

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM APPROVED  
OMB NO. 1004-0137  
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.***SUBMIT IN TRIPLICATE - Other instructions on page 2**

|   |   |  |
|---|---|--|
| 1. Type of Well<br><input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other                    |   | 5. Lease Serial No.<br>NMLC069515                          |
| 2. Name of Operator<br>CONOCOPHILLIPS COMPANY   |   | 6. If Indian, Allottee or Tribe Name                       |
| Contact: DEIDRE DUFFY<br>E-Mail: DDUFFY@LTENV.COM   |   | 7. If Unit or CA/Agreement, Name and/or No.                |
| 3a. Address<br>MIDLAND, TX 79710  | 3b. Phone No. (include area code)<br>Ph: 970-385-1096 | 8. Well Name and No.<br>ZIA HILLS 25E FED COM 404H         |
| 4. Location of Well (Footage, Sec., T., R., M., or Survey Description)<br>Sec 25 T26S R32E NWNE 349FNL 2310FEL<br>32.011188 N Lat, 103.373820 W Lon |   | 9. API Well No.<br>30-025-43363-00-X1                      |
|   |   | 10. Field and Pool or Exploratory Area<br>WILDCAT;WOLFCAMP |
|   |   | 11. County or Parish, State<br>LEA COUNTY, NM              |

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

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

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

Change of name from War Hammer 25 Fed Com 16H to Zia Hills 25E Fed Com 404H. *eff 2-1-18*

Change of BHL location.

Change from 36-26S-32E 330'FSL 2310'FEL

Change to 36-26S-32E 50'FSL 3300'FEL

See Attachments

**Carlsbad Field Office**  
**OCD Hobbs**  
**SEE ATTACHED FOR CONDITIONS OF APPROVAL**

|   |                         |
|---|-------------------------|
| 14. I hereby certify that the foregoing is true and correct.<br>Electronic Submission #399961 verified by the BLM Well Information System<br>For CONOCOPHILLIPS COMPANY, sent to the Hobbs<br>Committed to AFMSS for processing by PRISCILLA PEREZ on 01/08/2018 (18PP0429SE) |                         |
| Name (Printed/Typed) DEIDRE DUFFY   | Title PROJECT ECOLOGIST |
| Signature (Electronic Submission)   | Date 01/08/2018         |

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

|   |                                 |                        |
|---|---------------------------------|------------------------|
| Approved By <u>ZOTA STEVENS</u>   | Title <u>PETROLEUM ENGINEER</u> | Date <u>03/02/2018</u> |
| Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. |                                 | Office Hobbs           |

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

(Instructions on page 2)

**\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\***

# WELL PLAN SUMMARY

## 1280 Extended Reach Single Lateral

Date: Mar 01, 2018  
Version: 1  
Prepared by: M. Smith

WELL: Zia Hills 25E Fed Com 404H

COUNTY, STATE: Lea, Co. NM  
API No.:  
BLM Permit:

AFE: WAF OND  
Drilling Network No.:  
Invoice Handler ID: VENNECP  
COST ESTIMATE  
DRILLING  
COMPLETION  
FACILITIES  
TOTAL

SURFACE LOC: NWNE 25-T26S-R32E 349' FNL 2310' FEL  
BH LOC: SENW 36-T26S-R32E 50' FSL 3300' FEL

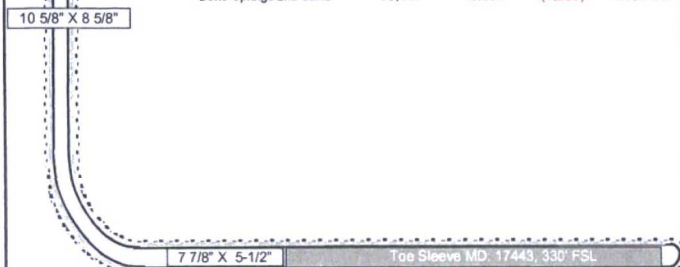
ELEVATIONS: GL 3,134.0'  
KB +27.0'

WH Coord.: LAT 32° 1' 11.43" N  
(NAD-27) LON 103° 37' #####

| FORMATION TOP:        | TVD    | MD     | SUBSEA  |
|-----------------------|--------|--------|---------|
| 14-3/4" X 11-3/4"     |        |        |         |
| Quaternary Fill       | 0      | 0      | 0       |
| Base of Fresh Water   | 300    | 300    | 300     |
| Rustler               | 567    | 567    | 2,594   |
| Surface Casing        | 921    | 921    | 2,240   |
| Top of Salt / Salado  | 982    | 982    | 2,179   |
| Castile               | 2,877  | 2,877  | 284     |
| Delaware Base of Salt | 4,607  | 4,621  | (1,446) |
| Ford Shale            | 5,022  | 5,038  | (1,861) |
| Cherry Canyon         | 5,627  | 5,651  | (2,466) |
| Brushy Canyon         | 7,277  | 7,316  | (4,116) |
| Bone Springs          | 8,647  | 8,699  | (5,486) |
| Bone Springs 2nd Carb | 10,061 | 10,130 | (6,900) |
| Bone Springs 2nd Sand | 10,441 | 10,634 | (7,280) |

### Notes

- Ensure proper notifications are made to BLM
  - Spud Notice - 24 hours before spud
  - Running / Cementing all strings of casing - 4 hours
  - BOP Tests - 4 hours
- H2S equipment will be rigged up and functional, 500' before Delaware formation. If H2S is encountered, Onshore Order 6 along with Conocophillips H2S plan will be followed.



|                         |                     |        |               |         |           |
|-------------------------|---------------------|--------|---------------|---------|-----------|
| 8 5/8 in. shoe 4782' MD | TARGET              | 10,541 | 11,018        | (7,380) | Gas / Oil |
| 4765' TVD               | Formation Dip Rate: |        | est > 90° dip |         |           |
|                         | PBTD                | 10,541 | 11,018        | (7,380) | Gas / Oil |

