

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

Form 3160-3  
(March 2012)

AUG 01 2017

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**RECEIVED**

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No.  
NM107369

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
HH CE 35 2 FED 61 **318938**

9. API Well No.  
**30-015-44347**

1a. Type of work:  DRILL  REENTER

1b. Type of Well:  Oil Well  Gas Well  Other  Single Zone  Multiple Zone

2. Name of Operator  
CHEVRON USA INCORPORATED

3a. Address  
6301 Deauville Blvd. Midland TX 79706

3b. Phone No. (include area code)  
(432)687-7866

10. Field and Pool, or Exploratory  
PURPLE SAGE / WOLFCAMP (GAS)

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface NESE / 2514 FSL / 475 FEL / LAT 32.085847 / LONG -104.153756  
At proposed prod. zone SESE / 280 FSL / 330 FEL / LAT 32.065061 / LONG -104.153627

11. Sec., T R. M. or Blk. and Survey or Area  
SEC 35 / T25S / R27E / NMP

14. Distance in miles and direction from nearest town or post office\*  
11.5 miles

12. County or Parish  
EDDY

13. State  
NM

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)  
330 feet

16. No. of acres in lease  
1200

17. Spacing Unit dedicated to this well  
640

18. Distance from proposed location\* to nearest well, drilling, completed, 430 feet applied for, on this lease, ft.

19. Proposed Depth  
10237 feet / 17684 feet

20. BLM/BIA Bond No. on file  
FED: CA0329

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3144 feet

22. Approximate date work will start\*  
07/15/2017

23. Estimated duration  
130 days

**24. Attachments**

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- |  |   |
|--|---|
| 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 required by the BLM.             |

25. Signature (Electronic Submission)	Name (Printed Typed) Dorian K Fuentes / Ph: (432)687-7631	Date 12/22/2016
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Title  
Permitting Specialist

Approved by (Signature) (Electronic Submission)	Name (Printed Typed) Bobby Ballard / Ph: (575)234-2235	Date 07/26/2017
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Title  
Natural Resource Specialist

Office  
CARLSBAD

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.

(Continued on page 2)

\*(Instructions on page 2)

**APPROVED WITH CONDITIONS**

RW 8-2-17

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM 1:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 *et seq.*, 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications.

Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## **Additional Operator Remarks**

### **Location of Well**

1. SHL: NESE / 2514 FSL / 475 FEL / TWSP: 25S / RANGE: 27E / SECTION: 35 / LAT: 32.085847 / LONG: -104.153756 ( TVD: 0 feet, MD: 0 feet )  
PPP: NESE / 2640 FSL / 330 FEL / TWSP: 25S / RANGE: 27E / SECTION: 35 / LAT: 32.086192 / LONG: -104.15328 ( TVD: 10237 feet, MD: 17684 feet )  
BHL: SESE / 280 FSL / 330 FEL / TWSP: 26S / RANGE: 27E / SECTION: 2 / LAT: 32.065061 / LONG: -104.153627 ( TVD: 10237 feet, MD: 17684 feet )

### **BLM Point of Contact**

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: 5752345934

Email: pperez@blm.gov

## **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

**PECOS DISTRICT  
DRILLING OPERATIONS  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Chevron USA Inc
LEASE NO.:	NMNM114968
WELL NAME & NO.:	61H-HH CE 35 2 Fed
SURFACE HOLE FOOTAGE:	2514'/S & 475'/E
BOTTOM HOLE FOOTAGE:	280'/S & 330'/E
LOCATION:	Section 35, T.25 S., R.27 E., NMPM
COUNTY:	Eddy County, New Mexico

**A. DRILLING OPERATIONS 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

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. **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 wells.**
3. 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 is located, this does not include the dog house or stairway area.
4. **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.**

## **B. CASING**

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

### **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.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

### **High Cave/Karst**

Possibility of water flows in the Castillo and Salado.

Possibility of lost circulation in the Delaware.

**A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH.**

1. The 13-3/8 inch surface casing shall be set at approximately **450** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
  - 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 is to include the lead cement slurry.**
- 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.

**Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

2. The minimum required fill of cement behind the 9-5/8 inch production casing is:

**Operator has proposed DV tool at depth of 2100', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.**

a. First stage to DV tool:

- Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 22% - Additional cement may be required.**

**If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.**

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

**Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

3. The minimum required fill of cement behind the 5.5 inch production casing is:

Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. 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.

### **C. 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. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.

c. Manufacturer representative shall install the test plug for the initial BOP test.

d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.

- 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.**

**5M 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. 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. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
  - c. 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.
  - d. The results of the test shall be reported to the appropriate BLM office.
  - 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 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.

#### **D. DRILLING MUD**

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

**Proposed mud weight may not be adequate for drilling through Wolfcamp.**

**Approved for aerated mud, but not air drilling.**

**E. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**F. 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.

**TMAK 04212017**

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Chevron USA Inc.
LEASE NO.:	NMNM114968
WELL NAME & NO.:	61H-HH CE 35 2 Fed
SURFACE HOLE FOOTAGE:	2514'/S & 475'/E
BOTTOM HOLE FOOTAGE:	280'/S & 330'/E
LOCATION:	Section 35, T.25 S., R.27 E., NMPM
COUNTY:	Eddy County, New Mexico

**TABLE OF CONTENTS**

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Cave/Karst
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

### **Cave and Karst**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

#### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

##### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

##### **No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

##### **Pad Berming:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

##### **Tank Battery Liners and Berms:**

Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

##### **Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

### **F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

**G. ON LEASE ACCESS ROADS****Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

**Turnouts**

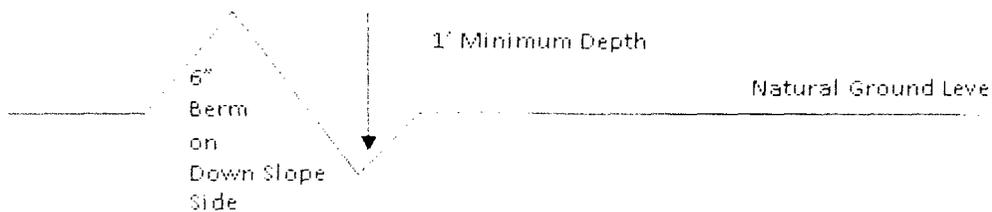
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out-sloping and in-sloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

### Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

### Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Construction Steps**

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

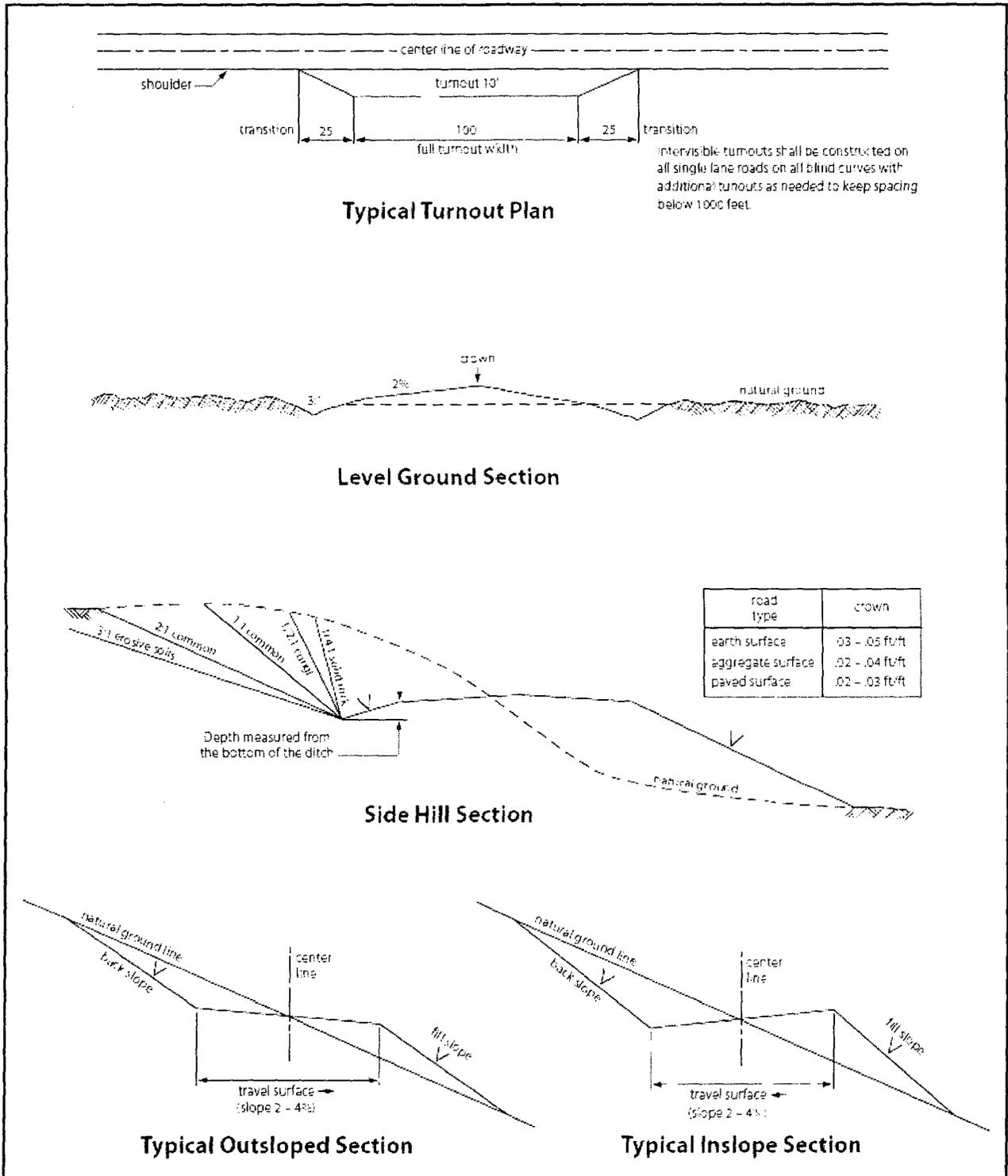


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## **B. PIPELINES**

### **STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES**

A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.

4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;

b. Activities of other parties including, but not limited to:

- (1) Land clearing
- (2) Earth-disturbing and earth-moving work
- (3) Blasting
- (4) Vandalism and sabotage;

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

### **STANDARD STIPULATIONS FOR BURIED PIPELINE STIPULATIONS**

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of

the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be

segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3          |
| <input type="checkbox"/> seed mixture 2            | <input type="checkbox"/> seed mixture 4          |
| <input type="checkbox"/> seed mixture 2/LPC        | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

## **VIII. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **IX. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

**Seed Mixture 1 for Loamy Sites**

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre shall be doubled. The seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

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**Operator Certification**

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

**NAME:** Dorian K Fuentes**Signed on:** 12/20/2016**Title:** Permitting Specialist**Street Address:** 6301 Deauville Blvd**City:** Midland**State:** TX**Zip:** 79706**Phone:** (432)687-7631**Email address:** djvo@chevron.com

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**Field Representative**

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

APD ID: 10400009344

Submission Date: 12/22/2016

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

**Section 1 - General**

APD ID: 10400009344

Tie to previous NOS?

Submission Date: 12/22/2016

BLM Office: CARLSBAD

User: Dorian K Fuentes

Title: Permitting Specialist

Federal/Indian APD: FED

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

Lease number: NMNM107369

Lease Acres: 1200

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? NO

APD Operator: CHEVRON USA INCORPORATED

Operator letter of designation:

Keep application confidential? NO

**Operator Info**

Operator Organization Name: CHEVRON USA INCORPORATED

Operator Address: 6301 Deauville Blvd.

