

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD - HOBBS  
06/02/2020  
RECEIVED

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

|   |   |  |
|---|---|--|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER  |   | 5. Lease Serial No.<br>NMNM094118  |
| 1b. Type of Well: <input checked="" 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 checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone  |   | 7. If Unit or CA Agreement, Name and No.                                   |
| 2. Name of Operator<br>DEVON ENERGY PRODUCTION COMPANY LP [6137]  |   | 8. Lease Name and Well No.<br>RAILSPLITTER 15-22 FED COM<br>[328254]<br>2H |
| 3a. Address<br>333 West Sheridan Avenue, Oklahoma City, OK 73102  | 3b. Phone No. (include area code)<br>(800) 583-3866 | 9. API Well No. 30-025-47213   |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At surface NWSW / 2290 FSL / 432 FWL / LAT 32.042486 / LONG -103.464903<br>At proposed prod. zone SWSW / 20 FSL / 1010 FWL / LAT 32.021744 / LONG -103.463021 |   | 10. Field and Pool, or Exploratory [98105]<br>UNDESIGNATED/UPPER WOLFCAMP  |
| 14. Distance in miles and direction from nearest town or post office*   |   | 12. County or Parish<br>LEA  |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 432 feet  |   | 13. State<br>NM  |
| 16. No of acres in lease 1760   |   | 17. Spacing Unit dedicated to this well 480.0                              |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 747 feet   |   | 20. BLM/BIA Bond No. in file<br>FED: NMB000801                             |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3279 feet   |   | 22. Approximate date work will start* 09/01/2020                           |
| 24. Attachments   |   | 23. Estimated duration 45 days   |

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<br>(Electronic Submission)           | Name (Printed/Typed)<br>Rebecca Deal / Ph: (800) 583-3866 | Date<br>12/17/2019 |
| Title<br>Regulatory Compliance Professional        |   |                    |
| Approved by (Signature)<br>(Electronic Submission) | Name (Printed/Typed)<br>Cody Layton / Ph: (575) 234-5959  | Date<br>05/27/2020 |
| Title<br>Assistant Field Manager Lands & Minerals  |   |                    |
| Office<br>Carlsbad Field 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 06/02/2020

SL

(Continued on page 2)

APPROVED WITH CONDITIONS  
Approval Date: 05/27/2020

KZ  
06/03/2020

\*(Instructions on page 2)

# Railsplitter 15-22 Fed Com 2H

## 1. Geologic Formations

|               |       |                              |     |
|---------------|-------|------------------------------|-----|
| TVD of target | 12760 | Pilot hole depth             | N/A |
| MD at TD:     | 20380 | Deepest expected fresh water |     |

### Basin

| Formation       | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone? | Hazards* |
|-----------------|---------------------|------------------------------------|----------|
| Rustler         | 700                 |                                    |          |
| Salt            | 1000                |                                    |          |
| Base of Salt    | 5100                |                                    |          |
| Delaware        | 5350                |                                    |          |
| Bone Spring 1st | 9600                |                                    |          |
| Bone Spring 2nd | 11125               |                                    |          |
| Bone Spring 3rd | 12200               |                                    |          |
| Wolfcamp        | 12625               |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |
|                 |                     |                                    |          |

\*H2S, water flows, loss of circulation, abnormal pressures, etc.

## 2. Casing Program (Primary Design)

| Hole Size                 | Casing Interval |           | Csg. Size | Wt (PPF) | Grade | Conn         | Min SF Collapse | Min SF Burst | Min SF Tension     |
|---------------------------|-----------------|-----------|-----------|----------|-------|--------------|-----------------|--------------|--------------------|
|                           | From            | To        |           |          |       |              |                 |              |                    |
| 17 1/2                    | 0               | 725 TVD   | 13 3/8    | 48.0     | H40   | STC          | 1.125           | 1.25         | 1.6                |
| 9 7/8                     | 0               | 12200 TVD | 7 5/8     | 29.7     | P110  | Flushmax III | 1.125           | 1.25         | 1.6                |
| 6 3/4                     | 0               | TD        | 5 1/2     | 20.0     | P110  | Vam SG       | 1.125           | 1.25         | 1.6                |
| BLM Minimum Safety Factor |                 |           |           |          |       |              | 1.125           | 1            | 1.6 Dry<br>1.8 Wet |

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for contingency casing.
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- A variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing.
- Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
- A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

## Casing Program (Alternative Design)

| Hole Size                 | Casing Interval |           | Csg. Size | Wt (PPF) | Grade | Conn | Min SF Collapse | Min SF Burst | Min SF Tension     |
|---------------------------|-----------------|-----------|-----------|----------|-------|------|-----------------|--------------|--------------------|
|                           | From            | To        |           |          |       |      |                 |              |                    |
| 17 1/2                    | 0               | 725 TVD   | 13 3/8    | 48.0     | H40   | STC  | 1.125           | 1.25         | 1.6                |
| 9 7/8                     | 0               | 12200 TVD | 8 5/8     | 32.0     | P110  | TLW  | 1.125           | 1.25         | 1.6                |
| 7 7/8                     | 0               | TD        | 5 1/2     | 17.0     | P110  | BTC  | 1.125           | 1.25         | 1.6                |
| BLM Minimum Safety Factor |                 |           |           |          |       |      | 1.125           | 1            | 1.6 Dry<br>1.8 Wet |

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for contingency casing.
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- A variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing.
- Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
- Variance requested to drill 10.625" hole instead of 9.875" for intermediate 1, the 8.625" connection will change from TLW to BTC.
- A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

Railsplitter 15-22 Fed Com 2H

|  | Y or N |
|--|--------|
| Is casing new? If used, attach certification as required in Onshore Order #1   | Y      |
| Does casing meet API specifications? If no, attach casing specification sheet.   | Y      |
| Is premium or uncommon casing planned? If yes attach casing specification sheet.   | N      |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y      |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?                | Y      |
|  |        |
| Is well located within Capitan Reef?   | N      |
| If yes, does production casing cement tie back a minimum of 50' above the Reef?  |        |
| Is well within the designated 4 string boundary.   |        |
|  |        |
| Is well located in SOPA but not in R-111-P?  | N      |
| If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?                       |        |
|  |        |
| Is well located in R-111-P and SOPA?   | N      |
| If yes, are the first three strings cemented to surface?   |        |
| Is 2 <sup>nd</sup> string set 100' to 600' below the base of salt?   |        |
|  |        |
| Is well located in high Cave/Karst?  | N      |
| If yes, are there two strings cemented to surface?   |        |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?   |        |
|  |        |
| Is well located in critical Cave/Karst?  | N      |
| If yes, are there three strings cemented to surface?   |        |



**3. Cementing Program (Primary Design)**

| Casing   | # Sks        | TOC                 | Wt.<br>(lb/gal) | Yld<br>(ft3/sack) | Slurry Description                         |
|--|--------------|---------------------|-----------------|-------------------|--|
| Surface  | 563          | Surf                | 13.2            | 1.44              | Lead: Class C Cement + additives           |
| Int 1  | 763          | Surf                | 9               | 3.27              | Lead: Class C Cement + additives           |
|  | 783          | 4000'<br>above shoe | 13.2            | 1.44              | Tail: Class H / C + additives              |
| Int 1<br>Two Stage<br>w/ DV @<br>TVD of Delaware | 961          | Surf                | 9               | 3.27              | 1st stage Lead: Class C Cement + additives |
|  | 93           | 500'<br>above shoe  | 13.2            | 1.44              | 1st stage Tail: Class H / C + additives    |
|  | 464          | Surf                | 9               | 3.27              | 2nd stage Lead: Class C Cement + additives |
|  | 93           | 500' above<br>DV    | 13.2            | 1.44              | 2nd stage Tail: Class H / C + additives    |
| Int 1<br>Intermediate<br>Squeeze                 | As<br>Needed | Surf                | 9               | 1.44              | Squeeze Lead: Class C Cement + additives   |
|  | 763          | Surf                | 9               | 3.27              | Lead: Class C Cement + additives           |
|  | 783          | 4000'<br>above shoe | 13.2            | 1.44              | Tail: Class H / C + additives              |
| Production                                       | 62           | 10210               | 9.0             | 3.3               | Lead: Class H / C + additives              |
|  | 521          | 12210               | 13.2            | 1.4               | Tail: Class H / C + additives              |

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

| Casing String              | % Excess |
|----------------------------|----------|
| Surface                    | 50%      |
| Intermediate 1             | 30%      |
| Intermediate 1 (Two Stage) | 25%      |
| Prod                       | 10%      |

### 3. Cementing Program (Alternative Design)

| Casing                                | # Sks     | TOC              | Wt. ppg | Yld (ft3/sack) | Slurry Description                         |
|---------------------------------------|-----------|------------------|---------|----------------|--|
| Surface                               | 563       | Surf             | 13.2    | 1.44           | Lead: Class C Cement + additives           |
| Int 1                                 | 480       | Surf             | 9       | 3.27           | Lead: Class C Cement + additives           |
|                                       | 465       | 4000' above shoe | 13.2    | 1.44           | Tail: Class H / C + additives              |
| Int 1<br>Two Stage<br>w DV @<br>~4500 | 564       | Surf             | 9       | 3.27           | 1st stage Lead: Class C Cement + additives |
|                                       | 55        | 500' above shoe  | 13.2    | 1.44           | 1st stage Tail: Class H / C + additives    |
|                                       | 304       | Surf             | 9       | 3.27           | 2nd stage Lead: Class C Cement + additives |
|                                       | 55        | 500' above DV    | 13.2    | 1.44           | 2nd stage Tail: Class H / C + additives    |
| Int 1<br>Intermediate<br>Squeeze      | As Needed | Surf             | 13.2    | 1.44           | Squeeze Lead: Class C Cement + additives   |
|                                       | 480       | Surf             | 9       | 3.27           | Lead: Class C Cement + additives           |
|                                       | 465       | 4000' above shoe | 13.2    | 1.44           | Tail: Class H / C + additives              |
| Int 1 (10.625" Hole Size)             | 730       | Surf             | 9       | 3.27           | Lead: Class C Cement + additives           |
|                                       | 768       | 4000' above shoe | 13.2    | 1.44           | Tail: Class H / C + additives              |
| Production                            | 117       | 10210            | 9.0     | 3.3            | Lead: Class H / C + additives              |
|                                       | 1081      | 12210            | 13.2    | 1.4            | Tail: Class H / C + additives              |

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

| Casing String              | % Excess |
|----------------------------|----------|
| Surface                    | 50%      |
| Intermediate 1             | 30%      |
| Intermediate 1 (Two Stage) | 25%      |
| Prod                       | 10%      |