Estimated BH Static Temperature (°F): 199  
Max. Anticipated BH Pressure: 0.500 psi/ft 5,271 psi  
Max Anticipated Surface Pressure: 2,951 psi

### CONTACTS

|                                  | Office       | Cell         |
|----------------------------------|--------------|--------------|
| Drilling Engineer: Matt Smith    | 281-206-5199 | 432-269-6432 |
| Geologist: Josh Day              | 281-206-5620 | 423-512-0347 |
| Onsite Drilling Rep. Greg Rivera | 432-234-9399 |              |
| Dennis Hously                    |              |              |
| Drilling Supt.: Scott Nicholson  | 432-688-9065 | 432-230-8010 |

| DRILLING FLUID: | Type             | Interval (MD)  | Density (ppg) | Vis (sec/qt) | PV (cP) | YP (#100R2) | pH      | FL (mL) | LGS (% by vol) | NaCl (ppb sol) | Remarks               |
|-----------------|------------------|----------------|---------------|--------------|---------|-------------|---------|---------|----------------|----------------|-----------------------|
| Surface:        | Fresh Water      | Surface - 921' | 8.4-8.8       | 28-50        | 1-5     | 2-6         | 7.5-8.5 | NC      | < 5.0          | 10,000         | Rig Tanks/Closed Loop |
| Intermediate:   | Emulsified Brine | 921' - 4782'   | 9-9.5         | 28-50        | 1-5     | 2-6         | 7.5-8.5 | NC      | < 5.0          | 180,000        | Rig Tanks/Closed Loop |
| Production:     | OBM              | 4782' - 17723' | 9-9.5         | 50-70        | 18-25   | 8-14        | 9.5-10  | < 8     | < 8.0          | 400 - 00       | Rig Tanks/Closed Loop |

### Reference Drilling Fluids Program

| CASING:       | Hole    | TOP (MD) | BTM (MD) | Length  | Size    | Wt    | Grade | Connection |
|---------------|---------|----------|----------|---------|---------|-------|-------|------------|
| Surface:      | 14 3/4" | 27'      | 921'     | 894'    | 11 3/4" | 47.00 | J-55  | BTC        |
| Intermediate: | 10 5/8" | 27'      | 4,782'   | 4,755'  | 8 5/8"  | 32.00 | P-110 | BTC        |
| Production:   | 7 7/8"  | 27'      | 17,723'  | 17,696' | 5 1/2"  | 23.00 | P-110 | TXP        |

BOP: Minimum - COP Class 3 Well Control Requirements  
Rig - 13-5/8"x10M psi Rams / 4-1/16"x10M psi Manifold  
Stackup - Rotating Head, Annular Preventer, Pipe Ram, Blind Ram, Mud Cross (Choke & Kill Valves), Pipe Ram

Mud Pit: Float Based Electronic PVT with Flow Sensor and Gravity Trip Tank, Alarms +/- 10 BBLs

Wellhead: 13-5/8" x 10M psi (Casing Head - "A" Section)

CENTRALIZATION:  
Surface Casing: 1 per joint on first 3 joints  
Intermediate Casing: Shoe joint, 1 per joint where DLS > 0.6 "/100'  
Production Liner: Rigid body, 1 every other joint from TD to estimated TOC, 1 every 4 joints above TOC

| CEMENT:       | Hole            | MD      | TVD     | Spacer            | Lead   | Tail   | COMMENTS   |
|---------------|-----------------|---------|---------|-------------------|--|--|--|
| Surface:      | 14-3/4"x11-3/4" | 921'    | 921'    | 20 bbl FW         | 400 sx Class C + adds<br>12.8 ppg 1.73ft3/sk     | 420 sx Class C+ adds<br>14.8 ppg 1.33 ft3/sk | Cemented to surface w/ 200%XS<br>Add FiberBlock                                |
| Intermediate: | 10-5/8"x8-5/8"  | 4,782'  | 4,765'  | 40 bbl Spacer     | 440 sx Poz/Class C + adds<br>11.8 ppg 2.7 ft3/sk | 280 sx Class H adds<br>15.6 ppg 1.59 ft3/sk  | Cemented to surface w/ 70%L / 30%T XS calc'd on 10.625" hole<br>Add FiberBlock |
| Production:   | 7-7/8"x5-1/2"   | 17,723' | 10,541' | 40 bbl OBM spacer |  | 2162 sx Class H + adds                       | Cemented 500' above Int Casing<br>Depth 10% XS calc'd on 7.875" hole           |

### Reference Cementing Recommendation

### DIRECTIONAL PLAN:

| Comments             | MD (ft) | INC (deg) | AZI (deg) | TVD (ft) | NS (ft) | EW (ft) | DLS (°/100') | VS (ft) | SEC-T-R      | Section Line Distance |
|----------------------|---------|-----------|-----------|----------|---------|---------|--------------|---------|--------------|-----------------------|
| Build @ 1.5"/100'    | 2,600'  | 0         | 0         | 2,600'   | 0       | 0       | 0            | 0       | 25-T26S-R32E | 349' FNL 2310' FEL    |
| End Build @ 8°       | 3,115'  | 8         | 288       | 3,113'   | 11      | -33     | 1.5          | -6      | 25-T26S-R32E | 338' FNL 2343' FEL    |
| Intermediate Casing  | 4,782'  | 8         | 288       | 4,765'   | 78      | -244    | 0.0          | -46     | 25-T26S-R32E | 271' FNL 2554' FEL    |
| KOP, Build @ 8"/100' | 9,862'  | 8         | 288       | 9,799'   | 288     | -896    | 0            | -168    | 25-T26S-R32E | 61' FNL 3206' FEL     |
| Landing Point        | 11,018' | 90        | 180       | 10,540'  | -430    | -986    | 8            | 555     | 25-T26S-R32E | 779' FNL 3296' FEL    |
| Toe Sleeve 2         | 17,393' | 90        | 180       | 10,530'  | -6804   | -940    | 0            | 6,866   | 36-T26S-R32E | 380' FSL 3300' FEL    |
| FTP / Toe Sleeve 1   | 17,443' | 90        | 180       | 10,530'  | -6854   | -940    | 0            | 6,916   | 36-T26S-R32E | 330' FSL 3300' FEL    |
| PBHL/TD              | 17,723' | 90        | 180       | 10,530'  | -7134   | -940    | 0            | 7,196   | 36-T26S-R32E | 50' FSL 3300' FEL     |

Reference Directional Plan MWD Surveys will be taken at 90° interval below surface casing, 30' while building curve, and every 90° while drilling lateral.