Zip: 79706

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)687-7866

Operator Internet Address:

**Section 2 - Well Information**

Well in Master Development Plan? EXISTING

Mater Development Plan name: HAYHURST DEVELOPMENT  
AREA

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: HH CE 35 2 FED

Well Number: 61

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE

Pool Name: WOLFCAMP  
(GAS)

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

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

Describe other minerals:

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: HH CE Number: 61 62 63 64 65 66 35 2 FED

Well Class: HORIZONTAL

Number of Legs:

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 11.5 Miles

Distance to nearest well: 430 FT

Distance to lease line: 330 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: HH\_CE\_35\_2\_FED\_61\_C\_102\_06-09-2017.pdf

Well work start Date: 07/15/2017

Duration: 130 DAYS

### Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 0

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	251 4	FSL	475	FEL	25S	27E	35	Aliquot NESE	32.08584 7	- 104.1537 56	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114968	314 4	0	0
KOP Leg #1	251 4	FSL	330	FEL	25S	27E	35	Aliquot NESE	32.07893 5	- 104.1534 47	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114968	314 4	0	0
PPP Leg #1	264 0	FSL	330	FEL	25S	27E	35	Aliquot NESE	32.08619 2	- 104.1532 8	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114968	- 709 3	176 84	102 37

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	330	FSL	330	FEL	26S	27E	2	Aliquot SESE 9	32.06519 9	- 104.1536 25	EDD Y	NEW MEXI CO	NEW MEXI CO	S	STATE	- 709 3	176 84	102 37
BHL Leg #1	280	FSL	330	FEL	26S	27E	2	Aliquot SESE 1	32.06506 1	- 104.1536 27	EDD Y	NEW MEXI CO	NEW MEXI CO	S	STATE	- 709 3	176 84	102 37

District I  
1625 N French Dr, Hobbs, NM 88249  
Phone (575) 393-6161 Fax (575) 393-0720

District II  
811 S First St., Artesia, NM 88210  
Phone (575) 748-1253 Fax (575) 748-9720

District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone (505) 334-6178 Fax (505) 334-6170

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

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

Form C-102  
August 1, 2011  
appropriate  
District Office

**RECEIVED**

AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

1 API Number <b>30-015-44347</b>	2 Pool Code <b>98220</b>	3 Pool Name <b>Purple Sage; Wolfcamp (GMS)</b>
4 Property Code <b>318938</b>	5 Property Name <b>HH CE 35 2 FED</b>	
6 GRID No. <b>4323</b>	7 Operator Name <b>CHEVRON U.S.A. INC.</b>	
		8 Well Number <b>61 H</b>
		9 Elevation <b>3144'</b>

**" Surface Location**

UI or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	35	25 SOUTH	27 EAST, N.M.P.M.		2514'	SOUTH	475'	EAST	EDDY

**" Bottom Hole Location If Different From Surface**

UI or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	2	26 SOUTH	27 EAST, N.M.P.M.		280'	SOUTH	330'	EAST	EDDY

10 Dedicated Acres <b>6.40</b>	11 Joint or L F I	12 Consolidation Code	13 Grant No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

FIRST TAKE POINT	
X=	555,916 NAD 27
Y=	395,083
LAT.	32.086070
LONG.	104.152788
MID POINT	
X=	555,558 NAD 27
Y=	392,443
LAT.	32.078813
LONG.	104.152955
LAST TAKE POINT	
X=	555,821 NAD 27
Y=	387,446
LAT.	32.065077
LONG.	104.153134

HH CE 35 2 FED NO 61 WELL	
X=	555,768 NAD 27
Y=	394,957
LAT.	32.085725
LONG.	104.153265
CORNER COORDINATES TABLE (NAD 27)	
A - Y=397750.87	X=553684.52
B - Y=397744.31	X=555259.47
C - Y=392441.44	X=552540.62
D - Y=392442.13	X=555198.44
E - Y=387033.95	X=553461.59
F - Y=387127.27	X=555146.39

**OPERATOR CERTIFICATION**

I hereby certify that the information contained herein is true and correct to the best of my knowledge and belief, and that this operation is either done as a working interest or without mineral interest in the land including the proposed bottom hole location. I, as a split estate holder, the location pursuant to a contract with the owner of such mineral or working interest or the relevant pasting operation or a minimum passing order hereby covered by the division.

Signature: *[Signature]* Date: **12-30-2016**

Printed Name: **Dorcas R. Fuentes**

E-mail Address: **drc@chevron.com**

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**SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my knowledge.

Date of Survey: **11-10-2016**

Signature and Seal of Professional Surveyor: *[Signature]*

**23006**

Certificate Number: **23006**

**APD ID:** 10400009344

**Submission Date:** 12/22/2016

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

**Well Type:** CONVENTIONAL GAS WELL

**Well Work Type:** Drill

**Section 1 - Geologic Formations**

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
17762	CASTILE	-3626	505	505	LIMESTONE, ANHYDRITE, GYPSUM	NONE	No
15332	BELL CANYON	-5936	2310	2310	SANDSTONE	NONE	No
17719	LAMAR	-6021	2395	2395	LIMESTONE	NONE	No
15316	CHERRY CANYON	-6834	3208	3208	SANDSTONE	NONE	No
17713	BRUSHY CANYON	-8076	4450	4450	SANDSTONE	NONE	No
17688	BONE SPRING	-9925	6299	6299	LIMESTONE	NONE	No
15338	BONE SPRING 1ST	-10514	6888	6888	SANDSTONE	NONE	No
15338	BONE SPRING 1ST	-10540	6914	6914	SHALE	NONE	No
17737	BONE SPRING 2ND	-11247	7621	7621	SANDSTONE	NONE	No
17738	BONE SPRING 3RD	-12243	8617	8617	LIMESTONE	NONE	No
17709	WOLFCAMP	-13863	10237	17684	MUDSTONE	NATURAL GAS, OIL	Yes

**Section 2 - Blowout Prevention**

**Pressure Rating (PSI):** 5M

**Rating Depth:** 10307

**Equipment:** Will have a minimum of 5000 psi rig stack for drill out below surface casing. Stack will be tested as specified in the attached requirements.

**Requesting Variance?** YES

**Variance request:** Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold; Chevron would also like to request a variance to use a FMC Technologies conventional wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days.

**Testing Procedure:** Test BOP from 250 psi to 5000 psi in Ram and 250 psi to 3500 psi in Annular - attachments are included below.

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

**Choke Diagram Attachment:**

HH CE 35 2 FED 61\_9Pt\_02-15-2017.pdf

HH CE 35 2 FED 61\_BOP-Choke\_02-15-2017.pdf

**BOP Diagram Attachment:**

HH CE 35 2 FED 61\_BOP Diagram\_02-15-2017.pdf

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**Section 3 - Casing**

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Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	450	0	450	-7093	-7543	450	K-55	54.5	STC	5.11	1.82	DRY	3.97	DRY	2.31
2	INTERMEDIATE	12.25	9.625	NEW	API	Y	0	9015	0	9015	-7093	-16108	9015	L-80	40	OTHER	1.32	1.45	DRY	1.78	DRY	1.84
3	PRODUCTION	8.5	5.5	NEW	API	N	0	17684	0	10237	-7093	-17330	17684	P-110	20	OTHER	1.5	1.82	DRY	2.43	DRY	1.35

**Casing Attachments**

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Casing ID: 1      String Type: SURFACE

Inspection Document:

Spec Document:

Taperd String Spec:

Casing Design Assumptions and Worksheet(s):

HH CE 35 2 FED 61\_9Pt\_02-17-2017.pdf

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Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

### Casing Attachments

Casing ID: 2 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Taperd String Spec:

HH CE 35 2 FED 61\_9Pt\_02-17-2017.pdf

Casing Design Assumptions and Worksheet(s):

HH CE 35 2 FED 61\_9.625 TXP\_02-15-2017.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Taperd String Spec:

Casing Design Assumptions and Worksheet(s):

HH CE 35 2 FED 61\_P110 TXP\_02-15-2017.pdf

### Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	450	356	1.33	14.8	6.37	50	C	Class C
INTERMEDIATE	Lead	2100	0	1100	213	2.43	11.9	14.21		CL C	50/50 Poz Class C + Extender, Antifoam, Retarder, Salt,
INTERMEDIATE	Tail		1100	2100	235	1.33	14.8	6.37	0	C	CLASS C + ANTIFOAM, RETARDER, VISCOSIFIER

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Lead	2100	2100	8015	1524	2.43	11.9	13.76	100	H	50/50 Poz Class H + Antifoam, Extender, Salt, Retarder, Viscosifier
INTERMEDIATE	Tail		8015	9015	389	1.21	15.6	5.54	50	H	
PRODUCTION	Lead		7015	8015	430	1.21	14.5	5.54		H	50/50 Poz: Class H + Extender, Antifoam, Dispersant, Retarder
PRODUCTION	Tail		8015	1777 6	2766	1.2	15.6	5.3	50	H	
											Class H + Retarder, Dispersant
											Class H, + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent

### Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: In compliance with onshore order #2

Describe the mud monitoring system utilized: Visual Mud monitoring Equipment, PVT, Stroke counter, Flow Sensor in compliance with onshore order #2

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	450	SPUD MUD	8.3	8.7							
450	9015	OIL-BASED MUD	9	9.5							

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
9015	1777 6	OIL-BASED MUD	10	12.5							**the mud weights will range depending on the targeted formation. The Wolfcamp D pore pressure will not exceed 12.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure. To control pressure we are using 12.5 and may end up using heavier mud weight to either 13.5 or 14.0.

## Section 6 - Test, Logging, Coring

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

Drill Stem Tests are not planned and the logging program will be as follows:

Mudlogs - 2 man mudlog

MWD Gamma

Quad Combo w/Di-Pole Sonic, FMI

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

GR,MWD,MUDLOG

Coring operation description for the well:

Conventional whole core samples are not planned; directional survey will be run - will send log(s) when run

## Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6654

Anticipated Surface Pressure: 4401.86

Anticipated Bottom Hole Temperature(F): 150

Anticipated abnormal proessures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

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

**Hydrogen sulfide drilling operations plan:**

HH CE 35 2 FED 61\_H2S\_12-20-2016.pdf

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### **Section 8 - Other Information**

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

HH CE 35 2 FED 61\_Well Pad Layout\_12-20-2016.pdf

HH CE 35 2 FED 61\_AC Report\_02-15-2017.pdf

HH CE 35 2 FED 61\_Stand Report\_02-15-2017.pdf

HH\_CE\_35\_2\_FED\_61\_Specified\_FTP\_03-14-2017.pdf

**Other proposed operations facets description:**

The FTP corrected and attached\_HH CE 35 2 FED 61\_Specified FTP.

**Other proposed operations facets attachment:**

**Other Variance attachment:**

# CHOKE MANIFOLD SCHEMATIC

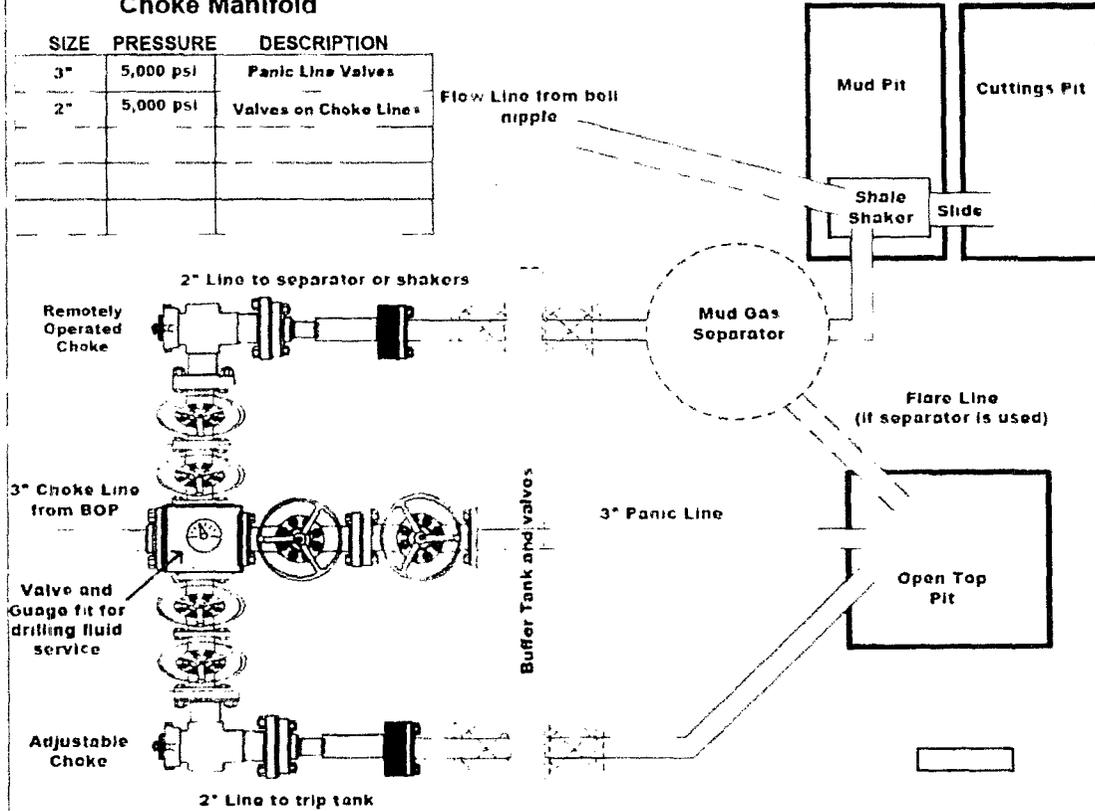
## Minimum Requirements

**OPERATION** : Bone Spring wells/ Intermediate section SWD

**Minimum System Pressure Rating** : 5,000 psi

### Choke Manifold

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Panic Line Valves
2"	5,000 psi	Valves on Choke Lines



### Installation Checklist

The following items must be verified and checked off prior to pressure testing of BOP equipment.