**4. Pressure Control Equipment (Three String Design)**

| BOP installed and tested before drilling which hole? |  | Size? | Min. Required WP | Type | ✓                              | Tested to: |
|--|--|-------|------------------|------|--------------------------------|------------|
| Int 1  | 13-58"   | 5M    | Annular          | X    | 50% of rated working pressure  |            |
|  |  |       | Blind Ram        | X    | 5M                             |            |
|  |  |       | Pipe Ram         |      |                                |            |
|  |  |       | Double Ram       | X    |                                |            |
|  |  |       | Other*           |      |                                |            |
| Production   | 13-5/8"  | 10M   | Annular (5M)     | X    | 100% of rated working pressure |            |
|  |  |       | Blind Ram        | X    | 10M                            |            |
|  |  |       | Pipe Ram         |      |                                |            |
|  |  |       | Double Ram       | X    |                                |            |
|  |  |       | Other*           |      |                                |            |
|  |  |       | Annular (5M)     |      |                                |            |
|  |  |       | Blind Ram        |      |                                |            |
|  |  |       | Pipe Ram         |      |                                |            |
|  |  |       | Double Ram       |      |                                |            |
|  |  |       | Other*           |      |                                |            |
| N  | A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |       |                  |      |                                |            |
| Y  | A variance is requested to run a 5 M annular on a 10M system   |       |                  |      |                                |            |

### 5. Mud Program (Three String Design)

| Section      | Type            | Weight (ppg) |
|--------------|-----------------|--------------|
| Surface      | FW Gel          | 8.5-9        |
| Intermediate | DBE / Cut Brine | 10-10.5      |
| Production   | OBM             | 10-10.5      |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

|   |                             |
|---|-----------------------------|
| What will be used to monitor the loss or gain of fluid? | PVT/Pason/Visual Monitoring |
|---|-----------------------------|

### 6. Logging and Testing Procedures

| Logging, Coring and Testing |   |
|-----------------------------|---|
| X                           | Will run GR/CNL from TD to surface (horizontal well - vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
|                             | No logs are planned based on well control or offset log information.  |
|                             | Drill stem test? If yes, explain.   |
|                             | Coring? If yes, explain.  |

| Additional logs planned |             | Interval                |
|-------------------------|-------------|-------------------------|
|                         | Resistivity | Int. shoe to KOP        |
|                         | Density     | Int. shoe to KOP        |
| X                       | CBL         | Production casing       |
| X                       | Mud log     | Intermediate shoe to TD |
|                         | PEX         |                         |

### 7. Drilling Conditions

| Condition                  | Specify what type and where? |
|----------------------------|------------------------------|
| BH pressure at deepest TVD | 6967                         |
| Abnormal temperature       | No                           |

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H<sub>2</sub>S) monitors will be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered measured values and formations will be provided to the BLM.

|   |                                 |
|---|---------------------------------|
| N | H <sub>2</sub> S is present     |
| Y | H <sub>2</sub> S plan attached. |

## 8. Other facets of operation

Is this a walking operation? Potentially

- 1 If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
- 2 The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
- 3 The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

- 1 Spudder rig will move in and batch drill surface hole.
  - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.,
- 2 After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
- 3 The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
- 4 A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
- 5 Spudder rig operations is expected to take 4-5 days per well on a multi-well pad.
- 6 The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
- 7 Drilling operations will be performed with drilling rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commence on each well.
  - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

X Directional Plan  
           Other, describe

## Devon Energy Annular Preventer Summary

### 1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

| Component                   | OD        | Preventer                            | RWP |
|-----------------------------|-----------|--------------------------------------|-----|
| Drillpipe                   | 4.5"      | Fixed lower 4.5"<br>Upper 4.5-7" VBR | 10M |
| HWDP                        | 4.5"      | Fixed lower 4.5"<br>Upper 4.5-7" VBR | 10M |
| Drill collars and MWD tools | 4.75"     | Upper 4.5-7" VBR                     | 10M |
| Mud Motor                   | 4.75"     | Upper 4.5-7" VBR                     | 10M |
| Production casing           | 5.5"      | Upper 4.5-7" VBR                     | 10M |
| ALL                         | 0-13-5/8" | Annular                              | 5M  |
| Open-hole                   | -         | Blind Rams                           | 10M |

VBR = Variable Bore Ram. Compatible range listed in chart.

### 2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may choose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

#### General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

## **Devon Energy Annular Preventer Summary**

### General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

### General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

### General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
  - a. SICP
  - b. Pit gain
  - c. Time
6. Regroup and identify forward plan

## **Devon Energy Annular Preventer Summary**

### General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drillpipe thru the stack.
  - a. Perform flowcheck, if flowing:
  - b. Sound alarm (alert crew)
  - c. Stab full opening safety valve and close
  - d. Space out drill string with tool joint just beneath the upper pipe ram.
  - e. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
  - f. Confirm shut-in
  - g. Notify toolpusher/company representative
  - h. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. Stab crossover and full opening safety valve and close
  - c. Space out drill string with upset just beneath the compatible pipe ram.
  - d. Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
  - e. Confirm shut-in
  - f. Notify toolpusher/company representative
  - g. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. If possible to pick up high enough, pull string clear of the stack and follow “Open Hole” scenario.
  - c. If impossible to pick up high enough to pull the string clear of the stack:
  - d. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
  - e. Space out drill string with tooljoint just beneath the upper pipe ram.
  - f. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
  - g. Confirm shut-in
  - h. Notify toolpusher/company representative
  - i. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
  - j. Regroup and identify forward plan





Fluid Technology

ContiTech Beattie Corp.  
Website: [www.contitechbeattie.com](http://www.contitechbeattie.com)

Monday, June 14, 2010

RE: Drilling & Production Hoses  
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

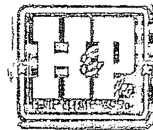
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson  
Sales Manager  
ContiTech Beattie Corp

ContiTech Beattie Corp,  
11535 Brittnmoore Park Drive,  
Houston, TX 77041  
Phone: +1 (832) 327-0141  
Fax: +1 (832) 327-0148  
[www.contitechbeattie.com](http://www.contitechbeattie.com)



RIG 212



## QUALITY DOCUMENT

PHOENIX RUBBER  
INDUSTRIAL LTD.

6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152  
Phone: (3662) 566-737 • Fax: (3662) 566-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26  
Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.taurusemerge.hu

|   |           |                                      |  |                     |  |
|---|-----------|--------------------------------------|--|---------------------|--|
| <b>QUALITY CONTROL<br/>INSPECTION AND TEST CERTIFICATE</b>  |           |                                      |  | CERT. N°: 552       |  |
| PURCHASER: Phoenix Beattie Co.  |           |                                      |  | P.O. N°: 1519FA-871 |  |
| PHOENIX RUBBER order N°: 170466   |           | HOSE TYPE: 3" ID Choke and Kill Hose |  |                     |  |
| HOSE SERIAL N°: 34128   |           | NOMINAL / ACTUAL LENGTH: 11,43 m     |  |                     |  |
| W.P. 68,96 MPa 10000 psi  |           | T.P. 103,4 MPa 15000 psi             |  | Duration: 60 min.   |  |
| Pressure test with water at ambient temperature<br><br><p style="text-align: center;">See attachment. (1 page)</p>                                    |           |                                      |  |                     |  |
| ↑ 10 mm = 10 Min.<br>→ 10 mm = 25 MPa   |           |                                      |  |                     |  |
| COUPLINGS   |           |                                      |  |                     |  |
| Type  | Serial N° |                                      | Quality  | Heat N°             |  |
| 3" coupling with<br>4 1/16" Flange end  | 720 719   |                                      | AISI 4130  | C7626               |  |
|   |           |                                      | AISI 4130  | 47357               |  |
|   |           |                                      |  |                     |  |
|   |           |                                      |  |                     |  |
| API Spec 16 C<br>Temperature rate: "B"  |           |                                      |  |                     |  |
| All metal parts are flawless  |           |                                      |  |                     |  |
| WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT. |           |                                      |  |                     |  |
| Date:   | Inspector |                                      | Quality Control  |                     |  |
| 29. April. 2002.  |           |                                      | PHOENIX RUBBER Industrial Ltd.<br>Hose Inspection and<br>Verification Dept.<br>PHOENIX RUBBER G.G. |                     |  |

40920-0-00015 N8006

|   |               |       |    |    |
|---|---------------|-------|----|----|
| 8 | GNL +0.000 °C | 14:00 |    |    |
|   | RDL +0.000 °C | 14:00 |    |    |
|   | BL +1844 bar  | 14:00 |    |    |
| 7 | GNL +0.000 °C | 13:45 | 40 | 80 |
|   | RDL +0.000 °C | 13:45 |    |    |
|   | BL +1847 bar  | 13:45 |    |    |
| 6 | GNL +0.000 °C | 13:20 |    |    |
|   | RDL +0.000 °C | 13:20 |    |    |
|   | BL +1850 bar  | 13:20 |    |    |
| 5 | GNL +0.000 °C | 13:00 |    |    |
|   | RDL +0.000 °C | 13:00 |    |    |
|   | BL +1856 bar  | 13:00 |    |    |
| 4 |               |       |    |    |
| 3 |               |       |    |    |
| 2 |               |       |    |    |

100  
GENEX RUBBER  
Industrial Ltd.  
Hose Inspection and  
Certification Dept.

VERIFIED TRUE CO.  
PHOENIX RUBBER CO.

