

Form 3160-3  
(June 2015)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator <b>[372165]</b>		8. Lease Name and Well No. <b>[318029]</b>
3a. Address	3b. Phone No. (include area code)	9. API Well No. <b>30-025-48692</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		10. Field and Pool, or Exploratory <b>[96434]</b>
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)		12. County or Parish
16. No of acres in lease		13. State
17. Spacing Unit dedicated to this well		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.		
19. Proposed Depth		
20. BLM/BIA Bond No. in file		
21. Elevations (Show whether DF, KDB, RT, GL, etc.)		
22. Approximate date work will start*		
23. Estimated duration		
24. Attachments		
The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)		
1. Well plat certified by a registered surveyor.		4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
2. A Drilling Plan.		5. Operator certification.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).		6. Such other site specific information and/or plans as may be requested by the BLM.
25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
Office		
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		
Conditions of approval, if any, are attached.		
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.		

GCP Rec 04/13/2021

SL

(Continued on page 2)

APPROVED WITH CONDITIONS

Approval Date: 04/12/2021

KZ  
04/22/2021

\*(Instructions on page 2)

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>CENTENNIAL RESOURCES</b>
<b>LEASE NO.:</b>	<b>NMNM126972</b>
<b>WELL NAME &amp; NO.:</b>	<b>SOLOMON Fed Com 505H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>2339'/N &amp; 1130'/E</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>100'/N &amp; 1870'/E</b>
<b>LOCATION:</b>	<b>Section 27, T.24 S., R.34 E., NMPM</b>
<b>COUNTY:</b>	<b>LEA County, New Mexico</b>

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input checked="" type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

### B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1,300** feet (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

**hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**
3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification. **Excess cement calculates to 22%, additional cement might be required.**

**C. PRESSURE CONTROL**

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

**D. SPECIAL REQUIREMENT (S)****Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

**JJP03302021****GENERAL REQUIREMENTS**

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

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

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

☒ Lea County

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure

- rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
- b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
  2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
  3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

#### A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

**B. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

- b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
  - c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
  - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall



have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### C. DRILLING MUD

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

#### D. WASTE MATERIAL AND FLUIDS

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

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





U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Operator Certification Data Report

04/13/2021

### Operator Certification

*I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.*

**NAME:** Michelle Gonzales-Nguyen**Signed on:** 03/05/2020**Title:** Regulatory Analyst**Street Address:** 1001 17th Street, Suite 1800**City:** Denver**State:** CO**Zip:** 80202**Phone:** (720)499-1565**Email address:** Michelle.Gonzales@cdevinc.com

### Field Representative

**Representative Name:****Street Address:****City:****State:****Zip:****Phone:****Email address:**



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# Application Data Report

04/13/2021

APD ID: 10400054470

Submission Date: 03/05/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - General

APD ID: 10400054470

Tie to previous NOS? N

Submission Date: 03/05/2020

BLM Office: CARLSBAD

User: Michelle Gonzales-Nguyen

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM126972

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? Y

Permitting Agent? NO

APD Operator: CENTENNIAL RESOURCE PRODUCTION LLC

Operator letter of designation:

## Operator Info

Operator Organization Name: CENTENNIAL RESOURCE PRODUCTION LLC

Operator Address: 1001 17th Street, Suite 1800

Zip: 80202

Operator PO Box:

Operator City: Denver

State: CO

Operator Phone: (720)499-1400

Operator Internet Address:

## Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: 2ND BONE  
SPRING

Pool Name: RED HILLS BONE  
SPRING, NORTH

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N

Use Existing Well Pad? N

New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:

Number: 1

Well Class: HORIZONTAL

Solomon/Sheba Federal

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 20 Miles

Distance to nearest well: 30 FT

Distance to lease line: 1130 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: Solomon\_Federal\_Com\_505H\_C\_102\_20200225133408.pdf

Solomon\_Federal\_Com\_505H\_C\_102\_Lease\_Detail\_20200225133408.pdf

Well work start Date: 06/21/2021

Duration: 25 DAYS

## Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 23782

Reference Datum: GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	2339	FNL	1130	FEL	24S	34E	27	Aliquot SENE	32.189351	-103.452934	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 16139	3461	0	0	N
KOP Leg #1	2548	FNL	1870	FEL	24S	34E	27	Aliquot SWNE	32.188779	-103.455324	LEA	NEW MEXI CO	NEW MEXI CO	F	FEE	-7179	10708	10640	Y

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	2548	FNL	1870	FEL	24S	34E	27	Aliquot SWNE	32.188779	- 103.455324	LEA	NEW MEXICO	NEW MEXICO	F	FEE	- 7752	11354	11213	Y
EXIT Leg #1	100	FNL	1870	FEL	24S	34E	22	Aliquot NWNE	32.210009	- 103.455322	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126972	- 7752	21439	11213	Y
BHL Leg #1	100	FNL	1870	FEL	24S	34E	22	Aliquot NWNE	32.210009	- 103.455322	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126972	- 7752	21439	11213	Y



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# Drilling Plan Data Report

04/13/2021

APD ID: 10400054470

Submission Date: 03/05/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
672829	RUSTLER	3524	1119	1119	SANDSTONE	NONE	N
932162	SALADO	1788	1736	1736	SALT	NONE	N
932163	LAMAR	-1835	5359	5359	ANHYDRITE	NONE	N
672830	BELL CANYON	-1890	5414	5414	SANDSTONE	NATURAL GAS, OIL	N
672831	CHERRY CANYON	-2805	6329	6329	SANDSTONE	NATURAL GAS, OIL	N
672864	BRUSHY CANYON	-4303	7827	7827	SANDSTONE	NATURAL GAS, OIL	N
672865	BONE SPRING LIME	-5714	9238	9238	OTHER : Carbonate	NATURAL GAS, OIL	N
672866	AVALON SAND	-5742	9266	9266	SHALE	CO2, NATURAL GAS, OIL	N
672867	BONE SPRING 1ST	-6757	10281	10281	SANDSTONE	NATURAL GAS, OIL	N
672868	BONE SPRING 2ND	-6957	10481	10481	OTHER, SHALE : Carbonate	NATURAL GAS, OIL	Y

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 11213

**Equipment:** The BOP and related equipment will meet or exceed the requirements of a 5M-psi system as set forth in On Shore Order No. 2. See attached BOP Schematic. A. Casinghead: 13 5/8 5,000 psi SOW x 13 5,000 psi WP Intermediate Spool: 13 5,000 psi WP x 11 5,000 psi WP Tubinghead: 11 5,000 psi WP x 7 1/16" 15,000 psi WP B. Minimum Specified Pressure Control Equipment Annular preventer One Pipe ram, One blind ram Drilling spool, or blowout preventer with 2 side outlets. Choke side will be a 3-inch minimum diameter, kill line shall be at least 2-inch diameter 3 inch diameter choke line 2 3 inch choke line valves 2 inch kill line 2 chokes with 1 remotely controlled from rig floor (see Figure 2) 2 2 inch kill line valves and a check valve Upper kelly cock valve with handle available When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed) Lower kelly cock valve with handle available Safety valve(s) and subs to fit all drill string connections in use Inside BOP or float sub available Pressure gauge on choke manifold All BOPE connections subjected to well pressure shall be flanged, welded, or clamped Fill-up line above the uppermost preventer. C. Auxiliary Equipment Audio and visual mud monitoring equipment shall be placed to detect volume changes indicating loss or gain of circulating fluid volume. (OOS 1, III.C.2) Gas Buster will be used below intermediate casing setting depth. Upper and lower kelly cocks with handles, safety

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H

and subs to fit all drill string connections and a pressure gauge installed on choke manifold.

**Requesting Variance?** YES

**Variance request:** Centennial Resource Production, LLC hereby requests to use a flex hose on the choke manifold for this well. Please see attached multi bowl procedure.

**Testing Procedure:** The BOP test shall be performed before drilling out of the surface casing shoe and will occur at a minimum: a. when initially installed b. whenever any seal subject to test pressure is broken c. following related repairs d. at 30 day intervals e. checked daily as to mechanical operating conditions. The ram type preventer(s) will be tested using a test plug to 250 psi (low) and 5,000 psi (high) (casinghead WP) with a test plug upon its installation onto the 13 surface casing. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing. The annular type preventer(s) shall be tested to 50% of its working pressure. Pressure will be maintained for at least 10 minutes or until provisions of the test are met, whichever is longer. A Sundry Notice (Form 3160 5), along with a copy of the BOP test report, shall be submitted to the local BLM office within 5 working days following the test. If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure. The BLM office will be provided with a minimum of four (4) hours notice of BOP testing to allow witnessing. The BOP Configuration, choke manifold layout, and accumulator system, will be in compliance with Onshore Order 2 for a 5,000 psi system. A remote accumulator will be used. Pressures, capacities, and specific placement and use of the manual and/or hydraulic controls, accumulator controls, bleed lines, etc., will be identified at the time of the BLM witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible

**Choke Diagram Attachment:**

HP650\_10M\_Choke\_Manifold\_20200225124015.pdf

**BOP Diagram Attachment:**

HP650\_BOP\_Schematic\_CoFlex\_Choke\_5K\_2019\_1\_29\_20200225124021.pdf

### Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	CONDUCTOR	26	20.0	NEW	API	N	0	120	0	120	3461	3341	120	H-40	94	OTHER - WELD						
2	SURFACE	17.5	13.375	NEW	API	N	0	1300	0	1300	3461	2161	1300	J-55	54.5	OTHER - BTC	1.76	4.26	DRY	12.04	DRY	12.04
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	5513	0	5486	3461	-2025	5513	J-55	40	LT&C	1.28	1.39	DRY	2.37	DRY	2.87
4	PRODUCTION	8.75	5.5	NEW	API	N	0	10708	0	10640	3461	-7179	10708	OTHER	20	OTHER - TMK UP DQX	2.01	2.29	DRY	3.01	DRY	3.01
5	PRODUCTION	8.5	5.5	NEW	API	N	10708	21439	10640	11213	-7179	-7752	10731	OTHER	20	OTHER - TMK UP DQX	1.91	2.17	DRY	55.94	DRY	55.94

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H**Casing Attachments**

---

**Casing ID:** 1      **String Type:** CONDUCTOR**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

---

**Casing ID:** 2      **String Type:** SURFACE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

CASING\_ASSUMPTIONS\_WORKSHEET\_20200225145837.pdf

---

**Casing ID:** 3      **String Type:** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**CASING\_ASSUMPTIONS\_WORKSHEET\_20200225150125.pdf

---



**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H**Casing Attachments****Casing ID:** 4 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

CASING\_ASSUMPTIONS\_WORKSHEET\_20200225150415.pdf

Technical\_Data\_Sheet\_TMK\_UP\_DQX\_5.5\_x\_20\_P110\_CY\_20200305165658.pdf

**Casing ID:** 5 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

CASING\_ASSUMPTIONS\_WORKSHEET\_20200226070116.pdf

Technical\_Data\_Sheet\_TMK\_UP\_DQX\_5.5\_x\_20\_P110\_CY\_20200305165730.pdf

**Section 4 - Cement**

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0	0	0	0

CONDUCTOR	Lead		0	120	121	1.49	12.9	181		Grout	Bentonite 4% BWOC, Cellophane #sx, CaCl2 2% BWOC
-----------	------	--	---	-----	-----	------	------	-----	--	-------	--

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	800	639	1.74	13.5	1111	100	Class C Premium	Premium Gel Bentonite 4%, C-45 Econolite 0.25%, Phenoseal 0.25#/sk, CaCl 1%, Defoamer C-41P 0.75%
SURFACE	Tail		800	1300	518	1.34	14.8	695	100	Class C Premium	C-45 Econolite 0.10%, CaCl 1.0%
INTERMEDIATE	Lead		0	5013	1188	3.44	10.7	4086	150	TXI Lightweight	Salt 1.77/sk, C-45 Econolite 2.25%, STE 6.00%, Citric Acid 0.18%, C-19 0.10%, CSA-1000 0.20%, C-530P 0.30%, CTB-15 LCM 7#/sk, Gyp Seal 8#/sk
INTERMEDIATE	Tail		5013	5513	141	1.33	14.8	188	20	Class C Premium	C-45 Econolite 0.10%, Citric acid 0.05%, C503P 0.25%
PRODUCTION	Lead		0	10708	1048	3.41	10.6	3575	30	TXI Lightweight	Salt 8.98#/sk, STE 6.00%, Citric acid 0.20%, CSA-1000 0.23%, C47B 0.10%, C-503P 0.30%
PRODUCTION	Tail		10708	21439	2478	1.24	14.2	3073	25	50:25:25 Class H: Poz: CPO18	Citric acid 0.03%, CSA-1000 0.05%, C47B 0.25%, C-503P 0.30%

## Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

**Describe what will be on location to control well or mitigate other conditions:** Sufficient quantities of mud materials will be on the well site at all times for the purpose of assuring well control and maintaining wellbore integrity. Surface interval will employ fresh water mud. The intermediate hole will utilize a diesel emulsified brine fluid to inhibit salt washout and prevent severe fluid losses. The production hole will employ oil base fluid to inhibit formation reactivity and of the appropriate density to maintain well control.

**Describe the mud monitoring system utilized:** Centrifuge separation system. Open tank monitoring with EDR will be used for drilling fluids and return volumes. Open tank monitoring will be used for cement and cuttings return volumes. Mud properties will be monitored at least every 24 hours using industry accepted mud check practices.

## Circulating Medium Table

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1300	OTHER : FW	8.6	9.5							
1300	5513	OTHER : Brine	9	10							
0	2143 9	OIL-BASED MUD	8.8	10							

### Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

Will utilize MWD/LWD (Gamma ray logging) from intermediate hole to TD of the well.

**List of open and cased hole logs run in the well:**

GAMMA RAY LOG,DIRECTIONAL SURVEY,

**Coring operation description for the well:**

N/A

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5830

**Anticipated Surface Pressure:** 3363

**Anticipated Bottom Hole Temperature(F):** 165

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

H2S\_Plan\_Solomon\_Federal\_Com\_505H\_20200226101717.pdf

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

## Section 8 - Other Information

### Proposed horizontal/directional/multi-lateral plan submission:

Solomon\_Fed\_Com\_505H\_\_v3\_\_2mile\_\_20200226103319.pdf

### Other proposed operations facets description:

GCP is attached. Geoprog and WBD is attached.

### Other proposed operations facets attachment:

CRD\_Batch\_Setting\_Procedures\_20200228113732.pdf

CDEV\_Multi\_Bowl\_Procedure\_Solomon\_Fed\_Com\_505H\_20200228120922.pdf

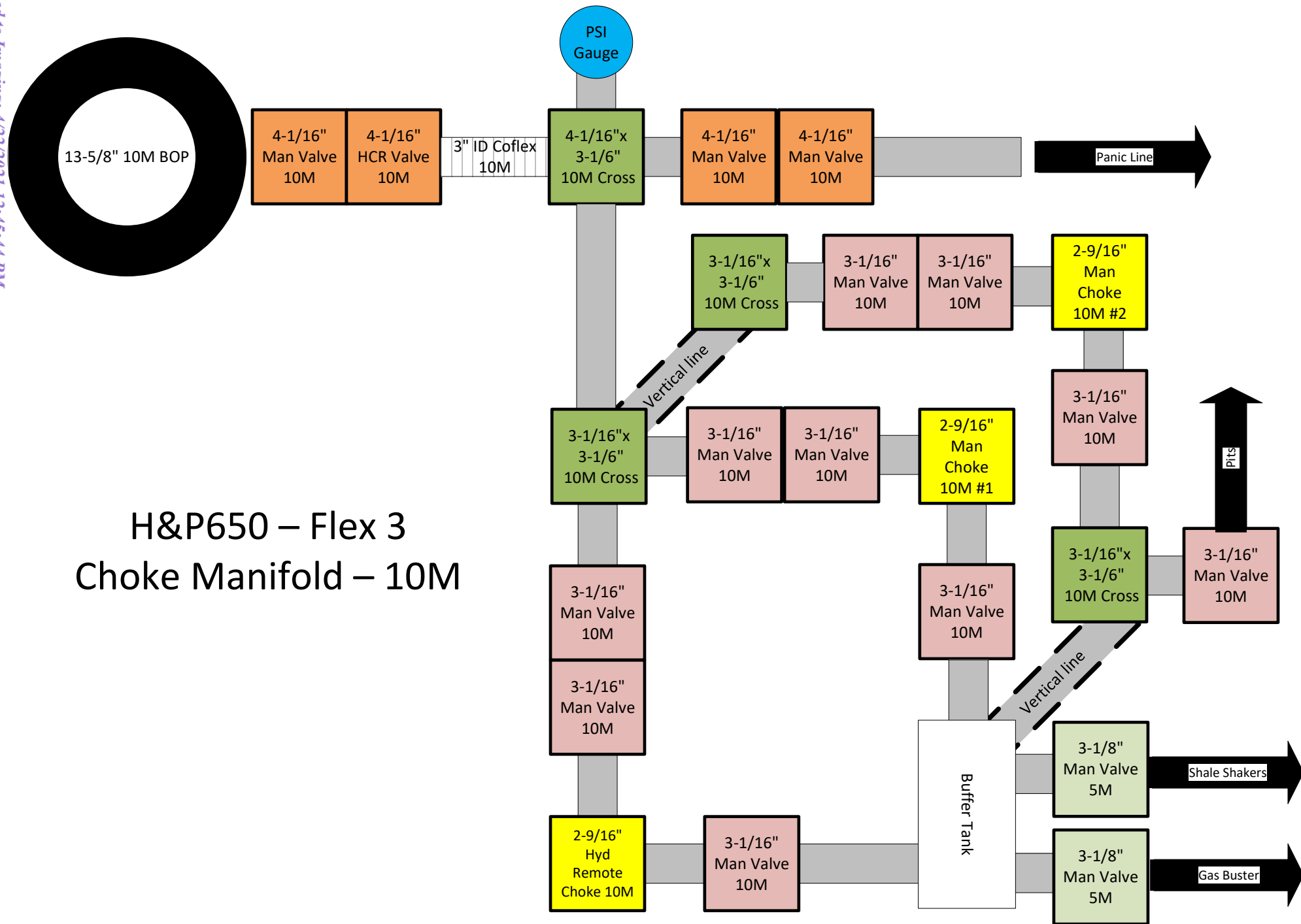
Gas\_Capture\_Plan\_Solomon\_505H\_20200305094735.pdf

Solomon\_Federal\_Com\_505H\_Pre\_Drill\_Prog\_File\_20201018123202.pdf

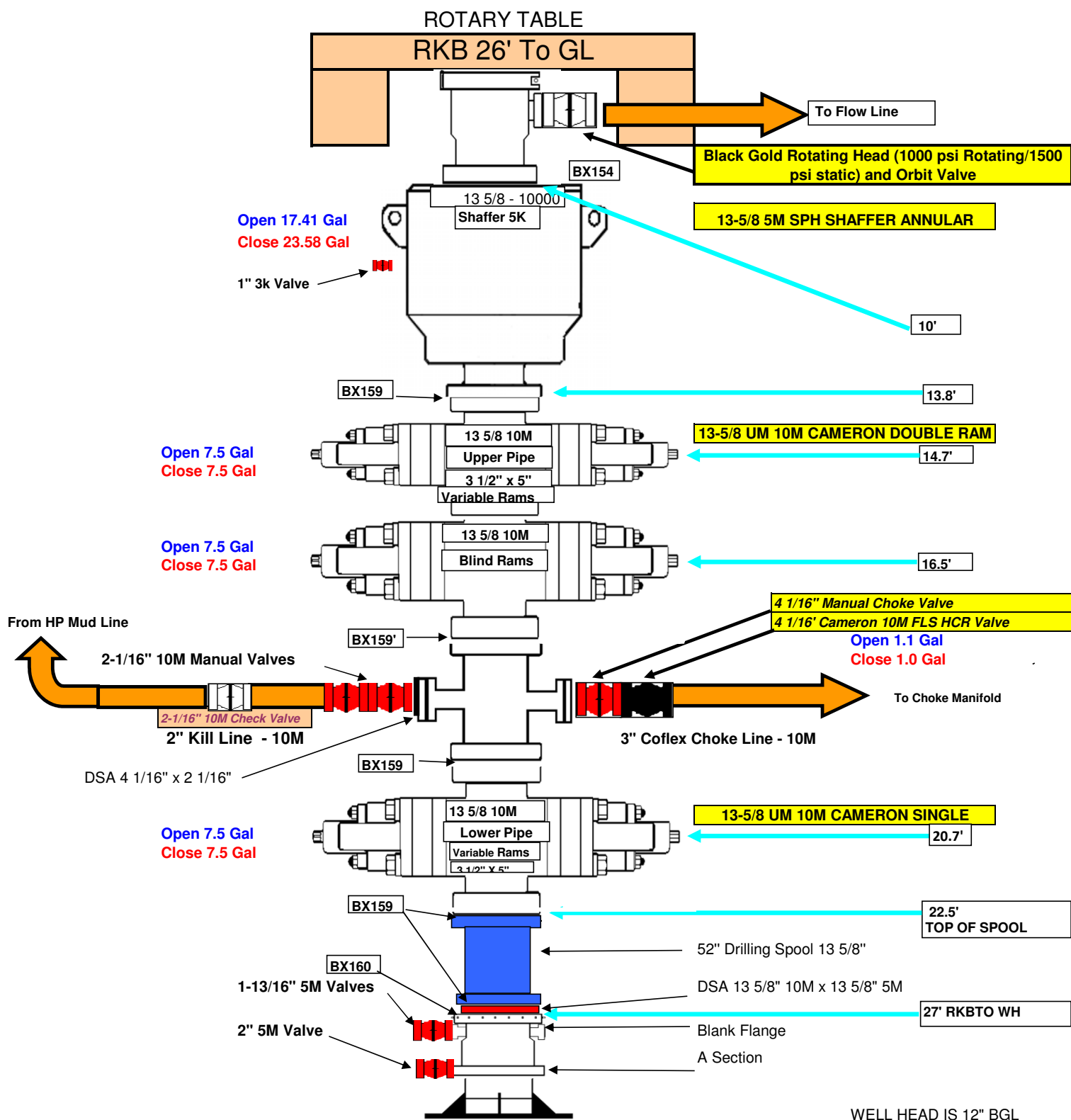
Solomon\_Fed\_Com\_505H\_\_WBD\_20201018123202.pdf

### Other Variance attachment:

H\_P\_Flex\_Hose\_Specs\_Continental\_Hose\_SN\_67255\_20200228112930.pdf



# H&P 650



CASING ASSUMPTIONS WORKSHEET:Centralizer Program:

Surface:        - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)  
                     - No Cement baskets will be run

Production:    - 1 welded bow spring centralizer on a stop ring 6' above float shoe  
                     - 1 centralizer every other joint to the top of the tail cement  
                     - 1 centralizer every 4 joints to 500' below the top of the lead cement  
                     - The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

- CENTENNIAL RESOURCE DEVELOPMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.