### FORMATION EVALUATION:

|                          |   |
|--------------------------|---|
| Mud Logging - One-Man:   | First surface hole to TD. First intermediate hole to TD |
| Mud Logging - Two-Man:   | Intermediate Casing Point to TD                         |
| Open Hole - PEX          | None  |
| Cased Hole - GR/CBL/USIT | None  |
| MWD - GR                 | Surface Casing Shoe to TD                               |

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Prepared by: M. Smith

WELL: Zia Hills 25E Fed Com 404H

COUNTY, STATE: Lea, Co, NM

AFE: WAF OND

SURFACE LOC: NWN 25-T26S-R32E

349' FNL 2310' FEL

API No.:

Drilling Network No.:

BH LOC: SENW 36-T26S-R32E

50' FSL 3300' FEL

BLM Permit:

Invoice Handler ID: VENNECP

ELEVATIONS: GL 3,134.0'  
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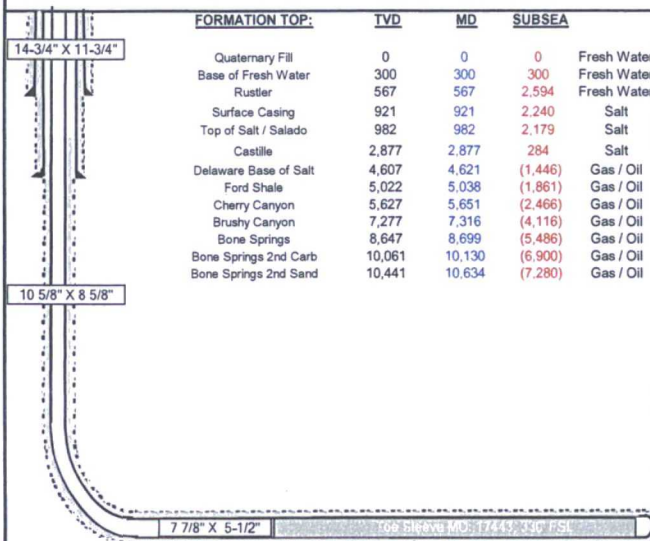
COST ESTIMATE

DRILLING

COMPLETION

FACILITIES

TOTAL



### Notes

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B) Running / Cementing all strings of casing - 4 hours  
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- 2) H2S equipment will be rigged up and functional, 500' before Delaware formation. If H2S is encountered, Onshore Order 6 along with ConocoPhillips H2S plan will be followed.

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8 5/8 in. shoe 4782' MD  
4765' TVD

TARGET 10,541' -11,018' (7,380') Gas / Oil

Formation Dip Rate: est > 90° dip

PBTD 10,541' 11,018' (7,380') Gas / Oil

Estimated BH Static Temperature (°F): 199

Max. Anticipated BH Pressure: 0.500 psia / 5,271 psi

Max Anticipated Surface Pressure: 2,951 psi

| DRILLING FLUID: | Type             | Interval (MD)  | Density | Vis (cP) | PV (#100R2) | YP (cP) | pH      | FL (mL) | LGS (% by vol) | NaCl (ppb sol) | Remarks               |
|-----------------|------------------|----------------|---------|----------|-------------|---------|---------|---------|----------------|----------------|-----------------------|
| Surface:        | Fresh Water      | Surface - 921' | 8.6     | 28-50    | 1-5         | 2-6     | 7.5-8.5 | NC      | < 5.0          | 10,000         | Rig Tanks/Closed Loop |
| Intermediate:   | Emulsified Brine | 921' - 4782'   | 9.2     | 28-50    | 1-5         | 2-6     | 7.5-8.5 | NC      | < 5.0          | 180,000        | Rig Tanks/Closed Loop |
| Production:     | OBM              | 4782' - 17723' | 9.2     | 50-70    | 18-25       | 8-14    | 9.5-10  | < 8     | < 8.0          | 400 - 00       | Rig Tanks/Closed Loop |

### Reference Drilling Fluids Program

| CASING:       | Hole   | TOP (MD) | BTM (MD) | Length  | Size   | Wt    | Grade | Connection | BOP:   |
|---------------|--------|----------|----------|---|--------|-------|-------|------------|--|
| Surface:      | 14 3/4 | 27'      | 921'     | 894'  | 11 3/4 | 47.00 | J-55  | BTC        | Minimum - COP Class 3 Well Control Requirements  |
| Contingency   |        |          |          | ACP/DV Tool run 100' below water board depth if necessary |        |       |       |            | Rig - 13-5/8"x10M psi Rams / 4-1/16"x10M psi Manifold  |
| Intermediate: | 10 5/8 | 27'      | 4,782'   | 4,755'  | 8 5/8  | 32.00 | P-110 | BTC        | Stackup - Rotating Head, Annular Preventer, Pipe Ram, Blind Ram, Mud Cross (Choke & Kill Valves), Pipe Ram |
| Production:   | 7 7/8  | 27'      | 17,723'  | 17,696'   | 5 1/2  | 23.00 | P-110 | TXP        |  |

### CENTRALIZATION:

Surface Casing: 1 per joint on first 3 joints

Intermediate Casing: Shoe joint, 1 per joint where DLS > 0.6 "/100'

Production Liner: Rigid body, 1 every other joint from TD to estimated TOC, 1 every 4 joints above TOC