- The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- Adjustable Chokes may be Remotely Operated but will have backup hand pump for hydraulic actuation in case of loss of rig air pressure or power.
- Flare and Panic lines will terminate a minimum of 150' from the wellhead. These lines will terminate at a location as per approved APD.
- The choke line, kill line, and choke manifold lines will be straight unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and reduce vibration. This excludes the line between mud gas separator and shale shaker.
- All valves (except chokes) on choke line, kill line, and choke manifold will be full opening and will allow straight through flow. This excludes any valves between mud gas separator and shale shakers.
- All manual valves will have hand wheels installed.
- If used, flare system will have effective method for ignition
- All connections will be flanged, welded, or clamped (no threaded connections like hammer unions)
- If buffer tank is used, a valve will be used on all lines at any entry or exit point to or from the buffer tank.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: \_\_\_\_\_

Representative: \_\_\_\_\_

Date: \_\_\_\_\_

Diagram B

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9342	
Wolfcamp D		10237	
Lateral TVD Wolfcamp D		10237	17683.58'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9342
Oil/Gas	Wolfcamp D	10237

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies conventional wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	LTC	New
Production	0'	17,684'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 17683.58' MD/10,237' TVD (7,500' VS @ 90deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	17,684'	15.6	1.2	50	2766	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,300'	17.2	0.97	10	350	3.61

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	17,684'	OBM	10.0 - 12.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp D pore pressure will not exceed 12.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure.

**7. TESTING, LOGGING, AND CORING**

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI,	Prod hole	After Intermediate hole	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is: 6654 psi

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9342	
Wolfcamp D		10237	
Lateral TVD Wolfcamp D		10237	17683.58'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9342
Oil/Gas	Wolfcamp D	10237

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies conventional wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	LTC	New
Production	0'	17,684'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 17683.58' MD/10,237' TVD (7,500' VS @ 90deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Surface Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
DV TOOL		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	17,684'	15.6	1.2	50	2766	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,300'	17.2	0.97	10	350	3.61

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	17,684'	OBM	10.0 - 12.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp D pore pressure will not exceed 12.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure.

**7. TESTING, LOGGING, AND CORING**

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI,	Prod hole	After Intermediate hole	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is:  
**6654 psi**

# CHOKE MANIFOLD SCHEMATIC

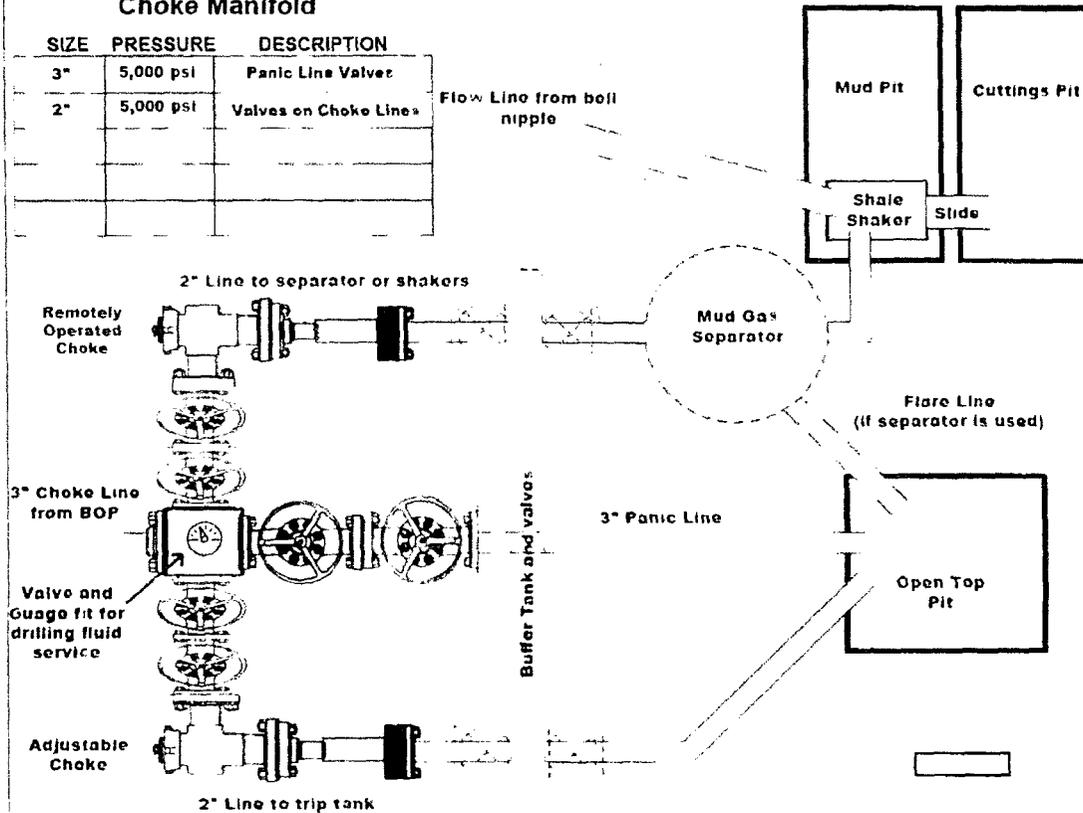
## Minimum Requirements

**OPERATION** : Bone Spring wells/ Intermediate section SWD

**Minimum System Pressure Rating** : 5,000 psi

### Choke Manifold

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Panic Line Valve
2"	5,000 psi	Valves on Choke Lines



### Installation Checklist

The following items must be verified and checked off prior to pressure testing of BOP equipment

- The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- Adjustable Chokes may be Remotely Operated but will have backup hand pump for hydraulic actuation in case of loss of rig air pressure or power.
- Flare and Panic lines will terminate a minimum of 150' from the wellhead. These lines will terminate at a location as per approved APD.
- The choke line, kill line, and choke manifold lines will be straight unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and reduce vibration. This excludes the line between mud gas separator and shale shaker.
- All valves (except chokes) on choke line, kill line, and choke manifold will be full opening and will allow straight through flow. This excludes any valves between mud gas separator and shale shakers.
- All manual valves will have hand wheels installed.
- If used, flare system will have effective method for ignition
- All connections will be flanged, welded, or clamped (no threaded connections like hammer unions)
- If buffer tank is used, a valve will be used on all lines at any entry or exit point to or from the buffer tank.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer:

**Wellname:** \_\_\_\_\_

**Representative:** \_\_\_\_\_

**Date:** \_\_\_\_\_

# BLOWOUT PREVENTOR SCHEMATIC

## Minimum Requirements

OPERATION : Bone Spring wells/ Intermediate section SWD

Minimum System Pressure Rating : 5,000 psi

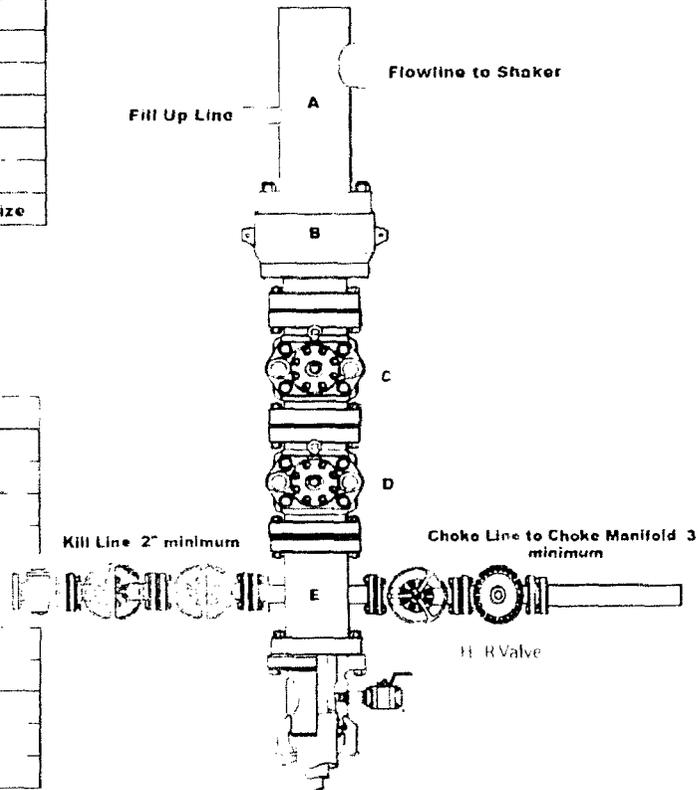
SIZE	PRESSURE	DESCRIPTION
A	N/A	Bell Nipple
B	13 5/8" 5,000 psi	Annular
C	13 5/8" 5,000 psi	Pipe Ram
D	13 5/8" 5,000 psi	Blind Ram
E	13 5/8" 5,000 psi	Mud Cross
F		
DSA	As required for each hole size	

### Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	5,000 psi	Gate Valve
2"	5,000 psi	Gate Valve
2"	5,000 psi	Check Valve

### Choke Line

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Gate Valve
3"	5,000 psi	HCR Valve



### Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- All valves on the kill line and choke line will be full opening and will allow straight through flow.
- The kill line and choke line will be straight unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and reduce vibration.
- Manual (hand wheels) or automatic locking devices will be installed on all ram preventers. Hand wheels will also be installed on all manual valves on the choke line and kill line.
- A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will remain open unless accumulator is inoperative.
- Upper kelly cock valve with handle will be available on rig floor along with safety valve and subs to fit all drill string connections in use.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: \_\_\_\_\_  
 Representative: \_\_\_\_\_  
 Date: \_\_\_\_\_

# BLOWOUT PREVENTOR SCHEMATIC

## Minimum Requirements

**OPERATION** : Bone Spring wells/ Intermediate section SWD

**Minimum System Pressure Rating** : 5,000 psi

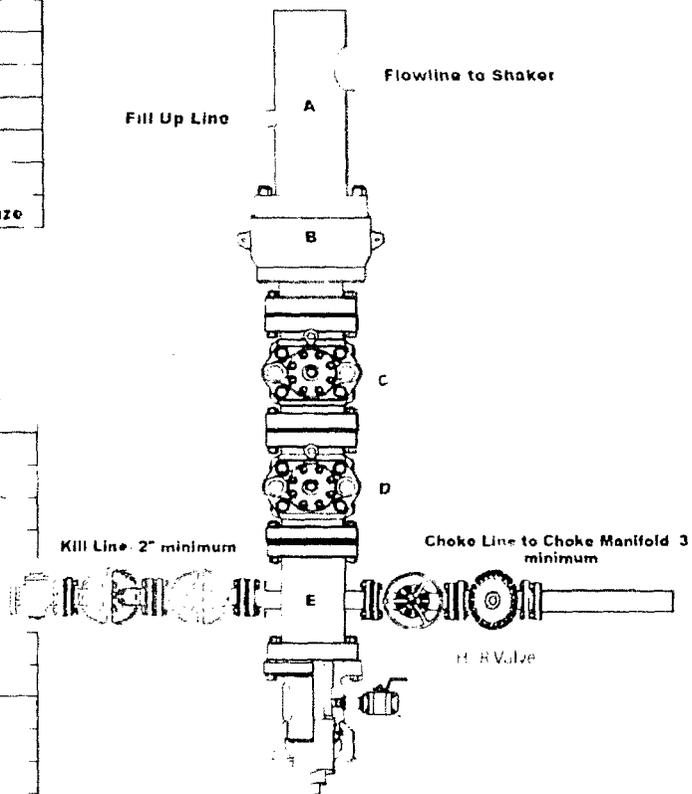
SIZE	PRESSURE	DESCRIPTION
A	N/A	Bell Nipple
B	13 5/8" 5,000 psi	Annular
C	13 5/8" 5,000 psi	Pipe Ram
D	13 5/8" 5,000 psi	Blind Ram
E	13 5/8" 5,000 psi	Mud Cross
F		
DSA	As required for each hole size	

**Kill Line**

SIZE	PRESSURE	DESCRIPTION
2"	5,000 psi	Gate Valve
2"	5,000 psi	Gate Valve
2"	5,000 psi	Check Valve

**Choke Line**

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Gate Valve
3"	5,000 psi	HCR Valve



### Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- All valves on the kill line and choke line will be full opening and will allow straight through flow.
- The kill line and choke line will be straight unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and reduce vibration.
- Manual (hand wheels) or automatic locking devices will be installed on all ram preventers. Hand wheels will also be installed on all manual valves on the choke line and kill line.
- A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will remain open unless accumulator is inoperative.
- Upper Kelly cock valve with handle will be available on rig floor along with safety valve and subs to fit all drill string connections in use.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer:

**Wellname:** \_\_\_\_\_

**Representative:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Diagram A

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9084	
Lateral TVD Wolfcamp A		9084	18718.50'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9084

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

PLEASE REFERENCE MPD

**4. CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	18718.50'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 18952.56' MD/9084.19' TVD (10173.5' VS @ 89.16° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	2.9	1.34	1.79	2.22
Production	1.26	1.66	2.54	1.31