CASING ASSUMPTIONS WORKSHEET:Centralizer Program:

Surface:        - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)  
                     - No Cement baskets will be run

Production:    - 1 welded bow spring centralizer on a stop ring 6' above float shoe  
                     - 1 centralizer every other joint to the top of the tail cement  
                     - 1 centralizer every 4 joints to 500' below the top of the lead cement  
                     - The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

- CENTENNIAL RESOURCE DEVELOPMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface:        - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)  
                     - No Cement baskets will be run

Production:    - 1 welded bow spring centralizer on a stop ring 6' above float shoe  
                     - 1 centralizer every other joint to the top of the tail cement  
                     - 1 centralizer every 4 joints to 500' below the top of the lead cement  
                     - The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

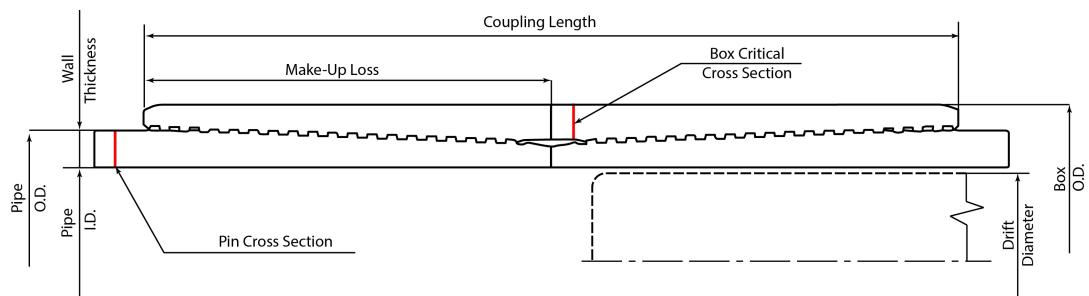
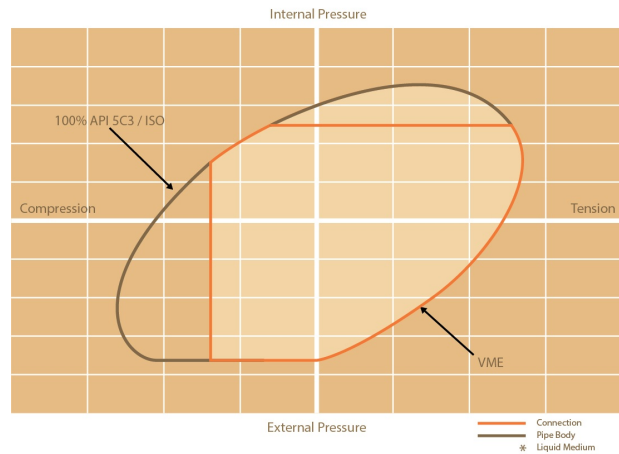
- CENTENNIAL RESOURCE DEVELOPMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

TUBULAR PARAMETERS		PIPE BODY PROPERTIES	
Nominal OD, (inch)	5.500	PE Weight, (lbs/ft)	19.81
Wall Thickness, (inch)	0.361	Nominal Weight, (lbs/ft)	20.00
Pipe Grade	P110 CY	Nominal ID, (inch)	4.778
Coupling	Regular	Drift Diameter, (inch)	4.653
Coupling Grade	P110 CY	Nominal Pipe Body Area, (sq inch)	5.828
Drift	Standard	Yield Strength in Tension, (klbs)	641
<b>CONNECTION PARAMETERS</b>		Min. Internal Yield Pressure, (psi)	12 640
		Collapse Pressure, (psi)	11 110

Connection OD (inch)	6.05
Connection ID, (inch)	4.778
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Yield Strength in Compression, (klbs)	641
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	11 110
Uniaxial Bending (deg/100ft)	92.0

#### MAKE-UP TORQUES

Yield Torque, (ft-lb)	20 600
Minimum Make-Up Torque, (ft-lb)	11 600
Optimum Make-Up Torque, (ft-lb)	12 900
Maximum Make-Up Torque, (ft-lb)	14 100
Operating Torque, (ft-lb)	17 500



**NOTE:** The content of this Technical Data Sheet is for general information only and does not guarantee performance or imply fitness for a particular purpose, which only a competent drilling professional can determine considering the specific installation and operation parameters. This information supersedes all prior versions for this connection. Information that is printed or downloaded is no longer controlled by TMK and might not be the latest information. Anyone using the information herein does so at their own risk. To verify that you have the latest technical information, please contact PAO "TMK" Technical Sales in Russia (Tel: +7 (495) 775-76-00, Email: techsales@tmk-group.com) and TMK IPSCO in North America (Tel: +1 (281)949-1044, Email: techsales@tmk-ipsco.com).

Print date: 12/04/2018 19:42

CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface:        - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)  
                     - No Cement baskets will be run

Production:    - 1 welded bow spring centralizer on a stop ring 6' above float shoe  
                     - 1 centralizer every other joint to the top of the tail cement  
                     - 1 centralizer every 4 joints to 500' below the top of the lead cement  
                     - The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

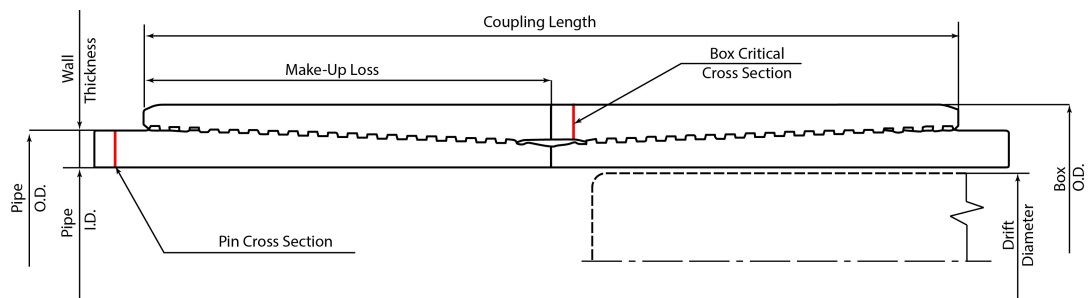
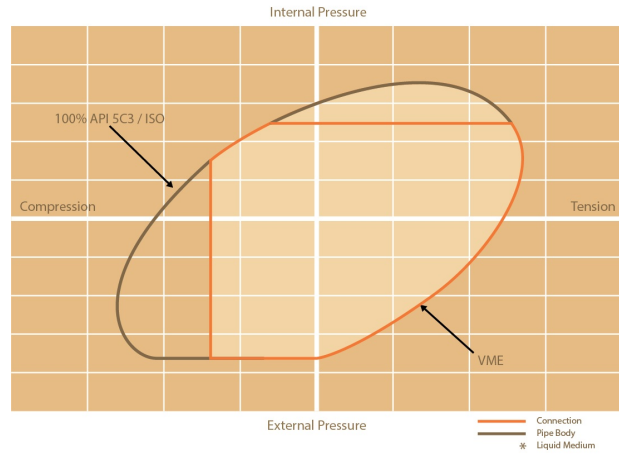
- CENTENNIAL RESOURCE DEVELOPMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

TUBULAR PARAMETERS		PIPE BODY PROPERTIES	
Nominal OD, (inch)	5.500	PE Weight, (lbs/ft)	19.81
Wall Thickness, (inch)	0.361	Nominal Weight, (lbs/ft)	20.00
Pipe Grade	P110 CY	Nominal ID, (inch)	4.778
Coupling	Regular	Drift Diameter, (inch)	4.653
Coupling Grade	P110 CY	Nominal Pipe Body Area, (sq inch)	5.828
Drift	Standard	Yield Strength in Tension, (klbs)	641
<b>CONNECTION PARAMETERS</b>		Min. Internal Yield Pressure, (psi)	12 640
		Collapse Pressure, (psi)	11 110

Connection OD (inch)	6.05
Connection ID, (inch)	4.778
Make-Up Loss, (inch)	4.122
Connection Critical Area, (sq inch)	5.828
Yield Strength in Tension, (klbs)	641
Yield Strength in Compression, (klbs)	641
Tension Efficiency	100%
Compression Efficiency	100%
Min. Internal Yield Pressure, (psi)	12 640
Collapse Pressure, (psi)	11 110
Uniaxial Bending (deg/100ft)	92.0

#### MAKE-UP TORQUES

Yield Torque, (ft-lb)	20 600
Minimum Make-Up Torque, (ft-lb)	11 600
Optimum Make-Up Torque, (ft-lb)	12 900
Maximum Make-Up Torque, (ft-lb)	14 100
Operating Torque, (ft-lb)	17 500



**NOTE:** The content of this Technical Data Sheet is for general information only and does not guarantee performance or imply fitness for a particular purpose, which only a competent drilling professional can determine considering the specific installation and operation parameters. This information supersedes all prior versions for this connection. Information that is printed or downloaded is no longer controlled by TMK and might not be the latest information. Anyone using the information herein does so at their own risk. To verify that you have the latest technical information, please contact PAO "TMK" Technical Sales in Russia (Tel: +7 (495) 775-76-00, Email: techsales@tmk-group.com) and TMK IPSCO in North America (Tel: +1 (281)949-1044, Email: techsales@tmk-ipsco.com).

Print date: 12/04/2018 19:42



## **HYDROGEN SULFIDE CONTINGENCY PLAN**

**Solomon Federal Com 505H**

**Section 27**

**T 24S R 34E**

**Lea County, NM**

## **Table of Contents**

Page 3: Introduction

Page 4: Directions to Location

Page 5: Safe Briefing Areas

Page 6: Drill Site Location Setup

Page 7: Toxicity of Various Gases

Page 10: H<sub>2</sub>S Required Equipment

Page 11: Determination of Radius of Exposure

Page 12: Emergency Contact List



## INTRODUCTION

This plan specifies precautionary measures, safety equipment, emergency procedures, responsibilities, duties, and the compliance status pertaining to the production operations of Hydrogen Sulfide producing wells on:

Centennial Resource Development, Inc.

This plan will be in full effect prior to and continuing with all drilling operations for all wells producing potential Hydrogen Sulfide on the

### **Solomon Federal Com 505H**

This plan was developed in response to the potential hazards involved when producing formations that may contain Hydrogen Sulfide (H<sub>2</sub>S). It has been written in compliance with current New Mexico Oil Conservation Division Rule 118 and Bureau of Land Management 43 CFR 3160 Onshore Order No. 6.

### **All personnel shall receive proper H<sub>2</sub>S training in accordance with Onshore Order III.C.3.a**

This plan shall require the full cooperation and efforts of all individuals participating in the production of potential H<sub>2</sub>S wells.

Each individual is required to know their assigned responsibilities and duties in regard to normal production operations and emergency procedures.

Each person should thoroughly understand and be able to use all safety related equipment on the production facility.

Each person should become familiar with the location of all safety equipment and become involved in ensuring that all equipment is properly stored, easily accessible, and routinely maintained.

An ongoing training program will remain in effect with regular training, equipment inspections, and annual certifications for all personnel.

Centennial Resource Development, Inc. shall make every reasonable effort to provide all possible safeguards to protect all personnel, both on this location and in the immediate vicinity, from the harmful effects of H<sub>2</sub>S exposure, if a release to the atmosphere should occur.

## **DIRECTIONS TO LOCATION**

**Solomon Federal Com 505H**

**Section 5**

**T 22S R 32E**

**Lea County, NM**

PROCEED IN A WESTERLY, THEN NORTHWESTERLY, THEN WESTERLY DIRECTION FROM JAL, NEW MEXICO ALONG NM-128 APPROXIMATELY 18.0 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE SOUTH; TURN LEFT AND PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY DIRECTION APPROXIMATELY 0.4 MILES TO THE EXISTING JULIET FED COM 1H PAD.

TOTAL DISTANCE FROM JAL, NEW MEXICO TO THE EXISTING LOCATION IS APPROXIMATELY 18.5 MILES.

## SAFE BRIEFING AREAS

Two areas will be designated as “SAFE BRIEFING AREAS”.

### The Primary Safe Briefing Area

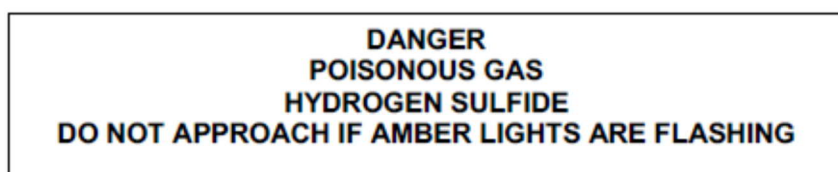
If the Primary Safe Briefing Area cannot be used due to wind conditions; the designated secondary safe briefing area will be used.

These two areas are so designated for accessibility reasons related to self-contained safe breathing air device locations, evacuation muster point utility, and for ease of overall communication, organizational support, as well as the all-important prevailing wind directions. Drawings of the facility denoting these locations are included on Page 15.

If H<sub>2</sub>S is detected in concentrations equal to or in excess of 15 PPM, all personnel not assigned emergency duties are to assemble in the appropriate “SAFE BRIEFING AREA” for instructions.

**Wind Direction Indicators:** A windsock, shall be positioned, allowing the wind direction to be observed from anywhere on the charted facility location.

**Warning-DANGER SIGNS for Approaching Traffic:** All signs shall also be illuminated under conditions of poor visibility.



An amber strobe light system will be activated for H<sub>2</sub>S concentrations of 10 PPM or greater and an audible alarm will sound when H<sub>2</sub>S exceeds 15 ppm, and. This condition will exist until the all clear is given.

## **DRILL SITE LOCATION:**

1. The drilling rig should be situated on location such that the prevailing winds blow across the rig toward the reserve pit or at right angles to a line from the rig to the reserve pit.
2. The entrance to the location should be designated so that it can be barricaded if Hydrogen Sulfide emergency conditions arise. An auxiliary exit (or entrance) should be available in case of a catastrophe; a shift in wind direction would not preclude escape from the location. Appropriate warning signs and flags should be placed at all location entrances.
3. Once H<sub>2</sub>S safety procedures are established on location, no beards or facial hair, which will interfere with face seal or mask, will be allowed on location.
4. A minimum of two BRIEFING AREAS will be established, no less than 250 feet from the wellhead and in such location that at least one area will be up-wind from the well at all times. Upon recognition of an emergency situation, all personnel should assemble at the designated briefing areas for instructions.
5. A safety equipment trailer will be station at one of the briefing areas.
6. Windsocks will be installed and wind streamers (6 to 8 feet above ground level) placed at the location entrance. Windsocks shall be illuminated for nighttime operations. Personnel should develop wind direction consciousness.
7. The mud-logging trailer will be located so as to minimize the danger from the gas that breaks out of the drilling fluid.
8. Shale shaker mud tanks will be located so as to minimize the danger from gas that breaks out of the drilling fluid.
9. Electric power plant(s) will be located as far from the well bore as practical so that it may be used under conditions where it otherwise would have to be shut down.
10. When approaching depth where Hydrogen Sulfide may be encountered, appropriate warning signs will be posted on all access roads to the location and at the foot of all stairways to the derrick floor.
11. Appropriate smoking areas will be designated, and smoking will be prohibited elsewhere.

The table below lists various poisonous gases and the concentrations at which they become dangerous.

### **TOXICITY OF VARIOUS GASES**

<b>TOXICITY OF GASES</b> (Taken from API RP-49 September 1974 – Re-issued August 1978)					
<b>Common Name</b>	<b>Chemical Formula</b>	<b>Gravity (Air = 1)</b>	<b>Threshold 1 Limit</b>	<b>Hazardous 2 Limit</b>	<b>Lethal 3 Limit</b>
Hydrogen Sulfide	H <sub>2</sub> S	1.18	10 ppm	250 ppm/1hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21	20 ppm	---	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/1hr	1000 ppm
Carbon Dioxide	CO <sub>2</sub>	1.52	5000 ppm	5%	10%
Methane	CH <sub>4</sub>	0.55	90000 ppm	Combustible Above 5% in Air	

1. Threshold concentration at which it is believed that all workers may repeatedly be exposed day after day, without adverse effect	2. Hazardous concentration that may cause death	3. Lethal concentration that will cause death with short-term exposure
---	---	--

### **Properties of Gases**

The produced gas will probably be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methane.

### **Carbon Dioxide**

Carbon Dioxide (CO<sub>2</sub>) is usually considered inert and is commonly used to extinguish fires.

It is heavier than air (1.52 times) and it will concentrate in low areas of still air.

Humans cannot breathe air containing more than 10% CO<sub>2</sub> without losing consciousness. Air containing 5% CO<sub>2</sub> will cause disorientation in a few minutes.

Continued exposures to CO<sub>2</sub> after being affected will cause convulsions, coma, and respiratory failure.

The threshold limit of CO<sub>2</sub> is 5000 ppm.

Short-term exposure to 50,000 PPM (5%) is reasonable. This gas is colorless and odorless and can be tolerated in relatively high concentrations.

### Hydrogen Sulfide

Hydrogen Sulfide (H<sub>2</sub>S) itself is a colorless, transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

Although the slightest presence of H<sub>2</sub>S in the air is normally detectable by its characteristic “rotten egg” odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost, allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide.

HYDROGEN SULFIDE TOXICITY			
Concentration			Effects
%H <sub>2</sub> S	PPM	GR/100 SCF 1	
0.001	10	0.65	Safe for 8 hours without respirator. Obvious and unpleasant odor.
0.002	20	1.30	Burning in eyes and irritation of respiratory tract after on hour.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; need prompt artificial respiration.
0.07	700	45.92	Unconscious quickly; death will result if not rescued promptly
0.10	1000	64.80	DEATH!
Note: 1 grain per 100 cubic feet			

### Sulfur Dioxide

Sulfur Dioxide is a colorless, transparent gas and is non-flammable.

Sulfur Dioxide (SO<sub>2</sub>) is produced during the burning of H<sub>2</sub>S. Although SO<sub>2</sub> is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures. Since Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect. The following table indicates the toxic nature of the gas.

SULFUR DIOXIDE TOXICITY		
Concentration		Effects
%SO <sub>2</sub>	PPM	
0.0005	3 to 5	Pungent odor-normally a person can detect SO <sub>2</sub> in this range.
0.0012	12	Throat irritation, coughing, and constriction of the chest tearing and smarting of eyes.
0.15	150	So irritating that it can only be endured for a few minutes.
0.05	500	Causes a sense of suffocation, even with first breath.