Mud Pit: Float Based Electronic PVT with Flow Sensor and Gravity Trip Tank, Alarms +/- 10 BBLs

Wellhead: 13-5/8" x 10M psi (Casing Head - "A" Section)

| CEMENT:       | Hole            | MD      | TVL     | Spacer            | Lead  | Tail   | COMMENTS   |
|---------------|-----------------|---------|---------|-------------------|---|--|--|
| Surface:      | 14-3/4"x11-3/4" | 921'    | 921'    | 20 bbl FW         | 400 sx Class C + adds<br>12.8 ppg 1.73ft/sk     | 420 sx Class C + adds<br>14.8 ppg 1.33 ft/sk | Cemented to surface w/ 200%XS<br>Add FiberBlock                                |
| Intermediate: | 10-5/8"x8-5/8"  | 4,782'  | 4,765'  | 40 bbl Spacer     | 440 sx Poz/Class C + adds<br>11.8 ppg 2.7 ft/sk | 280 sx Class H adds<br>15.6 ppg 1.59 ft/sk   | Cemented to surface w/ 70%L / 30%T XS calc'd on 10.625" hole<br>Add FiberBlock |
| Production:   | 7-7/8"x5-1/2"   | 17,723' | 10,541' | 40 bbl OBM spacer |   | 2162 sx Class H + adds<br>15.6 ppg 1.19ft/sk | Cemented 500' above Int Casing<br>Depth 10% XS calc'd on 7.875" hole           |

### Reference Cementing Recommendation

### DIRECTIONAL PLAN:

| Comments             | MD (ft) | INC (deg) | AZI (deg) | TVL (ft) | NS (ft) | EW (ft) | DLS (°/100') | YS (ft) | SEC-T-R      | Section Line Distance |
|----------------------|---------|-----------|-----------|----------|---------|---------|--------------|---------|--------------|-----------------------|
| Build @ 1.5"/100'    | 2,600'  | 0         | 0         | 2,600'   | 0       | 0       | 0            | 0       | 25-T26S-R32E | 349' FNL 2310' FEL    |
| End Build @ 8"       | 3,115'  | 8         | 288       | 3,113'   | 11      | -33     | 1.5          | -6      | 25-T26S-R32E | 338' FNL 2343' FEL    |
| Intermediate Casing  | 4,782'  | 8         | 288       | 4,765'   | 78      | -244    | 0.0          | -46     | 25-T26S-R32E | 271' FNL 2554' FEL    |
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| Landing Point        | 11,018' | 90        | 180       | 10,540'  | -430    | -986    | 8            | 555     | 25-T26S-R32E | 779' FNL 3296' FEL    |
| Toe Sleeve 2         | 17,393' | 90        | 180       | 10,530'  | -6804   | -940    | 0            | 6,866   | 36-T26S-R32E | 380' FSL 3300' FEL    |
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| PBHL/TD              | 17,723' | 90        | 180       | 10,530'  | -7134   | -940    | 0            | 7,196   | 36-T26S-R32E | 50' FSL 3300' FEL     |

### Reference Directional Plan

MWD Surveys will be taken at 90' interval below surface casing, 30' while building curve, and every 90' while drilling lateral.

### FORMATION EVALUATION:

Mud Logging - One-Man: First surface hole to TD, First intermediate hole to TD

Mud Logging - Two-Man: Intermediate Casing Point to TD

Open Hole - PEX None

Cased Hole - GR/CBL/USIT None

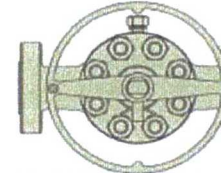
MWD - GR Surface Casing Shoe to TD

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**Batch Drilling Order (Quad Pad)**

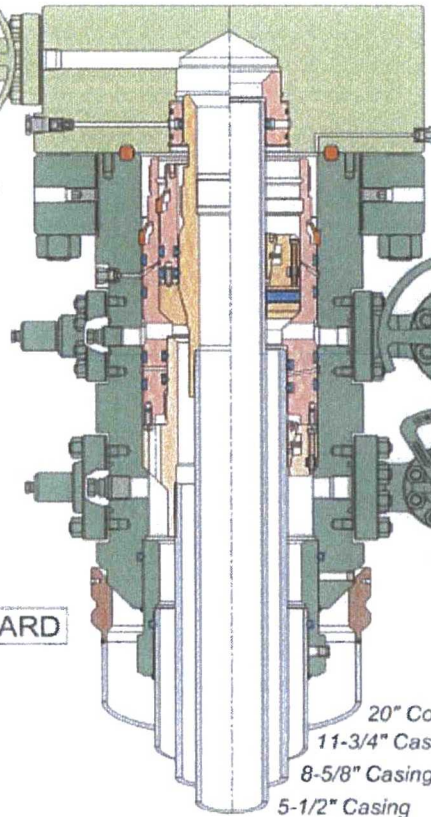
| Surface   | Intermediate | Lateral   |
|-----------|--------------|-----------|
| 1) Well 1 | 1) Well 4    | 1) Well 1 |
| 2) Well 2 | 2) Well 3    | 2) Well 2 |
| 3) Well 3 | 3) Well 2    | 3) Well 3 |
| 4) Well 4 | 4) Well 1    | 4) Well 4 |