# Devon Energy

WELL DETAILS: Railsplitter 15-22 Fed Com 2H

RKB @ 3303.60ft

3278.60

Northing  
380276.66

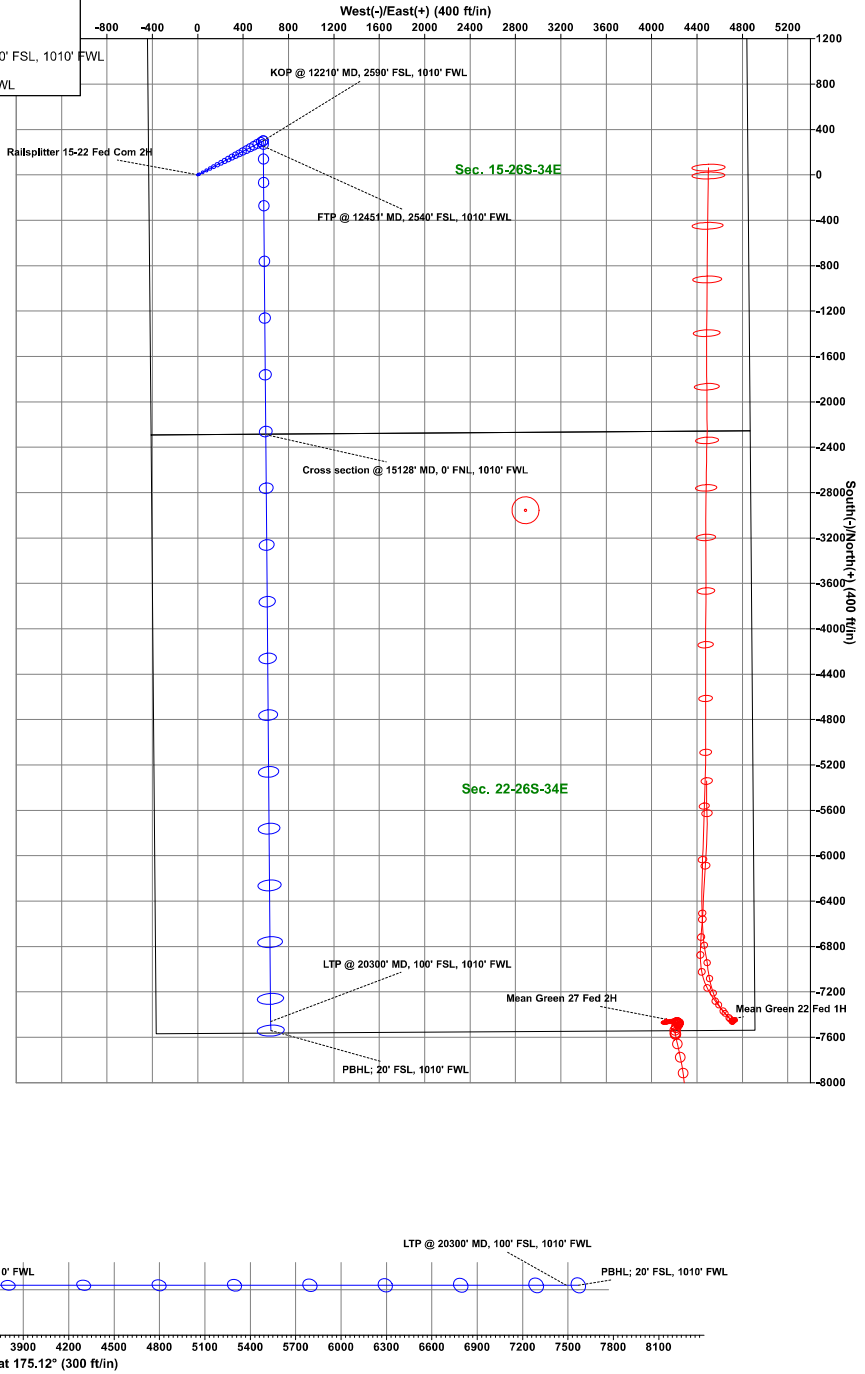
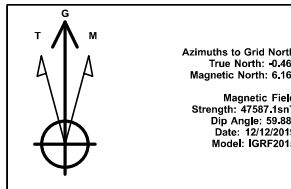
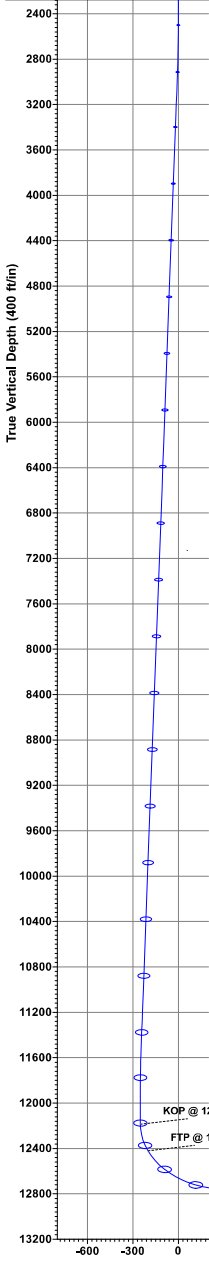
Easting  
810420.97

Latitude  
32.042486

Longitude  
-103.464903

## SECTION DETAILS Permit Plan 1

|   | MD       | Inc   | Azi    | TVD      | +N/-S    | +E/-W  | Dleg  | VSect   | Annotation                            |
|---|----------|-------|--------|----------|----------|--------|-------|---------|---------------------------------------|
|   | 0.00     | 0.00  | 0.00   | 0.00     | 0.00     | 0.00   | 0.00  | 0.00    |                                       |
|   | 2500.00  | 0.00  | 0.00   | 2500.00  | 0.00     | 0.00   | 0.00  | 0.00    |                                       |
|   | 2914.54  | 4.15  | 62.49  | 2914.18  | 6.92     | 13.30  | 1.00  | -5.77   |                                       |
|   | 11583.92 | 4.15  | 62.49  | 11560.88 | 296.38   | 569.14 | 0.00  | -246.90 |                                       |
| 5 | 11860.28 | 0.00  | 0.00   | 11837.00 | 301.00   | 578.00 | 1.50  | -250.75 |                                       |
| 6 | 12210.32 | 0.00  | 0.00   | 12187.04 | 301.00   | 578.00 | 0.00  | -250.75 | KOP @ 12210' MD, 2590' FSL, 1010' FWL |
| 7 | 13110.33 | 90.00 | 179.52 | 12760.00 | -271.94  | 582.80 | 10.00 | 320.52  |                                       |
| 8 | 20379.59 | 90.00 | 179.52 | 12760.00 | -7540.95 | 643.70 | 0.00  | 7568.37 | PBHL; 20' FSL, 1010' FWL              |



# **WCDSC Permian NM**

**Lea County (NAD83 New Mexico East)**

**Sec 15-T26S-R34E**

**Railsplitter 15-22 Fed Com 2H**

**Wellbore #1**

**Plan: Permit Plan 1**

## **Standard Planning Report - Geographic**

**12 December, 2019**

## Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSC Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

|                    |                                    |                      |                |
|--------------------|------------------------------------|----------------------|----------------|
| <b>Project</b>     | Lea County (NAD83 New Mexico East) |                      |                |
| <b>Map System:</b> | US State Plane 1983                | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983          |                      |                |
| <b>Map Zone:</b>   | New Mexico Eastern Zone            |                      |                |

|                       |     |                  |                 |            |                   |        |
|-----------------------|-----|------------------|-----------------|------------|-------------------|--------|
| Site                  |     | Sec 15-T26S-R34E |                 |            |                   |        |
| Site Position:        |     | Northing:        | 383,264.34 usft | Latitude:  | 32.050709         |        |
| From:                 | Map | Easting:         | 809,962.78 usft | Longitude: | -103.466304       |        |
| Position Uncertainty: |     | 0.00 ft          | Slot Radius:    | 13-3/16 "  | Grid Convergence: | 0.46 ° |

| Well                 | Railsplitter 15-22 Fed Com 2H |         |                     |                 |               |             |
|----------------------|-------------------------------|---------|---------------------|-----------------|---------------|-------------|
| Well Position        | +N/-S                         | 0.00 ft | Northing:           | 380,276.66 usft | Latitude:     | 32.042486   |
|                      | +E/-W                         | 0.00 ft | Easting:            | 810,420.97 usft | Longitude:    | -103.464903 |
| Position Uncertainty |                               | 0.50 ft | Wellhead Elevation: |                 | Ground Level: | 3,278.60 ft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2015          | 12/12/2019         | 6.62                   | 59.88                | 47,587.10282443            |

|                          |                              |                   |                      |                      |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|
| <b>Design</b>            | Permit Plan 1                |                   |                      |                      |
| <b>Audit Notes:</b>      |                              |                   |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                | PROTOTYPE         | <b>Tie On Depth:</b> | 0.00                 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b>    | <b>Direction (°)</b> |
|                          | 0.00                         | 0.00              | 0.00                 | 175.12               |

|                                 |                      |                                       |                             |                |
|---------------------------------|----------------------|---------------------------------------|-----------------------------|----------------|
| <b>Plan Survey Tool Program</b> | <b>Date</b>          | 12/12/2019                            |                             |                |
| <b>Depth From (ft)</b>          | <b>Depth To (ft)</b> | <b>Survey (Wellbore)</b>              | <b>Tool Name</b>            | <b>Remarks</b> |
| 1                               | 0.00                 | 20,379.59 Permit Plan 1 (Wellbore #1) | MWD+HDGM<br>OWSG MWD + HDGM |                |

|                            |                        |                    |                            |                   |                   |                                |                               |                              |                |                        |
|----------------------------|------------------------|--------------------|----------------------------|-------------------|-------------------|--------------------------------|-------------------------------|------------------------------|----------------|------------------------|
| <b>Plan Sections</b>       |                        |                    |                            |                   |                   |                                |                               |                              |                |                        |
| <b>Measured Depth (ft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b> | <b>Dogleg Rate (°/100usft)</b> | <b>Build Rate (°/100usft)</b> | <b>Turn Rate (°/100usft)</b> | <b>TFO (°)</b> | <b>Target</b>          |
| 0.00                       | 0.00                   | 0.00               | 0.00                       | 0.00              | 0.00              | 0.00                           | 0.00                          | 0.00                         | 0.00           |                        |
| 2,500.00                   | 0.00                   | 0.00               | 2,500.00                   | 0.00              | 0.00              | 0.00                           | 0.00                          | 0.00                         | 0.00           |                        |
| 2,914.54                   | 4.15                   | 62.49              | 2,914.18                   | 6.92              | 13.30             | 1.00                           | 1.00                          | 0.00                         | 62.49          |                        |
| 11,583.92                  | 4.15                   | 62.49              | 11,560.88                  | 296.38            | 569.14            | 0.00                           | 0.00                          | 0.00                         | 0.00           |                        |
| 11,860.28                  | 0.00                   | 0.00               | 11,837.00                  | 301.00            | 578.00            | 1.50                           | -1.50                         | 0.00                         | 180.00         |                        |
| 12,210.32                  | 0.00                   | 0.00               | 12,187.04                  | 301.00            | 578.00            | 0.00                           | 0.00                          | 0.00                         | 0.00           |                        |
| 13,110.33                  | 90.00                  | 179.52             | 12,760.00                  | -271.94           | 582.80            | 10.00                          | 10.00                         | 0.00                         | 179.52         | PBHL - Railsplitter 15 |
| 20,379.59                  | 90.00                  | 179.52             | 12,760.00                  | -7,540.95         | 643.70            | 0.00                           | 0.00                          | 0.00                         | 0.00           | PBHL - Railsplitter 15 |

# Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSO Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

| Planned Survey      |                 |             |                     |            |            |                     |                    |           |             |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 0.00                | 0.00            | 0.00        | 0.00                | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 100.00              | 0.00            | 0.00        | 100.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 200.00              | 0.00            | 0.00        | 200.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 300.00              | 0.00            | 0.00        | 300.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 400.00              | 0.00            | 0.00        | 400.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 500.00              | 0.00            | 0.00        | 500.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 600.00              | 0.00            | 0.00        | 600.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 700.00              | 0.00            | 0.00        | 700.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 800.00              | 0.00            | 0.00        | 800.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 900.00              | 0.00            | 0.00        | 900.00              | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,000.00            | 0.00            | 0.00        | 1,000.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,100.00            | 0.00            | 0.00        | 1,100.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,200.00            | 0.00            | 0.00        | 1,200.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,300.00            | 0.00            | 0.00        | 1,300.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,400.00            | 0.00            | 0.00        | 1,400.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,500.00            | 0.00            | 0.00        | 1,500.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,600.00            | 0.00            | 0.00        | 1,600.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,700.00            | 0.00            | 0.00        | 1,700.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,800.00            | 0.00            | 0.00        | 1,800.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 1,900.00            | 0.00            | 0.00        | 1,900.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,000.00            | 0.00            | 0.00        | 2,000.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,100.00            | 0.00            | 0.00        | 2,100.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,200.00            | 0.00            | 0.00        | 2,200.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,300.00            | 0.00            | 0.00        | 2,300.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,400.00            | 0.00            | 0.00        | 2,400.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,500.00            | 0.00            | 0.00        | 2,500.00            | 0.00       | 0.00       | 380,276.66          | 810,420.97         | 32.042486 | -103.464903 |
| 2,600.00            | 1.00            | 62.49       | 2,599.99            | 0.40       | 0.77       | 380,277.06          | 810,421.74         | 32.042487 | -103.464900 |
| 2,700.00            | 2.00            | 62.49       | 2,699.96            | 1.61       | 3.10       | 380,278.27          | 810,424.06         | 32.042491 | -103.464893 |
| 2,800.00            | 3.00            | 62.49       | 2,799.86            | 3.63       | 6.96       | 380,280.29          | 810,427.93         | 32.042496 | -103.464880 |
| 2,900.00            | 4.00            | 62.49       | 2,899.68            | 6.45       | 12.38      | 380,283.10          | 810,433.35         | 32.042504 | -103.464863 |
| 2,914.54            | 4.15            | 62.49       | 2,914.18            | 6.92       | 13.30      | 380,283.58          | 810,434.26         | 32.042505 | -103.464860 |
| 3,000.00            | 4.15            | 62.49       | 2,999.41            | 9.78       | 18.77      | 380,286.44          | 810,439.74         | 32.042513 | -103.464842 |
| 3,100.00            | 4.15            | 62.49       | 3,099.15            | 13.12      | 25.19      | 380,289.77          | 810,446.15         | 32.042522 | -103.464821 |
| 3,200.00            | 4.15            | 62.49       | 3,198.89            | 16.45      | 31.60      | 380,293.11          | 810,452.57         | 32.042531 | -103.464801 |
| 3,300.00            | 4.15            | 62.49       | 3,298.63            | 19.79      | 38.01      | 380,296.45          | 810,458.98         | 32.042540 | -103.464780 |
| 3,400.00            | 4.15            | 62.49       | 3,398.37            | 23.13      | 44.42      | 380,299.79          | 810,465.39         | 32.042549 | -103.464759 |
| 3,500.00            | 4.15            | 62.49       | 3,498.11            | 26.47      | 50.83      | 380,303.13          | 810,471.80         | 32.042558 | -103.464738 |
| 3,600.00            | 4.15            | 62.49       | 3,597.85            | 29.81      | 57.24      | 380,306.47          | 810,478.21         | 32.042567 | -103.464717 |
| 3,700.00            | 4.15            | 62.49       | 3,697.58            | 33.15      | 63.66      | 380,309.81          | 810,484.62         | 32.042576 | -103.464697 |
| 3,800.00            | 4.15            | 62.49       | 3,797.32            | 36.49      | 70.07      | 380,313.15          | 810,491.03         | 32.042585 | -103.464676 |
| 3,900.00            | 4.15            | 62.49       | 3,897.06            | 39.83      | 76.48      | 380,316.49          | 810,497.45         | 32.042594 | -103.464655 |
| 4,000.00            | 4.15            | 62.49       | 3,996.80            | 43.17      | 82.89      | 380,319.82          | 810,503.86         | 32.042603 | -103.464634 |
| 4,100.00            | 4.15            | 62.49       | 4,096.54            | 46.50      | 89.30      | 380,323.16          | 810,510.27         | 32.042612 | -103.464614 |
| 4,200.00            | 4.15            | 62.49       | 4,196.28            | 49.84      | 95.71      | 380,326.50          | 810,516.68         | 32.042621 | -103.464593 |
| 4,300.00            | 4.15            | 62.49       | 4,296.01            | 53.18      | 102.12     | 380,329.84          | 810,523.09         | 32.042630 | -103.464572 |
| 4,400.00            | 4.15            | 62.49       | 4,395.75            | 56.52      | 108.54     | 380,333.18          | 810,529.50         | 32.042639 | -103.464551 |
| 4,500.00            | 4.15            | 62.49       | 4,495.49            | 59.86      | 114.95     | 380,336.52          | 810,535.92         | 32.042648 | -103.464530 |
| 4,600.00            | 4.15            | 62.49       | 4,595.23            | 63.20      | 121.36     | 380,339.86          | 810,542.33         | 32.042657 | -103.464510 |
| 4,700.00            | 4.15            | 62.49       | 4,694.97            | 66.54      | 127.77     | 380,343.20          | 810,548.74         | 32.042666 | -103.464489 |
| 4,800.00            | 4.15            | 62.49       | 4,794.71            | 69.88      | 134.18     | 380,346.54          | 810,555.15         | 32.042675 | -103.464468 |
| 4,900.00            | 4.15            | 62.49       | 4,894.44            | 73.22      | 140.59     | 380,349.87          | 810,561.56         | 32.042684 | -103.464447 |
| 5,000.00            | 4.15            | 62.49       | 4,994.18            | 76.55      | 147.01     | 380,353.21          | 810,567.97         | 32.042693 | -103.464427 |
| 5,100.00            | 4.15            | 62.49       | 5,093.92            | 79.89      | 153.42     | 380,356.55          | 810,574.38         | 32.042702 | -103.464406 |
| 5,200.00            | 4.15            | 62.49       | 5,193.66            | 83.23      | 159.83     | 380,359.89          | 810,580.80         | 32.042711 | -103.464385 |
| 5,300.00            | 4.15            | 62.49       | 5,293.40            | 86.57      | 166.24     | 380,363.23          | 810,587.21         | 32.042721 | -103.464364 |

# Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSC Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

| Planned Survey      |                 |             |                     |            |            |                     |                    |           |             |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 5,400.00            | 4.15            | 62.49       | 5,393.14            | 89.91      | 172.65     | 380,366.57          | 810,593.62         | 32.042730 | -103.464343 |
| 5,500.00            | 4.15            | 62.49       | 5,492.87            | 93.25      | 179.06     | 380,369.91          | 810,600.03         | 32.042739 | -103.464323 |
| 5,600.00            | 4.15            | 62.49       | 5,592.61            | 96.59      | 185.47     | 380,373.25          | 810,606.44         | 32.042748 | -103.464302 |
| 5,700.00            | 4.15            | 62.49       | 5,692.35            | 99.93      | 191.89     | 380,376.59          | 810,612.85         | 32.042757 | -103.464281 |
| 5,800.00            | 4.15            | 62.49       | 5,792.09            | 103.27     | 198.30     | 380,379.92          | 810,619.27         | 32.042766 | -103.464260 |
| 5,900.00            | 4.15            | 62.49       | 5,891.83            | 106.60     | 204.71     | 380,383.26          | 810,625.68         | 32.042775 | -103.464240 |
| 6,000.00            | 4.15            | 62.49       | 5,991.57            | 109.94     | 211.12     | 380,386.60          | 810,632.09         | 32.042784 | -103.464219 |
| 6,100.00            | 4.15            | 62.49       | 6,091.30            | 113.28     | 217.53     | 380,389.94          | 810,638.50         | 32.042793 | -103.464198 |
| 6,200.00            | 4.15            | 62.49       | 6,191.04            | 116.62     | 223.94     | 380,393.28          | 810,644.91         | 32.042802 | -103.464177 |
| 6,300.00            | 4.15            | 62.49       | 6,290.78            | 119.96     | 230.36     | 380,396.62          | 810,651.32         | 32.042811 | -103.464156 |
| 6,400.00            | 4.15            | 62.49       | 6,390.52            | 123.30     | 236.77     | 380,399.96          | 810,657.73         | 32.042820 | -103.464136 |
| 6,500.00            | 4.15            | 62.49       | 6,490.26            | 126.64     | 243.18     | 380,403.30          | 810,664.15         | 32.042829 | -103.464115 |
| 6,600.00            | 4.15            | 62.49       | 6,590.00            | 129.98     | 249.59     | 380,406.64          | 810,670.56         | 32.042838 | -103.464094 |
| 6,700.00            | 4.15            | 62.49       | 6,689.73            | 133.32     | 256.00     | 380,409.97          | 810,676.97         | 32.042847 | -103.464073 |
| 6,800.00            | 4.15            | 62.49       | 6,789.47            | 136.65     | 262.41     | 380,413.31          | 810,683.38         | 32.042856 | -103.464053 |
| 6,900.00            | 4.15            | 62.49       | 6,889.21            | 139.99     | 268.82     | 380,416.65          | 810,689.79         | 32.042865 | -103.464032 |
| 7,000.00            | 4.15            | 62.49       | 6,988.95            | 143.33     | 275.24     | 380,419.99          | 810,696.20         | 32.042874 | -103.464011 |
| 7,100.00            | 4.15            | 62.49       | 7,088.69            | 146.67     | 281.65     | 380,423.33          | 810,702.62         | 32.042883 | -103.463990 |
| 7,200.00            | 4.15            | 62.49       | 7,188.43            | 150.01     | 288.06     | 380,426.67          | 810,709.03         | 32.042892 | -103.463969 |
| 7,300.00            | 4.15            | 62.49       | 7,288.17            | 153.35     | 294.47     | 380,430.01          | 810,715.44         | 32.042901 | -103.463949 |
| 7,400.00            | 4.15            | 62.49       | 7,387.90            | 156.69     | 300.88     | 380,433.35          | 810,721.85         | 32.042910 | -103.463928 |
| 7,500.00            | 4.15            | 62.49       | 7,487.64            | 160.03     | 307.29     | 380,436.68          | 810,728.26         | 32.042919 | -103.463907 |
| 7,600.00            | 4.15            | 62.49       | 7,587.38            | 163.37     | 313.71     | 380,440.02          | 810,734.67         | 32.042928 | -103.463886 |
| 7,700.00            | 4.15            | 62.49       | 7,687.12            | 166.70     | 320.12     | 380,443.36          | 810,741.08         | 32.042937 | -103.463866 |
| 7,800.00            | 4.15            | 62.49       | 7,786.86            | 170.04     | 326.53     | 380,446.70          | 810,747.50         | 32.042946 | -103.463845 |
| 7,900.00            | 4.15            | 62.49       | 7,886.60            | 173.38     | 332.94     | 380,450.04          | 810,753.91         | 32.042955 | -103.463824 |
| 8,000.00            | 4.15            | 62.49       | 7,986.33            | 176.72     | 339.35     | 380,453.38          | 810,760.32         | 32.042964 | -103.463803 |
| 8,100.00            | 4.15            | 62.49       | 8,086.07            | 180.06     | 345.76     | 380,456.72          | 810,766.73         | 32.042974 | -103.463782 |
| 8,200.00            | 4.15            | 62.49       | 8,185.81            | 183.40     | 352.17     | 380,460.06          | 810,773.14         | 32.042983 | -103.463762 |
| 8,300.00            | 4.15            | 62.49       | 8,285.55            | 186.74     | 358.59     | 380,463.40          | 810,779.55         | 32.042992 | -103.463741 |
| 8,400.00            | 4.15            | 62.49       | 8,385.29            | 190.08     | 365.00     | 380,466.73          | 810,785.97         | 32.043001 | -103.463720 |
| 8,500.00            | 4.15            | 62.49       | 8,485.03            | 193.42     | 371.41     | 380,470.07          | 810,792.38         | 32.043010 | -103.463699 |
| 8,600.00            | 4.15            | 62.49       | 8,584.76            | 196.75     | 377.82     | 380,473.41          | 810,798.79         | 32.043019 | -103.463679 |
| 8,700.00            | 4.15            | 62.49       | 8,684.50            | 200.09     | 384.23     | 380,476.75          | 810,805.20         | 32.043028 | -103.463658 |
| 8,800.00            | 4.15            | 62.49       | 8,784.24            | 203.43     | 390.64     | 380,480.09          | 810,811.61         | 32.043037 | -103.463637 |
| 8,900.00            | 4.15            | 62.49       | 8,883.98            | 206.77     | 397.06     | 380,483.43          | 810,818.02         | 32.043046 | -103.463616 |
| 9,000.00            | 4.15            | 62.49       | 8,983.72            | 210.11     | 403.47     | 380,486.77          | 810,824.43         | 32.043055 | -103.463595 |
| 9,100.00            | 4.15            | 62.49       | 9,083.46            | 213.45     | 409.88     | 380,490.11          | 810,830.85         | 32.043064 | -103.463575 |
| 9,200.00            | 4.15            | 62.49       | 9,183.19            | 216.79     | 416.29     | 380,493.45          | 810,837.26         | 32.043073 | -103.463554 |
| 9,300.00            | 4.15            | 62.49       | 9,282.93            | 220.13     | 422.70     | 380,496.78          | 810,843.67         | 32.043082 | -103.463533 |
| 9,400.00            | 4.15            | 62.49       | 9,382.67            | 223.47     | 429.11     | 380,500.12          | 810,850.08         | 32.043091 | -103.463512 |
| 9,500.00            | 4.15            | 62.49       | 9,482.41            | 226.80     | 435.52     | 380,503.46          | 810,856.49         | 32.043100 | -103.463492 |
| 9,600.00            | 4.15            | 62.49       | 9,582.15            | 230.14     | 441.94     | 380,506.80          | 810,862.90         | 32.043109 | -103.463471 |
| 9,700.00            | 4.15            | 62.49       | 9,681.89            | 233.48     | 448.35     | 380,510.14          | 810,869.32         | 32.043118 | -103.463450 |
| 9,800.00            | 4.15            | 62.49       | 9,781.62            | 236.82     | 454.76     | 380,513.48          | 810,875.73         | 32.043127 | -103.463429 |
| 9,900.00            | 4.15            | 62.49       | 9,881.36            | 240.16     | 461.17     | 380,516.82          | 810,882.14         | 32.043136 | -103.463408 |
| 10,000.00           | 4.15            | 62.49       | 9,981.10            | 243.50     | 467.58     | 380,520.16          | 810,888.55         | 32.043145 | -103.463388 |
| 10,100.00           | 4.15            | 62.49       | 10,080.84           | 246.84     | 473.99     | 380,523.50          | 810,894.96         | 32.043154 | -103.463367 |
| 10,200.00           | 4.15            | 62.49       | 10,180.58           | 250.18     | 480.41     | 380,526.83          | 810,901.37         | 32.043163 | -103.463346 |
| 10,300.00           | 4.15            | 62.49       | 10,280.32           | 253.52     | 486.82     | 380,530.17          | 810,907.78         | 32.043172 | -103.463325 |
| 10,400.00           | 4.15            | 62.49       | 10,380.05           | 256.85     | 493.23     | 380,533.51          | 810,914.20         | 32.043181 | -103.463305 |
| 10,500.00           | 4.15            | 62.49       | 10,479.79           | 260.19     | 499.64     | 380,536.85          | 810,920.61         | 32.043190 | -103.463284 |
| 10,600.00           | 4.15            | 62.49       | 10,579.53           | 263.53     | 506.05     | 380,540.19          | 810,927.02         | 32.043199 | -103.463263 |
| 10,700.00           | 4.15            | 62.49       | 10,679.27           | 266.87     | 512.46     | 380,543.53          | 810,933.43         | 32.043208 | -103.463242 |
| 10,800.00           | 4.15            | 62.49       | 10,779.01           | 270.21     | 518.88     | 380,546.87          | 810,939.84         | 32.043217 | -103.463221 |



# Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSC Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

| Planned Survey                                      |                 |             |                     |            |            |                     |                    |           |             |
|---|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (ft)                                 | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 10,900.00   | 4.15            | 62.49       | 10,878.75           | 273.55     | 525.29     | 380,550.21          | 810,946.25         | 32.043227 | -103.463201 |
| 11,000.00   | 4.15            | 62.49       | 10,978.49           | 276.89     | 531.70     | 380,553.55          | 810,952.67         | 32.043236 | -103.463180 |
| 11,100.00   | 4.15            | 62.49       | 11,078.22           | 280.23     | 538.11     | 380,556.88          | 810,959.08         | 32.043245 | -103.463159 |
| 11,200.00   | 4.15            | 62.49       | 11,177.96           | 283.57     | 544.52     | 380,560.22          | 810,965.49         | 32.043254 | -103.463138 |
| 11,300.00   | 4.15            | 62.49       | 11,277.70           | 286.90     | 550.93     | 380,563.56          | 810,971.90         | 32.043263 | -103.463118 |
| 11,400.00   | 4.15            | 62.49       | 11,377.44           | 290.24     | 557.34     | 380,566.90          | 810,978.31         | 32.043272 | -103.463097 |
| 11,500.00   | 4.15            | 62.49       | 11,477.18           | 293.58     | 563.76     | 380,570.24          | 810,984.72         | 32.043281 | -103.463076 |
| 11,583.92   | 4.15            | 62.49       | 11,560.88           | 296.38     | 569.14     | 380,573.04          | 810,990.10         | 32.043288 | -103.463059 |
| 11,600.00   | 3.90            | 62.49       | 11,576.92           | 296.91     | 570.14     | 380,573.56          | 810,991.10         | 32.043290 | -103.463055 |
| 11,700.00   | 2.40            | 62.49       | 11,676.76           | 299.45     | 575.02     | 380,576.10          | 810,995.98         | 32.043297 | -103.463040 |
| 11,800.00   | 0.90            | 62.49       | 11,776.72           | 300.78     | 577.58     | 380,577.44          | 810,998.55         | 32.043300 | -103.463031 |
| 11,860.28   | 0.00            | 0.00        | 11,837.00           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| 11,900.00   | 0.00            | 0.00        | 11,876.72           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| 12,000.00   | 0.00            | 0.00        | 11,976.72           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| 12,100.00   | 0.00            | 0.00        | 12,076.72           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| 12,200.00   | 0.00            | 0.00        | 12,176.72           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| 12,210.32   | 0.00            | 0.00        | 12,187.04           | 301.00     | 578.00     | 380,577.66          | 810,998.97         | 32.043301 | -103.463030 |
| <b>KOP @ 12210' MD, 2590' FSL, 1010' FWL</b>        |                 |             |                     |            |            |                     |                    |           |             |
| 12,300.00   | 8.97            | 179.52      | 12,276.35           | 294.00     | 578.06     | 380,570.65          | 810,999.03         | 32.043282 | -103.463030 |
| 12,400.00   | 18.97           | 179.52      | 12,373.27           | 269.89     | 578.26     | 380,546.55          | 810,999.23         | 32.043215 | -103.463030 |
| 12,451.00   | 24.07           | 179.52      | 12,420.70           | 251.19     | 578.42     | 380,527.85          | 810,999.38         | 32.043164 | -103.463030 |
| <b>FTP @ 12451' MD, 2540' FSL, 1010' FWL</b>        |                 |             |                     |            |            |                     |                    |           |             |
| 12,500.00   | 28.97           | 179.52      | 12,464.53           | 229.32     | 578.60     | 380,505.98          | 810,999.57         | 32.043104 | -103.463030 |
| 12,600.00   | 38.97           | 179.52      | 12,547.36           | 173.52     | 579.07     | 380,450.18          | 811,000.04         | 32.042950 | -103.463030 |
| 12,700.00   | 48.97           | 179.52      | 12,619.24           | 104.19     | 579.65     | 380,380.85          | 811,000.62         | 32.042760 | -103.463030 |
| 12,800.00   | 58.97           | 179.52      | 12,677.99           | 23.42      | 580.33     | 380,300.08          | 811,001.29         | 32.042538 | -103.463030 |
| 12,900.00   | 68.97           | 179.52      | 12,721.83           | -66.31     | 581.08     | 380,210.35          | 811,002.04         | 32.042291 | -103.463029 |
| 13,000.00   | 78.97           | 179.52      | 12,749.41           | -162.30    | 581.88     | 380,114.36          | 811,002.85         | 32.042027 | -103.463029 |
| 13,100.00   | 88.97           | 179.52      | 12,759.91           | -261.61    | 582.71     | 380,015.04          | 811,003.68         | 32.041754 | -103.463029 |
| 13,110.33   | 90.00           | 179.52      | 12,760.00           | -271.94    | 582.80     | 380,004.72          | 811,003.77         | 32.041726 | -103.463029 |
| 13,200.00   | 90.00           | 179.52      | 12,760.00           | -361.61    | 583.55     | 379,915.05          | 811,004.52         | 32.041479 | -103.463029 |
| 13,300.00   | 90.00           | 179.52      | 12,760.00           | -461.61    | 584.39     | 379,815.05          | 811,005.36         | 32.041205 | -103.463029 |
| 13,400.00   | 90.00           | 179.52      | 12,760.00           | -561.60    | 585.23     | 379,715.06          | 811,006.19         | 32.040930 | -103.463029 |
| 13,500.00   | 90.00           | 179.52      | 12,760.00           | -661.60    | 586.06     | 379,615.06          | 811,007.03         | 32.040655 | -103.463029 |
| 13,600.00   | 90.00           | 179.52      | 12,760.00           | -761.60    | 586.90     | 379,515.06          | 811,007.87         | 32.040380 | -103.463029 |
| 13,700.00   | 90.00           | 179.52      | 12,760.00           | -861.59    | 587.74     | 379,415.07          | 811,008.71         | 32.040105 | -103.463029 |
| 13,800.00   | 90.00           | 179.52      | 12,760.00           | -961.59    | 588.58     | 379,315.07          | 811,009.55         | 32.039830 | -103.463029 |
| 13,900.00   | 90.00           | 179.52      | 12,760.00           | -1,061.59  | 589.42     | 379,215.08          | 811,010.38         | 32.039555 | -103.463028 |
| 14,000.00   | 90.00           | 179.52      | 12,760.00           | -1,161.58  | 590.25     | 379,115.08          | 811,011.22         | 32.039280 | -103.463028 |
| 14,100.00   | 90.00           | 179.52      | 12,760.00           | -1,261.58  | 591.09     | 379,015.08          | 811,012.06         | 32.039006 | -103.463028 |
| 14,200.00   | 90.00           | 179.52      | 12,760.00           | -1,361.58  | 591.93     | 378,915.09          | 811,012.90         | 32.038731 | -103.463028 |
| 14,300.00   | 90.00           | 179.52      | 12,760.00           | -1,461.57  | 592.77     | 378,815.09          | 811,013.73         | 32.038456 | -103.463028 |
| 14,400.00   | 90.00           | 179.52      | 12,760.00           | -1,561.57  | 593.60     | 378,715.09          | 811,014.57         | 32.038181 | -103.463028 |
| 14,500.00   | 90.00           | 179.52      | 12,760.00           | -1,661.56  | 594.44     | 378,615.10          | 811,015.41         | 32.037906 | -103.463028 |
| 14,600.00   | 90.00           | 179.52      | 12,760.00           | -1,761.56  | 595.28     | 378,515.10          | 811,016.25         | 32.037631 | -103.463028 |
| 14,700.00   | 90.00           | 179.52      | 12,760.00           | -1,861.56  | 596.12     | 378,415.10          | 811,017.09         | 32.037356 | -103.463028 |
| 14,800.00   | 90.00           | 179.52      | 12,760.00           | -1,961.55  | 596.96     | 378,315.11          | 811,017.92         | 32.037081 | -103.463028 |
| 14,900.00   | 90.00           | 179.52      | 12,760.00           | -2,061.55  | 597.79     | 378,215.11          | 811,018.76         | 32.036807 | -103.463027 |
| 15,000.00   | 90.00           | 179.52      | 12,760.00           | -2,161.55  | 598.63     | 378,115.12          | 811,019.60         | 32.036532 | -103.463027 |
| 15,100.00   | 90.00           | 179.52      | 12,760.00           | -2,261.54  | 599.47     | 378,015.12          | 811,020.44         | 32.036257 | -103.463027 |
| 15,128.00   | 90.00           | 179.52      | 12,760.00           | -2,289.54  | 599.70     | 377,987.12          | 811,020.67         | 32.036180 | -103.463027 |
| <b>Cross section @ 15128' MD, 0' FNL, 1010' FWL</b> |                 |             |                     |            |            |                     |                    |           |             |
| 15,200.00   | 90.00           | 179.52      | 12,760.00           | -2,361.54  | 600.31     | 377,915.12          | 811,021.27         | 32.035982 | -103.463027 |
| 15,300.00   | 90.00           | 179.52      | 12,760.00           | -2,461.54  | 601.15     | 377,815.13          | 811,022.11         | 32.035707 | -103.463027 |

# Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSO Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

| Planned Survey                       |                 |             |                     |            |            |                     |                    |           |             |
|--------------------------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (ft)                  | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 15,400.00                            | 90.00           | 179.52      | 12,760.00           | -2,561.53  | 601.98     | 377,715.13          | 811,022.95         | 32.035432 | -103.463027 |
| 15,500.00                            | 90.00           | 179.52      | 12,760.00           | -2,661.53  | 602.82     | 377,615.13          | 811,023.79         | 32.035157 | -103.463027 |
| 15,600.00                            | 90.00           | 179.52      | 12,760.00           | -2,761.53  | 603.66     | 377,515.14          | 811,024.63         | 32.034882 | -103.463027 |
| 15,700.00                            | 90.00           | 179.52      | 12,760.00           | -2,861.52  | 604.50     | 377,415.14          | 811,025.46         | 32.034607 | -103.463027 |
| 15,800.00                            | 90.00           | 179.52      | 12,760.00           | -2,961.52  | 605.33     | 377,315.15          | 811,026.30         | 32.034333 | -103.463027 |
| 15,900.00                            | 90.00           | 179.52      | 12,760.00           | -3,061.52  | 606.17     | 377,215.15          | 811,027.14         | 32.034058 | -103.463026 |
| 16,000.00                            | 90.00           | 179.52      | 12,760.00           | -3,161.51  | 607.01     | 377,115.15          | 811,027.98         | 32.033783 | -103.463026 |
| 16,100.00                            | 90.00           | 179.52      | 12,760.00           | -3,261.51  | 607.85     | 377,015.16          | 811,028.81         | 32.033508 | -103.463026 |
| 16,200.00                            | 90.00           | 179.52      | 12,760.00           | -3,361.50  | 608.69     | 376,915.16          | 811,029.65         | 32.033233 | -103.463026 |
| 16,300.00                            | 90.00           | 179.52      | 12,760.00           | -3,461.50  | 609.52     | 376,815.16          | 811,030.49         | 32.032958 | -103.463026 |
| 16,400.00                            | 90.00           | 179.52      | 12,760.00           | -3,561.50  | 610.36     | 376,715.17          | 811,031.33         | 32.032683 | -103.463026 |
| 16,500.00                            | 90.00           | 179.52      | 12,760.00           | -3,661.49  | 611.20     | 376,615.17          | 811,032.17         | 32.032408 | -103.463026 |
| 16,600.00                            | 90.00           | 179.52      | 12,760.00           | -3,761.49  | 612.04     | 376,515.18          | 811,033.00         | 32.032134 | -103.463026 |
| 16,700.00                            | 90.00           | 179.52      | 12,760.00           | -3,861.49  | 612.87     | 376,415.18          | 811,033.84         | 32.031859 | -103.463026 |
| 16,800.00                            | 90.00           | 179.52      | 12,760.00           | -3,961.48  | 613.71     | 376,315.18          | 811,034.68         | 32.031584 | -103.463025 |
| 16,900.00                            | 90.00           | 179.52      | 12,760.00           | -4,061.48  | 614.55     | 376,215.19          | 811,035.52         | 32.031309 | -103.463025 |
| 17,000.00                            | 90.00           | 179.52      | 12,760.00           | -4,161.48  | 615.39     | 376,115.19          | 811,036.35         | 32.031034 | -103.463025 |
| 17,100.00                            | 90.00           | 179.52      | 12,760.00           | -4,261.47  | 616.23     | 376,015.19          | 811,037.19         | 32.030759 | -103.463025 |
| 17,200.00                            | 90.00           | 179.52      | 12,760.00           | -4,361.47  | 617.06     | 375,915.20          | 811,038.03         | 32.030484 | -103.463025 |
| 17,300.00                            | 90.00           | 179.52      | 12,760.00           | -4,461.47  | 617.90     | 375,815.20          | 811,038.87         | 32.030209 | -103.463025 |
| 17,400.00                            | 90.00           | 179.52      | 12,760.00           | -4,561.46  | 618.74     | 375,715.20          | 811,039.71         | 32.029935 | -103.463025 |
| 17,500.00                            | 90.00           | 179.52      | 12,760.00           | -4,661.46  | 619.58     | 375,615.21          | 811,040.54         | 32.029660 | -103.463025 |
| 17,600.00                            | 90.00           | 179.52      | 12,760.00           | -4,761.46  | 620.41     | 375,515.21          | 811,041.38         | 32.029385 | -103.463025 |
| 17,700.00                            | 90.00           | 179.52      | 12,760.00           | -4,861.45  | 621.25     | 375,415.22          | 811,042.22         | 32.029110 | -103.463025 |
| 17,800.00                            | 90.00           | 179.52      | 12,760.00           | -4,961.45  | 622.09     | 375,315.22          | 811,043.06         | 32.028835 | -103.463024 |
| 17,900.00                            | 90.00           | 179.52      | 12,760.00           | -5,061.45  | 622.93     | 375,215.22          | 811,043.89         | 32.028560 | -103.463024 |
| 18,000.00                            | 90.00           | 179.52      | 12,760.00           | -5,161.44  | 623.77     | 375,115.23          | 811,044.73         | 32.028285 | -103.463024 |
| 18,100.00                            | 90.00           | 179.52      | 12,760.00           | -5,261.44  | 624.60     | 375,015.23          | 811,045.57         | 32.028010 | -103.463024 |
| 18,200.00                            | 90.00           | 179.52      | 12,760.00           | -5,361.43  | 625.44     | 374,915.23          | 811,046.41         | 32.027736 | -103.463024 |
| 18,300.00                            | 90.00           | 179.52      | 12,760.00           | -5,461.43  | 626.28     | 374,815.24          | 811,047.25         | 32.027461 | -103.463024 |
| 18,400.00                            | 90.00           | 179.52      | 12,760.00           | -5,561.43  | 627.12     | 374,715.24          | 811,048.08         | 32.027186 | -103.463024 |
| 18,500.00                            | 90.00           | 179.52      | 12,760.00           | -5,661.42  | 627.95     | 374,615.25          | 811,048.92         | 32.026911 | -103.463024 |
| 18,600.00                            | 90.00           | 179.52      | 12,760.00           | -5,761.42  | 628.79     | 374,515.25          | 811,049.76         | 32.026636 | -103.463024 |
| 18,700.00                            | 90.00           | 179.52      | 12,760.00           | -5,861.42  | 629.63     | 374,415.25          | 811,050.60         | 32.026361 | -103.463024 |
| 18,800.00                            | 90.00           | 179.52      | 12,760.00           | -5,961.41  | 630.47     | 374,315.26          | 811,051.43         | 32.026086 | -103.463023 |
| 18,900.00                            | 90.00           | 179.52      | 12,760.00           | -6,061.41  | 631.31     | 374,215.26          | 811,052.27         | 32.025811 | -103.463023 |
| 19,000.00                            | 90.00           | 179.52      | 12,760.00           | -6,161.41  | 632.14     | 374,115.26          | 811,053.11         | 32.025537 | -103.463023 |
| 19,100.00                            | 90.00           | 179.52      | 12,760.00           | -6,261.40  | 632.98     | 374,015.27          | 811,053.95         | 32.025262 | -103.463023 |
| 19,200.00                            | 90.00           | 179.52      | 12,760.00           | -6,361.40  | 633.82     | 373,915.27          | 811,054.79         | 32.024987 | -103.463023 |
| 19,300.00                            | 90.00           | 179.52      | 12,760.00           | -6,461.40  | 634.66     | 373,815.28          | 811,055.62         | 32.024712 | -103.463023 |
| 19,400.00                            | 90.00           | 179.52      | 12,760.00           | -6,561.39  | 635.49     | 373,715.28          | 811,056.46         | 32.024437 | -103.463023 |
| 19,500.00                            | 90.00           | 179.52      | 12,760.00           | -6,661.39  | 636.33     | 373,615.28          | 811,057.30         | 32.024162 | -103.463023 |
| 19,600.00                            | 90.00           | 179.52      | 12,760.00           | -6,761.39  | 637.17     | 373,515.29          | 811,058.14         | 32.023887 | -103.463023 |
| 19,700.00                            | 90.00           | 179.52      | 12,760.00           | -6,861.38  | 638.01     | 373,415.29          | 811,058.97         | 32.023612 | -103.463022 |
| 19,800.00                            | 90.00           | 179.52      | 12,760.00           | -6,961.38  | 638.85     | 373,315.29          | 811,059.81         | 32.023338 | -103.463022 |
| 19,900.00                            | 90.00           | 179.52      | 12,760.00           | -7,061.38  | 639.68     | 373,215.30          | 811,060.65         | 32.023063 | -103.463022 |
| 20,000.00                            | 90.00           | 179.52      | 12,760.00           | -7,161.37  | 640.52     | 373,115.30          | 811,061.49         | 32.022788 | -103.463022 |
| 20,100.00                            | 90.00           | 179.52      | 12,760.00           | -7,261.37  | 641.36     | 373,015.30          | 811,062.33         | 32.022513 | -103.463022 |
| 20,200.00                            | 90.00           | 179.52      | 12,760.00           | -7,361.36  | 642.20     | 372,915.31          | 811,063.16         | 32.022238 | -103.463022 |
| 20,300.00                            | 90.00           | 179.52      | 12,760.00           | -7,461.36  | 643.03     | 372,815.31          | 811,064.00         | 32.021963 | -103.463022 |
| LTP @ 20300' MD, 100' FSL, 1010' FWL |                 |             |                     |            |            |                     |                    |           |             |
| 20,379.58                            | 90.00           | 179.52      | 12,760.00           | -7,540.94  | 643.70     | 372,735.74          | 811,064.67         | 32.021744 | -103.463022 |
| PBHL; 20' FSL, 1010' FWL             |                 |             |                     |            |            |                     |                    |           |             |
| 20,379.59                            | 90.00           | 179.52      | 12,760.00           | -7,540.95  | 643.70     | 372,735.73          | 811,064.67         | 32.021744 | -103.463022 |