**H<sub>2</sub>S REQUIRED EQUIPMENT LIST****RESPIRATORY SAFETY SYSTEMS**

- Working cascade system available on rig floor and pit system & 750' of air line hose
- Four (4) breathing air manifolds
- Four (4) 30-minute rescue packs
- Five (5) work/Escape units
- Five (5) escape units
- One (1) filler hose for the work/escape/rescue units

**DETECTION AND ALARM SYSTEM**

- 4 channel H<sub>2</sub>S monitor
- 4 wireless H<sub>2</sub>S monitors
- H<sub>2</sub>S alarm system (Audible/Red strobe)
- Personal gas monitor for each person on location
- Gas sample tubes

**WELL CONTROL EQUIPMENT**

- Flare line with remote ignitor and backup flare gun, placed 150' from wellhead
- Choke manifold with remotely operated choke
- Mud gas separator

**VISUAL WARNING SYSTEMS**

- One color code condition sign will be placed at each entrance reflecting possible conditions at the site
- A colored condition flag will be on display, reflecting current condition at the site at the time
- At least 4 wind socks placed on location, visible at all angles and locations

**MUD PROGRAM**

- Mud will contain sufficient weight and additives to control and minimize H<sub>2</sub>S

**METALLURGY**

- All drill strings, casing, tubing, wellhead, BOP, spools, kill lines, choke manifold and lines, and valves shall be suitable for anticipated H<sub>2</sub>S volume and pressure

**COMMUNICATION**

- Cell phones, intercoms, and satellite phones will be available on location

**ADDITIONAL SAFETY RELATED ITEMS**

- Stretcher
- 2 OSHA full body harness
- 20# class ABC fire extinguisher

## DETERMINATION OF RADIUS OF EXPOSURE

**Potentially hazardous volume** means a volume of gas of such H<sub>2</sub>S concentration and flow rate that it may result in radius of exposure-calculated ambient concentrations of 100 ppm H<sub>2</sub>S at any occupied residence, school, church, park, school bus stop, place of business or other area where the public could reasonably be expected to frequent, or 500 ppm H<sub>2</sub>S at any Federal, State, County or municipal road or highway.

**Currently there are no residence located within the ROE**

**Radius of exposure** means the calculation resulting from using the Pasquill -Gifford derived equation, or by such other method(s) that may be approved by the authorized officer. Advanced Fire and Safety has provided the Pasquill-Gifford formula in excel format for simple calculations.

## NEW MEXICO OIL & GAS CONSERVATION DIVISION 118

### Solomon Federal Com 505H

H<sub>2</sub>S Concentration- 100 PPM

Maximum Escape Volume- 5000 MCF/Day

100 PPM Radius of Exposure - 65  
(Formula=  $1.589 \times \left(\frac{100}{1000000}\right) \times (5000 \times 1000) ^{.6258}$ )

500 PPM Radius of Exposure - 30  
(Formula=  $.4546 \times \left(\frac{100}{1000000}\right) \times (5000 \times 1000) ^{.6258}$ )

**EMERGENCY CONTACT LIST**

<b>911 is available in the area</b>			
<b>NAME</b>	<b>POSITION</b>	<b>COMPANY</b>	<b>NUMBER</b>
<b>Centennial Contacts</b>			
Ronny Hise	Drilling Engineer	CDEV	432-770-4786
Jason Fitzgerald	Superintendent	CDEV	318-347-3916
Mike Brown/Zach Gavin	Field Superintendent	CDEV	432-287-3003
Brett Thompson	Drilling Manager	CDEV	720-656-7027
Reggie Phillips	HSE Manager	CDEV	432-638-3380
Company man	Drilling Supervisor	CDEV	432-538-3343
<b>Local Emergency Response</b>			
Fire Department			575-395-2511
Jal Community Hospital			505-395-2511
State Police			505-827-9000
Lea County Sheriff			575-396-3611
<b>Safety Contractor</b>			
Advanced Safety	Office	Advanced Safety	833-296-3913
Joe Gadway	Permian Supervisor	Advanced Safety	318-446-3716
Clint Hudson	Operations Manager	Advanced Safety	337-552-8330
<b>Well Control Company</b>			
Wild Well Control			866-404-9564
<b>Contractors</b>			
Tommy E Lee	Pump Trucks		432-813-7140
Kevin Reed	Drilling Fluids	AES	575-441-6646
Compass Coordinators	Cement	Compass	432-561-5970

# **NEW MEXICO**

**LEA**

**JULIET FEDERAL COM**

**SOLOMON FEDERAL COM 505H**

**SOLOMON FEDERAL COM 505H**

**Plan: Solomon Fed Com 505H - v3 (2mile)**

## **Survey Report - Geographic**

**07 February, 2019**

## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

<b>Project</b>	LEA		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

<b>Site</b>	JULIET FEDERAL COM		
<b>Site Position:</b>		<b>Northing:</b>	0.00 usft
<b>From:</b>	Map	<b>Easting:</b>	97,504,799.39 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	0° 0' 0.000 N
		<b>Longitude:</b>	152° 28' 52.124 W
		<b>Grid Convergence:</b>	0.00 °

<b>Well</b>	SOLOMON FEDERAL COM 505H		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 11,695,067.58 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 2,116,802.23 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	32° 12' 33.077 N
		<b>Longitude:</b>	103° 27' 33.517 W
		<b>Ground Level:</b>	3,522.0 usft

<b>Wellbore</b>	SOLOMON FEDERAL COM 505H				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/31/2009	7.70	60.25	48,795.64017105

<b>Design</b>	Solomon Fed Com 505H - v3 (2mile)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	174.42

<b>Survey Tool Program</b>	<b>Date</b>	2/7/2019		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	21,439.2	Solomon Fed Com 505H - v3 (2mile) (SOL	MWD	OWSG MWD - Standard

<b>Planned Survey</b>									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.0	0.00	0.00	0.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
100.0	0.00	0.00	100.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
200.0	0.00	0.00	200.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
300.0	0.00	0.00	300.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
400.0	0.00	0.00	400.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
500.0	0.00	0.00	500.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
600.0	0.00	0.00	600.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
700.0	0.00	0.00	700.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
800.0	0.00	0.00	800.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
900.0	0.00	0.00	900.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W

## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,200.0	0.00	0.00	1,200.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
13 3/8"									
1,400.0	0.00	0.00	1,400.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	11,695,067.58	2,116,802.23	32° 12' 33.077 N	103° 27' 33.517 W
2,100.0	1.00	70.46	2,100.0	0.3	0.8	11,695,067.88	2,116,803.05	32° 12' 33.080 N	103° 27' 33.508 W
2,200.0	2.00	70.46	2,200.0	1.2	3.3	11,695,068.80	2,116,805.50	32° 12' 33.089 N	103° 27' 33.479 W
2,300.0	3.00	70.46	2,299.9	2.6	7.4	11,695,070.31	2,116,809.59	32° 12' 33.103 N	103° 27' 33.431 W
2,400.0	4.00	70.46	2,399.7	4.7	13.1	11,695,072.44	2,116,815.31	32° 12' 33.123 N	103° 27' 33.364 W
2,500.0	5.00	70.46	2,499.4	7.3	20.5	11,695,075.17	2,116,822.66	32° 12' 33.149 N	103° 27' 33.278 W
2,600.0	6.00	70.46	2,598.9	10.5	29.6	11,695,078.50	2,116,831.65	32° 12' 33.181 N	103° 27' 33.173 W
2,700.0	7.00	70.46	2,698.3	14.3	40.2	11,695,082.44	2,116,842.26	32° 12' 33.218 N	103° 27' 33.049 W
2,775.2	7.75	70.46	2,772.8	17.5	49.3	11,695,085.80	2,116,851.30	32° 12' 33.250 N	103° 27' 32.943 W
2,800.0	7.75	70.46	2,797.4	18.6	52.5	11,695,086.96	2,116,854.44	32° 12' 33.261 N	103° 27' 32.906 W
2,900.0	7.75	70.46	2,896.5	23.1	65.2	11,695,091.65	2,116,867.08	32° 12' 33.306 N	103° 27' 32.758 W
3,000.0	7.75	70.46	2,995.6	27.6	77.9	11,695,096.34	2,116,879.72	32° 12' 33.351 N	103° 27' 32.611 W
3,100.0	7.75	70.46	3,094.7	32.2	90.6	11,695,101.04	2,116,892.37	32° 12' 33.395 N	103° 27' 32.463 W
3,200.0	7.75	70.46	3,193.8	36.7	103.3	11,695,105.73	2,116,905.01	32° 12' 33.440 N	103° 27' 32.315 W
3,300.0	7.75	70.46	3,292.8	41.2	116.0	11,695,110.42	2,116,917.65	32° 12' 33.485 N	103° 27' 32.167 W
3,400.0	7.75	70.46	3,391.9	45.7	128.7	11,695,115.11	2,116,930.29	32° 12' 33.529 N	103° 27' 32.019 W
3,500.0	7.75	70.46	3,491.0	50.2	141.4	11,695,119.80	2,116,942.94	32° 12' 33.574 N	103° 27' 31.871 W
3,600.0	7.75	70.46	3,590.1	54.7	154.2	11,695,124.50	2,116,955.58	32° 12' 33.619 N	103° 27' 31.723 W
3,700.0	7.75	70.46	3,689.2	59.2	166.9	11,695,129.19	2,116,968.22	32° 12' 33.663 N	103° 27' 31.575 W
3,800.0	7.75	70.46	3,788.3	63.7	179.6	11,695,133.88	2,116,980.86	32° 12' 33.708 N	103° 27' 31.427 W
3,900.0	7.75	70.46	3,887.4	68.2	192.3	11,695,138.57	2,116,993.51	32° 12' 33.752 N	103° 27' 31.279 W
4,000.0	7.75	70.46	3,986.5	72.8	205.0	11,695,143.26	2,117,006.15	32° 12' 33.797 N	103° 27' 31.131 W
4,100.0	7.75	70.46	4,085.5	77.3	217.7	11,695,147.96	2,117,018.79	32° 12' 33.842 N	103° 27' 30.983 W
4,200.0	7.75	70.46	4,184.6	81.8	230.4	11,695,152.65	2,117,031.43	32° 12' 33.886 N	103° 27' 30.835 W
4,300.0	7.75	70.46	4,283.7	86.3	243.1	11,695,157.34	2,117,044.08	32° 12' 33.931 N	103° 27' 30.687 W
4,400.0	7.75	70.46	4,382.8	90.8	255.8	11,695,162.03	2,117,056.72	32° 12' 33.976 N	103° 27' 30.540 W
4,500.0	7.75	70.46	4,481.9	95.3	268.5	11,695,166.72	2,117,069.36	32° 12' 34.020 N	103° 27' 30.392 W
4,600.0	7.75	70.46	4,581.0	99.8	281.2	11,695,171.42	2,117,082.00	32° 12' 34.065 N	103° 27' 30.244 W
4,700.0	7.75	70.46	4,680.1	104.3	293.9	11,695,176.11	2,117,094.65	32° 12' 34.110 N	103° 27' 30.096 W
4,800.0	7.75	70.46	4,779.1	108.8	306.7	11,695,180.80	2,117,107.29	32° 12' 34.154 N	103° 27' 29.948 W
4,900.0	7.75	70.46	4,878.2	113.3	319.4	11,695,185.49	2,117,119.93	32° 12' 34.199 N	103° 27' 29.800 W
5,000.0	7.75	70.46	4,977.3	117.9	332.1	11,695,190.18	2,117,132.57	32° 12' 34.243 N	103° 27' 29.652 W
5,100.0	7.75	70.46	5,076.4	122.4	344.8	11,695,194.88	2,117,145.22	32° 12' 34.288 N	103° 27' 29.504 W
5,200.0	7.75	70.46	5,175.5	126.9	357.5	11,695,199.57	2,117,157.86	32° 12' 34.333 N	103° 27' 29.356 W
5,300.0	7.75	70.46	5,274.6	131.4	370.2	11,695,204.26	2,117,170.50	32° 12' 34.377 N	103° 27' 29.208 W
5,400.0	7.75	70.46	5,373.7	135.9	382.9	11,695,208.95	2,117,183.14	32° 12' 34.422 N	103° 27' 29.060 W
5,500.0	7.75	70.46	5,472.7	140.4	395.6	11,695,213.64	2,117,195.79	32° 12' 34.467 N	103° 27' 28.912 W
5,513.4	7.75	70.46	5,486.0	141.0	397.3	11,695,214.27	2,117,197.48	32° 12' 34.473 N	103° 27' 28.892 W
9 5/8"									
5,600.0	7.75	70.46	5,571.8	144.9	408.3	11,695,218.34	2,117,208.43	32° 12' 34.511 N	103° 27' 28.764 W
5,700.0	7.75	70.46	5,670.9	149.4	421.0	11,695,223.03	2,117,221.07	32° 12' 34.556 N	103° 27' 28.616 W
5,800.0	7.75	70.46	5,770.0	153.9	433.7	11,695,227.72	2,117,233.71	32° 12' 34.601 N	103° 27' 28.468 W
5,900.0	7.75	70.46	5,869.1	158.4	446.4	11,695,232.41	2,117,246.36	32° 12' 34.645 N	103° 27' 28.321 W
6,000.0	7.75	70.46	5,968.2	163.0	459.2	11,695,237.10	2,117,259.00	32° 12' 34.690 N	103° 27' 28.173 W
6,100.0	7.75	70.46	6,067.3	167.5	471.9	11,695,241.80	2,117,271.64	32° 12' 34.734 N	103° 27' 28.025 W
6,200.0	7.75	70.46	6,166.4	172.0	484.6	11,695,246.49	2,117,284.28	32° 12' 34.779 N	103° 27' 27.877 W

## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,300.0	7.75	70.46	6,265.4	176.5	497.3	11,695,251.18	2,117,296.93	32° 12' 34.824 N	103° 27' 27.729 W
6,400.0	7.75	70.46	6,364.5	181.0	510.0	11,695,255.87	2,117,309.57	32° 12' 34.868 N	103° 27' 27.581 W
6,500.0	7.75	70.46	6,463.6	185.5	522.7	11,695,260.56	2,117,322.21	32° 12' 34.913 N	103° 27' 27.433 W
6,600.0	7.75	70.46	6,562.7	190.0	535.4	11,695,265.26	2,117,334.85	32° 12' 34.958 N	103° 27' 27.285 W
6,700.0	7.75	70.46	6,661.8	194.5	548.1	11,695,269.95	2,117,347.50	32° 12' 35.002 N	103° 27' 27.137 W
6,800.0	7.75	70.46	6,760.9	199.0	560.8	11,695,274.64	2,117,360.14	32° 12' 35.047 N	103° 27' 26.989 W
6,900.0	7.75	70.46	6,860.0	203.5	573.5	11,695,279.33	2,117,372.78	32° 12' 35.092 N	103° 27' 26.841 W
7,000.0	7.75	70.46	6,959.0	208.1	586.2	11,695,284.02	2,117,385.42	32° 12' 35.136 N	103° 27' 26.693 W
7,100.0	7.75	70.46	7,058.1	212.6	598.9	11,695,288.72	2,117,398.07	32° 12' 35.181 N	103° 27' 26.545 W
7,200.0	7.75	70.46	7,157.2	217.1	611.7	11,695,293.41	2,117,410.71	32° 12' 35.225 N	103° 27' 26.397 W
7,300.0	7.75	70.46	7,256.3	221.6	624.4	11,695,298.10	2,117,423.35	32° 12' 35.270 N	103° 27' 26.249 W
7,400.0	7.75	70.46	7,355.4	226.1	637.1	11,695,302.79	2,117,435.99	32° 12' 35.315 N	103° 27' 26.102 W
7,500.0	7.75	70.46	7,454.5	230.6	649.8	11,695,307.48	2,117,448.64	32° 12' 35.359 N	103° 27' 25.954 W
7,600.0	7.75	70.46	7,553.6	235.1	662.5	11,695,312.18	2,117,461.28	32° 12' 35.404 N	103° 27' 25.806 W
7,700.0	7.75	70.46	7,652.7	239.6	675.2	11,695,316.87	2,117,473.92	32° 12' 35.449 N	103° 27' 25.658 W
7,800.0	7.75	70.46	7,751.7	244.1	687.9	11,695,321.56	2,117,486.56	32° 12' 35.493 N	103° 27' 25.510 W
7,900.0	7.75	70.46	7,850.8	248.7	700.6	11,695,326.25	2,117,499.21	32° 12' 35.538 N	103° 27' 25.362 W
8,000.0	7.75	70.46	7,949.9	253.2	713.3	11,695,330.94	2,117,511.85	32° 12' 35.582 N	103° 27' 25.214 W
8,100.0	7.75	70.46	8,049.0	257.7	726.0	11,695,335.64	2,117,524.49	32° 12' 35.627 N	103° 27' 25.066 W
8,200.0	7.75	70.46	8,148.1	262.2	738.7	11,695,340.33	2,117,537.13	32° 12' 35.672 N	103° 27' 24.918 W
8,300.0	7.75	70.46	8,247.2	266.7	751.5	11,695,345.02	2,117,549.78	32° 12' 35.716 N	103° 27' 24.770 W
8,400.0	7.75	70.46	8,346.3	271.2	764.2	11,695,349.71	2,117,562.42	32° 12' 35.761 N	103° 27' 24.622 W
8,500.0	7.75	70.46	8,445.3	275.7	776.9	11,695,354.40	2,117,575.06	32° 12' 35.806 N	103° 27' 24.474 W
8,600.0	7.75	70.46	8,544.4	280.2	789.6	11,695,359.10	2,117,587.70	32° 12' 35.850 N	103° 27' 24.326 W
8,700.0	7.75	70.46	8,643.5	284.7	802.3	11,695,363.79	2,117,600.35	32° 12' 35.895 N	103° 27' 24.178 W
8,800.0	7.75	70.46	8,742.6	289.2	815.0	11,695,368.48	2,117,612.99	32° 12' 35.940 N	103° 27' 24.030 W
8,900.0	7.75	70.46	8,841.7	293.8	827.7	11,695,373.17	2,117,625.63	32° 12' 35.984 N	103° 27' 23.882 W
9,000.0	7.75	70.46	8,940.8	298.3	840.4	11,695,377.86	2,117,638.27	32° 12' 36.029 N	103° 27' 23.735 W
9,100.0	7.75	70.46	9,039.9	302.8	853.1	11,695,382.56	2,117,650.92	32° 12' 36.073 N	103° 27' 23.587 W
9,200.0	7.75	70.46	9,139.0	307.3	865.8	11,695,387.25	2,117,663.56	32° 12' 36.118 N	103° 27' 23.439 W
9,300.0	7.75	70.46	9,238.0	311.8	878.5	11,695,391.94	2,117,676.20	32° 12' 36.163 N	103° 27' 23.291 W
9,400.0	7.75	70.46	9,337.1	316.3	891.2	11,695,396.63	2,117,688.84	32° 12' 36.207 N	103° 27' 23.143 W
9,500.0	7.75	70.46	9,436.2	320.8	904.0	11,695,401.32	2,117,701.49	32° 12' 36.252 N	103° 27' 22.995 W
9,600.0	7.75	70.46	9,535.3	325.3	916.7	11,695,406.02	2,117,714.13	32° 12' 36.297 N	103° 27' 22.847 W
9,700.0	7.75	70.46	9,634.4	329.8	929.4	11,695,410.71	2,117,726.77	32° 12' 36.341 N	103° 27' 22.699 W
9,733.1	7.75	70.46	9,667.2	331.3	933.6	11,695,412.26	2,117,730.96	32° 12' 36.356 N	103° 27' 22.650 W
9,800.0	7.08	70.46	9,733.5	334.2	941.7	11,695,415.27	2,117,739.05	32° 12' 36.385 N	103° 27' 22.555 W
9,900.0	6.08	70.46	9,832.9	338.1	952.5	11,695,419.25	2,117,749.80	32° 12' 36.423 N	103° 27' 22.430 W
10,000.0	5.08	70.46	9,932.4	341.3	961.7	11,695,422.64	2,117,758.92	32° 12' 36.455 N	103° 27' 22.323 W
10,100.0	4.08	70.46	10,032.1	344.0	969.2	11,695,425.42	2,117,766.40	32° 12' 36.481 N	103° 27' 22.235 W
10,200.0	3.08	70.46	10,131.9	346.1	975.1	11,695,427.59	2,117,772.26	32° 12' 36.502 N	103° 27' 22.167 W
10,300.0	2.08	70.46	10,231.8	347.6	979.3	11,695,429.16	2,117,776.49	32° 12' 36.517 N	103° 27' 22.117 W
10,400.0	1.08	70.46	10,331.7	348.5	981.9	11,695,430.12	2,117,779.07	32° 12' 36.526 N	103° 27' 22.087 W
10,500.0	0.08	70.46	10,431.7	348.8	982.9	11,695,430.47	2,117,780.03	32° 12' 36.529 N	103° 27' 22.076 W
10,508.3	0.00	0.00	10,440.0	348.8	982.9	11,695,430.48	2,117,780.03	32° 12' 36.529 N	103° 27' 22.076 W
10,600.0	0.00	0.00	10,531.7	348.8	982.9	11,695,430.48	2,117,780.03	32° 12' 36.529 N	103° 27' 22.076 W
10,700.0	0.00	0.00	10,631.7	348.8	982.9	11,695,430.48	2,117,780.03	32° 12' 36.529 N	103° 27' 22.076 W
10,708.4	0.00	0.00	10,640.1	348.8	982.9	11,695,430.48	2,117,780.03	32° 12' 36.529 N	103° 27' 22.076 W
10,800.0	9.16	180.00	10,731.3	341.5	982.9	11,695,423.17	2,117,780.14	32° 12' 36.457 N	103° 27' 22.076 W
10,900.0	19.16	180.00	10,828.2	317.1	982.9	11,695,398.74	2,117,780.49	32° 12' 36.215 N	103° 27' 22.076 W
11,000.0	29.16	180.00	10,919.3	276.2	982.9	11,695,357.87	2,117,781.08	32° 12' 35.811 N	103° 27' 22.076 W
11,100.0	39.16	180.00	11,001.9	220.1	982.9	11,695,301.79	2,117,781.88	32° 12' 35.256 N	103° 27' 22.076 W
11,200.0	49.16	180.00	11,073.6	150.6	982.9	11,695,232.22	2,117,782.88	32° 12' 34.567 N	103° 27' 22.076 W
11,300.0	59.16	180.00	11,132.1	69.6	982.9	11,695,151.27	2,117,784.04	32° 12' 33.766 N	103° 27' 22.076 W
11,400.0	69.16	180.00	11,175.6	-20.3	982.9	11,695,061.39	2,117,785.33	32° 12' 32.876 N	103° 27' 22.076 W

## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,500.0	79.16	180.00	11,202.9	-116.4	982.9	11,694,965.32	2,117,786.70	32° 12' 31.925 N	103° 27' 22.076 W
11,600.0	89.16	180.00	11,213.0	-215.7	982.9	11,694,865.97	2,117,788.13	32° 12' 30.942 N	103° 27' 22.076 W
11,608.4	90.00	180.00	11,213.1	-224.1	982.9	11,694,857.58	2,117,788.25	32° 12' 30.859 N	103° 27' 22.076 W
11,700.0	90.00	180.00	11,213.1	-315.7	982.9	11,694,765.99	2,117,789.56	32° 12' 29.952 N	103° 27' 22.076 W
11,800.0	90.00	180.00	11,213.1	-415.7	982.9	11,694,666.00	2,117,790.99	32° 12' 28.963 N	103° 27' 22.076 W
11,900.0	90.00	180.00	11,213.1	-515.7	982.9	11,694,566.01	2,117,792.43	32° 12' 27.973 N	103° 27' 22.076 W
12,000.0	90.00	180.00	11,213.1	-615.7	982.9	11,694,466.02	2,117,793.86	32° 12' 26.983 N	103° 27' 22.076 W
12,100.0	90.00	180.00	11,213.1	-715.7	982.9	11,694,366.03	2,117,795.30	32° 12' 25.994 N	103° 27' 22.076 W
12,200.0	90.00	180.00	11,213.1	-815.7	982.9	11,694,266.04	2,117,796.73	32° 12' 25.004 N	103° 27' 22.076 W
12,300.0	90.00	180.00	11,213.1	-915.7	982.9	11,694,166.05	2,117,798.16	32° 12' 24.015 N	103° 27' 22.076 W
12,400.0	90.00	180.00	11,213.1	-1,015.7	982.9	11,694,066.06	2,117,799.60	32° 12' 23.025 N	103° 27' 22.076 W
12,500.0	90.00	180.00	11,213.1	-1,115.7	982.9	11,693,966.07	2,117,801.03	32° 12' 22.035 N	103° 27' 22.076 W
12,600.0	90.00	180.00	11,213.1	-1,215.7	982.9	11,693,866.08	2,117,802.46	32° 12' 21.046 N	103° 27' 22.076 W
12,700.0	90.00	180.00	11,213.1	-1,315.7	982.9	11,693,766.09	2,117,803.90	32° 12' 20.056 N	103° 27' 22.076 W
12,800.0	90.00	180.00	11,213.1	-1,415.7	982.9	11,693,666.10	2,117,805.33	32° 12' 19.066 N	103° 27' 22.076 W
12,900.0	90.00	180.00	11,213.1	-1,515.7	982.9	11,693,566.11	2,117,806.76	32° 12' 18.077 N	103° 27' 22.076 W
13,000.0	90.00	180.00	11,213.1	-1,615.7	982.9	11,693,466.12	2,117,808.20	32° 12' 17.087 N	103° 27' 22.076 W
13,100.0	90.00	180.00	11,213.1	-1,715.7	982.9	11,693,366.13	2,117,809.63	32° 12' 16.097 N	103° 27' 22.076 W
13,200.0	90.00	180.00	11,213.1	-1,815.7	982.9	11,693,266.14	2,117,811.06	32° 12' 15.108 N	103° 27' 22.076 W
13,300.0	90.00	180.00	11,213.1	-1,915.7	982.9	11,693,166.15	2,117,812.50	32° 12' 14.118 N	103° 27' 22.077 W
13,400.0	90.00	180.00	11,213.1	-2,015.7	982.9	11,693,066.16	2,117,813.93	32° 12' 13.128 N	103° 27' 22.077 W
13,500.0	90.00	180.00	11,213.1	-2,115.7	982.9	11,692,966.17	2,117,815.37	32° 12' 12.139 N	103° 27' 22.077 W
13,600.0	90.00	180.00	11,213.1	-2,215.7	982.9	11,692,866.18	2,117,816.80	32° 12' 11.149 N	103° 27' 22.077 W
13,700.0	90.00	180.00	11,213.1	-2,315.7	982.9	11,692,766.19	2,117,818.23	32° 12' 10.159 N	103° 27' 22.077 W
13,800.0	90.00	180.00	11,213.1	-2,415.7	982.9	11,692,666.20	2,117,819.67	32° 12' 9.170 N	103° 27' 22.077 W
13,900.0	90.00	180.00	11,213.1	-2,515.7	982.9	11,692,566.21	2,117,821.10	32° 12' 8.180 N	103° 27' 22.077 W
14,000.0	90.00	180.00	11,213.1	-2,615.7	982.9	11,692,466.22	2,117,822.53	32° 12' 7.190 N	103° 27' 22.077 W
14,100.0	90.00	180.00	11,213.1	-2,715.7	982.9	11,692,366.23	2,117,823.97	32° 12' 6.201 N	103° 27' 22.077 W
14,200.0	90.00	180.00	11,213.1	-2,815.7	982.9	11,692,266.24	2,117,825.40	32° 12' 5.211 N	103° 27' 22.077 W
14,300.0	90.00	180.00	11,213.1	-2,915.7	982.9	11,692,166.25	2,117,826.83	32° 12' 4.221 N	103° 27' 22.077 W
14,400.0	90.00	180.00	11,213.1	-3,015.7	982.9	11,692,066.26	2,117,828.27	32° 12' 3.232 N	103° 27' 22.077 W
14,500.0	90.00	180.00	11,213.1	-3,115.7	982.9	11,691,966.27	2,117,829.70	32° 12' 2.242 N	103° 27' 22.077 W
14,600.0	90.00	180.00	11,213.1	-3,215.7	982.9	11,691,866.28	2,117,831.14	32° 12' 1.252 N	103° 27' 22.077 W
14,700.0	90.00	180.00	11,213.1	-3,315.7	982.9	11,691,766.29	2,117,832.57	32° 12' 0.263 N	103° 27' 22.077 W
14,800.0	90.00	180.00	11,213.1	-3,415.7	982.9	11,691,666.30	2,117,834.00	32° 11' 59.273 N	103° 27' 22.077 W
14,900.0	90.00	180.00	11,213.1	-3,515.7	982.9	11,691,566.31	2,117,835.44	32° 11' 58.283 N	103° 27' 22.077 W
15,000.0	90.00	180.00	11,213.1	-3,615.7	982.9	11,691,466.32	2,117,836.87	32° 11' 57.294 N	103° 27' 22.077 W
15,100.0	90.00	180.00	11,213.1	-3,715.7	982.9	11,691,366.33	2,117,838.30	32° 11' 56.304 N	103° 27' 22.077 W
15,200.0	90.00	180.00	11,213.1	-3,815.7	982.9	11,691,266.35	2,117,839.74	32° 11' 55.314 N	103° 27' 22.077 W
15,300.0	90.00	180.00	11,213.1	-3,915.7	982.9	11,691,166.36	2,117,841.17	32° 11' 54.325 N	103° 27' 22.077 W
15,400.0	90.00	180.00	11,213.1	-4,015.7	982.9	11,691,066.37	2,117,842.60	32° 11' 53.335 N	103° 27' 22.077 W
15,500.0	90.00	180.00	11,213.1	-4,115.7	982.9	11,690,966.38	2,117,844.04	32° 11' 52.345 N	103° 27' 22.077 W
15,600.0	90.00	180.00	11,213.1	-4,215.7	982.9	11,690,866.39	2,117,845.47	32° 11' 51.356 N	103° 27' 22.077 W
15,700.0	90.00	180.00	11,213.1	-4,315.7	982.9	11,690,766.40	2,117,846.90	32° 11' 50.366 N	103° 27' 22.077 W
15,800.0	90.00	180.00	11,213.1	-4,415.7	982.9	11,690,666.41	2,117,848.34	32° 11' 49.376 N	103° 27' 22.077 W
15,900.0	90.00	180.00	11,213.1	-4,515.7	982.9	11,690,566.42	2,117,849.77	32° 11' 48.387 N	103° 27' 22.077 W
16,000.0	90.00	180.00	11,213.1	-4,615.7	982.9	11,690,466.43	2,117,851.21	32° 11' 47.397 N	103° 27' 22.077 W
16,100.0	90.00	180.00	11,213.1	-4,715.7	982.9	11,690,366.44	2,117,852.64	32° 11' 46.408 N	103° 27' 22.077 W
16,200.0	90.00	180.00	11,213.1	-4,815.7	982.9	11,690,266.45	2,117,854.07	32° 11' 45.418 N	103° 27' 22.077 W
16,300.0	90.00	180.00	11,213.1	-4,915.7	982.9	11,690,166.46	2,117,855.51	32° 11' 44.428 N	103° 27' 22.077 W
16,400.0	90.00	180.00	11,213.1	-5,015.7	982.9	11,690,066.47	2,117,856.94	32° 11' 43.439 N	103° 27' 22.077 W
16,500.0	90.00	180.00	11,213.1	-5,115.7	982.9	11,689,966.48	2,117,858.37	32° 11' 42.449 N	103° 27' 22.077 W
16,600.0	90.00	180.00	11,213.1	-5,215.7	982.9	11,689,866.49	2,117,859.81	32° 11' 41.459 N	103° 27' 22.077 W
16,700.0	90.00	180.00	11,213.1	-5,315.7	982.9	11,689,766.50	2,117,861.24	32° 11' 40.470 N	103° 27' 22.077 W
16,800.0	90.00	180.00	11,213.1	-5,415.7	982.9	11,689,666.51	2,117,862.67	32° 11' 39.480 N	103° 27' 22.078 W



## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
16,900.0	90.00	180.00	11,213.1	-5,515.7	982.9	11,689,566.52	2,117,864.11	32° 11' 38.490 N	103° 27' 22.078 W
17,000.0	90.00	180.00	11,213.1	-5,615.7	982.9	11,689,466.53	2,117,865.54	32° 11' 37.501 N	103° 27' 22.078 W
17,100.0	90.00	180.00	11,213.1	-5,715.7	982.9	11,689,366.54	2,117,866.97	32° 11' 36.511 N	103° 27' 22.078 W
17,200.0	90.00	180.00	11,213.1	-5,815.7	982.9	11,689,266.55	2,117,868.41	32° 11' 35.521 N	103° 27' 22.078 W
17,300.0	90.00	180.00	11,213.1	-5,915.7	982.9	11,689,166.56	2,117,869.84	32° 11' 34.532 N	103° 27' 22.078 W
17,400.0	90.00	180.00	11,213.1	-6,015.7	982.9	11,689,066.57	2,117,871.28	32° 11' 33.542 N	103° 27' 22.078 W
17,500.0	90.00	180.00	11,213.1	-6,115.7	982.9	11,688,966.58	2,117,872.71	32° 11' 32.552 N	103° 27' 22.078 W
17,600.0	90.00	180.00	11,213.1	-6,215.7	982.9	11,688,866.59	2,117,874.14	32° 11' 31.563 N	103° 27' 22.078 W
17,700.0	90.00	180.00	11,213.1	-6,315.7	982.9	11,688,766.60	2,117,875.58	32° 11' 30.573 N	103° 27' 22.078 W
17,800.0	90.00	180.00	11,213.1	-6,415.7	982.9	11,688,666.61	2,117,877.01	32° 11' 29.583 N	103° 27' 22.078 W
17,900.0	90.00	180.00	11,213.1	-6,515.7	982.9	11,688,566.62	2,117,878.44	32° 11' 28.594 N	103° 27' 22.078 W
18,000.0	90.00	180.00	11,213.1	-6,615.7	982.9	11,688,466.63	2,117,879.88	32° 11' 27.604 N	103° 27' 22.078 W
18,100.0	90.00	180.00	11,213.1	-6,715.7	982.9	11,688,366.64	2,117,881.31	32° 11' 26.614 N	103° 27' 22.078 W
18,200.0	90.00	180.00	11,213.1	-6,815.7	982.9	11,688,266.65	2,117,882.74	32° 11' 25.625 N	103° 27' 22.078 W
18,300.0	90.00	180.00	11,213.1	-6,915.7	982.9	11,688,166.66	2,117,884.18	32° 11' 24.635 N	103° 27' 22.078 W
18,400.0	90.00	180.00	11,213.1	-7,015.7	982.9	11,688,066.67	2,117,885.61	32° 11' 23.645 N	103° 27' 22.078 W
18,500.0	90.00	180.00	11,213.1	-7,115.7	982.9	11,687,966.68	2,117,887.05	32° 11' 22.656 N	103° 27' 22.078 W
18,600.0	90.00	180.00	11,213.1	-7,215.7	982.9	11,687,866.69	2,117,888.48	32° 11' 21.666 N	103° 27' 22.078 W
18,700.0	90.00	180.00	11,213.1	-7,315.7	982.9	11,687,766.70	2,117,889.91	32° 11' 20.676 N	103° 27' 22.078 W
18,800.0	90.00	180.00	11,213.1	-7,415.7	982.9	11,687,666.72	2,117,891.35	32° 11' 19.687 N	103° 27' 22.078 W
18,800.8	90.00	180.00	11,213.1	-7,416.5	982.9	11,687,665.92	2,117,891.36	32° 11' 19.679 N	103° 27' 22.078 W
18,900.0	90.00	180.00	11,213.1	-7,515.7	982.9	11,687,566.73	2,117,892.78	32° 11' 18.697 N	103° 27' 22.078 W
19,000.0	90.00	180.00	11,213.1	-7,615.7	982.9	11,687,466.74	2,117,894.21	32° 11' 17.707 N	103° 27' 22.078 W
19,100.0	90.00	180.00	11,213.1	-7,715.7	982.9	11,687,366.75	2,117,895.65	32° 11' 16.718 N	103° 27' 22.078 W
19,200.0	90.00	180.00	11,213.1	-7,815.7	982.9	11,687,266.76	2,117,897.08	32° 11' 15.728 N	103° 27' 22.078 W
19,300.0	90.00	180.00	11,213.1	-7,915.7	982.9	11,687,166.77	2,117,898.51	32° 11' 14.738 N	103° 27' 22.078 W
19,400.0	90.00	180.00	11,213.1	-8,015.7	982.9	11,687,066.78	2,117,899.95	32° 11' 13.749 N	103° 27' 22.078 W
19,500.0	90.00	180.00	11,213.1	-8,115.7	982.9	11,686,966.79	2,117,901.38	32° 11' 12.759 N	103° 27' 22.078 W
19,600.0	90.00	180.00	11,213.1	-8,215.7	982.9	11,686,866.80	2,117,902.81	32° 11' 11.769 N	103° 27' 22.078 W
19,700.0	90.00	180.00	11,213.1	-8,315.7	982.9	11,686,766.81	2,117,904.25	32° 11' 10.780 N	103° 27' 22.078 W
19,800.0	90.00	180.00	11,213.1	-8,415.7	982.9	11,686,666.82	2,117,905.68	32° 11' 9.790 N	103° 27' 22.078 W
19,900.0	90.00	180.00	11,213.1	-8,515.7	982.9	11,686,566.83	2,117,907.12	32° 11' 8.800 N	103° 27' 22.078 W
20,000.0	90.00	180.00	11,213.1	-8,615.7	982.9	11,686,466.84	2,117,908.55	32° 11' 7.811 N	103° 27' 22.078 W
20,100.0	90.00	180.00	11,213.1	-8,715.7	982.9	11,686,366.85	2,117,909.98	32° 11' 6.821 N	103° 27' 22.078 W
20,200.0	90.00	180.00	11,213.1	-8,815.7	982.9	11,686,266.86	2,117,911.42	32° 11' 5.831 N	103° 27' 22.078 W
20,300.0	90.00	180.00	11,213.1	-8,915.7	982.9	11,686,166.87	2,117,912.85	32° 11' 4.842 N	103° 27' 22.078 W
20,400.0	90.00	180.00	11,213.1	-9,015.7	982.9	11,686,066.88	2,117,914.28	32° 11' 3.852 N	103° 27' 22.078 W
20,500.0	90.00	180.00	11,213.1	-9,115.7	982.9	11,685,966.89	2,117,915.72	32° 11' 2.863 N	103° 27' 22.078 W
20,600.0	90.00	180.00	11,213.1	-9,215.7	982.9	11,685,866.90	2,117,917.15	32° 11' 1.873 N	103° 27' 22.078 W
20,700.0	90.00	180.00	11,213.1	-9,315.7	982.9	11,685,766.91	2,117,918.58	32° 11' 0.883 N	103° 27' 22.078 W
20,800.0	90.00	180.00	11,213.1	-9,415.7	982.9	11,685,666.92	2,117,920.02	32° 10' 59.894 N	103° 27' 22.078 W
20,900.0	90.00	180.00	11,213.1	-9,515.7	982.9	11,685,566.93	2,117,921.45	32° 10' 58.904 N	103° 27' 22.078 W
21,000.0	90.00	180.00	11,213.1	-9,615.7	982.9	11,685,466.94	2,117,922.88	32° 10' 57.914 N	103° 27' 22.078 W
21,100.0	90.00	180.00	11,213.1	-9,715.7	982.9	11,685,366.95	2,117,924.32	32° 10' 56.925 N	103° 27' 22.079 W
21,200.0	90.00	180.00	11,213.1	-9,815.7	982.9	11,685,266.96	2,117,925.75	32° 10' 55.935 N	103° 27' 22.079 W
21,300.0	90.00	180.00	11,213.1	-9,915.7	982.9	11,685,166.97	2,117,927.19	32° 10' 54.945 N	103° 27' 22.079 W
21,400.0	90.00	180.00	11,213.1	-10,015.7	982.9	11,685,066.98	2,117,928.62	32° 10' 53.956 N	103° 27' 22.079 W
21,439.2	90.00	180.00	11,213.1	-10,054.9	982.9	11,685,027.81	2,117,929.18	32° 10' 53.568 N	103° 27' 22.079 W

## LGC

## Survey Report - Geographic

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Well:</b>	SOLOMON FEDERAL COM 505H	<b>North Reference:</b>	True
<b>Wellbore:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Database:</b>	Centennial EDM SQL Server

