0 - 1,400	
	Density	0 - 1,400	
	Neutron	0 - 1,400	
	Gamma Ray	0 - 1,400	
	Spontaneous Potential	0 - 1,400	
	Caliper	0 - 1,400	
	CASED HOLE:		
	Cement Bond Log	0 - 1,400	
	Variable Density Log	0 - 1,400	
	Casing Collar locator	0 - 1,400	
	Section	Log Type	Depths (ft)
	8-3/4" to 1,400 ft to TD	OPEN HOLE:	
Induction		1,400 - TD	
Density		1,400 - TD	
Neutron		1,400 - TD	
Spectral Gamma Ray		1,400 - TD	
Spontaneous Potential		1,400 - TD	
Caliper		1,400 - TD	
Nuclear Magnetic Resonance		3,350 - TD	
Sidewall Cores (large diameter)		50 cores-TBD	
Sonic Scanner		3,350 - TD	
Formation Micro-Imager		3,350 - TD	
Power Positioning Caliper		3,350 - TD	
Dynamic Tester- Fluid Samples		6-zones (TBD)	
Dynamic Tester- Mini-Frac		3-zones (TBD)	
VSP- Zero Offset		1,400 - TD	
CASED HOLE:			
Cement Bond Log		1,400 - TD	
Variable Density Log		1,400 - TD	
Casing Collar locator		1,400 - TD	

Table 3: Proposed Logging & Testing Plan

Fluid Sampling Program

Fluid samples are to be taken in the Wilcox 2, Wilcox 1 and Carrizo formations.

Core Sampling Program

Whole cores depths as stated in the Drilling Prognosis in step 19. An additional 50 large-diameter cores will be selected by Battelle's geologist after viewing the triple combo data.

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INJECTION & MINING DIVISION **Completions, Testing, and Temporary Abandonment Schematics and Procedures**

Cleco Diamond Vault CLDV STW #1 Testing & TA Schematic						
Formation Top MD/TVD	Formation	Depth MD/TVD		Casing Detail	Hole Size	Comments
		80'		20" line pipe Conductor Casing	24"	
1011'	Base of Lowest USDW	1400'		9-5/8", 36 ppf J55, API connection Surface Casing	12.25"	
1702'	Cockfield					<ol style="list-style-type: none"> 1. Log CBI 2. Pressure test casing to 1500 psi 3. Drill out stage cement tool 4. Plugback 100' into Wilcox-2 5. Run tubing and packer 6. Swab fluid sample 7. Plugback openhole 8. Perforate Wilcox-1 9. Run tubing and packer 10. Swab fluid sample 11. Plugback perforated interval 12. Perforate Carrizo 13. Run tubing and packer 14. Swab fluid sample 15. Plugback perforated interval 16. Set CIBP at 3500', cap with 100' cmt
2508'	Cook Mtn					
2769'	Sparta					
3376'	Cane River					
3703'	Carrizo					
3879'	Wilcox 1					
5252'	Wilcox 2	5378'		5-1/2", 17 ppf L80, API connection Production Casing Stage Cementing Tool ECP set @ Wilcox-2 (+50')		
8001'	Midway Grp	8101'				
					8.75"	

Figure 3: Proposed Temporary Abandonment and Testing Schematic



Christopher B. Hart
11/8/2023

NOTE: All depths listed are GL.

MEASUREMENT DATUM POINT: Ground Elevation

ABANDONMENT PROCEDURAL CONSIDERATIONS

Pre-MIRU Considerations

1. Emergency Response Plan: contact numbers of emergency and non-emergency regulatory authorities, location lat/long and directions to/from the nearest hospital to be posted in doghouse and company man shack. See Appendix 1.
2. MSDS sheets for all chemicals on location to be maintained on site.
3. Contact Louisiana DNR representative at least 48 hours prior to move in.
4. All depths and volumes to be confirmed after logging and confirmation of formation tops

Reporting and Cost Tracking

5. Daily drilling reports to be sent by 6:30 am CST every morning.
6. Daily operational update call at 7:00 am CST every morning.
7. Daily drilling reports should accurately capture any and all rig downtime.
8. All services should submit field tickets to company man prior to leaving location at the conclusion of service. Ensure field ticket accurately reflects services provided.
9. Accurate daily time and cost tracking is crucial to future invoice approval.

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RECOMMENDED ABANDONMENT PROCEDURE

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LOGGING AND PREP

1. MIRU workover rig and associated equipment
2. ND WH and NU BOPE
3. RU WL and log CBL stage tool to surface
4. PU and RIH with 4-3/4" bit on workstring
5. Pressure test casing to 1500 psi per LAC 43.XIX.109.B.1. Hold the pressure for 30 minutes, if a 5% drop in pressure is observed the test is failed and corrective action is required. Fill out and sign Affidavit of Test of Casing in Well FORM CSG-T.
6. Drill out stage tool and clean out to TD
7. Trip out to remove bit and RIH open-ended for cement plugback
8. RU cement company and pump cement to plugback openhole 100 feet above the base of the Wilcox-2
 - a. Spot 91 sacks 15.6 ppg neat cement, 1.15 cu ft/sack (calculated on 250 ft plug, recalculate with as-built)
9. Pick up 100 feet, reverse circulate clean, wait on cement and tag to confirm cement top
10. POOH

ZONAL FLUID COLLECTION

11. Run tubing and packer
 - a. Set packer 50 ft inside casing shoe
12. **RU swabbing assembly**
 - a. Swab for clean formation fluid
13. RIH with open-ended tubing for cement plugback to ~100' above the base of Wilcox 2
14. RU cement company and pump cement to plugback openhole to 100 feet inside casing shoe
 - a. Spot 764 sacks 15.6 ppg neat cement, 1.15 cuft/sack (calculated on 2172 ft plug, recalculate with as-built)
15. RU WL
 - a. Perforate **Wilcox-1** (Perf intervals to be selected from logs)
16. Run tubing and packer
 - a. Set packer 50' above top perforation