## Planning Report - Geographic

|                  |                                    |                                     |                                    |
|------------------|------------------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | EDM r5000.141_Prod US              | <b>Local Co-ordinate Reference:</b> | Well Railsplitter 15-22 Fed Com 2H |
| <b>Company:</b>  | WCDSC Permian NM                   | <b>TVD Reference:</b>               | RKB @ 3303.60ft                    |
| <b>Project:</b>  | Lea County (NAD83 New Mexico East) | <b>MD Reference:</b>                | RKB @ 3303.60ft                    |
| <b>Site:</b>     | Sec 15-T26S-R34E                   | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | Railsplitter 15-22 Fed Com 2H      | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1                        |                                     |                                    |
| <b>Design:</b>   | Permit Plan 1                      |                                     |                                    |

| Design Targets   |           |          |      |           |        |            |            |           |             |
|--|-----------|----------|------|-----------|--------|------------|------------|-----------|-------------|
| Target Name  |           |          |      |           |        |            |            |           |             |
| - hit/miss target  | Dip Angle | Dip Dir. | TVD  | +N/-S     | +E/-W  | Northing   | Easting    | Latitude  | Longitude   |
| - Shape  | (°)       | (°)      | (ft) | (ft)      | (ft)   | (usft)     | (usft)     |           |             |
| PBHL - Railsplitter 15-22  | 0.00      | 0.00     | 0.00 | -7,540.95 | 643.70 | 372,735.73 | 811,064.67 | 32.021744 | -103.463022 |
| - plan misses target center by 7568.37ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) |           |          |      |           |        |            |            |           |             |
| - Point  |           |          |      |           |        |            |            |           |             |

| Plan Annotations |                |                   |            |  |  |
|------------------|----------------|-------------------|------------|--|--|
| Measured Depth   | Vertical Depth | Local Coordinates |            |  |  |
| (ft)             | (ft)           | +N/-S (ft)        | +E/-W (ft) | Comment                                      |  |
| 12,210.32        | 12,187.04      | 301.00            | 578.00     | KOP @ 12210' MD, 2590' FSL, 1010' FWL        |  |
| 12,451.00        | 12,420.70      | 251.19            | 578.42     | FTP @ 12451' MD, 2540' FSL, 1010' FWL        |  |
| 15,128.00        | 12,760.00      | -2,289.54         | 599.70     | Cross section @ 15128' MD, 0' FNL, 1010' FWL |  |
| 20,300.00        | 12,760.00      | -7,461.36         | 643.03     | LTP @ 20300' MD, 100' FSL, 1010' FWL         |  |
| 20,379.58        | 12,760.00      | -7,540.94         | 643.70     | PBHL; 20' FSL, 1010' FWL                     |  |

# **Devon Energy**

## **APD VARIANCE DATA**

**OPERATOR NAME:** Devon Energy

### **1. SUMMARY OF Variance:**

Devon Energy respectfully requests approval for the following additions to the drilling plan:

1. Potential utilization of a spudder rig to pre-set surface casing.

### **2. Description of Operations**

1. A spudder rig contractor may move in their rig to drill the surface hole section and pre-set surface casing on this well.
  - a. After drilling the surface hole section, the rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
  - b. Rig will utilize fresh water based mud to drill surface hole to TD.
2. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
3. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
  - a. A means for intervention will be maintained while the drilling rig is not over the well.
4. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
5. Drilling operation will be performed with the big rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
  - a. The BLM will be contacted / notified 24 hours before the big rig moves back on to the pad with the pre-set surface casing.
6. Devon Energy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
7. Once the rig is removed, Devon Energy will secure the wellhead area by placing a guard rail around the cellar area.





Commitment Runs Deep



Design Plan  
Operation and Maintenance Plan  
Closure Plan

SENM - Closed Loop Systems  
June 2010

## **I. Design Plan**

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

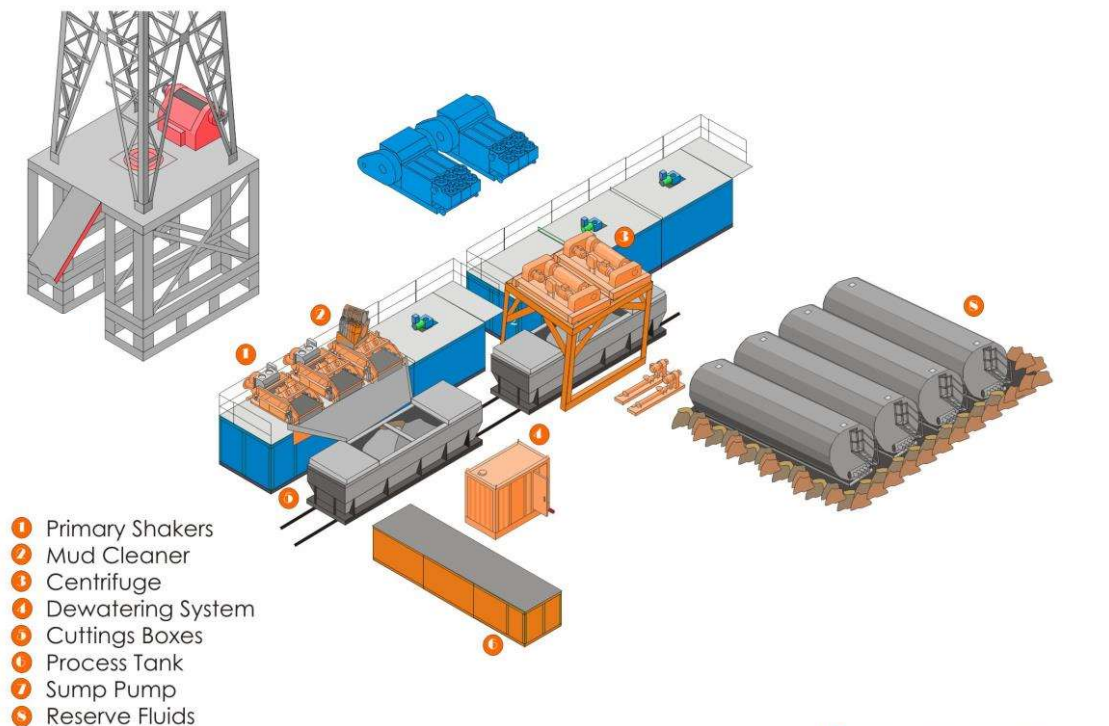
## **II. Operations and Maintenance Plan**

*Primary Shakers:* The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

**Mud Cleaner:** The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



## Closed Loop Schematic



**Centrifuges:** The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

**Dewatering System:** The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

*Cuttings Boxes:* Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

*Process Tank:* (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

*Sump and Sump Pump:* The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

*Reserve Fluids (Tank Farm):* A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe



dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

### **III. Closure Plan**

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. 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.

- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 10M will be installed and tested, with 5M annular being tested to 100% of rated working pressure.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 10,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

# PECOS DISTRICT

## DRILLING CONDITIONS OF APPROVAL

|                         |   |
|-------------------------|---|
| <b>OPERATOR'S NAME:</b> | <b>Devon Energy Production Company LP</b> |
| <b>LEASE NO.:</b>       | <b>NMNM094118</b>                         |
| <b>LOCATION:</b>        | Section 15, T.26 S., R.34 E., NMPM        |
| <b>COUNTY:</b>          | Lea County, New Mexico                    |

|                              |                               |
|------------------------------|-------------------------------|
| <b>WELL NAME &amp; NO.:</b>  | Railsplitter 15-22 Fed Com 2H |
| <b>SURFACE HOLE FOOTAGE:</b> | 2290'/S & 432'/W              |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 1010'/W               |

|                              |                               |
|------------------------------|-------------------------------|
| <b>WELL NAME &amp; NO.:</b>  | Railsplitter 15-22 Fed Com 4H |
| <b>SURFACE HOLE FOOTAGE:</b> | 2120'/S & 1421'/W             |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 2320'/W               |

|                              |                               |
|------------------------------|-------------------------------|
| <b>WELL NAME &amp; NO.:</b>  | Railsplitter 15-22 Fed Com 7H |
| <b>SURFACE HOLE FOOTAGE:</b> | 2390'/S & 1709'/E             |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 2300'/E               |

|                              |                               |
|------------------------------|-------------------------------|
| <b>WELL NAME &amp; NO.:</b>  | Railsplitter 15-22 Fed Com 8H |
| <b>SURFACE HOLE FOOTAGE:</b> | 2390'/S & 405'/E              |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 360'/E                |

|                              |                                |
|------------------------------|--------------------------------|
| <b>WELL NAME &amp; NO.:</b>  | Railsplitter 15-22 Fed Com 11H |
| <b>SURFACE HOLE FOOTAGE:</b> | 2390'/S & 1649'/E              |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 1200'/E                |

COA

|                      |  |  |                                     |
|----------------------|--|--|-------------------------------------|
| H2S                  | <input type="checkbox"/> Yes                     | <input checked="" type="checkbox"/> No             |                                     |
| Potash               | <input checked="" type="checkbox"/> None         | <input type="checkbox"/> Secretary                 | <input type="checkbox"/> R-111-P    |
| Cave/Karst Potential | <input checked="" type="checkbox"/> Low          | <input type="checkbox"/> Medium                    | <input type="checkbox"/> High       |
| Cave/Karst Potential | <input type="checkbox"/> Critical                |  |                                     |
| Variance             | <input type="checkbox"/> None                    | <input checked="" type="checkbox"/> Flex Hose      | <input type="checkbox"/> Other      |
| Wellhead             | <input type="checkbox"/> Conventional            | <input checked="" type="checkbox"/> Multibowl      | <input type="checkbox"/> 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 checked="" 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       |

**OPERATOR IS ONLY APPROVED FOR THE FOLLOWING DESIGN, OTHER DESIGNS SUBMITTED WILL BE VOID.**

**A. HYDROGEN SULFIDE**

Hydrogen Sulfide (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. If H<sub>2</sub>S 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**

**Alternate Casing Design:**

1. The **13-3/8** inch surface casing shall be set at approximately **840 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 **8-5/8** inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Operator has proposed to pump down 13-3/8" X 8-5/8" annulus. Operator must run a CBL from TD of the 8-5/8" casing to surface. Submit results to BLM.**

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

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.