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
LTP/BHL - SOLOMON F	0.00	0.00	11,213.0	-10,054.7	984.5	11,685,028.03	2,117,930.82	32° 10' 53.570 N	103° 27' 22.060 W
- plan misses target center by 1.6usft at 21439.0usft MD (11213.1 TVD, -10054.7 N, 982.9 E)									
- Point									
FTP - SOLOMON FED C	0.00	0.00	11,213.1	49.0	983.4	11,695,130.63	2,117,784.84	32° 12' 33.561 N	103° 27' 22.070 W
- plan misses target center by 61.8usft at 11354.0usft MD (11157.5 TVD, 22.0 N, 982.9 E)									
- Circle (radius 50.0)									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(")	(")
1,300.0	1,300.0	13 3/8"		13-3/8	17-1/2
5,513.4	5,486.0	9 5/8"		9-5/8	12-1/4
21,439.2	11,213.1	5 1/2"		5-1/2	8-3/4

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------

# **NEW MEXICO**

**LEA**

**JULIET FEDERAL COM**

**SOLOMON FEDERAL COM 505H**

**SOLOMON FEDERAL COM 505H**

**Solomon Fed Com 505H - v3 (2mile)**

## **Anticollision Summary Report**

**08 February, 2019**

## LGC

## Anticollision Summary Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Reference Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	SOLOMON FEDERAL COM 505H	<b>Database:</b>	Centennial EDM SQL Server
<b>Reference Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Solomon Fed Com 505H - v3 (2mile)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 200.0 usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	2/7/2019			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	21,439.2	Solomon Fed Com 505H - v3 (2mile) (SOL	MWD	OWSG MWD - Standard	

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
JULIET FEDERAL COM						
JULIET FEDERAL COM 1H - JULIET FEDERAL COM 1H	1,726.9	1,727.1	191.9	180.3	16.558	CC
JULIET FEDERAL COM 1H - JULIET FEDERAL COM 1H	2,000.0	1,999.8	192.8	179.9	14.947	ES
JULIET FEDERAL COM 1H - JULIET FEDERAL COM 1H	2,300.0	2,299.4	199.9	185.4	13.816	SF
JULIET FEDERAL COM 503H - JULIET FEDERAL COM	2,000.0	2,001.0	60.0	46.1	4.319	CC, ES
JULIET FEDERAL COM 503H - JULIET FEDERAL COM	2,200.0	2,201.0	63.3	48.0	4.135	SF
JULIET FEDERAL COM 504H - JULIET FEDERAL COM	2,000.0	2,001.0	30.0	16.1	2.158	CC, ES
JULIET FEDERAL COM 504H - JULIET FEDERAL COM	2,100.0	2,101.0	30.8	16.2	2.109	SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

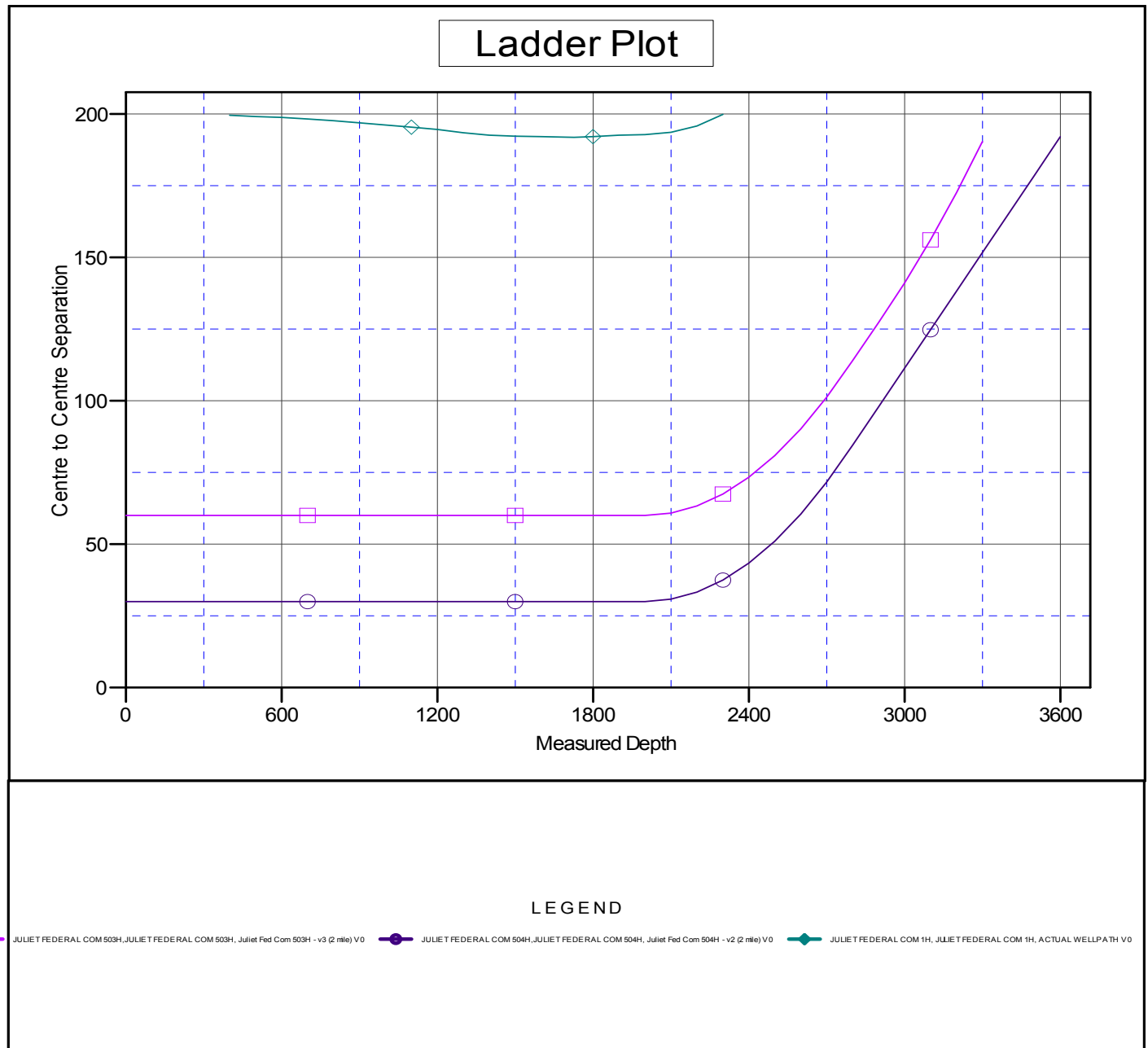
## LGC

## Anticollision Summary Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Reference Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	SOLOMON FEDERAL COM 505H	<b>Database:</b>	Centennial EDM SQL Server
<b>Reference Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to RKB=3522+25 @ 3547.0usft  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 0' 0.000 W

Coordinates are relative to: SOLOMON FEDERAL COM 505H  
Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N  
Grid Convergence at Surface is: 0.82°



CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## LGC

## Anticollision Summary Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well SOLOMON FEDERAL COM 505H
<b>Project:</b>	LEA	<b>TVD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Reference Site:</b>	JULIET FEDERAL COM	<b>MD Reference:</b>	RKB=3522+25 @ 3547.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	SOLOMON FEDERAL COM 505H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	SOLOMON FEDERAL COM 505H	<b>Database:</b>	Centennial EDM SQL Server
<b>Reference Design:</b>	Solomon Fed Com 505H - v3 (2mile)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to RKB=3522+25 @ 3547.0usft

Offset Depths are relative to Offset Datum

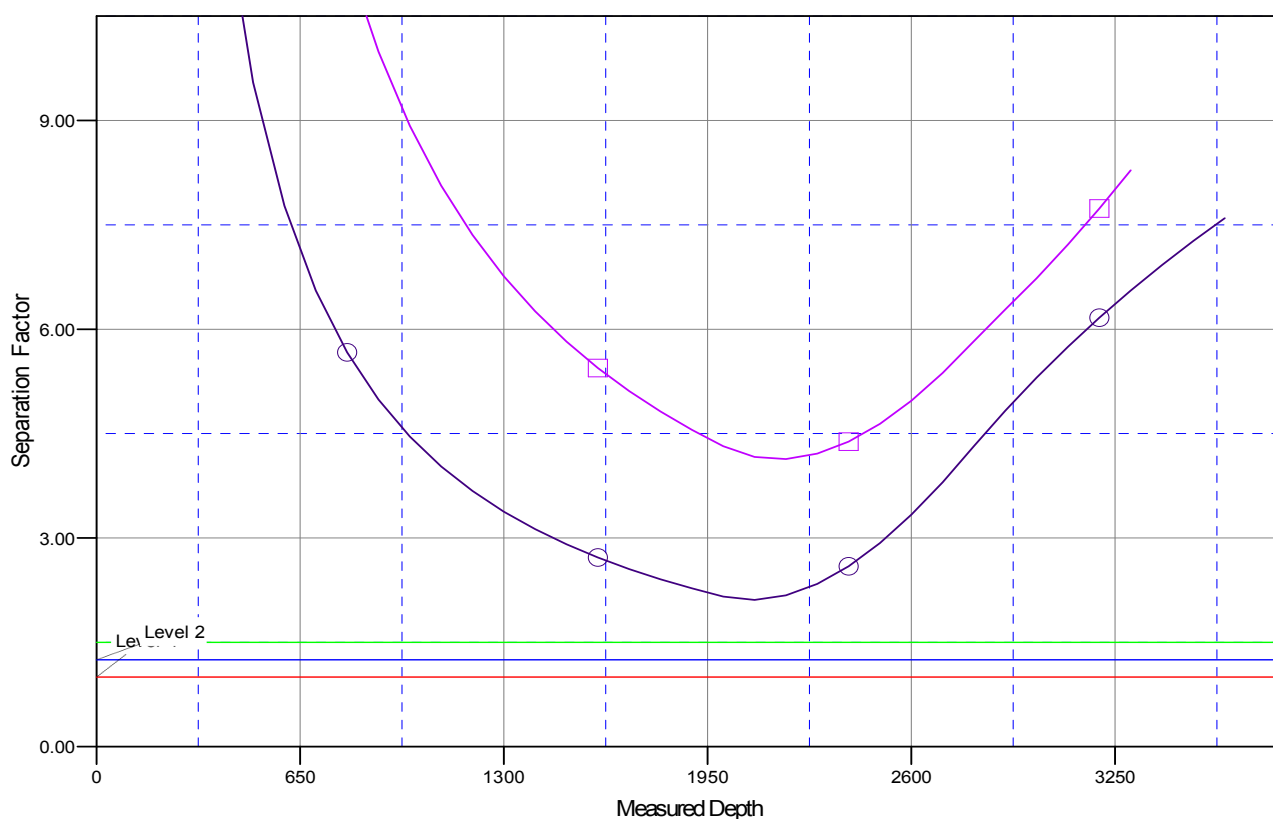
Central Meridian is 105° 0' 0.000 W

Coordinates are relative to: SOLOMON FEDERAL COM 505H

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N

Grid Convergence at Surface is: 0.82°

## Separation Factor Plot



## LEGEND

—■— JULIET FEDERAL COM 503H, JULIET FEDERAL COM 503H, Juliet Fed Com 503H - v3 (2 mile) V0
 —○— JULIET FEDERAL COM 504H, JULIET FEDERAL COM 504H, Juliet Fed Com 504H - v2 (2 mile) V0
 —◆— JULIET FEDERAL COM 1H, JULIET FEDERAL COM 1H, ACTUAL WELLPATH V0

## Centennial Resource Development New Mexico Multi-Well Pad Drilling Batch Setting Procedures

### ➤ Avalon and Bone Springs Formations

13-3/8" Surface Casing - CRD intends to preset 13-3/8" casing to a depth approved in the APD. 17-1/2" Surface Holes will be batch drilled by a Surface Preset rig. Appropriate notifications will be made prior to spudding the well, running and cementing casing and prior to skidding to the rig to the next well on pad.

1. Drill 17-1/2" Surface hole to Approved Depth with Surface Preset Rig and perform wellbore cleanup cycles. Trip out and rack back drilling BHA.
2. Run and land 13-3/8" 54.5# J55 BTC casing to depth approved in APD.
3. Cement 13-3/8" casing with cement to surface and floats holding.
4. Cut / Dress 20" Conductor and 13-3/8" casing as needed, weld on Cameron Multi-bowl system with baseplate supported by 20" conductor (see [Illustration 1-1 Below](#)). Weld performed per Cameron weld procedure.
5. Test Weld to 70% of 13-3/8" casing collapse or ~ 790psi.
6. Install nightcap with Pressure Gauge on wellhead. Nightcap is shown on final wellhead Stack up [Illustration #2-2 page 3](#).
7. Skid Rig to adjacent well to drill Surface hole.
8. Surface casing test will be performed by the Big Rig in order to allow ample time for Cement to develop 500psi compressive strength. Casing test to 0.22 psi/ft or 1500 psi whichever is greater - not to exceed 70% casing burst.

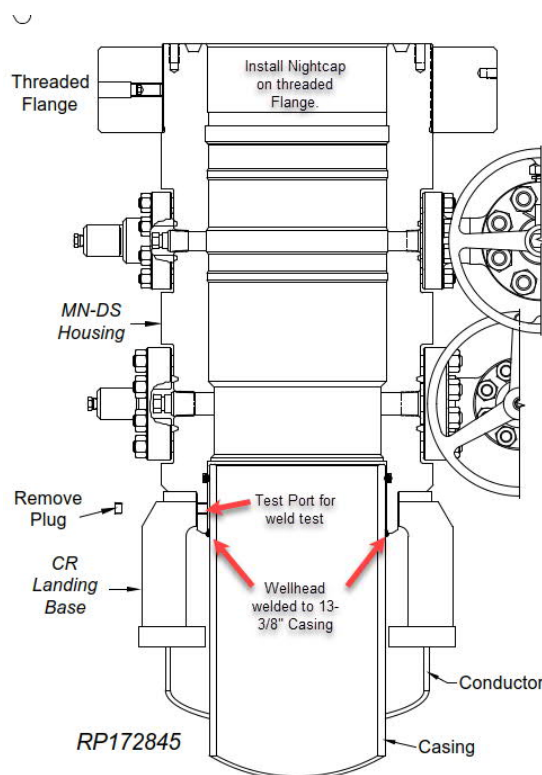


Illustration 1-1

- Intermediate and Production Casing – For all subsequent Intermediate and Production Casing Strings, the Big Rig will remove the nightcap and install and test BOPE. Prior to drill out the 13-3/8" Casing will be tested to 0.22psi/ft or 1500psi whichever is greater. The well will be drilled below 13-3/8" to its intended final TD in the Avalon or Bonesprings formations. Batch drilling will not be executed for casing strings below the 13-3/8". Appropriate notifications will be made prior Testing BOPE, and prior to running/cementing all casing strings. The

## ➤ Wolfcamp Formations

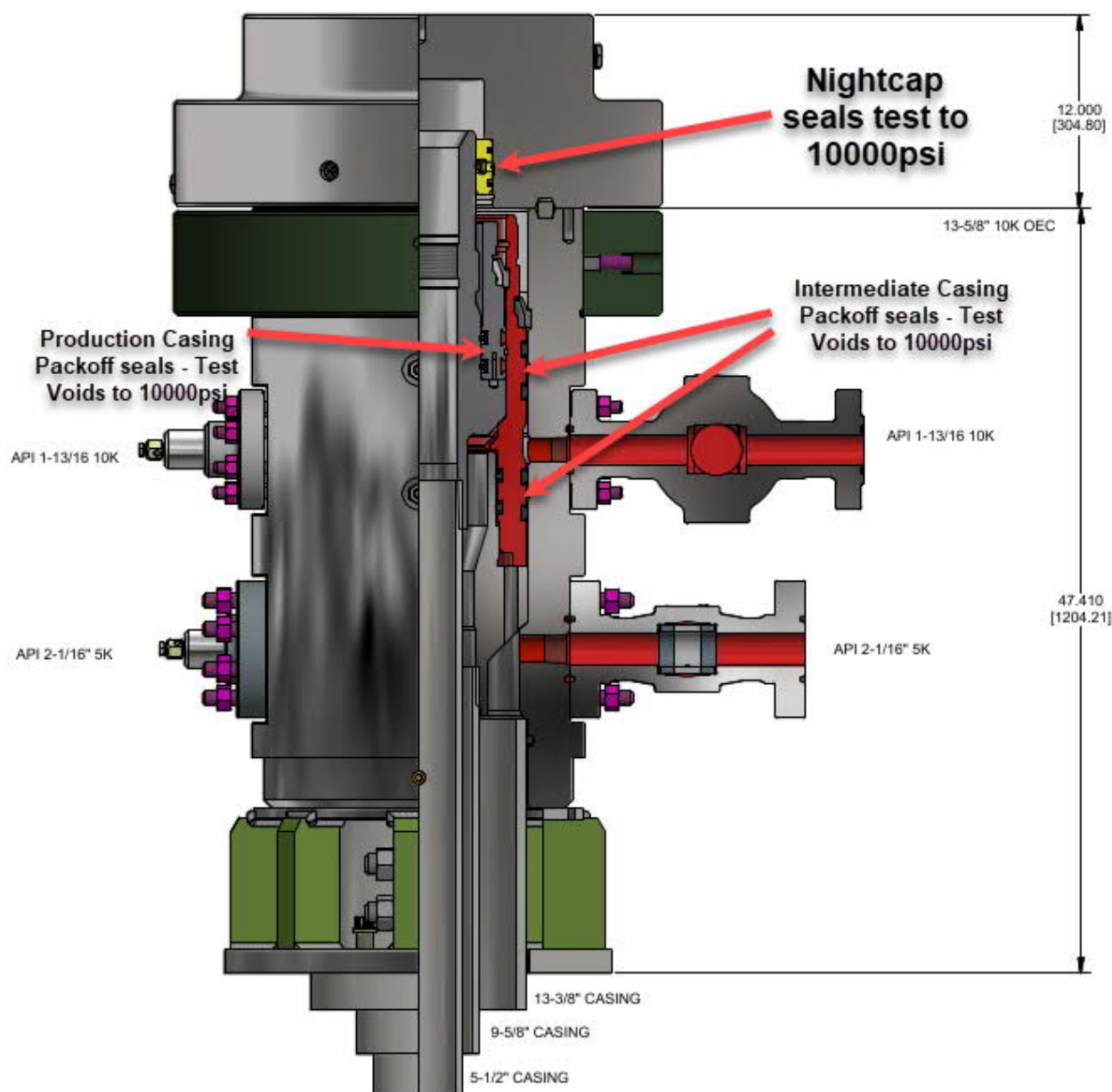
13-3/8" Surface Casing - CRD intends to preset 13-3/8" casing to a depth approved in the APD. Surface Holes will be batch set by a Surface Preset rig. Appropriate notifications will be made prior to spudding the well, running and cementing casing and prior to skidding to the rig to the next well on pad.

1. Drill 17-1/2" Surface hole to Approved Depth with Surface Preset Rig and perform wellbore cleanup cycles. Trip out and rack back drilling BHA.
2. Run and land 13-3/8" 54.5# J55 BTC casing to depth approved in APD.
3. Cement 13-3/8" casing with cement to surface and floats holding.
4. Cut / Dress 20" Conductor and 13-3/8" casing as needed, weld on Cameron Multi-bowl system with baseplate supported by 20" conductor (see [Illustration 1-1](#)). Weld performed per Cameron weld procedure.
5. Test Weld to 70% of 13-3/8" casing collapse or ~ 790psi.
6. Install nightcap with Pressure Gauge on wellhead. Nightcap is shown on final wellhead Stack up [Illustration #2-2 on page 3](#).
7. Subsequent casing test will be performed by the Big Rig in order to allow ample time for Cement to develop 500psi compressive strength. Casing test to 0.22 psi/ft or 1500 psi whichever is greater - not to exceed 70% casing burst.

Intermediate Casing – CRD intends to Batch set all intermediate casing strings to a depth approved in the APD, typically set 100' above KOP in the 3<sup>rd</sup> Bonesprings Carbonate. For the last intermediate section drilled on pad, the associated production interval will immediately follow. Appropriate notifications will be made prior Testing BOPE, and prior to running/cementing all casing strings.

1. Big Rig will remove the nightcap and install and test BOPE.
2. Test Surface casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
3. Install wear bushing then drill out 13-3/8" shoe-track plus 20' and conduct FIT to minimum of the MW equivalent anticipated to control the formation pressure to the next casing point.
4. Drill Intermediate hole to approved casing point. Trip out of hole with BHA to run Casing.
5. Remove wear bushing then run and land Intermediate Casing with mandrel hanger in wellhead.
6. Cement casing to surface with floats holding.
7. Washout stack then run wash tool in wellhead and wash hanger and pack-off setting area.
8. Install pack-off and test void to 10000 psi for 15 minutes. Nightcap shown on final wellhead stack up [illustration 2-2 on page 3](#).
9. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
10. Install nightcap – skid rig to adjacent well to drill Intermediate hole.