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
DV Tool		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	18718.50'	15.6	1.2	50	3258	5.30

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	18718.50'	OBM	10.0 - 13.5	50 - 70	5.0 - 10

7. **TESTING, LOGGING, AND CORING**

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

PLEASE REFERENCE MDP

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9186	
Lateral TVD Wolfcamp A		9186	18952.56'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9186

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

PLEASE REFERENCE MPD

**4. CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,000'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	18952.56'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9000'  
 Production Casing: 18952.56' MD/9185.69' TVD (10173.5' VS @ 89.13° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	2.9	1.34	1.79	2.22
Production	1.26	1.66	2.54	1.31

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
DV Tool		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,000'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	18952.56'	15.6	1.2	50	3258	5.30

6. MUD PROGRAM

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9,000'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9,000'	18952.56'	OBM	10.0 - 13.5	50 - 70	5.0 - 10

7. TESTING, LOGGING, AND CORING

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

PLEASE REFERENCE MDP

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		8745	
Wolfcamp C		9510	
Lateral TVD Wolfcamp C		9653	19395.01

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
	Deepest Expected Base of Fresh Water	450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	8745
Oil/Gas	Wolfcamp C	9653

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

PLEASE REFERENCE MDP

**4. CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9000'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	19,395'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9000'  
 Production Casing: 19395' MD/9,653' TVD (10097.94' VS @ 89.25° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,000'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,000'	9,000'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	19,395'	15.6	1.2	50	3473	5.30

ONSHORE ORDER NO. 1  
Chevron  
HayHurst SO 8 P5 #19H  
Eddy County, NM

CONFIDENTIAL -- TIGHT HOLE  
DRILLING PLAN  
PAGE: 4

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9000'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9000'	19,395'	OBM	10.0 - 13.5	50 - 70	5.0 - 10

7. **TESTING, LOGGING, AND CORING**

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

PLEASE REFERENCE MDP

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		8745	
Wolfcamp C		9709	
Lateral TVD Wolfcamp C		9709	19571.79'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
	Deepest Expected Base of Fresh Water	450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	8745
Oil/Gas	Wolfcamp C	9709

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

PLEASE REFERENCE MDP

**4. CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,000'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	19571.79'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9000'  
 Production Casing: 19571.79' MD/9,709' TVD (10,222.9' VS @ 88.87° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
DV TOOL		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,300'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	19571.79'	15.6	1.2	50	3473	5.30

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9,000'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9,000'	19571.79'	OBM	10.0 - 13.5	50 - 70	5.0 - 10

7. **TESTING, LOGGING, AND CORING**

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

PLEASE REFERENCE MDP

1. **FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		8745	
Wolfcamp D		10027	
Lateral TVD Wolfcamp D		10027	19932.37'

2. **ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	8745
Oil/Gas	Wolfcamp D	10027

All shows of fresh water and minerals will be reported and protected.

3. **BOP EQUIPMENT**

PLEASE REFERENCE MDP

4. **CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,000'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	19932.37'	8-1/2"	0"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

**Surface Casing:** 450'  
**Intermediate Casing:** 9300'  
**Production Casing:** 19932.37' MD/9955' TVD (10272.31' VS @ 89.56° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,300'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	19932.37'	15.6	1.2	50	3605	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,000'	17.2	0.97	50-100	50-100	3.61

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	0	0	0
450'	9,000'	OBM	9.0 - 9.5	50 -70	5.0 - 10
9,000'	19932.37'	OBM	10.0 - 13.5	50 -70	5.0 - 10

7. **TESTING, LOGGING, AND CORING**

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI, Lithoscanner	Prod hole	After Intermediate hole	TBD

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

PLEASE REFERENCE MDP

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		8745	
Wolfcamp D		9955	
Lateral TVD Wolfcamp D		9955	19925.13'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	8745
Oil/Gas	Wolfcamp D	9955

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

PLEASE REFERENCE MDP

4. **CASING PROGRAM**

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,000'	12-1/4"	9-5/8"	43.5 #	L-80	TXP	New
Production	0'	19925.13'	8-1/2"	0"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9300'  
 Production Casing: 19925.13' MD/9955' TVD (10272.31' VS @ 88.69° inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight (ppg)	Yield (sx/cu ft)	%Excess Open Hole	Sacks	Water gal/sk
<b>Surface</b>								
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,000'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,000'	9,000'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	19925.13'	15.6	1.2	50	3605	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,000'	17.2	0.97	50-100	50-100	3.61

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	0	0	0
450'	9,000'	OBM	9.0 - 9.5	50 -70	5.0 - 10
9,000'	19925.13'	OBM	10.0 - 13.5	50 -70	5.0 - 10

7. **TESTING, LOGGING, AND CORING**

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI,	Prod hole	After Intermediate hole	TBD

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

PLEASE REFERENCE MDP

Eddy County, NM

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:  
The formation tops are just an overview of the area TVD and are subjected to change

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9014	
Lateral TVD Wolfcamp A		9014	14,014'-22,000'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9014

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies UH-2 Multibowl wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

- a. The proposed casing program will be as follows: The proposed casing program will be as follows: The ranges of the production casing will range from 5000' -10,000' laterals. The targeted formations will be the Wolfcamp A. The casing loads were based on the worst case senerio (10,000' lateral)

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	TXP	New
Production	0'	14,014'-22,000'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

- b. Casing design subject to revision based on geologic conditions encountered.
- c. \*\*\*A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalculated & sent to the BLM prior to drilling.
- d. Chevron will fill casing at a minimum of every 20 jts (840') while running for intermediate and production casing in order to maintain collapse SF.

SF Calculations based on the following "Worst Case" casing design:

Surface Casing: 450'  
Intermediate Casing: 9015'  
Production Casing: 14,014'-22,000' MD/9,014' TVD (5,000'-10,000' VS @ 90 deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	2.9	1.34	1.79	2.22
Production	1.26	1.66	2.54	1.31

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 6.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight (ppg)	Yield (sx/cu ft)	%Excess Open Hole	Sacks	Water gal/sk
<b>Surface</b>								
Tail	Class C	0'	450'	14.8	1.33	50-100		6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50-100	150-250	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	50-100	250-350	6.37
DV Tool		Tool Depth: 2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	50-100	600-850	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50-100	250-450	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, Retarder	7,015'	8,015'	14.5	1.21	50-100	150-250	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	TD	15.6	1.2	50-100	2000-3000	5.30

1. Final cement volumes will be determined by caliper. Also, due to the surface location not being staked, the cement
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint
3. Production casing will have one horizontal type centralizer on every joint for the first 1000' from TD, then every other joint to EOB, and then every third joint to KOP. Bowspring type centralizers will be run from KOP to intermediate casing

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	TD	OBM	10.0 - 13.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp A pore pressure will not exceed 9.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure. A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume. When abnormal pressures are anticipated -- a pit volume totalizer (PVT), stroke counter, and flow sensor will be used to detect volume changes indicating loss or gain of circulating fluid volume.

A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions

**7. TESTING, LOGGING, AND CORING**

The anticipated type and amount of testing, logging, and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is: 4218 psi
- b. Hydrogen sulfide gas is not anticipated. An H2S Contingency plan will be attached with this MPD in the event that H2S is encountered

Eddy County, NM

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:  
The formation tops are just an overview of the area TVD and are subjected to change

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9014	
Lateral TVD Wolfcamp A		9014	14,014'-22,000'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9014

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies UH-2 Multibowl wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

- a. The proposed casing program will be as follows: The proposed casing program will be as follows: The ranges of the production casing will range from 5000' -10,000' laterals. The targeted formations will be the Wolfcamp A. The casing loads were based on the worst case senerio (10,000' lateral)

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	TXP	New
Production	0'	14,014'-22,000'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

- b. Casing design subject to revision based on geologic conditions encountered.
- c. \*\*\*A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalculated & sent to the BLM prior to drilling.
- d. Chevron will fill casing at a minimum of every 20 jts (840') while running for intermediate and production casing in order to maintain collapse SF.

SF Calculations based on the following "Worst Case" casing design:

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 14,014'-22,000' MD/9,014' TVD (5,000'-10,000' VS @ 90 deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	2.9	1.34	1.79	2.22
Production	1.26	1.66	2.54	1.31

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P interne!: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50-100		6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50-100	150-250	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	50-100	250-350	6.37
DV Tool		Tool Depth: 2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	50-100	600-850	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50-100	250-450	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, Retarder	7,015'	8,015'	14.5	1.21	50-100	150-250	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	TD	15.6	1.2	50-100	2000-3000	5.30

1. Final cement volumes will be determined by caliper. Also, due to the surface location not being staked, the cement
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint
3. Production casing will have one horizontal type centralizer on every joint for the first 1000' from TD, then every other joint to EOB, and then every third joint to KOP. Bowspring type centralizers will be run from KOP to intermediate casing

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	TD	OBM	10.0 - 13.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp A pore pressure will not exceed 9.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure. A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume. When abnormal pressures are anticipated -- a pit volume totalizer (PVT), stroke counter, and flow sensor will be used to detect volume changes indicating loss or gain of circulating fluid volume.

A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions

**7. TESTING, LOGGING, AND CORING**

The anticipated type and amount of testing, logging, and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is: 4218 psi
- b. Hydrogen sulfide gas is not anticipated. An H2S Contingency plan will be attached with this MPD in the event that H2S is encountered

Eddy County, NM

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:  
The formation tops are just an overview of the area TVD and are subjected to change

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9014	
Lateral TVD Wolfcamp A		9014	14,014'-22,000'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9014

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies UH-2 Multibowl wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

- a. The proposed casing program will be as follows: The proposed casing program will be as follows: The ranges of the production casing will range from 5000' -10,000' laterals. The targeted formations will be the Wolfcamp A. The casing loads were based on the worst case senerio (10,000' lateral)

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	TXP	New
Production	0'	14,014'-22,000'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

- b. Casing design subject to revision based on geologic conditions encountered.
- c. \*\*\*A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalculated & sent to the BLM prior to drilling.
- d. Chevron will fill casing at a minimum of every 20 jts (840') while running for intermediate and production casing in order to maintain collapse SF.

SF Calculations based on the following "Worst Case" casing design:

Surface Casing: 450'  
Intermediate Casing: 9015'  
Production Casing: 14,014'-22,000' MD/9,014' TVD (5,000'-10,000' VS @ 90 deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	2.9	1.34	1.79	2.22
Production	1.26	1.66	2.54	1.31

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50-100		6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50-100	150-250	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	50-100	250-350	6.37
DV Tool		Tool Depth 2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	50-100	600-850	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50-100	250-450	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, Retarder	7,015'	8,015'	14.5	1.21	50-100	150-250	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	TD	15.6	1.2	50-100	2000-3000	5.30

1. Final cement volumes will be determined by caliper. Also, due to the surface location not being staked, the cement
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint
3. Production casing will have one horizontal type centralizer on every joint for the first 1000' from TD, then every other joint to EOB, and then every third joint to KOP. Bowspring type centralizers will be run from KOP to intermediate casing

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	TD	OBM	10.0 - 13.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp A pore pressure will not exceed 9.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure. A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

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A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions

**7. TESTING, LOGGING, AND CORING**

The anticipated type and amount of testing, logging, and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is: 4218 psi
- b. Hydrogen sulfide gas is not anticipated. An H2S Contingency plan will be attached with this MPD in the event that H2S is encountered

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9342	
Wolfcamp D		10237	
Lateral TVD Wolfcamp D		10237	17683.58'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9342
Oil/Gas	Wolfcamp D	10237

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

Chevron requests a variance to use a FMC Technologies conventional wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal.

4. CASING PROGRAM

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	LTC	New
Production	0'	17,684'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 17683.58' MD/10,237' TVD (7,500' VS @ 90deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
Production	1.26	1.5	2.43	1.35

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	17,684'	15.6	1.2	50	2766	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,300'	17.2	0.97	10	350	3.61

6. **MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	17,684'	OBM	10.0 - 12.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp D pore pressure will not exceed 12.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure.

7. **TESTING, LOGGING, AND CORING**

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI,	Prod hole	After Intermediate hole	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

8. **ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is:  
**6654 psi**

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA TVD	KBTVD	MD
Castille		505	
Lamar		2395	
Bell		2310	
Cherry		3208	
Brushy		4450	
Bone Spring/Avalon		6299	
First Bone Spring Sand		6888	
First Bone Spring Shale		6914	
Second Bone Spring Sand		7621	
Harkey Sand		8123	
Third Bone Spring Sand		8617	
Wolfcamp A		9342	
Wolfcamp D		10237	
Lateral TVD Wolfcamp D		10237	17683.58'

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Castille	505
Water	Cherry Canyon	3208
Oil/Gas	Brushy Canyon	4450
Oil/Gas	Bone Spring Limestone	6888
Oil/Gas	First Bone Spring Shale	6914
Oil/Gas	Second Bone Spring Sand	7621
Oil/Gas	Harkey Sand	8123
Oil/Gas	Wolfcamp A	9342
Oil/Gas	Wolfcamp D	10237

All shows of fresh water and minerals will be reported and protected.