1-13/16" API 10,000  
BX-151 Ring Gasket



13-5/8" API 10,000  
BX-159 Ring Gasket

STANDARD



EMERGENCY

1-13/16" API 10,000  
BX-151 Ring Gasket

2-1/16" API 5,000  
R-24 Ring Gasket

20" Conductor  
11-3/4" Casing  
8-5/8" Casing  
5-1/2" Casing

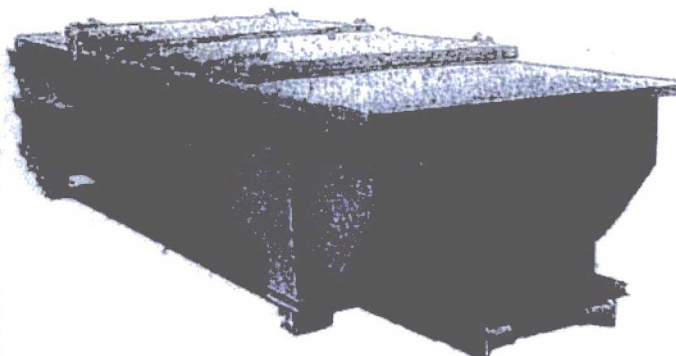
RP170263

Waste will be hauled off daily to an approved disposal site

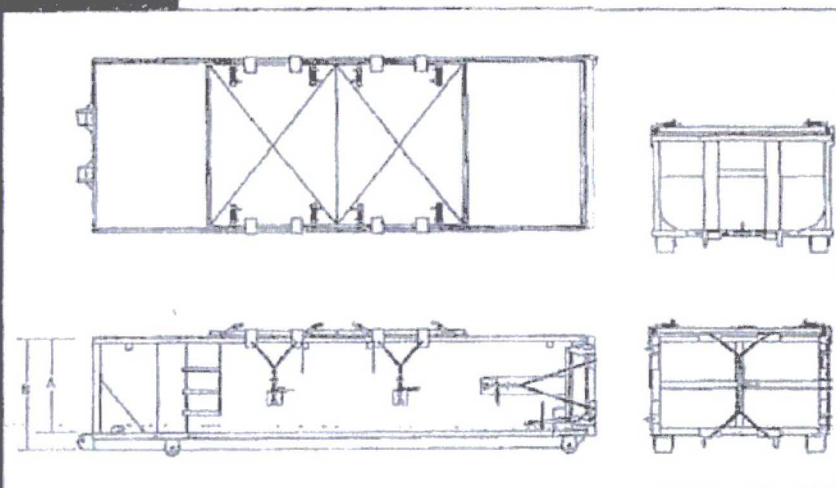
## SPECIFICATIONS

[illegible]

## Heavy Duty Split Metal Rolling Lid



| CONT. | A  | B  |
|-------|----|----|
| 20 YD | 41 | 53 |
| 25 YD | 53 | 65 |
| 30 YD | 65 | 77 |



11-3/4" Surface Casing:  
Surface Casing Depth (ft.)  
Surface Casing O.D. (in.)  
Surface Casing ID (in.)  
Hole O.D. (in.)  
Loss (%)

921  
11 3/4  
11  
14 3/4  
200%

Volume = Tail (S)  
Yield Tail (Cu. Ft./S.)  
Yield Loss (Cu. Ft./S.)  
Shut Joint (ft.)  
Shut Valve (Cu. Ft.)  
Tail Factor of cement

426  
1.33  
1.73  
40  
26.4  
400

Calculated Total Volume (Cu. Ft.)  
Calc. Tail Volume (Cu. Ft.)  
Calc. Lead Volume (Cu. Ft.)  
Calc. Lead Volume = (S<sub>u</sub>)  
Lead Volume = (bbls)  
Lead Volume = (bbls)

120.7  
97.4  
103.6

Intermediate Lead Cement Description:

M<sub>u</sub>, Weight 1.0 bbl  
P<sub>u</sub>, Class C  
5% BWOW N<sub>u</sub>, Class C  
1.9% BWOW SMS  
0.004 gal/ft. Retarder  
3 in/ft. Cement  
3 in/ft. Cement

Intermediate Tail Cement Description:  
M<sub>u</sub>, Weight 1.48 bbl  
Class C  
7% BWOW N<sub>u</sub>, Class C  
0.004 gal/ft. Retarder  
3 in/ft. Cement

Intermediate Tail Cement Description:  
M<sub>u</sub>, Weight 1.5 bbl  
P<sub>u</sub>, Class H  
Class H  
0.5% BWOW Fluid Loss  
0.5% BWOW Anti-Swelling Agent  
0.35% BWOW Retarder  
0.004 gal/ft. Cement  
3 in/ft. Cement

8-5/8" Intermediate Casing (Tail):  
Production Casing Depth (ft.)  
Production Casing O.D. (in.)  
Production Casing ID (in.)  
Hole O.D. (in.)  
Loss (%)

8.625  
7.921  
10.63  
70%

Top Tail (ft.) (1500' above shoe)  
Yield Tail (Cu. Ft./S.)  
Shut Joint (ft.)  
Shut Valve (Cu. Ft.)  
Calc. Tail Volume = (Cu. Ft.)

2.7  
1,171  
440

Required Tail Volume = (S<sub>u</sub>)  
Tail Volume = (bbls)  
Displacement Volume = (bbls)

209

Intermediate Tail Cement Description:

M<sub>u</sub>, Weight 1.5 bbl  
P<sub>u</sub>, Class H  
Class H  
0.5% BWOW Fluid Loss  
0.3% BWOW Retarder  
0.004 gal/ft. Cement  
3 in/ft. Cement

286  
76  
286

5-1/2" Production Liner (Tail):  
Intermediate Casing Depth (ft.)  
Intermediate Casing O.D. (in.)  
Intermediate Casing ID (in.)  
Production Casing ID (in.)  
Production Casing O.D. (in.)  
Loss (%)

4.782  
8.625  
7.921  
10.63  
30%

Production Casing ID (in.)  
Production Casing O.D. (in.)  
Yield Tail (Cu. Ft./S.)  
Shut Joint (ft.)  
Shut Valve (Cu. Ft.)  
Calc. Tail Volume = (Cu. Ft.)