WITH CAP

Illustration 2-2

Production Casing – CRD intends to Batch set all Production casings, except for the last intermediate hole. In this case the production interval will immediately follow the intermediate section on that well. Appropriate notifications will be made prior Testing BOPE, and prior to running/cementing all casing strings.

1. Big Rig will remove the nightcap and install and test BOPE.
2. Install wear bushing then drill Intermediate shoe-track plus 20' and conduct FIT to minimum MW equivalent to control the formation pressure to TD of well.
3. Drill Vertical hole to KOP – Trip out for Curve BHA.
4. Drill Curve, landing in production interval – Trip for Lateral BHA.

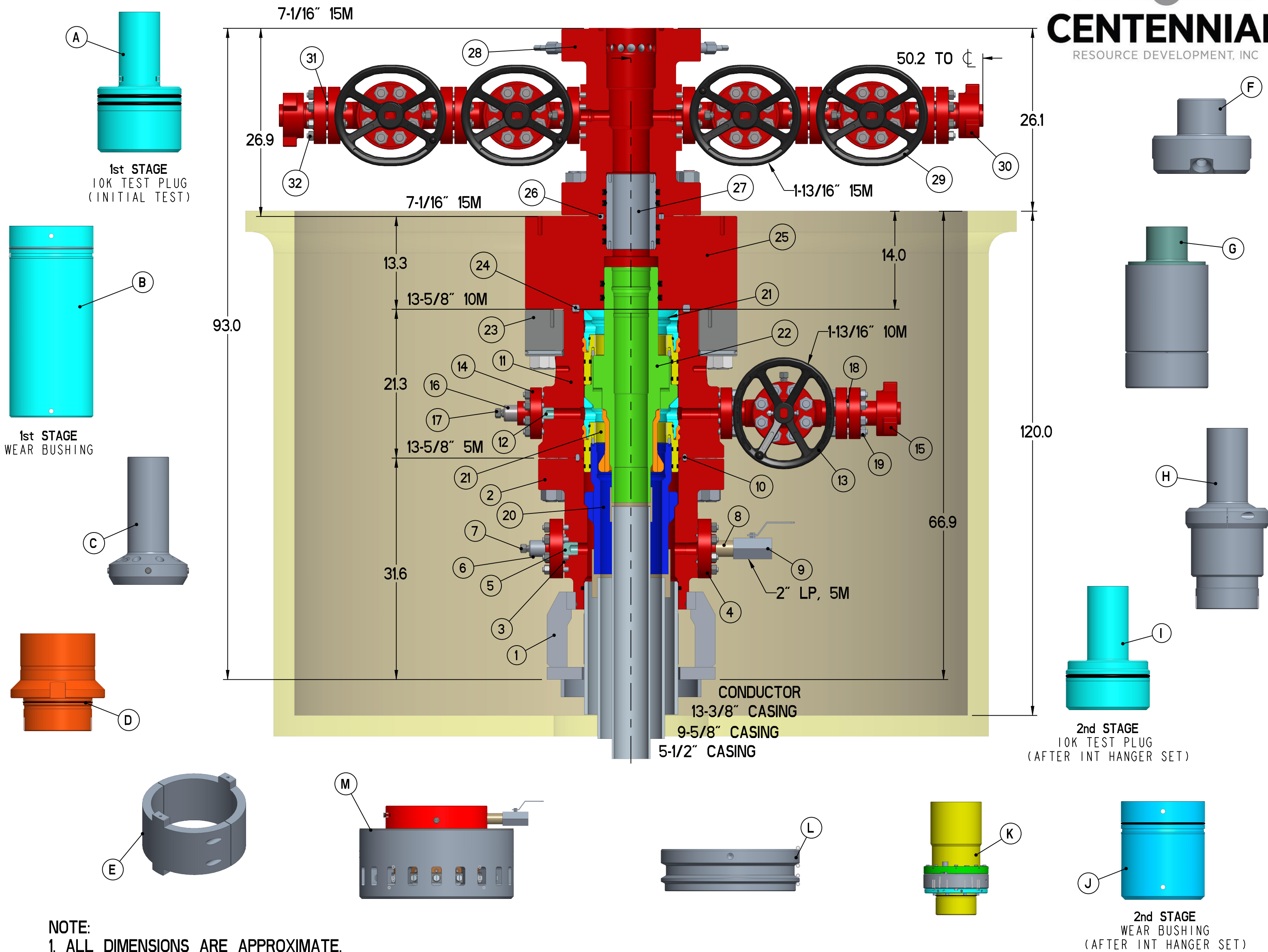
5. Drill Lateral / Production hole to Permitted BHL, perform cleanup cycles and trip out to run 5-1/2" Production Casing.
6. Remove wear bushing then run 5-1/2" production casing to TD landing casing mandrel in wellhead.
7. Cement 5-1/2" Production string to surface with floats holding.
8. Run in with wash tool and wash wellhead area – install pack-off and test void to 10000psi for 15 minutes.
9. Install BPV in 5-1/2" mandrel hanger – Nipple down BOPE and install nightcap.
10. Test nightcap void to 10000psi for 30 minutes per [illustration 2-2 page 3](#).
11. Skid rig to adjacent well on pad to drill production hole.

## Solomon Fed Com 505H

### Centennial Drilling Plan for 3-Casing String Bone Springs Formation

#### 13-3/8" x 9-5/8" x 5-1/2" Casing Design

1. Drill 17-1/2" surface hole to Total Depth with Spudder Rig and perform wellbore cleanup cycles.
2. Run and land 13-3/8" casing to Depth.
3. Cement 13-3/8" casing – cement to surface.
4. Cut / Dress Conductor and 13-3/8" casing as needed, weld on Multi-bowl system with baseplate supported by 20" conductor.
5. Test Weld to 70% of 13-3/8" casing collapse. Place nightcap with Pressure Gauge on wellhead and test seals to 70% of Casing Collapse.
6. Bleed Pressure if necessary and remove nightcap. Nipple up and test BOPE with test plug per Onshore Order 2.
7. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
8. Install wear bushing then drill out 13-3/8" shoe-track plus 20' and conduct FIT to minimum of the MW equivalent anticipated to control the formation pressure to the next casing point.
9. Drill 12-1/4" Intermediate hole to 9-5/8" casing point. (Base Capitan Reef).
10. Remove wear bushing then run and land 9-5/8" Intermediate Casing with mandrel hanger in wellhead.
11. Cement 9-5/8 casing – cement to surface.
12. Washout stack then run wash tool in wellhead and wash hanger and pack-off setting area.
13. Install pack-off and test to 5000 psi for 15 minutes.
  - a. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
14. Install wear bushing then drill out 9-5/8" shoe-track plus 20' and conduct FIT to minimum MW equivalent to control the formation pressure to TD of well.
15. Drill 8-3/4" Vertical hole to KOP – Trip out for Curve BHA.
16. Drill 8-3/4" Curve, landing in production interval – Trip for Lateral BHA.
17. Drill 8-1/2" Lateral to Permitted BHL, perform cleanup cycles and trip out to run 5-1/2" Production Casing.
18. Remove wear bushing then run 5-1/2" production casing to TD landing casing mandrel in wellhead.
19. Cement 5-1/2" Production string to surface.
20. Run in with wash tool and wash wellhead area – install pack-off and test to 5000psi for 15 minutes.
21. Install BPV in 5-1/2" mandrel hanger – Nipple down BOPE and install nightcap.
22. Test nightcap void to 5000psi for 30 minutes.



NOTE:  
1. ALL DIMENSIONS ARE APPROXIMATE.

ITEM	PARTS DESCRIPTION	PART NUMBERS
1	LANDING BASE ASSEMBLY 24.00 X 18.00 X 1.75	LB-1338CSGX24-03
2	CASING HEAD CC-22 13-5/8 5M X 13-3/8 SOW	CC-CHI35X1338SOWSV-00-2
3	RING GASKET OVAL R-24	RG-R24MS
4	COMPANION FLANGE 2-1/16 5000 X 2 LP	CF-25X2LP-2-00-OS
5	VALVE REMOVAL PLUG 10000 PSI	VRP-1900-6A-DD-OS
6	BULLPLUG 2 LP X 1/2 LP	BP-2X12XXH
7	GREASE FITTING 1/2 NPT	GF-12-4140
8	NIPPLE SEAMLESS 2 NPTX 2 NPT X 6.00	NIP-2X6XXH
9	BALL VALVE 2 LP 5000 PSI	B/V-25-CS-OS
10	RING GASKET BX-160	RG-BX160MS
11	INTERMEDIATE HEAD CFB-T 13-5/8 5M X 13-5/8 10M RSF	CFB-IHT135X1310SV-00-2
12	VALVE REMOVAL PLUG 10000 PSI	VRP-1660-6A-DD-OS
13	GATE VALVE 1-13/16 10000 FLANGED	175G-52SB100-LE-OS
14	COMPANION FLANGE 1-13/16 10M X 2 LP	CF-13410X2LP-2-OS
15	FLANGE ADAPTER 1-13/16 10M X 2 FIG 1502	AF-13410X21502-01-2-OS
16	BULLPLUG 2 LP X 1/2 LP	BP-2X12XXH
17	GREASE FITTING 1/2 NPT	GF-12-4140
18	RING GASKET BX-151	RG-BX151MS
19	STUD AND NUT SET 3/4 10UNC X 5-1/4 FULL	S-B7-34X514 / N-2H-34
20	CSG HGR MANDREL CFB 13-5/8 X 9-5/8 PIN BTM	CFB-CHL13X958LC-04
21	PACKOFF BUSHING CFB 13-5/8 X 11.500	CFB-PB13X11050-01-2
22	CSG HGR CFB 13-5/8 X 5-1/2 PIN BTM	CFB-CHU13X512TCBCBPV-00-2
23	THREADED FLANGE RING RSF 13-5/8 10M	RSF-TF1310X1950A-00-2
24	RING GASKET BX-159	RG-BX159MS
25	PACKOFF FLANGE FS 13-5/8 10M X 7-1/16 15M	FS-AF1310X715X758X7-00-3

26	RING GASKET BX-156	RG-BX156MS
27	SEAL-OFF NIPPLE SLICK OD 7.07 X 5.25	SN-707X525-00-3
28	TBG HEAD CTCM-15 7-1/16 15M X 7-1/16 15M	CTCM-TH715X715SVF57-00-2
29	GATE VALVE 1-13/16 15000 FLANGED	175G-52SB150-T25-3-OS
30	ADAPTER FLANGE 1-13/16 15M X 2 FIG 1502	AF-13415X21502-01-3-OS
31	RING GASKET BX-151	RG-BX151MS
32	STUD AND NUT SET 7/8 9UNC X 6	S-B7-78X6-BSL1 / N-2H-78-BSL1
ITEM	RENTAL TOOLS - PARTS DESCRIPTION	PART NUMBERS
A	RENTAL TEST PLUG CFB 13-5/8 X 4-1/2 IF	L-CFB-TP13X412IF-03
B	RENTAL BORE PROTECTOR CFB 13-5/8	L-CFB-BP13X12053-3075-01
C	RENTAL RETRIEVING TOOL 13-5/8 X 4-1/2 IF	L-CC-RT13-00
D	RENTAL RUNNING TOOL CFB 13-5/8	L-CFB-RT9750AX958BC-00
E	RENTAL TORQUE SLEEVE CFB 13.44X 11.62 X 9.12	L-CFB-RT-TS13-00
F	RENTAL WASH-OUT TOOL 13-5/8 X 4-1/2 IF	L-MW-WT13X412-00
G	RENTAL WASHOUT TOOL CFB 13-5/8 X4-1/2 IF	L-CFB-WT13X412IF-01
H	RENTAL RUNNING AND RETRIEVING TOOL CFB	L-CFB-RT10125AX412IF-00
I	RENTAL TEST PLUG CFB 13-5/8 4-1/2 IF	L-CFB-TP13X412IF-04
J	RENTAL BORE PROTECTOR CFB 13-5/8	L-CFB-BP13X9056-1575-00
K	RENTAL RUNNING TOOL CFB-RT-TT FOR 11 / 13 HGR	CFB-RT-TT512AX512TCBC-00
L	RENTAL THREADED SHOULDER RING RSF	L-RSF-SR1310BX-00-2
M	RSF CAPPING FLANGE	RSF-CF1310BX0ECX9CPX2LP-00

CENTENNIAL RESOURCE PRODUCTION, LLC  
13-3/8" X 9-5/8" X 5-1/2" , 15M  
CFB-T WELLHEAD SYSTEM  
QUOTE: HOU - 151185

DWN	CB	12/16/19
CHK		
APPR		
BY	DATE	




Worldwide Expertise - Global Strength


DRAWING NUMBER  
WH-20235



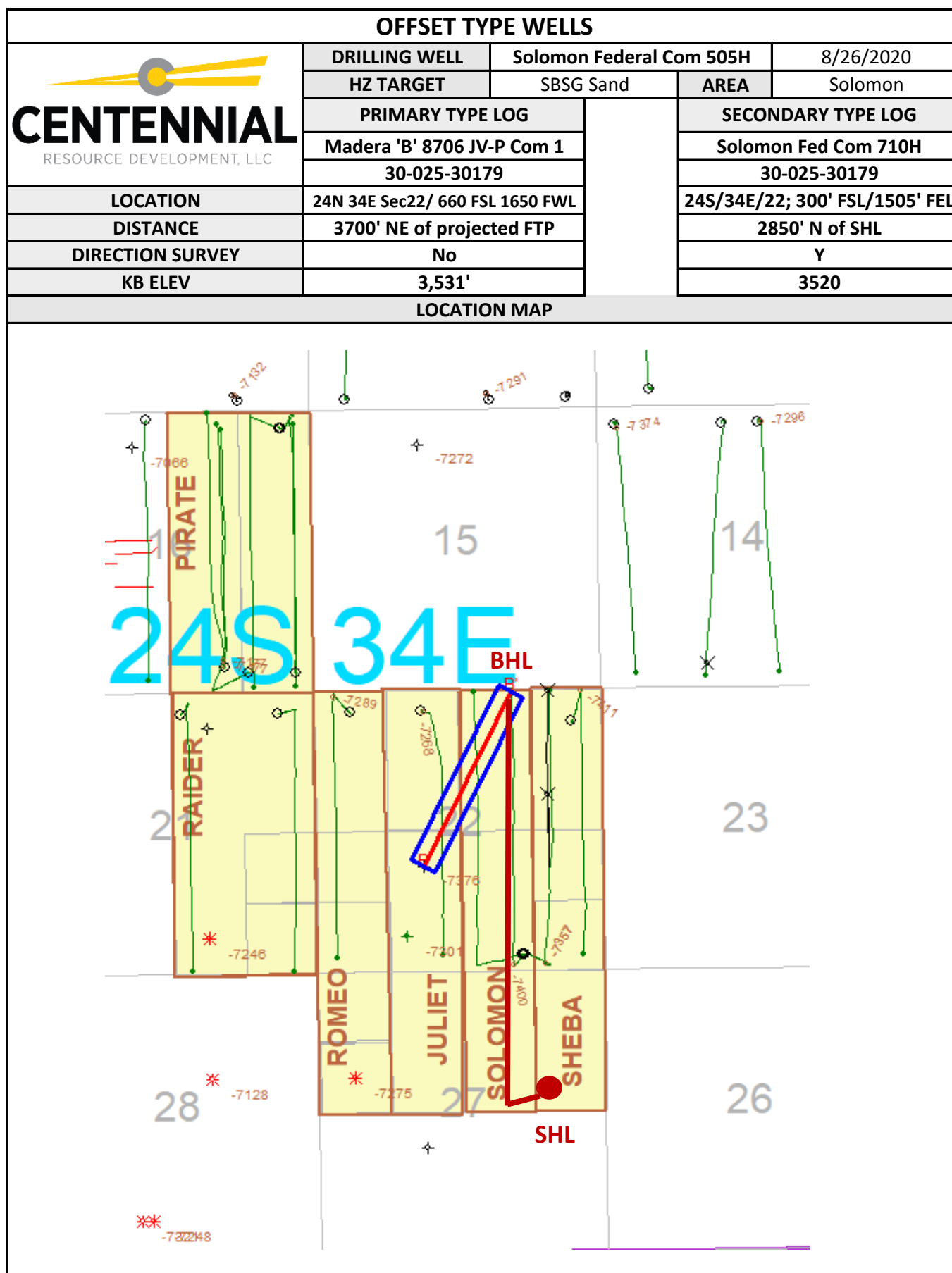
## GEOLOGIC PROG

			<b>WELL NAME</b>		Solomon Federal Com 505H		8/26/2020	
			<b>AREA</b>		Solomon		<b>API</b>	
			<b>HZ TARGET</b>		SBSG Sand		<b>WI %</b>	
			<b>LAT LENGTH</b>		7,700		<b>AFE#</b>	
			<b>TRRC PERMIT</b>				<b>COUNTY</b>	
	<b>TWNP</b>	<b>RNG</b>	<b>SECTION</b>	<b>FOOTAGE</b>		<b>COMMENT</b>		
<b>SHL</b>	24S	34E	27	2339' FNL, 1130' FEL		On lease. Drill S to N.		
<b>FTP/PP</b>	24S	34E	27	2548' FNL, 1870' FEL				
<b>LTP</b>	24S	34E	22	100' FNL, 1870' FEL				
<b>BHL</b>	24S	34E	22	100' FNL, 1870' FEL				
			<b>GROUND LEVEL</b>	3,464'	<b>RIG KB</b>	25'	<b>KB ELEV</b>	3,489'
<b>GEOLOGIST</b>	Isabel Harper		<a href="mailto:isabel.harper@cdevinc.com">isabel.harper@cdevinc.com</a>			(303) 589-8841		
<b>LOGGING</b>			No open hole logging.					
			MWD GR from drill out of surface casing to TD.					
<b>MUDLOGGING</b>			Standard mud logging and mud gas detection.					
			Mud loggers on from drill out of surface casing to TD.					
<b>FORMATION</b>			<b>TVD</b>	<b>SSTVD</b>	<b>THICKNESS</b>	<b>FINAL MD</b>	<b>FINAL TVD</b>	<b>DELTA</b>
Rustler			1,119'	2,370'	2,670'			
Salado			1,736'	1,753'	2,053'			
BX BLM (Fletcher Anhydrite)			3,789'	-300'	1,570'			
Lamar			5,359'	-1,870'	55'			
Bell Canyon			5,414'	-1,925'	915'			
Cherry Canyon			6,329'	-2,840'	211'			
Manzanita Lime			6,540'	-3,051'	1,287'			
Brushy Canyon			7,827'	-4,338'	1,411'			
Bone Spring Lime			9,238'	-5,749'	28'			
Avalon			9,266'	-5,777'	1,015'			
First Bone Spring Sand			10,281'	-6,792'	200'			
Second Bone Spring Shale			10,481'	-6,992'	309'			
Second Bone Spring Sand			10,790'	-7,301'	512'			
Third Bone Spring Carb			11,302'	-7,813'	537'			
Third Bone Spring Sand			11,839'	-8,350'	402'			
Wolfcamp			12,241'	-8,752'				
Target Top at 0' VS			10,830'	-7,341'	43'			
Target Base at 0' VS			10,873'	-7,384'				
HZ TARGET AT 0' VS			10,850'	-7,361'				
<b>TARGET:</b> KBTVD = 10850' at 0' VS, INC = 90.0 deg Target Window +10/-10'								
<b>COMMENT:</b>								