17. **RU swabbing assembly**
 - a. Swab for clean formation fluid
18. RIH with open-ended tubing for cement plugback to ~5270'
19. RU cement company and pump cement to plugback perforations
 - a. Spot 145 sacks 15.6 ppg CO₂ resistant cement, 1.15 cuft/sack (calculated on 1278 ft plug, recalculate with as-built)
20. RU WL
 - a. Perforate Carrizo (Perf intervals to be selected from logs)
21. Run tubing and packer
 - a. Set packer 50' above top perforation
22. **RU swabbing assembly**
 - a. Swab for clean formation fluid

TEMPORARY ABANDONMENT

23. RIH with open-ended tubing for cement plugback to ~4000'
24. RU cement company and pump cement to plugback perforations
 - a. Spot 23 sacks 15.6 ppg CO₂ resistant cement, 1.15 cuft/sack (calculated on 200 ft plug, recalculate with as-built)
25. RIH with WL
 - a. Set CIBP at 3500' or just above cement PBTD (confirm with engineering prior to setting)
 - b. POOH and RD WL
26. RIH with open-ended tubing to CIBP
 - a. Spot ~100' of cement on CIBP
 - b. Spot 11 sacks 15.6 ppg CO₂ resistant cement, 1.15 cuft/sack (calculated on 100 ft plug)
 - c. Pick up two stands and reverse circulate clean
27. Circulate and condition hole with inhibited KCl fluid
28. ND BOPE and NU WH
29. RD and release rig

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INJECTION & MINING DIVISION

1515451

Irene Wattermack #001 (API 17079000300000, Serial # 29600)

COMPOSITE LOG

Location of Well: *1110 04*

COMPANY: *1515451*

WELL: _____

RUN NO.: _____

FIELD: _____

SURVEY: _____

COUNTY: _____

STATE: _____

RUNING No. *29600*

LOG

Footage Measured
C & Photo Section
C & Photo Section
Area Depth Measured
Bottom of Log
Depth Section
No. of Meters
Resistivity
Weight
Meters
In Feet
Scale
Meters
Feet

REMARKS

BEST COPY AVAILABLE

SELF-POTENTIAL
mV/m

RESISTIVITY
ohm-cm

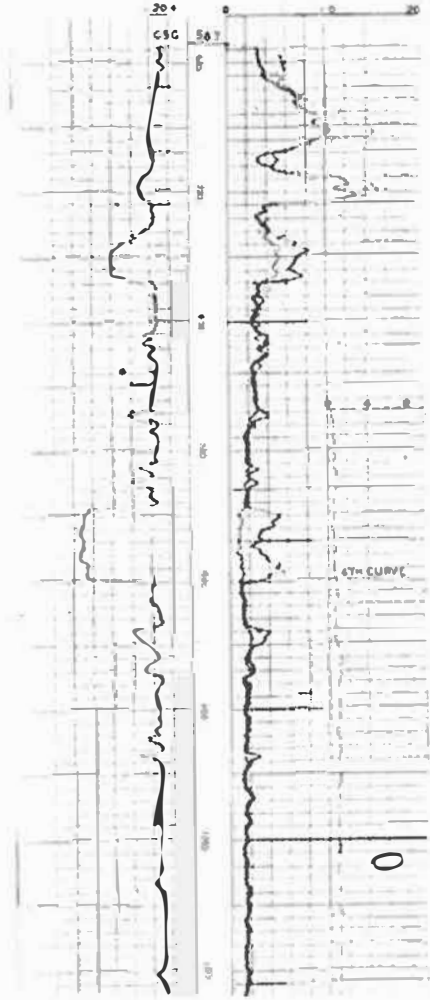
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044451



Base of USDW (1,011 ft)

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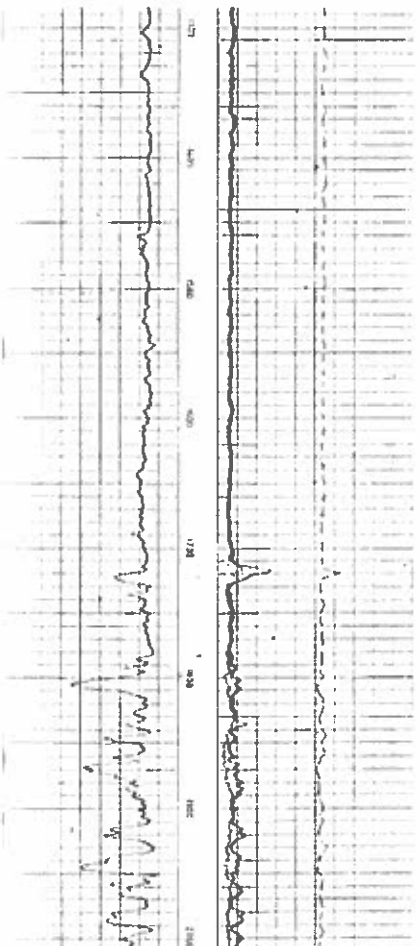
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044451