3,282  
1.59  
90  
440

Required Tail Volume = (S<sub>u</sub>)  
Tail Volume = (bbls)  
Displacement Volume = (bbls)

2162  
458  
373

Production Liner Tail Cement Description:

M<sub>u</sub>, Weight 1.5 bbl  
Class H  
Class H  
0.5% BWOW Fluid Loss  
0.5% BWOW Anti-Swelling Agent  
0.35% BWOW Retarder  
0.004 gal/ft. Cement

2561.812  
2.573  
4.282



Zia Hills 25E Fed Com 404H

NWNE 25-T26S-R32E

Lea, Co, NM

1/8/2018

## SURFACE CASING DESIGN INFORMATION

Setting Depth: 921' MD 921' TVD

## PIPE BODY DIMENSIONAL / PERFORMANCE DATA:

| SIZE<br>(Inches) | WEIGHT<br>(LB/FT) | GRADE | CPLG<br>TYPE | BORE ID<br>(Inches) | DRIFT ID<br>(Inches) | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|------------------|-------------------|-------|--------------|---------------------|----------------------|-----------------------------|--------------------------|-------------------------------|
| 11.75            | 47                | J-55  | BTC          | 11                  | 10.844               | 1,510 / 1,438               | 3,070 / 2,669            | 737 / 526                     |

Surface Casing Test Pressure = 1,500 psi  
Pressure Test Prior to Drill Out

## CONNECTION DIMENSIONAL / PERFORMANCE DATA:

| OD<br>(Inches) | ID<br>(Inches) | DRIFT<br>(Inches) | CPLG<br>TYPE | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|----------------|----------------|-------------------|--------------|-----------------------------|--------------------------|-------------------------------|
| 12.75          | 11             | 10.844            | BTC          | 1,510 / 1,438               | 3,070 / 2,669            | 807 / 576                     |

COP Minimum Design / Safety Factor  
Burst Collapse Tension (Body &  
1.15 1.05 1.40

BLM Actual Design / Safety Factors  
Burst Collapse Tension (Body)  
7.45 3.67 17.03  
19.60

## INTERMEDIATE CASING DESIGN INFORMATION

Setting Depth: 4,782' MD 4,765' TVD

## PIPE BODY DIMENSIONAL / PERFORMANCE DATA:

| SIZE<br>(Inches) | WEIGHT<br>(LB/FT) | GRADE | CPLG<br>TYPE | BORE ID<br>(Inches) | DRIFT ID<br>(Inches) | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|------------------|-------------------|-------|--------------|---------------------|----------------------|-----------------------------|--------------------------|-------------------------------|
| 8.625            | 32.0              | P-110 | BTC          | 7.921               | 7.875                | 3,420 / 3,257               | 7,860 / 6,834            | 1,006 / 718                   |

Intermediate Casing Test Pressure = 1500 psi  
Pressure Test Prior to Drill Out

## CONNECTION DIMENSIONAL / PERFORMANCE DATA:

| OD<br>(Inches) | ID<br>(Inches) | DRIFT<br>(Inches) | CPLG<br>TYPE | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|----------------|----------------|-------------------|--------------|-----------------------------|--------------------------|-------------------------------|
| 9.625          | 7.921          | 7.875             | BTC          | 3,420 / 3,257               | 7,860 / 6,834            | 1,002 / 715                   |

COP Minimum Design / Safety Factors  
Burst Collapse Tension (Body &  
1.15 1.05 1.40

BLM Actual Design / Safety Factors  
Burst Collapse Tension (Body)  
3.45 1.50 6.57  
7.65

## PRODUCTION LINER DESIGN INFORMATION

Setting Depth: 17,723' MD 10,530' TVD  
Hanger: 27' MD / TVD

## PIPE BODY DIMENSIONAL / PERFORMANCE DATA:

| SIZE<br>(Inches) | WEIGHT<br>(LB/FT) | GRADE | CPLG<br>TYPE | BORE ID<br>(Inches) | DRIFT ID<br>(Inches) | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|------------------|-------------------|-------|--------------|---------------------|----------------------|-----------------------------|--------------------------|-------------------------------|
| 5.5              | 23                | P-110 | TXP          | 4.670               | 4.54                 | 14,520 / 13,828             | 12,630 / 10,982          | 729 / 520                     |

Production Casing Test Pressure = TBD

## CONNECTION DIMENSIONAL / PERFORMANCE DATA:

| OD<br>(Inches) | ID<br>(Inches) | DRIFT<br>(Inches) | CPLG<br>TYPE | COLLAPSE (PSI)<br>API / CoP | BURST (PSI)<br>API / CoP | TENSION (1k LBS)<br>API / CoP |
|----------------|----------------|-------------------|--------------|-----------------------------|--------------------------|-------------------------------|
| 6.1            | 4.670          | 4.54              | TXP          | 14,520 / 13,828             | 12,630 / 10,982          | 729 / 520                     |

COP Minimum Design / Safety Factors  
Burst Collapse Tension (Body &  
1.15 1.05 1.40

BLM Actual Design / Safety Factors  
Burst Collapse Tension (Body)  
2.50 2.20 2.64  
3.08



**BOPE Configuration & Specifications**  
**13-5/8" x 10,000 psi System**

Rotating Head (w/ fill up line)  
 13-5/8" x 5k psi

Annular Preventer  
 13-5/8" x 5k psi

Pipe Ram  
 13-5/8" x 10k psi

Blind Ram  
 13-5/8" x 10k psi

Kill Line 2-1/16" x 5k Chicksan  
 (2) 2-1/16" x 5k Gate Valves  
 Outer Check Valve

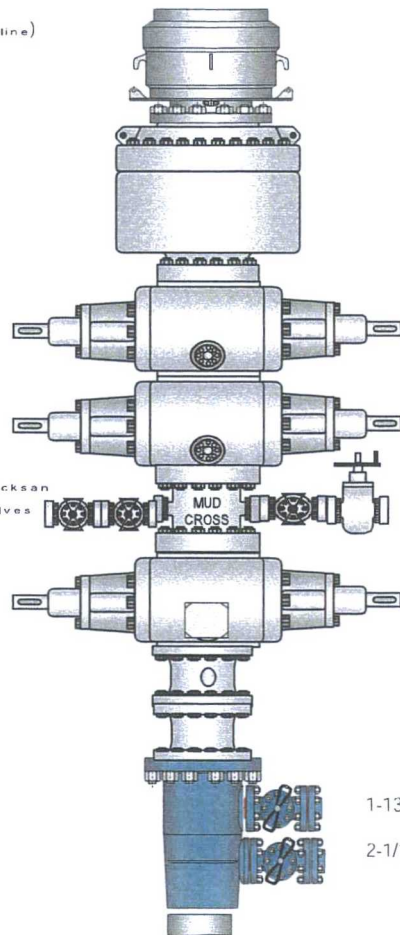
Pipe Ram  
 13-5/8" x 10k psi

Spacer Spool  
 13-5/8" x 10k psi

Casing Head  
 13-5/8" x 10k psi

Choke Line 6" x 3" x 10k psi  
 4-1/16" x 10k psi Inner Manual Valve  
 4-1/16" x 10k psi Outer Remote HCR