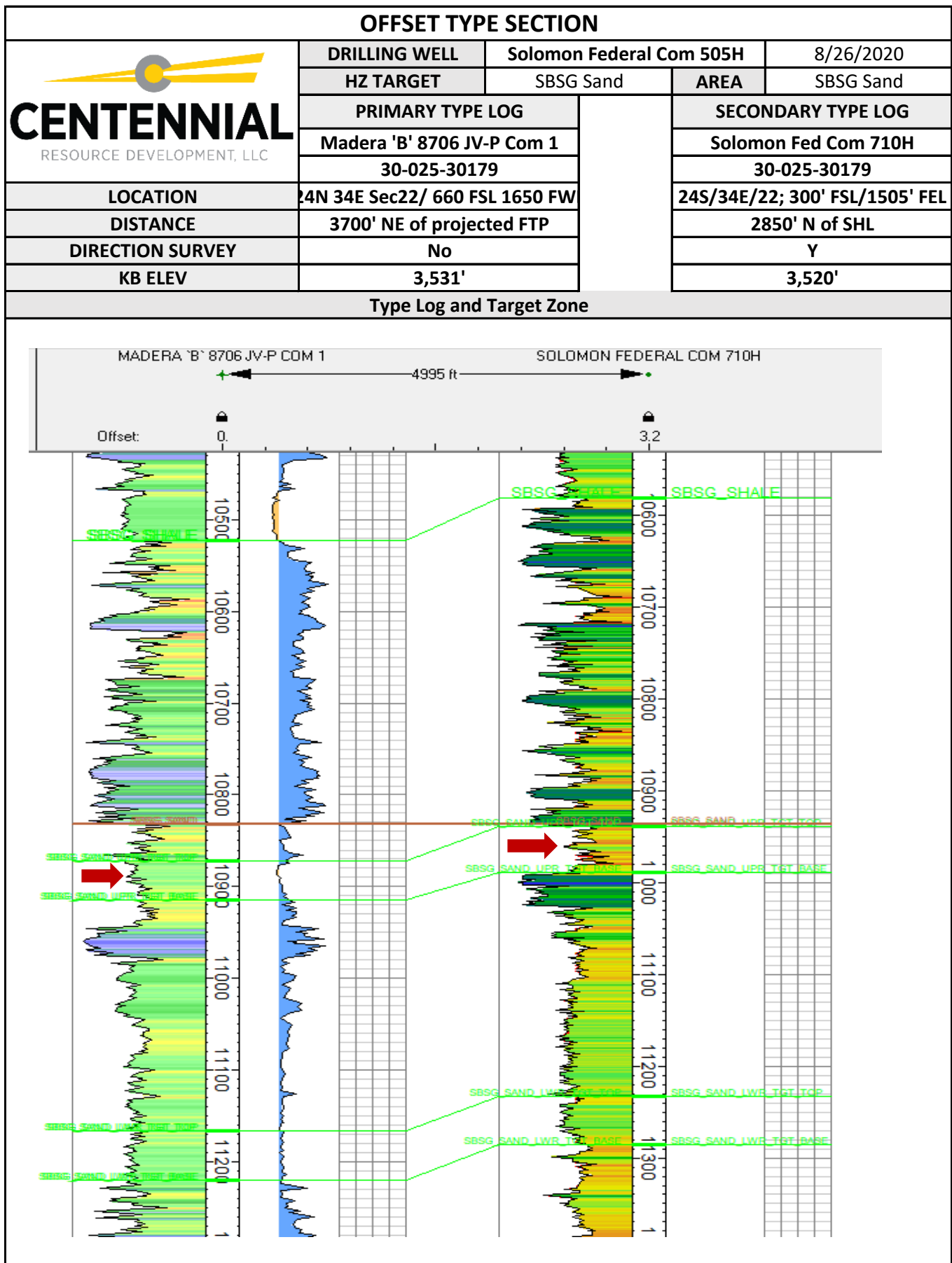
## GEOLOGIC PROG

OFFSET TYPE WELLS							
	DRILLING WELL		Solomon Federal Com 505H		8/26/2020		
	HZ TARGET		SBSG Sand		AREA	Solomon	
	PRIMARY TYPE LOG			SECONDARY TYPE LOG			
	Madera 'B' 8706 JV-P Com 1			Solomon Fed Com 710H			
	30-025-30179			30-025-30179			
	LOCATION			24S/34E/22; 300' FSL/1505' FEL			
	DISTANCE			2850' N of SHL			
	DIRECTION SURVEY			Y			
	KB ELEV			3,520'			
FORMATION	TVD	SSTVD	DELTA		TVD	SSTVD	DELTA
Rustler	1,161'	2,370'	617'				
Salado	1,778'	1,753'	2,053'		1,778'	1,742'	2,043'
BX BLM (Fletcher Anhydrite)	3,831'	-300'	1,570'		3,821'	-301'	1,631'
Lamar	5,401'	-1,870'	55'		5,452'	-1,932'	30'
Bell Canyon	5,456'	-1,925'	915'		5,482'	-1,962'	933'
Cherry Canyon	6,371'	-2,840'	211'		6,415'	-2,895'	236'
Manzanita Lime	6,582'	-3,051'	1,287'		6,651'	-3,131'	1,256'
Brushy Canyon	7,869'	-4,338'	1,411'		7,907'	-4,387'	1,455'
Bone Spring Lime	9,280'	-5,749'	28'		9,362'	-5,842'	24'
Avalon	9,308'	-5,777'	1,015'		9,386'	-5,866'	971'
First Bone Spring Sand	10,323'	-6,792'	200'		10,357'	-6,837'	207'
Second Bone Spring Shale	10,523'	-6,992'	309'		10,564'	-7,044'	356'
Second Bone Spring Sand	10,832'	-7,301'	512'		10,920'	-7,400'	486'
Third Bone Spring Carb	11,344'	-7,813'	537'		11,406'	-7,886'	550'
Third Bone Spring Sand	11,881'	-8,350'	402'		11,956'	-8,436'	391'
Wolfcamp	12,283'	-8,752'			12,347'	-8,827'	
Reservoir Top	10,872'	-7,341'	43'		10,922'	-7,402'	51'
Reservoir Base	10,915'	-7,384'			10,973'	-7,453'	
Comments							

## GEOLOGIC PROG




## GEOLOGIC PROG





## GEOLOGIC PROG

MUD LOG DISTRIBUTION DETAILS				
	WELL NAME	Solomon Federal Com 505H		8/26/2020
	AREA	Solomon	API	
	HZ TARGET	SBSG Sand	WI %	
	LAT LENGTH	7700	AFE#	
	TRRC PERMIT		COUNTY	Lea
GEOLOGIST	Isabel Harper	isabel.harper@cdevinc.com		(303) 589-8841
Mud Logging Company				
TBD				
TBD	TBD		TBD	
Contact 2	email		phone	
Contact 3	email		phone	
Daily distribution data requirements and protocol				
geodata@cdevinc.com; michael.rumon@cdevinc.com; joe.woodske@cdevinc.com; liam.kaltenback@cdevinc.com; matt.garrison@cdevinc.com; brett.thompson@cdevinc.com; aldo.gurmendi@cdevinc.com; drilling@cdevinc.com; ty.thompson@cdevinc.com; dawn.billesbach@cdevinc.com; Andrew.welshhans@cdevinc.com; nick.daniele@cdevinc.com; John.Harper@cdevinc.com; Isabel.Harper@cdevinc.com; jeremy.ray@cdevinc.com				
Daily email distribution list				
Final distribution data requirements				
Final distribution list				
Contact Information	Reports	Hard Copies	Digital data	Cuttings
Centennial Resource Development, c/o Joe Woodske, 1001 17th street, Suite 1800, SCAL, Inc., 2613 South County Road 1257, Midland, TX 79706	email final set	2 copies of 5" MD Vertical, 2 copies of 5" Horizontal and	email final set	
				No Dried Samples to be Collected
MWD Only: Centennial Resource Development, c/o Sarah Ferreyros, 1001 17th street, Suite 1800, Denver, CO, 80202	email final set	2 copies of the 5" MD vertical logs 2 copies of the 5" horizontal logs	email final set	
Project Geologist: Isabel Harper		Production: Brandon Morin		
Operations Geologist: Joe Woodske		Surface Land: Bailey Joplin		
Drilling: Ronny Hise		Mineral Land: Gavin Smith		

## CENTENNIAL

## WBD

Well : Solomon Fed Com 505H

Area : Solomon

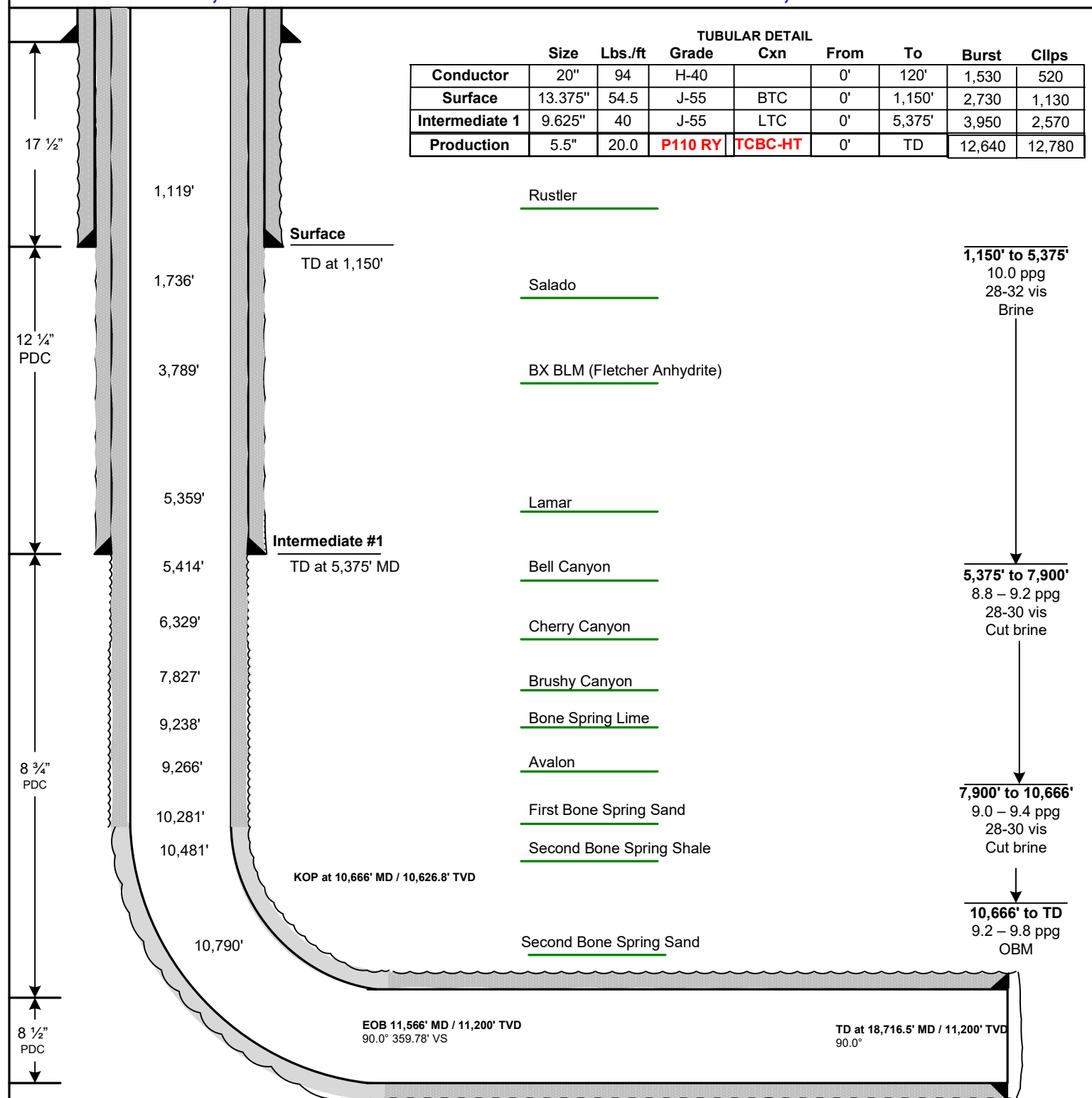
FM tgt: 2<sup>nd</sup> BSS (lower)

County : Lea State : NM

Location : Lot C Section 22, T24S, R34E; 400' FNL &amp; 2,190' FWL

BHL : Lot G, Section 27, T24S, R34E; 2,539' FNL &amp; 2,120' FEL

KB Elev : 3,548.6' MSL KB : 26.5' AGL GL Elev : 3,522.1' MSL




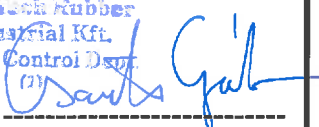


ContiTech

CONTITECH RUBBER  
Industrial Kft.

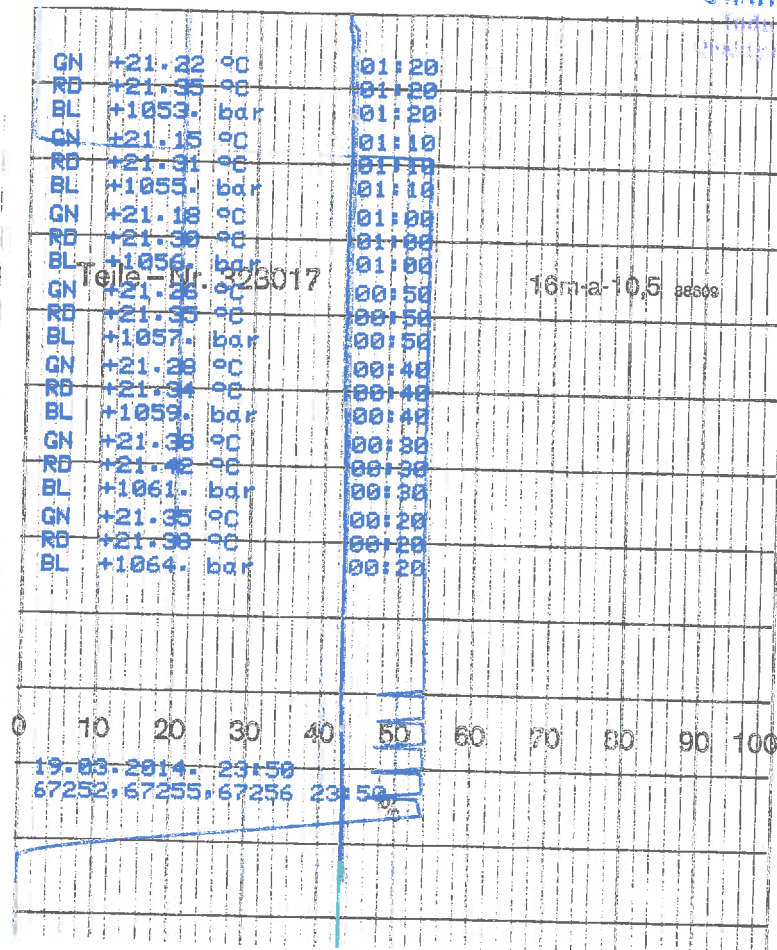
No:QC-DB- 210/ 2014

Page: 9 / 113

<b>QUALITY CONTROL INSPECTION AND TEST CERTIFICATE</b>				CERT. N°: 504	
PURCHASER: ContiTech Oil & Marine Corp.				P.O. N°: 4500409659	
CONTITECH RUBBER order N°: 538236		HOSE TYPE: 3" ID		Choke and Kill Hose	
HOSE SERIAL N°: 67255		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,77 m			
W.P. 68,9 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 min.	
<p>Pressure test with water at ambient temperature</p> <p style="text-align: center;">See attachment. ( 1 page )</p> <p>↑ 10 mm = 10 Min. → 10 mm = 20 MPa</p>					
COUPLINGS Type		Serial N°		Quality	Heat N°
3" coupling with		9251 9254		AISI 4130	A0579N
4 1/16" 10K API b.w. Flange end				AISI 4130	035608
<b>Not Designed For Well Testing</b>				<b>API Spec 16 C</b>	
				<b>Temperature rate:"B"</b>	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:	Inspector	Quality Control			
20. March 2014.		 			

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE No: 501, 504, 505

Page: 1 / 1





CONTITECH RUBBER  
Industrial Kft.

No:QC-DB- 210/ 2014

Page: 15 / 113

ContiTech

## Hose Data Sheet

CRI Order No.	538236
Customer	ContiTech Oil & Marine Corp.
Customer Order No	4500409659
Item No.	1
Hose Type	Flexible Hose
<b>Standard</b>	<b>API SPEC 16 C</b>
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
Type of coupling other end	FLANGE 4.1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St. steel outer wrap
Internal stripwound tube	No
Lining	OIL + GAS RESISTANT SOUR
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max. design temperature [°C]	100
Min. design temperature [°C]	-20
Min. Bend Radius operating [m]	0,90
Min. Bend Radius storage [m]	0,90
Electrical continuity	The Hose is electrically continuous
Type of packing	WOODEN CRATE ISPM-15



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# SUPO Data Report

04/13/2021

APD ID: 10400054470

Submission Date: 03/05/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: SOLOMON FEDERAL COM

Well Number: 505H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Existing\_Roads\_Map\_20200226105357.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? YES

ROW ID(s)

ID:

Do the existing roads need to be improved? YES

**Existing Road Improvement Description:** - The operator will improve or maintain existing road in a condition the same as or better than before operations begin. The operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattle guards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use. We will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or wind events. BLM written approval will be acquired before application of surfactants, binding agents, or the dust suppression chemicals on roadways.

**Existing Road Improvement Attachment:**

## Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

New\_Roads\_Maps\_20200226124556.pdf

New road type: COLLECTOR

Length: 1663 Feet

Width (ft.): 65

Max slope (%): 2

Max grade (%): 8

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 20

**New road access erosion control:** Drainage and erosion will be constantly monitored to prevent compromising the road integrity and to protect the surrounding native topography.

**New road access plan or profile prepared?** Y

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H**New road access plan attachment:**

New\_Roads\_Maps\_20200226134855.pdf

**Access road engineering design?** N**Access road engineering design attachment:****Turnout?** N**Access surfacing type:** OTHER**Access topsoil source:** BOTH**Access surfacing type description:** Caliche**Access onsite topsoil source depth:** 4

**Offsite topsoil source description:** - Caliche will be hauled from the existing Concho pit located in {SE4 NW4, Sec 6, T24S, R35E}. Pit has been identified for use in the attached exhibit. - Any native caliche on the proposed site can be used by "flipping" the location and using all native soils.

**Onsite topsoil removal process:** Native soils will be used in the initial construction of the well pad;; Pad will be compacted using fresh water, dust control measures will be implemented as needed; Topsoil will be stored along the East edge of the pad site

**Access other construction information:****Access miscellaneous information:****Number of access turnouts:****Access turnout map:**

### Drainage Control

**New road drainage crossing:** CULVERT**Drainage Control comments:** Will be monitored and repaired as necessary

**Road Drainage Control Structures (DCS) description:** Drainage and erosion will be constantly monitored to prevent compromising the well site integrity, and to protect the surrounding native topography

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES**Attach Well map:**

Well\_Proximity\_Map\_20200226141533.pdf

Solomon\_Federal\_Com\_505H\_\_\_Sheba\_506H\_\_\_507H\_\_\_306H\_\_\_405H\_SUPO\_20200305131233.pdf

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT**Production Facilities description:****Production Facilities map:**

Location\_Layout\_Plats\_20200226144803.pdf

Juliet\_Romeo\_Solomon\_Package\_CTB\_1\_Comingle\_FAC\_Layout\_20200226145020.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source type:** OTHER**Describe type:** Private**Water source use type:** STIMULATION**Source latitude:****Source longitude:****Source datum:****Water source permit type:** PRIVATE CONTRACT**Water source transport method:** PIPELINE**Source land ownership:** PRIVATE**Source transportation land ownership:** PRIVATE**Water source volume (barrels):** 35000**Source volume (acre-feet):** 4.51125837**Source volume (gal):** 1470000**Water source and transportation map:**

Water\_Source\_and\_Transportation\_Map\_20200226150053.pdf

**Water source comments:****New water well?** N

### New Water Well Info

**Well latitude:****Well Longitude:****Well datum:****Well target aquifer:****Est. depth to top of aquifer(ft):****Est thickness of aquifer:**



**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H**Aquifer comments:****Aquifer documentation:****Well depth (ft):****Well casing type:****Well casing outside diameter (in.):****Well casing inside diameter (in.):****New water well casing?****Used casing source:****Drilling method:****Drill material:****Grout material:****Grout depth:****Casing length (ft.):****Casing top depth (ft.):****Well Production type:****Completion Method:****Water well additional information:****State appropriation permit:****Additional information attachment:**

### Section 6 - Construction Materials

**Using any construction materials:** YES**Construction Materials description:** Concho Caliche Pit in the SENW of Sec. 6, T25S, 35E**Construction Materials source location attachment:**

Caliche\_Source\_and\_Route\_Map\_20200226150354.pdf

### Section 7 - Methods for Handling Waste

**Waste type:** DRILLING**Waste content description:** Fresh water based drilling fluid**Amount of waste:** 1500 barrels**Waste disposal frequency :** Weekly**Safe containment description:** Steel tanks with plastic-lined containment berms**Safe containmant attachment:****Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL**Disposal type description:****Disposal location description:** NMOCD approved disposal facility, Any public disposal (SWD).**Waste type:** DRILLING**Waste content description:** Brine water based drilling fluid**Amount of waste:** 1500 barrels**Waste disposal frequency :** Monthly**Safe containment description:** steel tanks with plastic-lined containment berms

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** state approved disposal facility (Sundance services or R360 Environmental)

**Waste type:** SEWAGE

**Waste content description:** Grey water/human waste

**Amount of waste:** 5000                      gallons

**Waste disposal frequency :** Weekly

**Safe containment description:** Approved waste storage tanks with containment

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Using water fleet to process sewage; the disposal fluid will go to any public disposal, state approved disposal facility

**Waste type:** GARBAGE

**Waste content description:** General trash/garbage

**Amount of waste:** 5000                      pounds

**Waste disposal frequency :** Weekly

**Safe containment description:** Enclosed trash trailer (Lea County Landfill, outside of Eunice)

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:** Commercial

**Disposal location description:** state approved disposal facility

**Waste type:** DRILLING

**Waste content description:** drill cuttings (12261 cubic feet/well)

**Amount of waste:** 12261                      gallons

**Waste disposal frequency :** One Time Only

**Safe containment description:** Drill cuttings will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC**Well Name:** SOLOMON FEDERAL COM**Well Number:** 505H**Disposal location description:** NMOCD approved disposal facility (Sundance or R360 Environmental)

### Reserve Pit

**Reserve Pit being used?** NO**Temporary disposal of produced water into reserve pit?** NO**Reserve pit length (ft.)****Reserve pit width (ft.)****Reserve pit depth (ft.)****Reserve pit volume (cu. yd.)****Is at least 50% of the reserve pit in cut?****Reserve pit liner****Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO**Are you storing cuttings on location?** Y**Description of cuttings location** Drill cuttings will be properly disposed of into a steel tank and taken to an NMOCD approved disposal facility.**Cuttings area length (ft.)****Cuttings area width (ft.)****Cuttings area depth (ft.)****Cuttings area volume (cu. yd.)****Is at least 50% of the cuttings area in cut?****WCuttings area liner****Cuttings area liner specifications and installation description**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** N**Ancillary Facilities attachment:****Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Location\_Layout\_Plats\_20200226151303.pdf

**Comments:** o Exterior well pad dimensions are 565 x 900. o Interior well pad dimensions from point of entry (well head) of the westernmost well are N-800, S-175, W-265, E-300. The length to the east includes 30 spacing for next well on multi-well

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

pad (three wells). Total disturbance area needed for construction of well pad will be 12.5 acres. o Top soil placement is on the south side of pad. Interim reclamation is planned to be completed upon completion of well and evaluation of best management practices. (Reclamation plat attached).