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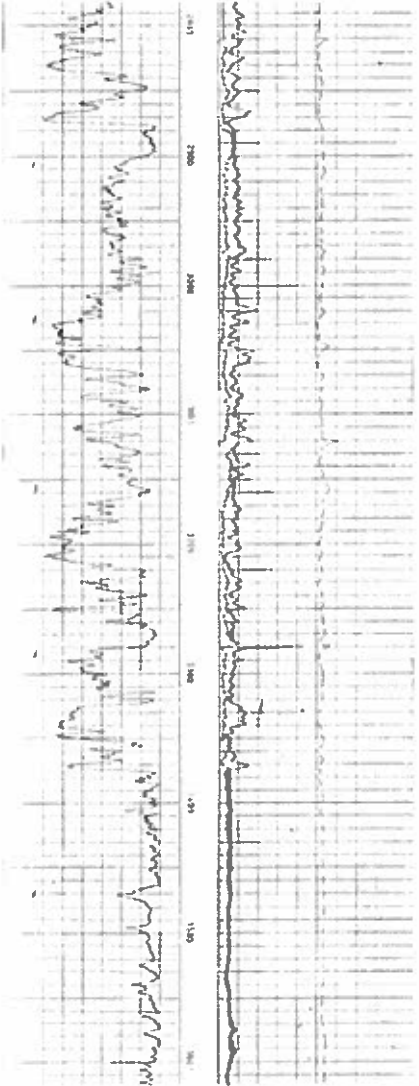
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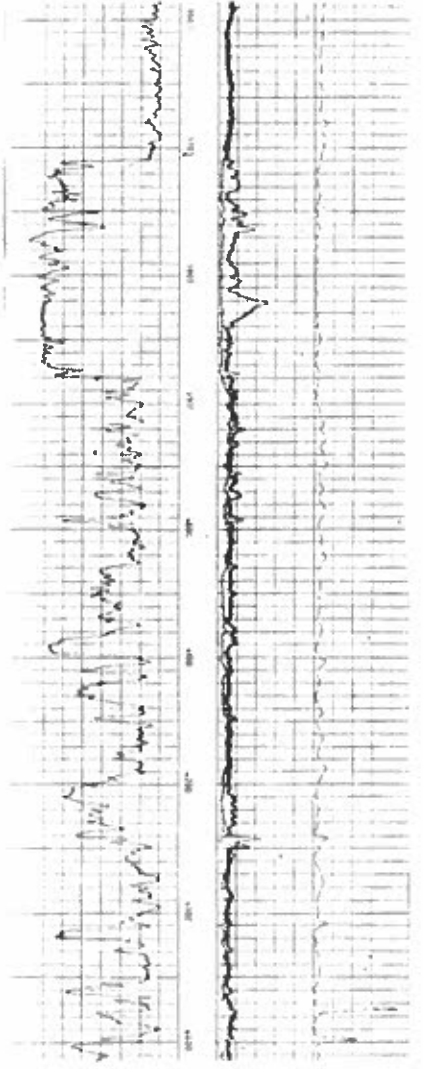
Caprock (3,376 to 3,700)

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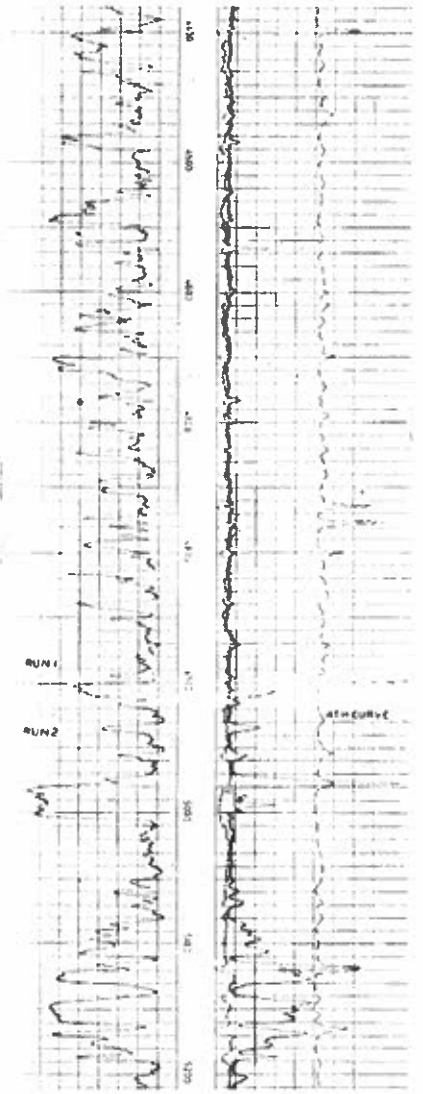


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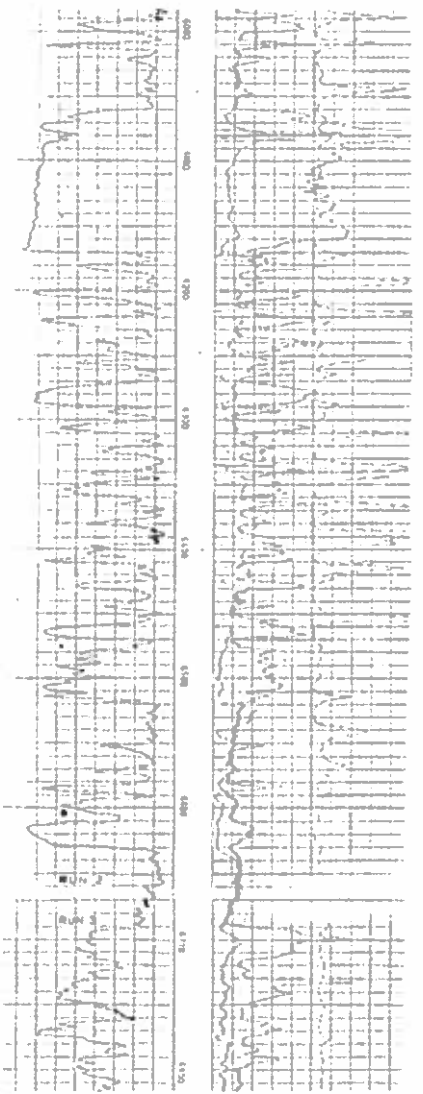
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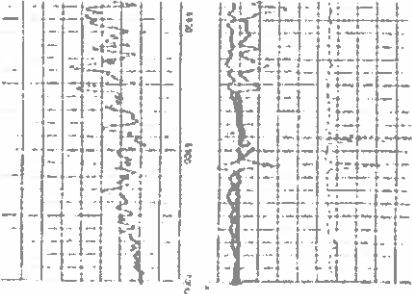