**3. BOP EQUIPMENT**

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements. Chevron requests a variance to use a CoFlex hose with a metal protective covering that will be utilized between the BOP and Choke manifold. Please refer to the testing and specification documents.

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4. CASING PROGRAM

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	K-55	STC	New
Intermediate	0'	9,015'	12-1/4"	9-5/8"	40.0 #	L-80	LTC	New
Production	0'	17,684'	8-1/2"	5-1/2"	20.0 #	P-110	TXP	New

**SF Calculations based on the following "Worst Case" casing design:**

Surface Casing: 450'  
 Intermediate Casing: 9015'  
 Production Casing: 17683.58' MD/10,237' TVD (7,500' VS @ 90deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.82	5.11	3.97	2.31
Intermediate	1.45	1.32	1.78	1.84
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Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Cement Top	Cement Bottom	Weight	Yield	%Excess	Sacks	Water
Surface				(ppg)	(sx/cu ft)	Open Hole		gal/sk
Tail	Class C	0'	450'	14.8	1.33	50	356	6.37
<b>Intermediate</b>								
Stage 2 Lead	50:50 Poz: Class C + Antifoam, Extender, Salt, Retarder	0'	1,100'	11.9	2.43	50	213	14.21
Stage 2 Tail	Class C + Antifoam, Retarder, Viscosifier	1,100'	2,100'	14.8	1.33	0	235	6.37
<b>DV TOOL</b>		2,100'						
Stage 1 Lead	50:50 Poz: Class H + Extender, Antifoam, Retarder, Salt, Viscosifier	2,100'	8,015'	11.9	2.43	100	1524	13.76
Stage 1 Tail	Class H + Retarder, Extender, Dispersant	8,015'	9,015'	15.6	1.21	50	389	5.54
<b>Production</b>								
Lead	50:50 Poz: Class H + Extender, Antifoam, Dispersant, , Retarder	7,015'	8,015'	14.5	1.21	100	430	5.54
Tail	Class H + Viscosifier, Antifoam, Dispersant, Fluid Loss, Retarder, Expanding Agent	8,015'	17,684'	15.6	1.2	50	2766	5.30
<b>Pilot Hole</b>								
Tail	Class C	9,500'	10,300'	17.2	0.97	10	350	3.61

**6. MUD PROGRAM**

From	To	Type	Weight	F. Vis	Filtrate
0'	450'	Spud Mud	8.3 - 8.7	32 - 34	NC - NC
450'	9015'	OBM	9.0 - 9.5	50 - 70	5.0 - 10
9015'	17,684'	OBM	10.0 - 12.5	50 - 70	5.0 - 10

\* The mud weights will range depending on the targeted formation. The Wolfcamp D pore pressure will not exceed 12.5 ppg, but due to wellbore stability, the mud program will exceed the pore pressure.

**7. TESTING, LOGGING, AND CORING**

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling	TBD
Wireline Logs	Quad Combo w/ Di-Pole Sonic, FMI,	Prod hole	After Intermediate hole	TBD

- c. Conventional whole core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. There is a pressure ramp that will be seen in the Wolfcamp A formation expected. Estimated BHP is:  
**6654 psi**

For the latest performance data, always visit our website: [www.tenaris.com](http://www.tenaris.com)

February 08 2017



**Connection:** TenarisXP® BTC  
**Casing/Tubing:** CAS  
**Coupling Option:** REGULAR

**Size:** 9.625 in.  
**Wall:** 0.435 in.  
**Weight:** 43.50 lbs/ft  
**Grade:** L80.1  
**Min. Wall Thickness:** 87.5 %

PIPE BODY DATA			
GEOMETRY			
Nominal OD	9.625 in.	Nominal Weight	43.50 lbs/ft
Nominal ID	8.755 in.	Wall Thickness	0.435 in.
Plain End Weight	42.73 lbs/ft	Standard Drift Diameter	8.599 in.
		Special Drift Diameter	N/A
PERFORMANCE			
Body Yield Strength	1005 x 1000 lbs	Internal Yield	6330 psi
Collapse	3810 psi	SMYS	80000 psi
TENARISXP® BTC CONNECTION DATA			
GEOMETRY			
Connection OD	10.625 in.	Coupling Length	10.825 in.
Critical Section Area	12.559 sq. in.	Threads per in.	5.00
		Connection ID	8.743 in.
		Make-Up Loss	4.891 in.
PERFORMANCE			
Tension Efficiency	100 %	Joint Yield Strength	1005 x 1000 lbs
Structural Compression Efficiency	100 %	Structural Compression Strength	1005 x 1000 lbs
External Pressure Capacity	3810 psi	Internal Pressure Capacity <sup>(1)</sup>	6330 psi
		Structural Bending <sup>(2)</sup>	38 °/100 ft
ESTIMATED MAKE-UP TORQUES <sup>(3)</sup>			
Minimum	20240 ft-lbs	Optimum	22490 ft-lbs
		Maximum	24740 ft-lbs
OPERATIONAL LIMIT TORQUES			
Operating Torque	ASK	Yield Torque	45900 ft-lbs

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**BLANKING DIMENSIONS**

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**Blanking Dimensions**

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- (1) Internal Pressure Capacity related to structural resistance only. Internal pressure leak resistance as per section 10.3 API 5C3 ISO 10400 - 2007.
- (2) Structural rating, pure bending to yield (i.e no other loads applied)
- (3) Torque values calculated for API Modified thread compounds with Friction Factor=1. For other thread compounds please contact us at [licensees@oilfield.tenaris.com](mailto:licensees@oilfield.tenaris.com). Torque values may be further reviewed. For additional information, please contact us at [contact-tenarishydril@tenaris.com](mailto:contact-tenarishydril@tenaris.com)

For the latest performance data, always visit our website: [www.tenaris.com](http://www.tenaris.com)

July 07 2015



Connection: TenarisXP™ BTC  
 Casing/Tubing: CAS  
 Coupling Option: REGULAR

Size: 5.500 in.  
 Wall: 0.361 in.  
 Weight: 20.00 lbs/ft  
 Grade: P110  
 Min. Wall Thickness: 87.5 %

PIPE BODY DATA					
GEOMETRY					
Nominal OD	5.500 in.	Nominal Weight	20.00 lbs/ft	Standard Drift Diameter	4.653 in.
Nominal ID	4.773 in.	Wall Thickness	0.361 in.	Special Drift Diameter	N/A
Plain End Weight	19.93 lbs/ft				
PERFORMANCE					
Body Yield Strength	641 x 1000 lbs	Internal Yield	12630 psi	SMYS	110000 psi
Collapse	11100 psi				
TENARISXP™ BTC CONNECTION DATA					
GEOMETRY					
Connection OD	6.100 in.	Coupling Length	9.450 in.	Connection ID	4.766 in.
Critical Section Area	5.828 sq. in.	Threads per in.	5.00	Make-Up Loss	4.204 in.
PERFORMANCE					
Tension Efficiency	100 %	Joint Yield Strength	641 x 1000 lbs	Internal Pressure Capacity <sup>(1)</sup>	12630 psi
Structural Compression Efficiency	100 %	Structural Compression Strength	641 x 1000 lbs	Structural Bending <sup>(2)</sup>	92 °/100 ft
External Pressure Capacity	11100 psi				
ESTIMATED MAKE-UP TORQUES <sup>(3)</sup>					
Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs
OPERATIONAL LIMIT TORQUES					
Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs		

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**BLANKING DIMENSIONS**

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**Blanking Dimensions**

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**(1)** Internal Pressure Capacity related to structural resistance only. Internal pressure leak resistance as per section 10.3 API 5C3 / ISO 10400 - 2007.

**(2)** Structural rating, pure bending to yield (i.e no other loads applied)

**(3)** Torque values calculated for API Modified thread compounds with Friction Factor=1. For other thread compounds please contact us at [licensees@oilfield.tenaris.com](mailto:licensees@oilfield.tenaris.com). Torque values may be further reviewed.

For additional information, please contact us at [contact-tenarishydril@tenaris.com](mailto:contact-tenarishydril@tenaris.com)



# H<sub>2</sub>S Preparedness and Contingency Plan Summary

Hayhurst Eddy County, New Mexico

## Training

MCBU Drilling and Completions H<sub>2</sub>S training requirements are intended to define the minimum level of training required for employees, contractors and visitors to enter or perform work at MCBU Drilling and Completions locations that have known concentrations of H<sub>2</sub>S.

### Awareness Level

Employees and visitors to MCBU Drilling and Completions locations that have known concentrations of H<sub>2</sub>S, who are not required to perform work in H<sub>2</sub>S areas, will be provided with an awareness level of H<sub>2</sub>S training prior to entering any H<sub>2</sub>S areas. At a minimum, awareness level training will include:

1. Physical and chemical properties of H<sub>2</sub>S
2. Health hazards of H<sub>2</sub>S
3. Personal protective equipment
4. Information regarding potential sources of H<sub>2</sub>S
5. Alarms and emergency evacuation procedures

Awareness level training will be developed and conducted by personnel who are qualified either by specific training, educational experience and/or work-related background.

### Advanced Level H<sub>2</sub>S Training

Employees and contractors required to work in areas that may contain H<sub>2</sub>S will be provided with Advanced Level H<sub>2</sub>S training prior to initial assignment. In addition to the Awareness Level requirements, Advanced Level H<sub>2</sub>S training will include:

1. H<sub>2</sub>S safe work practice procedures;
2. Emergency contingency plan procedures;
3. Methods to detect the presence or release of H<sub>2</sub>S (e.g., alarms, monitoring equipment), including hands-on training with direct reading and personal monitoring H<sub>2</sub>S equipment.
4. Basic overview of respiratory protective equipment suitable for use in H<sub>2</sub>S environments. Note: Employees who work at sites that participate in the Chevron Respirator User program will require separate respirator training as required by the MCBU Respiratory Protection Program;
5. Basic overview of emergency rescue techniques, first aid, CPR and medical evaluation procedures. Employees who may be required to perform "standby" duties are required to receive additional first aid and CPR training, which is not covered in the Advanced Level H<sub>2</sub>S training;
6. Proficiency examination covering all course material.

Advanced H<sub>2</sub>S training courses will be instructed by personnel who have successfully completed an appropriate H<sub>2</sub>S train-the-trainer development course (ANSI/ASSE Z390.1-2006) or who possess significant past experience through educational or work-related background.

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# H<sub>2</sub>S Preparedness and Contingency Plan Summary

## H<sub>2</sub>S Training & Certification

All employees and visitors will be issued an H<sub>2</sub>S training certification card (or certificate) upon successful completion of the appropriate H<sub>2</sub>S training course. Personnel working in an H<sub>2</sub>S environment will carry a current H<sub>2</sub>S training certification card as proof of having received the proper training on their person at all times.

## Briefing Areas

A minimum of two briefing areas will be established in locations that at least one area will be upwind from the well at all times. Upon recognition of an emergency situation, all personnel should assemble at the designated upwind briefing areas for instructions.

## H<sub>2</sub>S Equipment

### Minimum Equipment List

- a) Six 30 minute SCBAs – 2 at each briefing area and 2 in the Safety Trailer.
- b) Eight 5 minute EBAs – 5 in the dog house at the rig floor, 1 at the accumulator, 1 at the shale shakers and 1 at the mud pits.

## Visual Warning Devices

- a) One color code sign, displaying all possible conditions, will be placed at the entrance to the location with a flag displaying the current condition.
- b) Two windsocks will be on location, one on the dog house and one on the Drill Site Manager's Trailer.

## H<sub>2</sub>S Detection and Monitoring System

- a) H<sub>2</sub>S monitoring system (sensor head, warning light and siren) placed throughout rig.
  - Drilling Rig Locations: at a minimum, in the area of the Shale shaker, rig floor, and bell nipple.
  - Workover Rig Locations: at a minimum, in the area of the Cellar, rig floor and circulating tanks or shale shaker.