1-13/16" x 10k psi  
 2-1/16" 5k psi

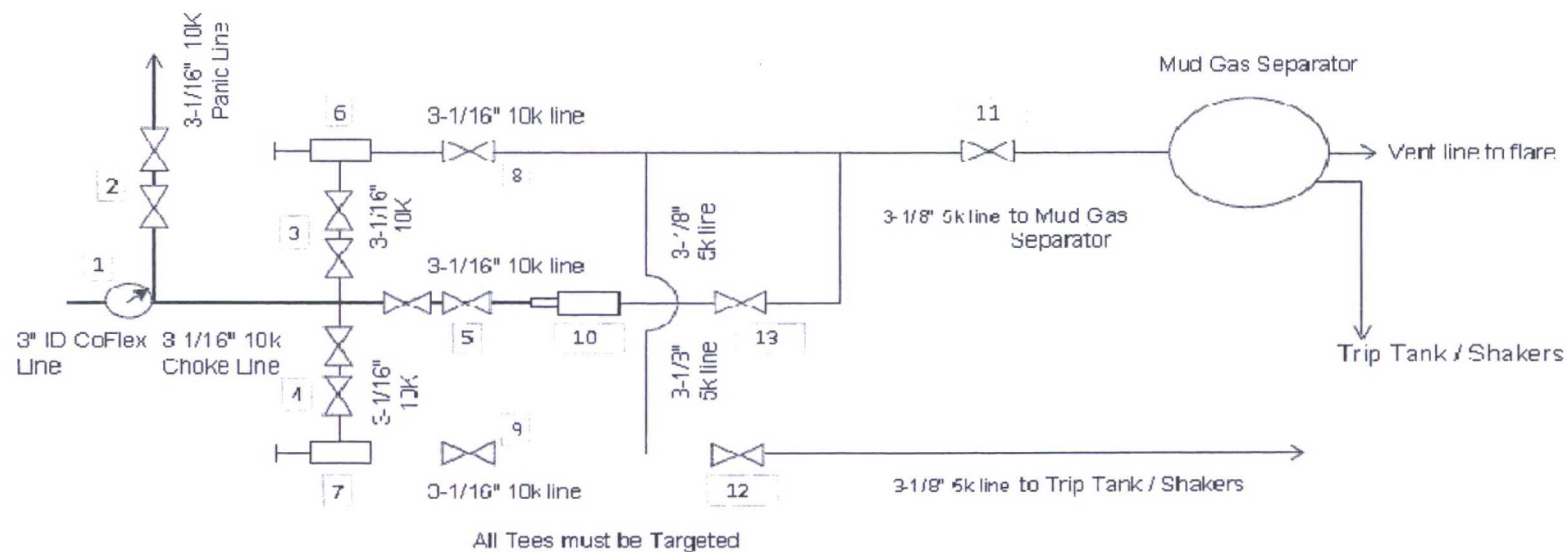


Variance is requested to to install a flexible choke line, instead of staright choke line prescribed in Onshore Order No 2.III.A.2.b

Choke Manifold 5M psi

## CHOKE MANIFOLD ARRANGEMENT - 10M Choke

per Onshore Oil and Gas Order No. 2 utilizing 5M/10M Equipment



| Item | Description  |
|------|--|
| 1    | Pressure Gauge   |
| 2    | 2 Gate Valves, 3-1/16" 10M                                 |
| 3    | 2 Gate Valves, 3-1/16" 10M                                 |
| 4    | 2 Gate Valves, 3-1/16" 10M                                 |
| 5    | 2 Gate Valves, 3-1/16" 10M                                 |
| 6    | Upper Manual Adjustable Choke, 4-1/16", 10M                |
| 7    | Lower Manual Adjustable Choke, 4-1/16", 10M                |
| 8    | Gate Valve, 3-1/16" 10M                                    |
| 9    | Gate Valve, 3-1/16" 10M                                    |
| 10   | Remote Controlled Hydraulic Adjustable Choke, 4-1/16", 10M |
| 11   | Gate Valve, 3-1/8" 5M                                      |
| 12   | Gate Valve, 3-1/8" 5M                                      |
| 13   | Gate Valve, 3-1/16" 10M                                    |

The 10M Choke Manifold & Valves will be tested to rated working pressure.

# PECOS DISTRICT

## DRILLING CONDITIONS OF APPROVAL

|                       |                                     |
|-----------------------|-------------------------------------|
| OPERATOR'S NAME:      | CONOCOPHILLIPS COMPANY              |
| LEASE NO.:            | NMLC069515                          |
| WELL NAME & NO.:      | ZIA HILLS 25E FED COM 404H          |
| SURFACE HOLE FOOTAGE: | 349' FNL & 2310' FEL                |
| BOTTOM HOLE FOOTAGE:  | 50' FSL & 3300' FEL; Sec. 36        |
| LOCATION:             | Section 25, T. 26 S., R 32 E., NMPM |
| COUNTY:               | Lea County, New Mexico              |