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044451



CLAUDE MORGAN
WATERMARK NO:
WC-RAPIDES LA

SCHE TO 7001
COT D 7000
EL 132 QF

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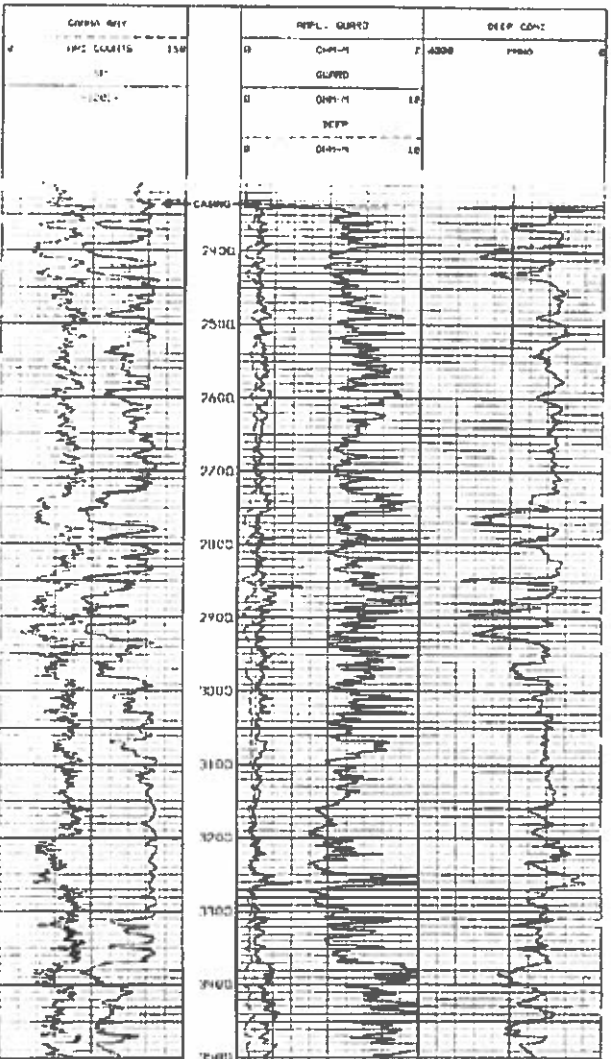
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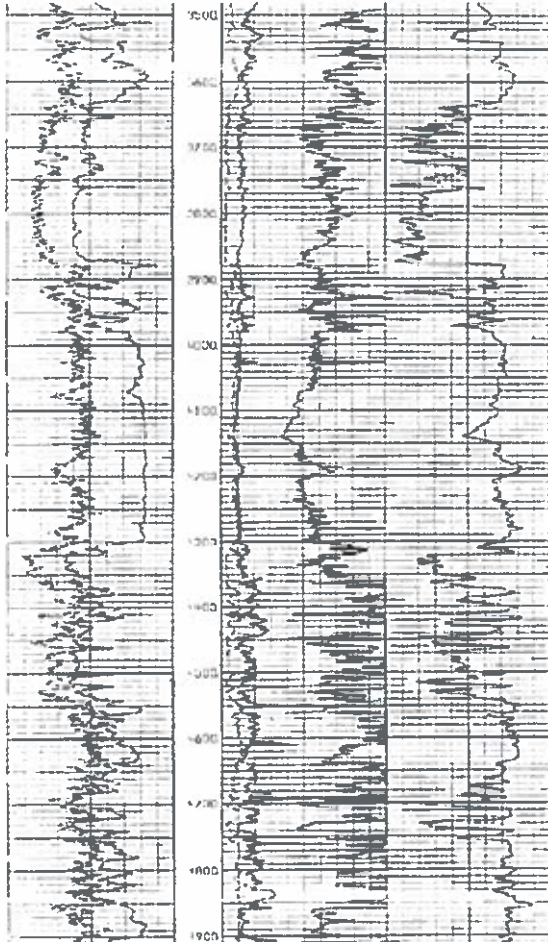
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1"=100 FT

MAIN LOG





Caprock (3,980 to 4,296 ft)

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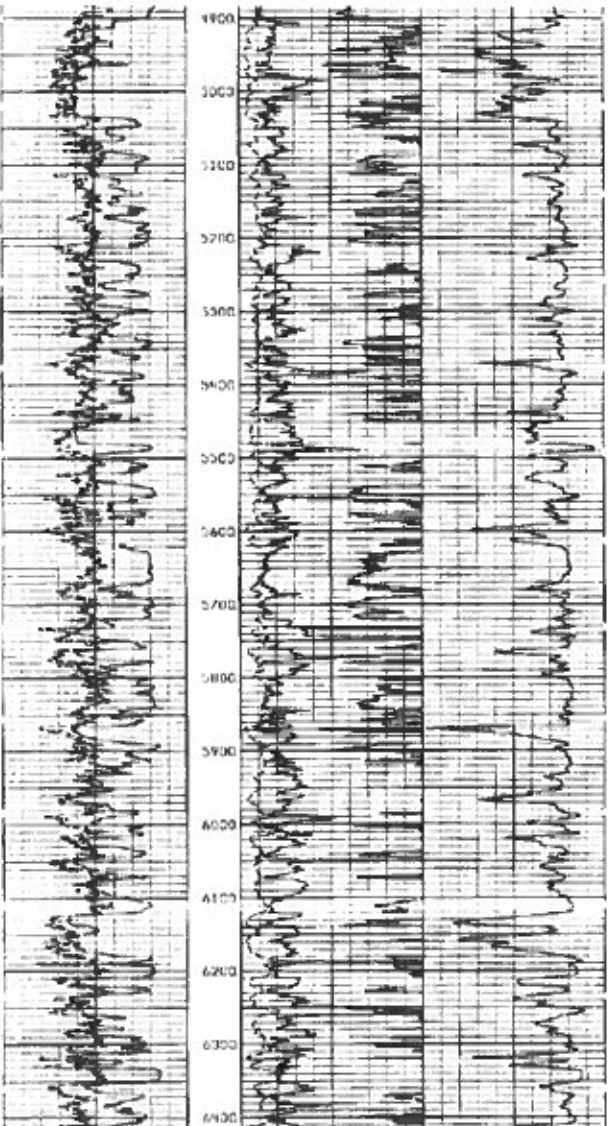
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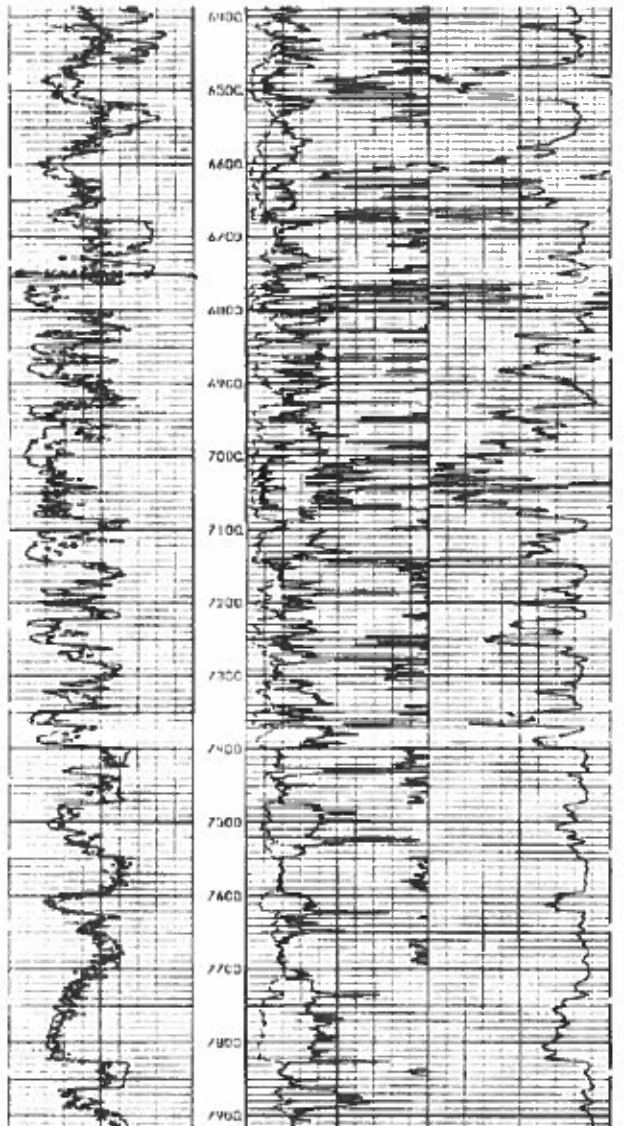