# H<sub>2</sub>S Preparedness and Contingency Plan Summary

## Well Control Equipment

- a) Flare Line 150' from wellhead with igniter.
- b) Choke manifold with a remotely operated choke.
- c) Mud / gas separator

## Mud Program

In the event of drilling, completions, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater the following shall be considered:

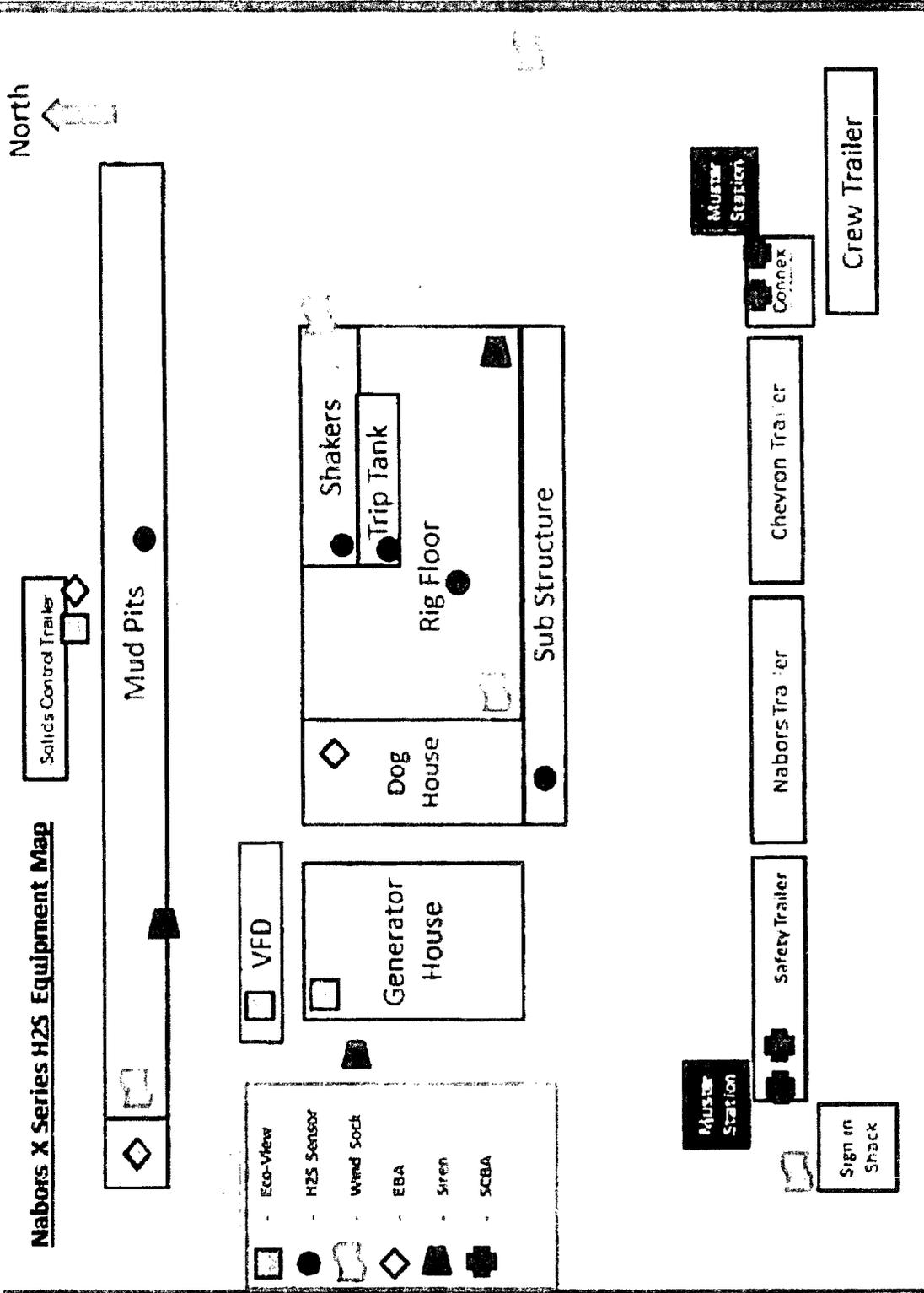
- 1. Use of a degasser
- 2. Use of a zinc based mud treatment
- 3. Increasing mud weight

## Public Safety - Emergency Assistance

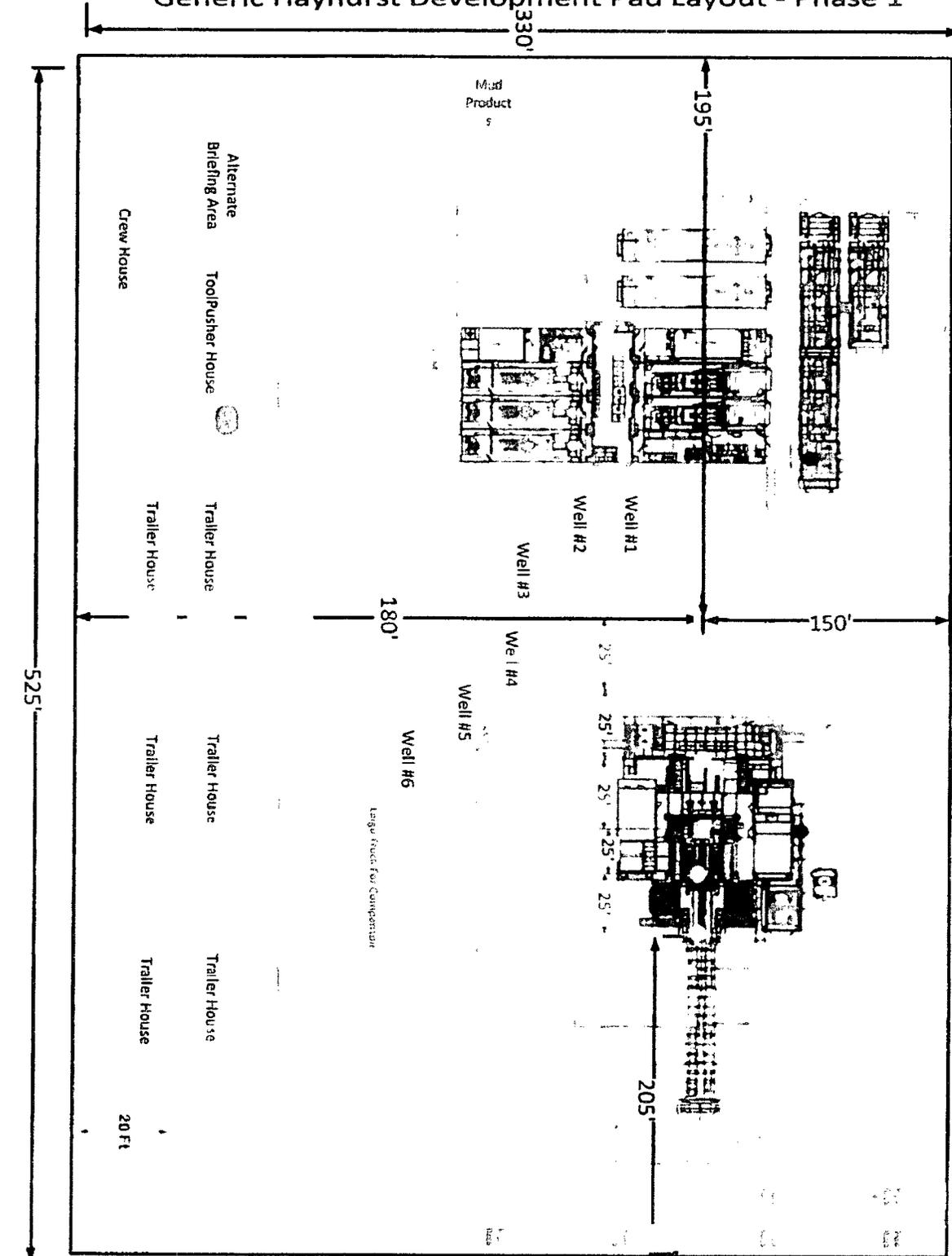
<u>Agency</u>	<u>Telephone Number</u>
Eddy County Sheriff's Department	575-887-7551
Fire Department:	
Carlsbad	575-885-3125
Artesia	575-746-5050
Carlsbad Medical Center	575-887-4100
Eddy County Emergency Management	575-628-5450
Poison Control Center	800-222-1222



# H<sub>2</sub>S Preparedness and Contingency Plan Summary



# Generic Hayhurst Development Pad Layout - Phase 1

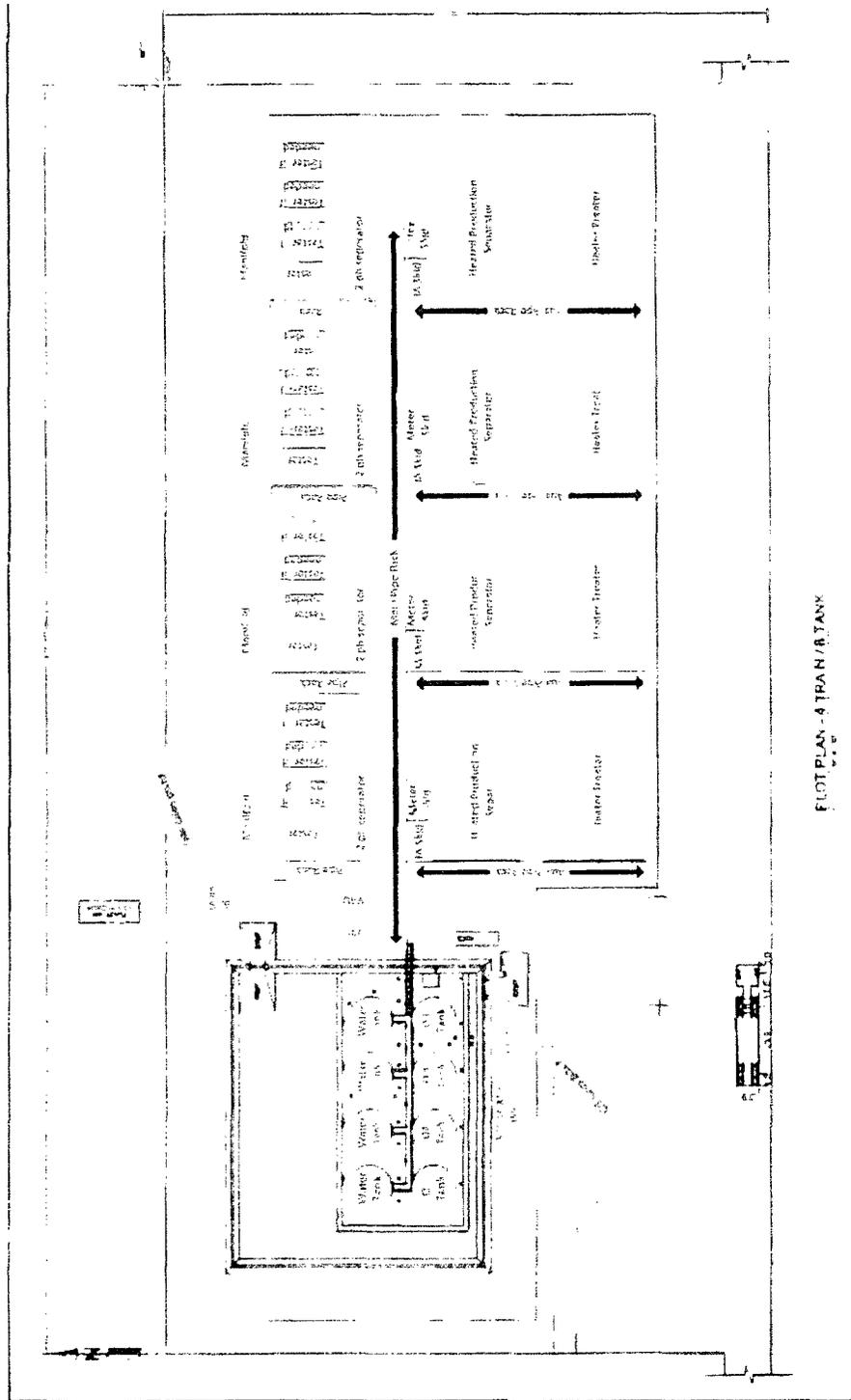


**Legend**

- H2S Monitor
- Flag

Location Entrance

- H2S Monitor Locations**
- End of Well
  - Rig Floor
  - Shelter Skid
  - East Pilepile
- Flag Locations**
- Signal Shack
  - Rig House
  - Dog House
- 10 Minute Escape Packs**
- 1 at Rig
  - 1 at Trip Tank
  - 1 at Accumulator
  - 4 at Rig floor
- 45 Minute Escape Packs**
- 2 at Briefing Area
  - 2 at Alternate Briefing Area