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** Solomon/Sheba Federal

**Multiple Well Pad Number:** 1

**Recontouring attachment:**

Reclamation\_Plat\_20200227141337.pdf

**Drainage/Erosion control construction:** Drainage and erosion will be constantly monitored to prevent compromising the well site integrity, and to protect the surrounding native topography.

**Drainage/Erosion control reclamation:** Upon reclamation, well site will be returned to its native contour. Water breaks will be added if needed, to prevent unnatural erosion and loss of vegetation.

<b>Well pad proposed disturbance (acres):</b> 12.862	<b>Well pad interim reclamation (acres):</b> 5.047	<b>Well pad long term disturbance (acres):</b> 7.815
<b>Road proposed disturbance (acres):</b> 0.9814	<b>Road interim reclamation (acres):</b> 0.6002	<b>Road long term disturbance (acres):</b> 0.3812
<b>Powerline proposed disturbance (acres):</b> 0	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b> 0	<b>Pipeline interim reclamation (acres):</b> 0	<b>Pipeline long term disturbance (acres):</b> 0
<b>Other proposed disturbance (acres):</b> 0	<b>Other interim reclamation (acres):</b> 0	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance:</b> 13.8434	<b>Total interim reclamation:</b> 5.6472	<b>Total long term disturbance:</b> 8.196200000000001

**Disturbance Comments:**

**Reconstruction method:** Come back in with heavy equipment, remove caliche in the reclamation area, and replace with native topsoil. Reconstruction of pad will occur once all wells on location have been drilled and completed.

**Topsoil redistribution:** Surface disturbance will be limited to well site surveyed dimensions. Topsoil will be stored along the East edge of the pad site.

**Soil treatment:** Native soils will be used in the initial construction of the well pad. Pad will be compacted using fresh water, dust control measures will be implemented as needed.

**Existing Vegetation at the well pad:** Mesquite, shrubs, and grass (needle-grass, burro grass, dropseed). Surface disturbance will be limited to well site surveyed dimensions. Topsoil will be stored along the East edge of the pad site.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** Mesquite, shrubs, and grass (needle-grass, burro grass, dropseed). Will be windrowed to the edge of the disturbance and be utilized as a barrier from water run-off.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** Mesquite, shrubs, and grass (needle-grass, burro grass, dropseed).

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** Mesquite, shrubs, and grass (needle-grass, burro grass,

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

dropseed).

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** N

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** N

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** N

**Seed harvest description:**

**Seed harvest description attachment:**

### Seed Management

#### Seed Table

### Seed Summary

**Total pounds/Acre:**

**Seed Type**

**Pounds/Acre**

**Seed reclamation attachment:**

### Operator Contact/Responsible Official Contact Info

**First Name:** Jamon

**Last Name:** Hohensee

**Phone:** (432)315-0113

**Email:** Zane.Kurtz@cdevinc.com

**Seedbed prep:** Prepare a 3-5 inch deep seedbed. with the top 3-4 inches consisting of topsoil.

**Seed BMP:** Seeding will be done in the proper season, and monitored for the re-establishment of native vegetation.

**Seed method:** Broadcast

**Existing invasive species?** N

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** Spray for noxious weeds and bare ground as needed.

**Weed treatment plan attachment:**

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Monitoring plan description:** All disturbed areas will be closely monitored for any primary or secondary noxious weeds. Should any be found, chemical spraying in accordance with state regulations will be implemented.

**Monitoring plan attachment:**

**Success standards:** No primary or secondary noxious weeds will be allowed. Vegetation will be returned to its native standard.

**Pit closure description:** No open pits will be constructed.

**Pit closure attachment:**

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:**

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:**

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

## Section 12 - Other Information

**Right of Way needed?** N

**Use APD as ROW?**

**ROW Type(s):**

## ROW Applications

**SUPO Additional Information:**

**Use a previously conducted onsite?** N

**Previous Onsite information:**

## Other SUPO Attachment

Solomon\_Federal\_Com\_505H\_\_\_Sheba\_506H\_\_\_507H\_\_\_306H\_\_\_405H\_SUPO\_20200228142700.pdf



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## PWD Data Report

04/13/2021

**APD ID:** 10400054470

**Submission Date:** 03/05/2020

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Well Type:** OIL WELL

**Well Work Type:** Drill

### Section 1 - General

**Would you like to address long-term produced water disposal?** NO

### Section 2 - Lined Pits

**Would you like to utilize Lined Pit PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Lined pit PWD on or off channel:**

**Lined pit PWD discharge volume (bbl/day):**

**Lined pit specifications:**

**Pit liner description:**

**Pit liner manufacturers information:**

**Precipitated solids disposal:**

**Describe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Lined pit precipitated solids disposal schedule:**

**Lined pit precipitated solids disposal schedule attachment:**

**Lined pit reclamation description:**

**Lined pit reclamation attachment:**

**Leak detection system description:**

**Leak detection system attachment:**



**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Lined pit Monitor description:**

**Lined pit Monitor attachment:**

**Lined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Lined pit bond number:**

**Lined pit bond amount:**

**Additional bond information attachment:**

### Section 3 - Unlined Pits

**Would you like to utilize Unlined Pit PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD disturbance (acres):**

**PWD surface owner:**

**Unlined pit PWD on or off channel:**

**Unlined pit PWD discharge volume (bbl/day):**

**Unlined pit specifications:**

**Precipitated solids disposal:**

**Describe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Unlined pit precipitated solids disposal schedule:**

**Unlined pit precipitated solids disposal schedule attachment:**

**Unlined pit reclamation description:**

**Unlined pit reclamation attachment:**

**Unlined pit Monitor description:**

**Unlined pit Monitor attachment:**

**Do you propose to put the produced water to beneficial use?**

**Beneficial use user confirmation:**

**Estimated depth of the shallowest aquifer (feet):**

**Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?**

**TDS lab results:**

**Geologic and hydrologic evidence:**

**State authorization:**

**Unlined Produced Water Pit Estimated percolation:**

**Unlined pit: do you have a reclamation bond for the pit?**

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information attachment:**

#### Section 4 - Injection

**Would you like to utilize Injection PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Injection PWD discharge volume (bbl/day):**

**Injection well mineral owner:**

**Injection well type:**

**Injection well number:**

**Injection well name:**

**Assigned injection well API number?**

**Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

#### Section 5 - Surface Discharge

**Would you like to utilize Surface Discharge PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

#### Section 6 - Other

**Would you like to utilize Other PWD options?** N

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Bond Info Data Report

04/13/2021

**APD ID:** 10400054470

**Submission Date:** 03/05/2020

Highlighted data  
reflects the most  
recent changes

**Operator Name:** CENTENNIAL RESOURCE PRODUCTION LLC

**Well Name:** SOLOMON FEDERAL COM

**Well Number:** 505H

[Show Final Text](#)

**Well Type:** OIL WELL

**Well Work Type:** Drill

### Bond Information

**Federal/Indian APD:** FED

**BLM Bond number:** NMB001841

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**

**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 Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number <b>30-025-48692</b>	<sup>2</sup> Pool Code 96434	<sup>3</sup> Pool Name Red Hills; BS, North
<sup>4</sup> Property Code <b>318029</b>	<sup>5</sup> Property Name SOLOMON FEDERAL COM	
<sup>7</sup> OGRID No. 372165	<sup>8</sup> Operator Name CENTENNIAL RESOURCE PRODUCTION, LLC	<sup>6</sup> Well Number 505H <sup>9</sup> Elevation 3460.4'

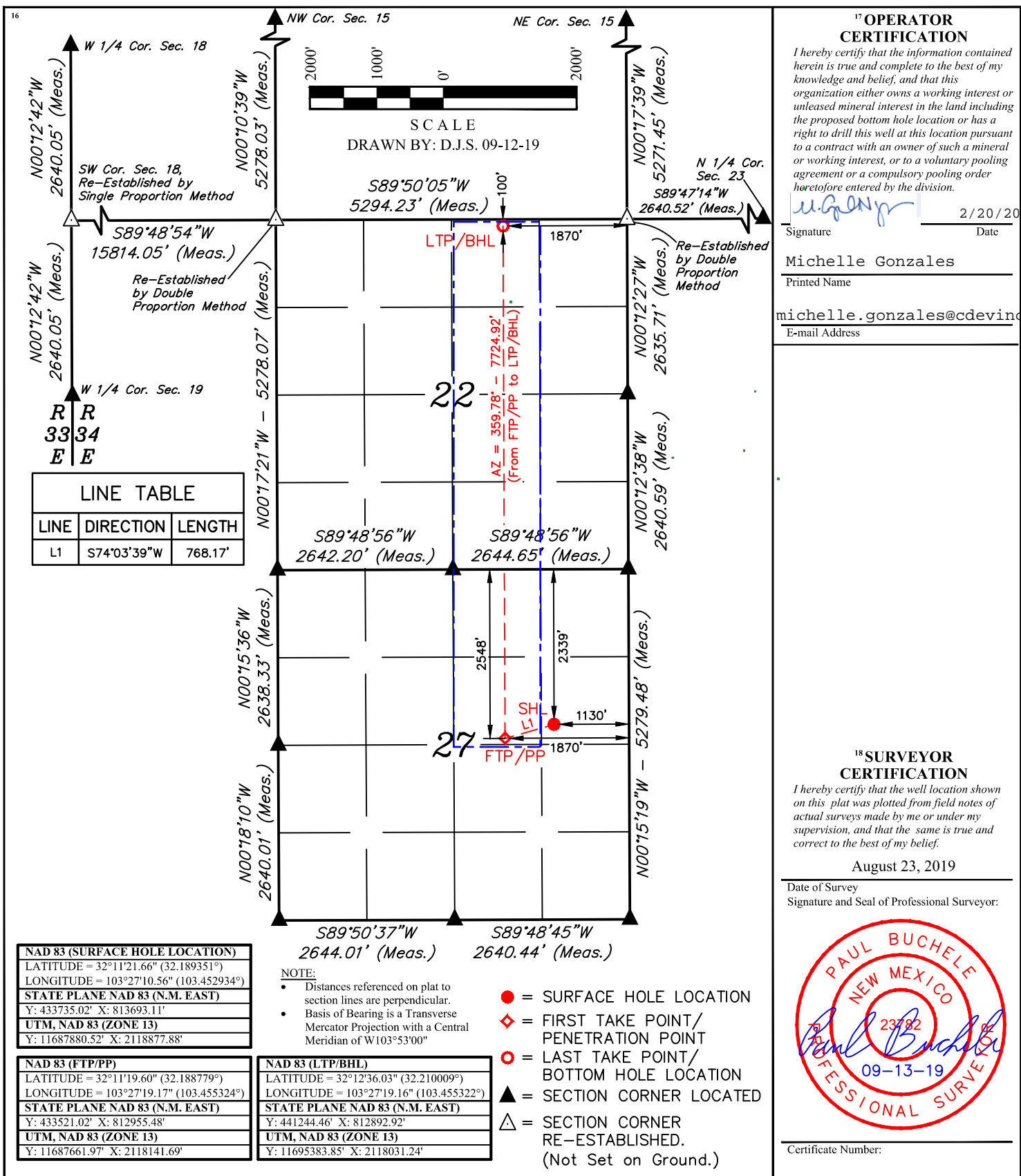
<sup>10</sup>Surface Location

UL or lot no. H	Section 27	Township 24S	Range 34E	Lot Idn	Feet from the 2339	North/South line NORTH	Feet from the 1130	East/West line EAST	County LEA
--------------------	---------------	-----------------	--------------	---------	-----------------------	---------------------------	-----------------------	------------------------	---------------

## " Bottom Hole Location If Different From Surface

UL or lot no. B	Section 22	Township 24S	Range 34E	Lot Idn	Feet from the 100	North/South line NORTH	Feet from the 1870	East/West line EAST	County LEA
<sup>12</sup> Dedicated Acres 240		<sup>13</sup> Joint or Infill		<sup>14</sup> Consolidation Code		<sup>15</sup> Order No.			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



**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 Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number		<sup>2</sup> Pool Code	<sup>3</sup> Pool Name
<sup>4</sup> Property Code	<sup>5</sup> Property Name SOLOMON FEDERAL COM		<sup>6</sup> Well Number 505H
<sup>7</sup> OGRID No.	<sup>8</sup> Operator Name CENTENNIAL RESOURCE PRODUCTION, LLC		<sup>9</sup> Elevation 3460.4'

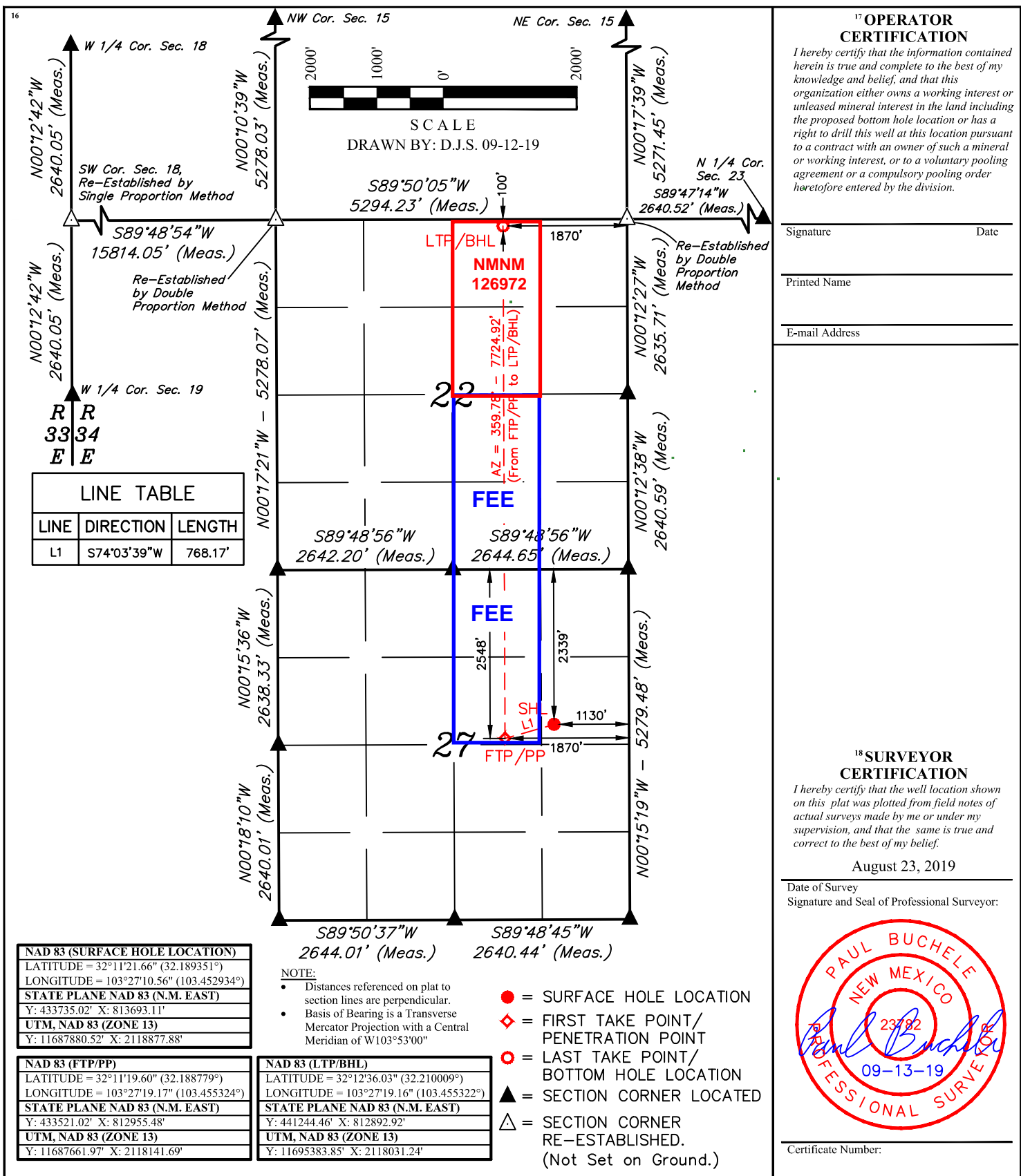
<sup>10</sup>Surface Location

UL or lot no. H	Section 27	Township 24S	Range 34E	Lot Idn	Feet from the 2339	North/South line NORTH	Feet from the 1130	East/West line EAST	County LEA
--------------------	---------------	-----------------	--------------	---------	-----------------------	---------------------------	-----------------------	------------------------	---------------

## " Bottom Hole Location If Different From Surface

UL or lot no. B	Section 22	Township 24S	Range 34E	Lot Idn	Feet from the 100	North/South line NORTH	Feet from the 1870	East/West line EAST	County LEA
<sup>12</sup> Dedicated Acres 240		<sup>13</sup> Joint or Infill		<sup>14</sup> Consolidation Code		<sup>15</sup> Order No.			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, 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, NM 87505

Submit Original  
to Appropriate  
District Office

## GAS CAPTURE PLAN

Date: 3/03/2020

☒ Original Operator & OGRID No.: Centennial Resource Production, LLC #372165  
☐ Amended - Reason for Amendment: \_\_\_\_\_

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

### Well(s)/Production Facility – Juliet Federal Pad Facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Solomon Federal Com 505H	Pending <b>30-025-48692</b>	H-27-24S-34E	2339 FNL & 1130 FEL	1800 MCF/D	Neither	New Well

### Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Lucid Energy and will be connected to Lucid's low/high pressure gathering system located in Lea County, New Mexico. It will require 0' of new pipeline to connect the facility to low/high pressure gathering system. Centennial Resource Production, LLC provides (periodically) to Lucid a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Centennial Resource Production, LLC and Lucid Energy have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Lucid's Red Hills Processing Plant located in Sec. 13, Twn. 24S, Rng. 33E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Lucid's system at that time. Based on current information, it is Centennial's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

### Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

**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**

CONDITIONS

Action 23871

**CONDITIONS OF APPROVAL**

Operator:	CENTENNIAL RESOURCE PRODUCTION	1001 17th Street, Suite 1800	Denver, CO80202	OGRID:	372165	Action Number:	23871	Action Type:	FORM 3160-3
-----------	--------------------------------	------------------------------	-----------------	--------	--------	----------------	-------	--------------	-------------

OCD Reviewer	Condition
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string