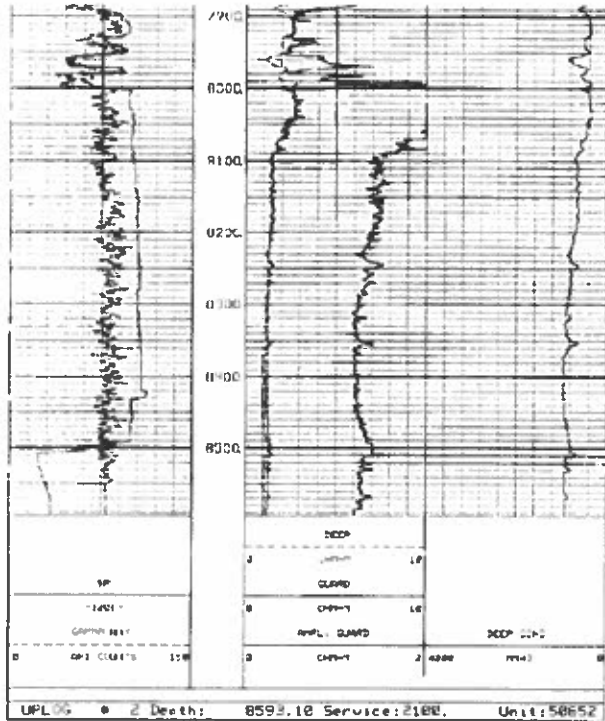
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Top of Midway (8,001 ft)

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INJECTION & MINING DIVISION

044451



Application No.044451

PLUG AND ABANDON PROCEDURE

WELL NUMBER: #1
FIELD: CLDV STW

Project: Cleco Diamond Vault
API # Pending

SURFACE LOCATION:
S18 T5N R3W
Rapides Parish, Louisiana
1' FSL & 712' FWL
Latitude (NAD83): N 31° 24' 15.02"
Longitude (NAD83): W 92° 43' 11.71"

OBJECTIVE: Stratigraphic Test Well
ELEVATION: 137.4 ft Ground Level above MSL

Cleco Diamond Vault CLDV STW #1 P&A Schematic						
Formation Top MD/TVD	Formation	Depth MD/TVD		Casing Detail	Hole Size	Comments
		80'		20" line pipe	24"	
1011'	Base of lowest USDW	1400'		Conductor Casing 9-5/8", 36 ppf J55, API connection	12.25"	<ol style="list-style-type: none"> 1. Install geophones at PBTD 2. Spot cement across geophones 3. Spot 100' cement across surf shoe 4. Spot 100' cement plug to surface 5. Cut casing 5' below grade 6. Weld on ID plate
1702'	Cockfield			Surface Casing		
2508'	Cook Mtn					
2769'	Sparta					
3376'	Cane River					
3703'	Carrizo					
3879'	Wilcox 1					
5252'	Wilcox 2	5378'		5-1/2", 17 ppf L80, API connection Production Casing Stage Cementing Tool ECP set @ Wilcox-2 (+50')		
8001'	Midway Grp	8101'			8.75"	

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INJECTION & MINING DIVISION

P&A Procedure
Cleco Diamond Vault STW #1

NOTE: All depths listed are GL.

MEASUREMENT DATUM POINT: Ground Elevation

SECTION 1 – PROCEDURAL CONSIDERATIONS

Pre-MIRU Considerations

1. Complete and submit work permit Form DM-4R with plan for plugging prior to scheduling workover rig.
2. Emergency Response Plan: contact numbers of emergency and non-emergency regulatory authorities, location lat/long and directions to/from the nearest hospital to be posted in doghouse and company man shack. See Appendix 1.
3. MSDS sheets for all chemicals on location to be maintained on site.
4. Contact oil and gas inspector at least 12 hours prior to move in.
5. All depths and volumes to be confirmed after logging and confirmation of formation tops
6. All fluid between plugs to be 9.0 ppg minimum

Reporting and Cost Tracking

1. Daily drilling reports to be sent by 6:30 am CST every morning.
2. Daily operational update call at 7:00 am CST every morning.
3. Daily drilling reports should accurately capture any and all rig downtime.
4. All services should submit field tickets to company man prior to leaving location at the conclusion of service. Ensure field ticket accurately reflects services provided.
5. Accurate daily time and cost tracking is crucial to future invoice approval.