COA

**All pervious COA still apply expect the following:**

|                      |  |  |                               |
|----------------------|--|--|-------------------------------|
| H2S                  | <input checked="" type="radio"/> Yes   | <input type="radio"/> No                   |                               |
| Potash               | <input checked="" type="radio"/> None  | <input type="radio"/> Secretary            | <input type="radio"/> R-111-P |
| Cave/Karst Potential | <input checked="" type="radio"/> Low   | <input type="radio"/> Medium               | <input type="radio"/> High    |
| Variance             | <input type="radio"/> None             | <input checked="" type="radio"/> Flex Hose | <input type="radio"/> Other   |
| Wellhead             | <input type="radio"/> Conventional     | <input checked="" type="radio"/> Multibowl | <input type="radio"/> Both    |
| Other                | <input type="checkbox"/> 4 String Area | <input type="checkbox"/> Capitan Reef      | <input type="checkbox"/> WIPP |

### A. Hydrogen Sulfide

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

### B. CASING

1. The 11 3/4 inch surface casing shall be set at approximately **950** feet (a minimum of 25 feet 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.
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.
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. **Additonal cement maybe required. Excess calculates to 13%.**

### 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.

## 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)

☒ Chaves and Roosevelt Counties  
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.  
During office hours call (575) 627-0272.  
After office hours call (575)

☒ 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. 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.
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. The results of the test shall be reported to the appropriate BLM office.
  - 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. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### 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.

#### **Waste Minimization Plan (WMP)**

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

**ZS 030118**



| 11 3/4  | surface csg in a | 14 3/4  | inch hole. | Design Factors |              |          | SURFACE |        |           |
|---|------------------|---------|------------|----------------|--------------|----------|---------|--------|-----------|
| Segment   | #/ft             | Grade   | Coupling   | Body           | Collapse     | Burst    | Length  | Weight |           |
| "A"   | 47.00            | J 55    | BUTT       | 16.51          | 3.48         | 1.3      | 950     | 44,650 |           |
| "B"   |                  |         |            |                |              |          | 0       | 0      |           |
| w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500              |                  |         | Tail Cmt   | does           | circ to sfc. | Totals:  | 950     | 44,650 |           |
| Comparison of Proposed to Minimum Required Cement Volumes |                  |         |            |                |              |          |         |        |           |
| Hole  | Annular          | 1 Stage | 1 Stage    | Min            | 1 Stage      | Drilling | Calc    | Req'd  | Min Dist  |
| Size  | Volume           | Cmt Sx  | CuFt Cmt   | Cu Ft          | % Excess     | Mud Wt   | MASP    | BOPE   | Hole-Cplg |
| 14 3/4  | 0.4336           | 820     | 1251       | 442            | 183          | 8.80     | 1308    | 2M     | 1.00      |

| 8 5/8   | casing inside the | 11 3/4  | Design Factors |       |                      |          | INTERMEDIATE |          |           |
|---|-------------------|---------|----------------|-------|----------------------|----------|--------------|----------|-----------|
| Segment   | #/ft              | Grade   | Coupling       | Joint | Collapse             | Burst    | Length       | Weight   |           |
| "A"   | 32.00             | P 110   | TXPBTC         | 6.57  | 1.45                 | 1.51     | 4,782        | 153,024  |           |
| "B"   |                   |         |                |       |                      |          | 0            | 0        |           |
| w/8.4#/g mud, 30min Sfc Csg Test psig:                |                   |         |                |       |                      | Totals:  | 4,782        | 153,024  |           |
| The cement volume(s) are intended to achieve a top of |                   |         |                | 0     | ft from surface or a |          | 950          | overlap. |           |
| Hole  | Annular           | 1 Stage | 1 Stage        | Min   | 1 Stage              | Drilling | Calc         | Req'd    | Min Dist  |
| Size  | Volume            | Cmt Sx  | CuFt Cmt       | Cu Ft | % Excess             | Mud Wt   | MASP         | BOPE     | Hole-Cplg |
| 10 5/8  | 0.2100            | 720     | 1633           | 1061  | 54                   | 9.50     | 2880         | 3M       | 0.50      |
| Class 'C' tail cmt yld > 1.35                         |                   |         |                |       |                      |          |              |          |           |

|   |                   |         |          |                |          |                                 |            |           |           |
|---|-------------------|---------|----------|----------------|----------|---------------------------------|------------|-----------|-----------|
| Tail cmt  |                   |         |          |                |          |                                 |            |           |           |
| 5 1/2   | casing inside the |         | 8 5/8    | Design Factors |          |                                 | PRODUCTION |           |           |
| Segment   | #/ft              | Grade   | Coupling | Joint          | Collapse | Burst                           | Length     | Weight    |           |
| "A"   | 23.00             | P 110   | TXP      | 3.01           | 2.99     | 2.8                             | 9,862      | 226,826   |           |
| "B"   | 23.00             | P 110   | TXP      | 9.42           | 2.55     | 2.8                             | 7,861      | 180,803   |           |
| w/8.4#/g mud, 30min Sfc Csg Test psig: 2,170          |                   |         |          |                |          | Totals:                         | 17,723     | 407,629   |           |
| B   | would be:         |         |          | 47.45          | 2.80     | if it were a vertical wellbore. |            |           |           |
| No Pilot Hole Planned                                 |                   |         | MTD      | Max VTD        | Csg VD   | Curve KOP                       | Dogleg°    | Severity° | MEOC      |
|   |                   |         | 17723    | 10530          | 10530    | 9862                            | 90         | 8         | 11018     |
| The cement volume(s) are intended to achieve a top of |                   |         |          |                | 4620     | ft from surface or a            |            | 162       | overlap.  |
| Hole  | Annular           | 1 Stage | 1 Stage  | Min            | 1 Stage  | Drilling                        | Calc       | Req'd     | Min Dist  |
| Size  | Volume            | Cmt Sx  | CuFt Cmt | Cu Ft          | % Excess | Mud Wt                          | MASP       | BOPE      | Hole-Cplg |
| 7 7/8   | 0.1733            | 2153    | 2562     | 2276           | 13       | 9.50                            |            |           | 0.84      |