FLOT PLAN - 4 TRAN TANK

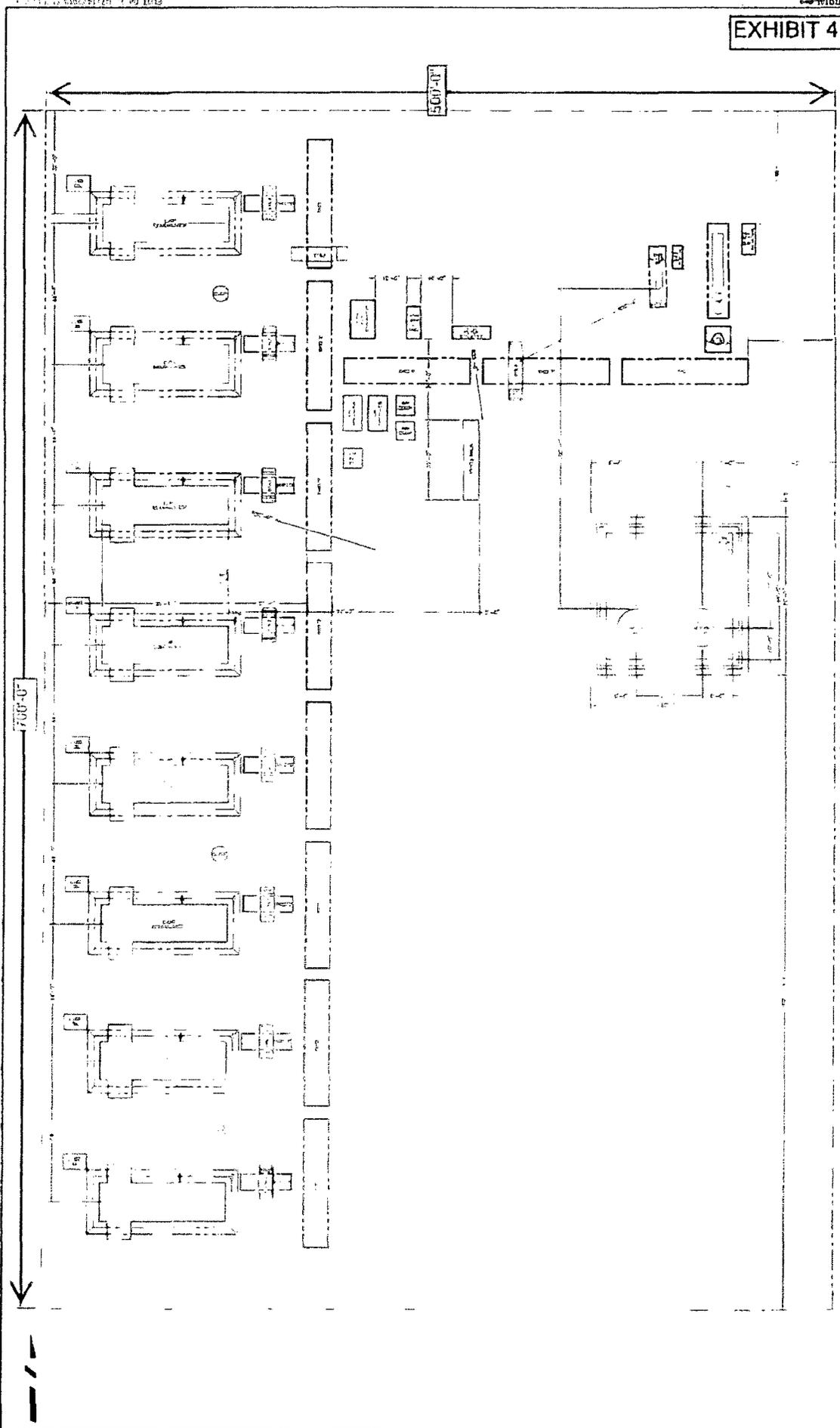


EXHIBIT 4

COMPRESSOR STATION - 8 COMPRESSOR LAYOUT

<p>Chevron U.S.A. Inc.</p>	STANDARD COMPRESSOR GAS-LIFT STATION
PLOT PLAN - 8 COMPRESSOR LAYOUT	
COMPRESSOR_PLOTPLAN_BTOTAL	
<p>FOR REVIEW</p>	
<p>DATE FOR REVIEW -</p> <p>APPROVED BY/DATE</p>	

Sheet No. 1 of 12/15/2015

COMPRESSOR\_PLOTPLAN\_BTOTAL



# **Chevron**

**Eddy County, NM (NAD27 NME)**

**HH CE 35 2 Fed**

**61**

**OH**

**Plan 1 12-19-16**

## **Anticollision Report**

**20 December, 2016**





**Phoenix Technology Services LP**  
Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

<b>Reference</b>	Plan 1 12-19-16		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00 usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	3.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	12/20/2016		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,683.58	Plan 1 12-19-16 (OH)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance		Separation Factor	Warning
			Between Centres (usft)	Between Ellipses (usft)		
Offset Well - Wellbore - Design						
HH CE 35 2 Fed						
62 - OH - Plan 1 12-19-16	2,000.00	2,000.00	25.00	4.16	1.200	Level 2 CC
62 - OH - Plan 1 12-19-16	2,100.00	2,100.34	25.44	3.55	1.162	Level 2 ES SF
63 - OH - Plan 1 12-19-16	2,001.13	2,002.14	50.00	29.15	2.398	CC
63 - OH - Plan 1 12-19-16	17,683.58	17,387.69	173.00	-8.28	0.954	Level 1 ES, SF
64 - OH - Plan 1 12-19-16	2,000.02	2,001.02	75.01	54.17	3.599	CC
64 - OH - Plan 1 12-19-16	9,753.30	9,807.50	107.53	3.72	1.036	Level 2 ES, SF
65 - OH - Plan 1 12-19-16	2,003.86	2,004.95	100.00	79.12	4.789	CC
65 - OH - Plan 1 12-19-16	2,300.00	2,304.67	101.84	77.81	4.238	ES
65 - OH - Plan 1 12-19-16	2,500.00	2,503.02	106.50	80.36	4.073	SF
66 - OH - Plan 1 12-19-16	2,002.02	2,004.08	125.02	104.15	5.991	CC
66 - OH - Plan 1 12-19-16	9,382.59	9,468.63	186.45	86.43	1.864	ES, SF

Offset Design													Offset Site Error:	0.00 usft
HH CE 35 2 Fed - 62 - OH - Plan 1 12-19-16													Offset Well Error:	0.00 usft
Survey Program: 0-MWD+HDGM														
Measured Depth (usft)	Vertical Depth (usft)	Reference Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
		Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	180.00	-25.00	0.00	25.00					
100.00	100.00	100.00	100.00	0.20	0.20	180.00	-25.00	0.00	25.00	24.60	0.40	61.992		
200.00	200.00	200.00	200.00	0.74	0.74	180.00	-25.00	0.00	25.00	23.52	1.48	16.907		
300.00	300.00	300.00	300.00	1.28	1.28	180.00	-25.00	0.00	25.00	22.45	2.55	9.788		
400.00	400.00	400.00	400.00	1.81	1.81	180.00	-25.00	0.00	25.00	21.37	3.63	6.888		
500.00	500.00	500.00	500.00	2.35	2.35	180.00	-25.00	0.00	25.00	20.30	4.70	5.314		
600.00	600.00	600.00	600.00	2.89	2.89	180.00	-25.00	0.00	25.00	19.22	5.78	4.325		
700.00	700.00	700.00	700.00	3.43	3.43	180.00	-25.00	0.00	25.00	18.14	6.86	3.647		
800.00	800.00	800.00	800.00	3.97	3.97	180.00	-25.00	0.00	25.00	17.07	7.93	3.152		
900.00	900.00	900.00	900.00	4.50	4.50	180.00	-25.00	0.00	25.00	15.99	9.01	2.776		
1,000.00	1,000.00	1,000.00	1,000.00	5.04	5.04	180.00	-25.00	0.00	25.00	14.92	10.08	2.480		
1,100.00	1,100.00	1,100.00	1,100.00	5.58	5.58	180.00	-25.00	0.00	25.00	13.84	11.16	2.241		
1,200.00	1,200.00	1,200.00	1,200.00	6.12	6.12	180.00	-25.00	0.00	25.00	12.77	12.23	2.044		
1,300.00	1,300.00	1,300.00	1,300.00	6.65	6.65	180.00	-25.00	0.00	25.00	11.69	13.31	1.879		
1,400.00	1,400.00	1,400.00	1,400.00	7.19	7.19	180.00	-25.00	0.00	25.00	10.62	14.38	1.738		
1,500.00	1,500.00	1,500.00	1,500.00	7.73	7.73	180.00	-25.00	0.00	25.00	9.54	15.46	1.617		

CC - Min centre to center distance or covergent point. SF - min separation factor ES - min ellipse separation



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 62 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,600.00	1,600.00	1,600.00	1,600.00	8.27	8.27	180.00	-25.00	0.00	25.00	8.47	16.53	1.512		
1,700.00	1,700.00	1,700.00	1,700.00	8.80	8.80	180.00	-25.00	0.00	25.00	7.39	17.61	1.420 Level 3		
1,800.00	1,800.00	1,800.00	1,800.00	9.34	9.34	180.00	-25.00	0.00	25.00	6.31	18.69	1.338 Level 3		
1,900.00	1,900.00	1,900.00	1,900.00	9.88	9.88	180.00	-25.00	0.00	25.00	5.24	19.76	1.265 Level 3		
2,000.00	2,000.00	2,000.00	2,000.00	10.42	10.42	180.00	-25.00	0.00	25.00	4.16	20.84	1.200 Level 2, CC		
2,100.00	2,099.98	2,100.34	2,100.32	10.95	10.95	136.87	-24.15	-1.53	25.44	3.55	21.90	1.162 Level 2, ES, SF		
2,200.00	2,199.87	2,200.23	2,200.07	11.48	11.48	153.53	-21.60	-6.11	28.03	5.10	22.94	1.222 Level 2		
2,300.00	2,299.74	2,299.66	2,299.18	12.01	12.00	171.30	-17.74	-13.08	33.32	9.33	23.99	1.389 Level 3		
2,400.00	2,399.61	2,399.05	2,398.23	12.54	12.53	-176.29	-13.77	-20.24	40.95	15.91	25.04	1.635		
2,500.00	2,499.49	2,498.43	2,497.28	13.08	13.06	-168.02	-9.79	-27.39	49.87	23.78	26.09	1.912		
2,600.00	2,599.36	2,597.82	2,596.33	13.61	13.60	-162.34	-5.82	-34.55	59.52	32.37	27.15	2.192		
2,700.00	2,699.23	2,697.21	2,695.38	14.15	14.13	-158.26	-1.84	-41.71	69.58	41.37	28.21	2.467		
2,800.00	2,799.11	2,796.60	2,794.43	14.68	14.67	-155.22	2.13	-48.87	79.90	50.63	29.26	2.730		
2,900.00	2,898.98	2,895.99	2,893.48	15.22	15.21	-152.88	6.10	-56.03	90.39	60.07	30.33	2.981		
3,000.00	2,998.85	2,995.37	2,992.53	15.76	15.75	-151.03	10.08	-63.19	101.00	69.61	31.39	3.218		
3,100.00	3,098.73	3,094.76	3,091.58	16.29	16.29	-149.54	14.05	-70.35	111.70	79.25	32.45	3.442		
3,200.00	3,198.60	3,194.15	3,190.63	16.83	16.84	-148.30	18.03	-77.50	122.45	88.94	33.52	3.654		
3,300.00	3,298.47	3,293.54	3,289.68	17.37	17.38	-147.27	22.00	-84.66	133.26	98.68	34.58	3.853		
3,400.00	3,398.35	3,392.93	3,388.73	17.91	17.92	-146.39	25.98	-91.82	144.10	108.45	35.65	4.042		
3,500.00	3,498.22	3,492.32	3,487.78	18.45	18.47	-145.63	29.95	-98.98	154.97	118.25	36.72	4.221		
3,600.00	3,598.09	3,591.70	3,586.83	18.99	19.02	-144.97	33.92	-106.14	165.86	128.08	37.79	4.390		
3,700.00	3,697.97	3,691.09	3,685.88	19.53	19.56	-144.40	37.90	-113.30	176.78	137.92	38.86	4.550		
3,800.00	3,797.84	3,790.48	3,784.93	20.07	20.11	-143.89	41.87	-120.46	187.70	147.78	39.93	4.701		
3,900.00	3,897.71	3,889.87	3,883.98	20.61	20.66	-143.43	45.85	-127.61	198.65	157.65	41.00	4.845		
4,000.00	3,997.59	3,989.26	3,983.03	21.15	21.21	-143.03	49.82	-134.77	209.60	167.53	42.07	4.982		
4,100.00	4,097.46	4,088.64	4,082.06	21.69	21.76	-142.66	53.79	-141.93	220.56	177.42	43.14	5.113		
4,200.00	4,197.33	4,188.03	4,181.13	22.23	22.31	-142.33	57.77	-149.09	231.53	187.32	44.21	5.237		
4,300.00	4,297.21	4,287.42	4,280.18	22.78	22.86	-142.03	61.74	-156.25	242.50	197.22	45.28	5.355		
4,400.00	4,397.08	4,386.81	4,379.23	23.32	23.41	-141.75	65.72	-163.41	253.49	207.13	46.36	5.468		
4,500.00	4,496.95	4,486.20	4,478.28	23.86	23.96	-141.50	69.69	-170.57	264.47	217.04	47.43	5.576		
4,600.00	4,596.82	4,585.58	4,577.33	24.40	24.51	-141.27	73.66	-177.72	275.47	226.96	48.51	5.679		
4,700.00	4,696.70	4,684.97	4,676.38	24.94	25.06	-141.06	77.64	-184.88	286.46	236.88	49.58	5.778		
4,800.00	4,796.57	4,784.36	4,775.43	25.49	25.61	-140.86	81.61	-192.04	297.46	246.81	50.66	5.872		
4,900.00	4,896.44	4,883.75	4,874.48	26.03	26.16	-140.67	85.59	-199.20	308.47	256.73	51.73	5.963		
5,000.00	4,996.32	4,983.14	4,973.53	26.57	26.72	-140.50	89.56	-206.36	319.47	266.67	52.81	6.050		
5,100.00	5,096.19	5,082.52	5,072.58	27.11	27.27	-140.34	93.53	-213.52	330.48	276.60	53.88	6.133		
5,200.00	5,196.06	5,181.91	5,171.63	27.66	27.82	-140.19	97.51	-220.68	341.49	286.53	54.96	6.214		
5,300.00	5,295.94	5,281.30	5,270.68	28.20	28.38	-140.05	101.48	-227.83	352.51	296.47	56.03	6.291		
5,400.00	5,395.81	5,380.69	5,369.73	28.74	28.93	-139.92	105.46	-234.99	363.52	306.41	57.11	6.365		
5,500.00	5,495.68	5,480.08	5,468.78	29.29	29.48	-139.80	109.43	-242.15	374.54	316.35	58.19	6.437		
5,600.00	5,595.56	5,579.47	5,567.83	29.83	30.04	-139.68	113.40	-249.31	385.56	326.29	59.26	6.506		
5,700.00	5,695.43	5,678.85	5,666.88	30.37	30.59	-139.57	117.38	-256.47	396.58	336.24	60.34	6.572		
5,800.00	5,795.30	5,778.52	5,766.21	30.92	31.15	-139.46	121.35	-263.65	407.60	346.18	61.42	6.636		
5,900.00	5,895.19	5,892.45	5,879.92	31.46	31.77	-139.52	124.78	-269.80	416.62	354.02	62.60	6.655		
6,000.00	5,995.17	6,007.02	5,994.45	31.99	32.38	-139.59	126.00	-272.00	419.99	356.21	63.79	6.584		
6,100.00	6,095.17	6,107.73	6,095.17	32.52	32.91	-90.00	126.00	-272.00	420.00	355.15	64.85	6.476		
6,200.00	6,195.17	6,207.73	6,195.17	33.06	33.43	-90.00	126.00	-272.00	420.00	354.09	65.91	6.372		
6,300.00	6,295.17	6,307.73	6,295.17	33.59	33.96	-90.00	126.00	-272.00	420.00	353.03	66.97	6.271		
6,400.00	6,395.17	6,407.73	6,395.17	34.12	34.48	-90.00	126.00	-272.00	420.00	351.97	68.03	6.174		
6,500.00	6,495.17	6,507.73	6,495.17	34.65	35.00	-90.00	126.00	-272.00	420.00	350.91	69.09	6.079		
6,600.00	6,595.17	6,607.73	6,595.17	35.18	35.53	-90.00	126.00	-272.00	420.00	349.85	70.15	5.987		
6,700.00	6,695.17	6,707.73	6,695.17	35.71	36.05	-90.00	126.00	-272.00	420.00	348.79	71.21	5.898		