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INJECTION & MINING DIVISION

P&A Procedure
Cleco Diamond Vault STW #1

SECTION 2 – RECOMMENDED PROCEDURE

PLUGGING AND ABANDONMENT

1. Conduct and document safety meeting.
2. MIRU workover rig and associated equipment.
3. ND WH and NU BOPE. Check and record pressures.
4. Make up and RIH with geophones for permanent installation.
 - a. Geophones to be set to PBSD per monitoring program
5. Pick up tubing string open-ended to pump cement at 2900 ft
6. RU cement company. Pump Class A cement with 50% POZ (slurry weight of 14.7 lb/gal) using a balance method to cement across geophones in hole.
7. Pick up three joints, circulate hole with ≥ 9.0 ppg fluid.
8. Trip tubing string to a depth of 1450 ft and prepare to set cement plug.
9. Pump Class A cement to fill the casing 100 ft over surface casing shoe.
10. Pick up three joints, circulate hole with ≥ 9.0 ppg fluid.
11. Trip tubing string to a depth of 100 ft and prepare to set cement plug.
12. Pump Class A cement to fill the casing from 100 ft to 5-10 ft below ground level.
13. Cut the casing string off at 5 ft below grade and weld a steel plate, (with well ID, permit number, and date of abandonment on it) to the casing strings.
14. Backfill the excavation.
15. Rig down and move off service rig and any remaining equipment.
16. Complete Louisiana Form P&A

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OCT 3 2023

INJECTION & MINING DIVISION

P&A Procedure
Cleco Diamond Vault STW #1

Description	Cemented Interval (ft, MD)	Formation	Plugging Method	Plug Description	
				Type	Quantity
Geophones	2,800-2,900 (approx.)	-	Balance	Class A	18 sacks
Surface Casing Shoe	1,350-1,450	-	Balance	Class A	18 sacks
Surface	Surface - 100	-	Balance	Class A	18 sacks

Table 1: Intervals to be plugged and materials/methods used (40 CFR 146.92 (b)(2 – 4)).

Category	Cost
Workover Rig & Mob/Demob	\$100,000
Cementing	\$60,000
Clean up & Reclamation	\$100,000
Misc Services & Contingency	\$50,000
Total	\$310,000

Table 2: Estimated STW plugging cost.

**All costs are based on best estimates as of July 2023. All costs subject to change based on downhole conditions, regulatory requirements, inflation, and availability of services.*

Battelle Carbon Services Contacts:

Position	Name	Phone
Drilling Supervisor	Danny Bryant	859-248-6675
Drilling Engineer	James Pipes	432-210-0440
Ops Geo Lead	Mike Sheahan	618-593-9201
Project Manager	Rob Rogalski	918-510-1458
Operations Manager	Jason VanderKooi	405-823-4211

OFFICE OF CONSERVATION

OCT 3 2023

INJECTION & MINING DIVISION

P&A Procedure
Cleco Diamond Vault STW #1

CLECO POWER LLC

EXTERNAL			
Quick Look Up List			
CONTACT		PHONE	
1	STATE POLICE (Emergency Hotline)	225.925.6595 or 877.925.6595	
2	LDEQ SINGLE POINT OF CONTACT (SPOC)	225.342.1234	
3	NATIONAL RESPONSE CENTER (NRC): [Oil Spills Only]	800.424.8802	
CONTACT	PHONE	FAX	ADDRESS / E-MAIL
AGENCIES / DEPARTMENTS			
USEPA Region 6 (Dallas, TX)	214.665.6450 800.342.7745		1445 Ross Avenue (6SF-RO), Dallas, TX 75202-2733
Louisiana Department of Environmental Quality (LDEQ):			
• Single Point of Contact (SPOC)	225.342.1234		
• Non-Emergency	225.763.3908		
• Groundwater Impact			PO Box 4312 Baton Rouge, LA 70821-4312
• Follow-Up Report			PO Box 4312 Baton Rouge, LA 70821-4312
Louisiana Department of Transportation and Development (LDOTD):			
	225.379.1210		
US Coast Guard	504.589.6261		
FIRE / EXPLOSION			
Boyce Fire Department	318.793.2121		
LOCAL EMERGENCY PLANNING COMMITTEES (LEPC)			
Rapides Parish Emergency Planning Committee	318.445.0391		
MEDIA			
KLAX	318.473.0412		
KALB	318.445.6397		
KRRV	318.442.5550		
KZMZ	318.443.2543		
KQID	318.445.1234		
MEDICAL (Hospitals)			
St. Francis Cabrini (Alexandria, LA)	318.487.1122		
Rapides Regional (Alexandria, LA)	318.487.3000		
OFF-SITE CONTRACTORS (Spill/Release Response)			
Oil Mop, Inc.	800.645.6671		
Petron Environmental & Safety	318.445.1456		
Jones Chemical Co. (Chlorine gas)			
• Office	504.536.1171		
• Plant	504.652.5012		

P&A Procedure
Cleco Diamond Vault STW #1

CLECO POWER LLC

CONTACT	PHONE	FAX	ADDRESS / E-MAIL
Advanced Specialized Carriers Pineville, LA	318.715.1656		
OFF-SITE CONTRACTORS (Disposal)			
Chemical Waste Management, Inc. [solid or hazardous waste]	318.583.2144		Lake Charles, LA
Erscos [hazardous waste/waste oil]	501.863.7173		El Dorado, Arkansas
USPCI [hazardous waste / PCB]	405.528.8371		Oklahoma City, Oklahoma
• Mr. Ken Jackson	same		
• Mr. David Sanchez	same		
Advanced Specialized Carriers Pineville, LA	318.715.1656		
POLICE DEPARTMENTS			
LA State Police			
• 24-Hour Hotline	225.925.6595		
• Troop E	318.487.5911		
Boyce Police Department	318.793.2477		
Rapides Parish Sheriff's Office (Boyce Substation)	911 or 318.793.8157		
MISCELLANEOUS OUTSIDE CONTACTS			
National Weather Service (Slidell, LA)	504.522.7330		

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OCT 3 2023
INJECTION & MINING DIVISION

(1) Have the potential and real adverse environmental effects of the proposed facility been avoided to the maximum extent possible?

The potential and real adverse environmental effects of the stratigraphic test well (proposed facility) include impacts to underground sources of drinking water and impacts to the surface environment. Avoidance and mitigation of those potential effects are described below.