### **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 **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 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.

## 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.



**Devon Energy Center  
333 West Sheridan Avenue  
Oklahoma City, Oklahoma 73102-5015**

# **Hydrogen Sulfide (H<sub>2</sub>S) Contingency Plan**

**For**

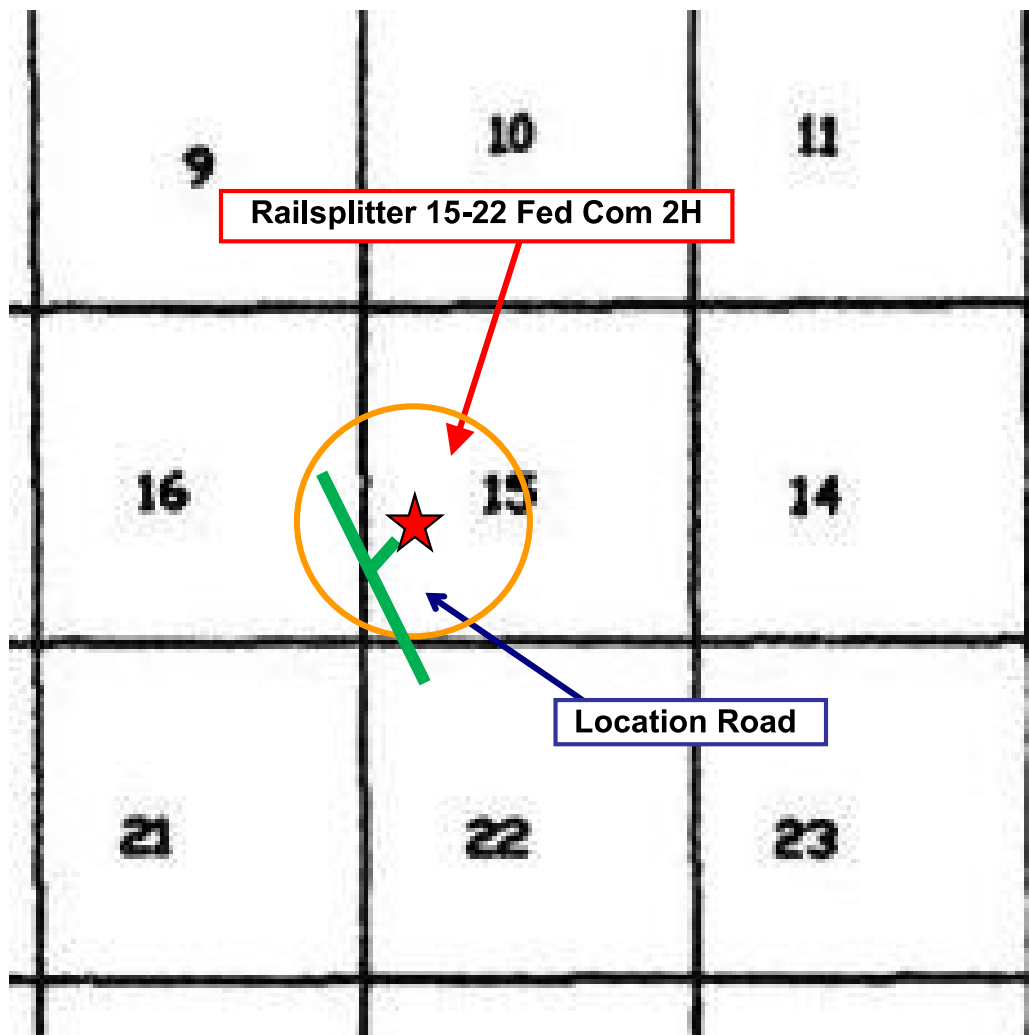
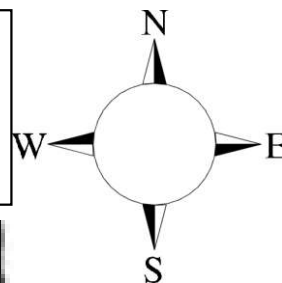
**Railsplitter 15-22 Fed Com 2H**

**Sec-15 T-26S R-34E  
2290 FSL & 432' FWL  
LAT. = 32.042486' N (NAD83)  
LONG = 103.464903' W**

**Lea County NM**

## Railsplitter 15-22 Fed Com 2H

This is an open drilling site. H<sub>2</sub>S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H<sub>2</sub>S, including warning signs, wind indicators and H<sub>2</sub>S monitor.



Assumed 100 ppm **ROE = 3000'** (**Radius of Exposure**)  
100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

### Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

**Assumed 100 ppm ROE = 3000'**

**100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.**

### **Emergency Procedures**

**In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must**

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.**
- **Use the “buddy system” to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H<sub>2</sub>S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

### **Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

### **Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

| <b>Common Name</b>      | <b>Chemical Formula</b> | <b>Specific Gravity</b>  | <b>Threshold Limit</b> | <b>Hazardous Limit</b> | <b>Lethal Concentration</b> |
|-------------------------|-------------------------|--------------------------|------------------------|------------------------|-----------------------------|
| <b>Hydrogen Sulfide</b> | <b>H<sub>2</sub>S</b>   | <b>1.189<br/>Air = 1</b> | <b>10 ppm</b>          | <b>100 ppm/hr</b>      | <b>600 ppm</b>              |
| <b>Sulfur Dioxide</b>   | <b>SO<sub>2</sub></b>   | <b>2.21<br/>Air = 1</b>  | <b>2 ppm</b>           | <b>N/A</b>             | <b>1000 ppm</b>             |

### **Contacting Authorities**

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

## **Hydrogen Sulfide Drilling Operation Plan**

### **I. HYDROGEN SULFIDE (H<sub>2</sub>S) TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

### **II. HYDROGEN SULFIDE TRAINING**

Note: All H<sub>2</sub>S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H<sub>2</sub>S.

## **1. Well Control Equipment**

- A. Flare line
- B. Choke manifold – Remotely Operated
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
- D. Auxiliary equipment may include if applicable: annular preventer and rotating head.
- E. Mud/Gas Separator

## **2. Protective equipment for essential personnel:**

30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

## **3. H<sub>2</sub>S detection and monitoring equipment:**

Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights which activate when H<sub>2</sub>S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

- Bell nipple
- Possum Belly/Shale shaker
- Rig floor
- Choke manifold
- Cellar

### **Visual warning systems:**

- A. Wind direction indicators as shown on well site diagram
- B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.



#### **4. Mud program:**

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

#### **5. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H<sub>2</sub>S trim.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

#### **6. Communication:**

- A. Company personnel have/use cellular telephones in the field.
- B. Land line (telephone) communications at Office

#### **7. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

| <b><u>Devon Energy Corp. Company Call List</u></b> |   |                               |
|--|---|-------------------------------|
| Drilling Supervisor – Basin – Mark Kramer          |   | 405-823-4796                  |
| EHS Professional – Laura Wright                    |   | 405-439-8129                  |
| <b><u>Agency Call List</u></b>                     |   |                               |
| <b><u>Lea County (575)</u></b>                     | <b>Hobbs</b>  |                               |
|  | Lea County Communication Authority                                      | 393-3981                      |
|  | State Police  | 392-5588                      |
|  | City Police   | 397-9265                      |
|  | Sheriff's Office  | 393-2515                      |
|  | <b>Ambulance</b>  | <b>911</b>                    |
|  | Fire Department   | 397-9308                      |
|  | LEPC (Local Emergency Planning Committee)                               | 393-2870                      |
|  | NMOCD   | 393-6161                      |
|  | US Bureau of Land Management  | 393-3612                      |
|  |   |                               |
|  |   |                               |
| <b><u>Eddy County (575)</u></b>                    | <b>Carlsbad</b>   |                               |
|  | State Police  | 885-3137                      |
|  | City Police   | 885-2111                      |
|  | Sheriff's Office  | 887-7551                      |
|  | <b>Ambulance</b>  | <b>911</b>                    |
|  | Fire Department   | 885-3125                      |
|  | LEPC (Local Emergency Planning Committee)                               | 887-3798                      |
|  | US Bureau of Land Management  | 887-6544                      |
|  | NM Emergency Response Commission (Santa Fe)                             | (505) 476-9600                |
|  | 24 HR   | (505) 827-9126                |
|  | National Emergency Response Center                                      | (800) 424-8802                |
|  | National Pollution Control Center: Direct                               | (703) 872-6000                |
|  | For Oil Spills  | (800) 280-7118                |
|  | <b>Emergency Services</b>   |                               |
|  | Wild Well Control   | (281) 784-4700                |
|  | Cudd Pressure Control   | (915) 699-0139 (915) 563-3356 |
|  | Halliburton   | (575) 746-2757                |
|  | B. J. Services  | (575) 746-3569                |
|  |   |                               |
| <b><u>Give GPS position:</u></b>                   | Native Air – Emergency Helicopter – Hobbs (NM and TX)                   | (800)642-7828                 |
|  | Flight For Life - Lubbock, TX   | (806) 743-9911                |
|  | Aerocare - Lubbock, TX  | (806) 747-8923                |
|  | Med Flight Air Amb - Albuquerque, NM                                    | (575) 842-4433                |
|  | Lifeguard Air Med Svc. Albuquerque, NM                                  | (800) 222-1222                |
|  | Poison Control (24/7)   | (575) 272-3115                |
|  | Oil & Gas Pipeline 24 Hour Service                                      | (800) 364-4366                |
|  | NOAA – Website - <a href="http://www.nhc.noaa.gov">www.nhc.noaa.gov</a> |                               |
|  |   |                               |

Prepared in conjunction with  
Dave Small



# Devon Energy - Well Pad Rig Location Layout Safety Equipment Location