Protection of Underground Sources of Drinking Water

The stratigraphic test well is sited on the existing Cleco Brame Energy Center (BEC). An extensive set of subsurface data have been analyzed at the Project site to support the evaluation of site suitability. The integration of well logs, 2D seismic, and regional maps and cross sections confirm the lateral extent of the target reservoir that will be tested and the confining zone between the reservoir and the lowermost underground source of drinking water (USDW), as well as the absence of faulting and structural features at the site location and surrounding area that could impact the integrity of the confining zone. No regional faults are mapped in the immediate location of the BEC facility. No earthquakes recorded in Louisiana in the last 100 years have occurred within 80 miles of the Project site. The absence of recorded earthquakes near the Project site is consistent with the regional seismic hazard map published by the United States Geological Survey (2014),¹ which designates central Louisiana as a low-risk area for seismic activity.

The deepest USDW at the Project site is known as the Catahoula formation and is found between 650 feet and 1,100 feet below the surface. The targeted injection zones in the Wilcox formation are found between 4,200 feet and 7,700 feet below the surface. There is over 3,000 feet of rock between the targeted injection zones and the deepest source of drinking water, including two impermeable shale zones.

The stratigraphic test well will be drilled to a planned total depth of 8,101 feet to allow for collection of geologic data within the Cane River and Wilcox formations. The well casing will be constructed in accordance with LAC43.XIX.109 with surface casing set below the base of the lowest USDW and cemented to surface in accordance with the regulations. The surface casing and its targeted set depth are designed to protect all sources of USDWs. This surface cased section is drilled using a freshwater mud system designed to prevent contamination of groundwater. Once this surface casing string is set and cemented the stratigraphic test well drilling begins using a similar freshwater mud system with bentonite (clay) for fluid loss control and weight. The drilling mud will be recirculated to maintain zero discharge. However, additional tank volume will be maintained on site to recover any excess mud or cement that may be circulated to surface.

Pressure testing of the surface casing will be conducted to ensure no leaks or potential for migration of fluids to the USDW. Production casing will be cemented from the surface to the total depth of the well to seal off the formations and prevent migration of fluids outside of the injection zone. Following placement, a cement bond log (CBL) will be run to confirm the integrity of the cement (i.e., assurance that there are no channels adjacent to the casing which would permit migration of fluids up the wellbore from the injection zone). Per LAC43.XIX.111, a blowout preventer (BOP) system will be installed to ensure well control during drilling. Following completion of testing and coring, permanent geophones will be

¹ United States Geological Survey (USGS), 2014, 2014 Seismic Hazard Map-Louisiana. Available at: <https://www.usgs.gov/media/images/2014-seismic-hazard-map-louisiana>

installed in the well for seismic monitoring and the well will be plugged and abandoned in accordance with the plugging procedures specified in LAC43.XIX.137.

Protection of Surface Environment

The following environmental studies were conducted to assess potential impacts associated with surface activities at the proposed facility:

- Cultural and historical resources;
- Wetlands and waters of the US;
- Cursory threatened, endangered, and protected species review;
- Land resources; and
- Floodplains.

A cursory visual ground survey of threatened, endangered or protected species or their habitat did not identify immediate concerns at the proposed facility. While migratory bird species are found in the surrounding area, some of which are protected, there were no nests observed at the proposed facility. A state licensed archaeologist has conducted database research and an regional survey to determine if historic, archaeological, or cultural resources are present in the region; however, this survey did not specifically cover the proposed installation location. The survey identified previously recorded archaeological sites in the surrounding area as well as a previously unrecorded prehistoric resource location located on the western edges of Lake Rodemacher. However, the proposed facility is located on Cleco BEC property, which was historically a forested area that was later cleared and most recently covered with non-native gravel/rock and later earthen fill. Due to the history of the site and extent of past disturbance, no historic, cultural, or archaeological resources are anticipated to be impacted through this action. Floodplains and wetlands are noted in nearby areas, however, there are no wetlands or floodplains located at the proposed facility.

Cleco employs on-site Environmental Coordinators that are responsible for tracking environmental compliance and responding to accidental releases resulting from surface activities. The Environmental Coordinators also manage emergency response at the BEC and will coordinate with the Contractor to mitigate environmental, health and safety impacts during site preparation, drilling, testing, and plugging and abandonment activities.

The construction of the proposed facility will incorporate best management practices (BMPs), engineering practices, and regulatory requirements to ensure that the real adverse environmental effects occurring as the result of proposed facility are avoided to the maximum extent possible. The following BMPs, engineering practices, and regulatory requirements will be utilized as applicable for the proposed facility:

- Well design, drilling, installation, and testing will conform with American Petroleum Institute (API) Standards, including but not limited to:
 - Recommended Practice 54 (Occupational Safety and Health for Oil and Gas Well Drilling and Servicing Operations);
 - API Guidance Document HF1 (Hydraulic Fracturing Operations – Well Construction and Integrity Guidelines); and
 - API Standard 65-Part 2 (Isolating Potential Flow Zones During Well Construction)
- Safe work permits will be used to ensure work sites are returned to a clean and safe condition when work is completed.
- Contractors will be required to develop and implement a dust management plan to minimize dust during construction. Cleco construction inspectors and contract construction supervisors will make observations regarding the contractors' compliance

with the plan. The facility will require that roads and high traffic areas be wetted as necessary to minimize the generation of dust due to vehicle traffic.

- General trash and debris generated during construction will be containerized and disposed of offsite in accordance with applicable regulatory requirements. Used oil and lubricants from equipment maintenance will be stored in closed containers and managed in accordance with all applicable rules and will be sent to used oil recycling contractors.
- Drip pans and proper collection containers will be used for equipment parked overnight.
- Solid and/or hazardous waste generated during construction may include waste such as construction material debris, used lubricants and oils, and general trash. Any waste generated from construction will be stored temporarily onsite in accordance with all applicable federal and state regulations prior to transport off-site to an authorized treatment, storage, recycling, or disposal facility.
- A stormwater pollution prevention plan (SWPPP) and permit are in place for the existing facility and will be updated to include anticipated operations proposed for the proposed facility. A separate stormwater general permit for construction activities (Permit No. LAR100000) will be obtained from the Louisiana Department of Environmental Quality (LDEQ). As required, a SWPPP will be prepared for the proposed activity. The SWPPP will incorporate BMPs to protect surface water bodies that traverse the proposed facility or receive stormwater discharges from the proposed facility.
- The Project will implement environmental awareness training with contractors to support environmental protection, including migratory bird and bat protection.
- Additional tank volume will be maintained on site to recover any excess mud or cement that may be circulated to surface.

(2) Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the later outweighs the former?

Yes, the social and economic benefits of the proposed facility along with the positive environmental impact of significantly reducing greenhouse gas (GHG) emissions up to 95% (reducing emissions by up to 4,600,000 tonnes/year) from Cleco's Madison Unit 3 Power Plant will considerably outweigh any adverse environmental impacts.

Environmental impact costs stem directly from any adverse environmental effects resulting from the implementation of a project. The potential and real adverse environmental effects of the proposed facility include subsurface and surface impacts associated with design, drilling, and testing of the well. However, as demonstrated in Question 1, these environmental impacts are mitigated through regulatory, operational, and administrative measures that will be implemented for this proposed facility, thereby minimizing environmental impact costs.

The information gathered from the proposed facility will support siting and building a state-of-the-art CO₂ storage facility that will support Cleco's efforts to preserve the environment and drive economic benefits to Louisiana through the company's long-term commitment to supply safe, clean, and reliable energy. A properly designed CO₂ storage facility will provide significant economic and social benefits, including additional property tax base from the capital investment, additional sales and use taxes for the parish and state, additional construction jobs, and addition of 30 to 40 new permanent jobs. To support local workforce development, Cleco will continue to invest in educating and upskilling its workforce through STEM, trade, and university education, targeted support for underrepresented populations, meritocratic interview processes, corporate giving, and generous pay and benefits packages. As a result, the social and economic benefits that will be recognized through the implementation of this proposed project clearly outweigh the environmental impacts.

(3) Are there alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing non-environmental benefits?

No alternative projects would offer more protection to the environment than the proposed facility. The purpose of the stratigraphic test well will be to confirm favorable conditions for storage of captured CO₂. Evaluation of subsurface conditions is critical to demonstrating that the CO₂ can be safely stored without migrating to or impacting underground sources of drinking water.

As part of Cleco's goal to sustainably reduce their greenhouse gas emissions by 60% by 2030 with aspirations of achieving net-zero emissions by 2050, they propose to install a carbon dioxide (CO₂) capture and sequestration (CCS) facility on the existing Madison Unit 3 at the BEC (Project Diamond Vault)². CCS has emerged as a vital technology in the global effort to mitigate climate change and transition to a low-carbon economy. CCS technologies enable the capture of CO₂ emissions, followed by transportation and storage in underground reservoirs, preventing the greenhouse gas from entering the atmosphere. The Project is anticipated to reduce CO₂ emissions from Madison Unit 3 by 95% by storing the CO₂ in geological features underneath the BEC and will be designed to capture 4.6M tonnes of CO₂ per year.

Design of the CO₂ reservoir to meet the federal underground injection control (UIC) regulations for Class VI CO₂ injection requires collection of subsurface geologic data to confirm sufficient storage capacity and permanent containment, such that the injection results in no impacts to underground sources of drinking water. While existing data from the area, including well logs, 2D seismic, and regional maps and cross sections indicate the lateral extent of the target reservoir and confining zone, additional site-specific data is required to confirm this information and to demonstrate no potential for the Project to impact underground sources of drinking water at the planned injection location. Therefore, there are not alternative projects that would offer the same benefits.

Site-specific data involves assessing the geologic, hydrogeologic, geochemical and geomechanical properties of the proposed storage site to ensure that the injection wells are appropriately sited. Evaluation of these properties require collection of core and geophysical logging data from the proposed stratigraphic test well. The data collected from this well will be used in the development of injection well construction and operating plans, providing inputs for the computation model that estimates the extent of the injection CO₂ plume and related pressure front, and establishing baseline information to which geochemical, geophysical and hydrogeologic site monitoring data will be collected over the life of the injection project. Data collected from the sub surface is necessary to provide the utmost confidence that the CO₂ captured from the facility to meet CO₂ reduction targets and climate change goals can be safely and permanently stored.

(4) Are there alternative sites which would offer more protection to the environment than the proposed facility site without unduly curtailing non-environmental benefits?

No alternative sites would offer more protection to the environment than the proposed facility. The purpose of the stratigraphic test well will be to confirm favorable conditions for storage of captured CO₂, given that the source of the CO₂ is located at the Cleco BEC, and storage will occur beneath the site, the proposed facility will be sited in the optimal location.

The stratigraphic test well will be located on the BEC property (i.e., in a developed industrial area) away from sensitive environmental areas and receptors. The location selected for the well provides a greater level of protection against impacts to the environment by co-locating with Cleco's existing operations which has existing protections in place for stormwater and spill containment, thereby mitigating potential impacts to undeveloped sensitive or protected environmental areas. Additionally, access to the proposed facility already exists and all

² <https://www.cleco.com/diamondvault>

construction activities will be contained within the boundaries of the BEC. The subsurface conditions required to safely store CO₂ also exist in this location, including a favorable storage reservoir, sufficient cap rock, and no faulting or seismic activity, such that impacts to underground sources of drinking water are mitigated.

(5) Are there mitigating measures which would offer more protection to the environment, than the facility as proposed, without unduly curtailing non-environmental benefits?

No other mitigating measures would offer more protection to the environment. As indicated under Question 1, Cleco is implementing mitigation measures for the proposed facility that are designed to offer maximum protection of the environment. The proposed facility will be designed and constructed in accordance with API Standards and Guidance, EPA UIC regulations and Louisiana Office of Conservation well regulations. Surface activities will comply with all applicable Louisiana Department of Natural Resources (LDNR) and LDEQ regulations. These regulations are developed to mitigate impacts to underground sources of drinking water associated with the stratigraphic test well and surface impacts associated with construction, drilling, and testing activities. Cleco intends to comply with these regulations and implement additional measures to ensure safe and protective operations.