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



Phoenix Technology Services LP  
Anticollision Report



Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Reference Site: HH CE 35 2 Fed  
Site Error: 0.00 usft  
Reference Well: 61  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 3.00 sigma  
Database: Compass 5000 GCR  
Offset TVD Reference: Reference Datum

Offset Design HH CE 35 2 Fed - 62 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,800.00	6,795.17	6,807.73	6,795.17	36.24	36.58	-90.00	126.00	-272.00	420.00	347.73	72.27	5.811		
6,900.00	6,895.17	6,907.73	6,895.17	36.77	37.10	-90.00	126.00	-272.00	420.00	346.67	73.33	5.727		
7,000.00	6,995.17	7,007.73	6,995.17	37.31	37.63	-90.00	126.00	-272.00	420.00	345.61	74.39	5.646		
7,100.00	7,095.17	7,107.73	7,095.17	37.84	38.16	-90.00	126.00	-272.00	420.00	344.54	75.46	5.566		
7,200.00	7,195.17	7,207.73	7,195.17	38.37	38.68	-90.00	126.00	-272.00	420.00	343.48	76.52	5.489		
7,300.00	7,295.17	7,307.73	7,295.17	38.90	39.21	-90.00	126.00	-272.00	420.00	342.42	77.58	5.414		
7,400.00	7,395.17	7,407.73	7,395.17	39.44	39.74	-90.00	126.00	-272.00	420.00	341.35	78.65	5.340		
7,500.00	7,495.17	7,507.73	7,495.17	39.97	40.26	-90.00	126.00	-272.00	420.00	340.29	79.71	5.269		
7,600.00	7,595.17	7,607.73	7,595.17	40.50	40.79	-90.00	126.00	-272.00	420.00	339.23	80.77	5.200		
7,700.00	7,695.17	7,707.73	7,695.17	41.03	41.32	-90.00	126.00	-272.00	420.00	338.16	81.84	5.132		
7,800.00	7,795.17	7,807.73	7,795.17	41.57	41.85	-90.00	126.00	-272.00	420.00	337.10	82.90	5.066		
7,900.00	7,895.17	7,907.73	7,895.17	42.10	42.38	-90.00	126.00	-272.00	420.00	336.03	83.97	5.002		
8,000.00	7,995.17	8,007.73	7,995.17	42.63	42.90	-90.00	126.00	-272.00	420.00	334.97	85.03	4.939		
8,100.00	8,095.17	8,107.73	8,095.17	43.17	43.43	-90.00	126.00	-272.00	420.00	333.90	86.10	4.878		
8,200.00	8,195.17	8,207.73	8,195.17	43.70	43.96	-90.00	126.00	-272.00	420.00	332.84	87.16	4.819		
8,300.00	8,295.17	8,307.73	8,295.17	44.24	44.49	-90.00	126.00	-272.00	420.00	331.77	88.23	4.760		
8,400.00	8,395.17	8,407.73	8,395.17	44.77	45.02	-90.00	126.00	-272.00	420.00	330.70	89.30	4.703		
8,500.00	8,495.17	8,507.73	8,495.17	45.30	45.55	-90.00	126.00	-272.00	420.00	329.64	90.36	4.648		
8,600.00	8,595.17	8,607.73	8,595.17	45.84	46.08	-90.00	126.00	-272.00	420.00	328.57	91.43	4.594		
8,700.00	8,695.17	8,707.73	8,695.17	46.37	46.61	-90.00	126.00	-272.00	420.00	327.51	92.49	4.541		
8,800.00	8,795.17	8,807.73	8,795.17	46.91	47.14	-90.00	126.00	-272.00	420.00	326.44	93.56	4.489		
8,900.00	8,895.17	8,907.73	8,895.17	47.44	47.67	-90.00	126.00	-272.00	420.00	325.37	94.63	4.438		
9,000.00	8,995.17	9,007.73	8,995.17	47.97	48.20	-90.00	126.00	-272.00	420.00	324.30	95.70	4.389		
9,100.00	9,095.17	9,107.73	9,095.17	48.51	48.73	-90.00	126.00	-272.00	420.00	323.24	96.76	4.340		
9,200.00	9,195.17	9,207.73	9,195.17	49.04	49.26	-90.00	126.00	-272.00	420.00	322.17	97.83	4.293		
9,300.00	9,295.17	9,307.73	9,295.17	49.58	49.80	-90.00	126.00	-272.00	420.00	321.10	98.90	4.247		
9,400.00	9,395.17	9,407.73	9,395.17	50.11	50.33	-90.00	126.00	-272.00	420.00	320.03	99.97	4.201		
9,500.00	9,495.17	9,507.73	9,495.17	50.65	50.86	-90.00	126.00	-272.00	420.00	318.96	101.04	4.157		
9,600.00	9,595.17	9,607.73	9,595.17	51.18	51.39	-90.00	126.00	-272.00	420.00	317.90	102.10	4.113		
9,700.00	9,695.15	9,707.72	9,695.15	51.71	51.92	89.08	126.00	-272.00	419.99	316.82	103.16	4.071		
9,766.36	9,761.05	9,773.63	9,761.05	52.02	52.26	90.00	125.36	-272.01	419.93	316.12	103.81	4.045		
9,800.00	9,794.02	9,807.14	9,794.46	52.18	52.42	90.56	122.81	-272.06	419.95	315.83	104.12	4.033		
9,900.00	9,888.95	9,908.20	9,893.50	52.62	52.88	92.21	103.37	-272.41	420.25	315.25	105.00	4.002		
10,000.00	9,977.04	10,011.53	9,989.62	53.00	53.31	93.82	65.85	-273.09	420.88	315.09	105.79	3.979		
10,100.00	10,055.62	10,117.16	10,079.29	53.32	53.68	95.32	10.32	-274.10	421.76	315.32	106.45	3.962		
10,200.00	10,122.30	10,225.02	10,158.76	53.67	53.98	96.65	-62.36	-275.42	422.80	315.81	106.99	3.952		
10,300.00	10,175.06	10,334.93	10,224.30	54.05	54.23	97.78	-150.38	-277.03	423.85	316.40	107.46	3.944		
10,400.00	10,212.29	10,446.60	10,272.44	54.42	54.63	98.65	-250.92	-278.85	424.78	316.86	107.92	3.936		
10,500.00	10,232.87	10,559.59	10,300.40	54.80	55.06	99.24	-360.19	-280.84	425.45	316.98	108.47	3.922		
10,600.00	10,237.00	10,670.10	10,307.00	55.19	55.48	99.46	-470.35	-282.84	425.72	316.56	109.17	3.900		
10,700.00	10,237.00	10,770.10	10,307.00	55.64	55.93	99.46	-570.33	-284.66	425.72	315.69	110.03	3.869		
10,800.00	10,237.00	10,870.10	10,307.00	56.16	56.44	99.46	-670.31	-286.48	425.72	314.67	111.05	3.834		
10,900.00	10,237.00	10,970.10	10,307.00	56.77	57.03	99.46	-770.30	-288.30	425.72	313.50	112.22	3.794		
11,000.00	10,237.00	11,070.10	10,307.00	57.44	57.70	99.46	-870.28	-290.11	425.72	312.19	113.54	3.750		
11,100.00	10,237.00	11,170.10	10,307.00	58.19	58.43	99.46	-970.26	-291.93	425.72	310.73	115.00	3.702		
11,200.00	10,237.00	11,270.10	10,307.00	59.00	59.23	99.46	-1,070.25	-293.75	425.72	309.13	116.60	3.651		
11,300.00	10,237.00	11,370.10	10,307.00	59.89	60.10	99.46	-1,170.23	-295.57	425.72	307.40	118.33	3.598		
11,400.00	10,237.00	11,470.10	10,307.00	60.83	61.03	99.46	-1,270.21	-297.39	425.72	305.54	120.18	3.542		
11,500.00	10,237.00	11,570.10	10,307.00	61.84	62.01	99.46	-1,370.20	-299.20	425.72	303.57	122.16	3.485		
11,600.00	10,237.00	11,670.10	10,307.00	62.90	63.06	99.46	-1,470.18	-301.02	425.72	301.48	124.25	3.426		
11,700.00	10,237.00	11,770.10	10,307.00	64.01	64.16	99.46	-1,570.17	-302.84	425.72	299.28	126.45	3.367		
11,800.00	10,237.00	11,870.10	10,307.00	65.18	65.32	99.46	-1,670.15	-304.66	425.72	296.97	128.75	3.307		

CC - Min centre to center distance or covergent point. SF - min separation factor. ES - min ellipse separation



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
11,900.00	10,237.00	11,970.10	10,307.00	66.40	66.52	99.46	-1,770.13	-306.48	425.72	294.57	131.15	3.246		
12,000.00	10,237.00	12,070.10	10,307.00	67.66	67.77	99.46	-1,870.12	-308.29	425.72	292.08	133.64	3.186		
12,100.00	10,237.00	12,170.10	10,307.00	68.97	69.06	99.46	-1,970.10	-310.11	425.72	289.50	136.22	3.125		
12,200.00	10,237.00	12,270.10	10,307.00	70.32	70.39	99.46	-2,070.08	-311.93	425.72	286.84	138.89	3.065		
12,300.00	10,237.00	12,370.10	10,307.00	71.71	71.77	99.46	-2,170.07	-313.75	425.72	284.10	141.63	3.006		
12,400.00	10,237.00	12,470.10	10,307.00	73.13	73.18	99.46	-2,270.05	-315.56	425.72	281.28	144.44	2.947		
12,500.00	10,237.00	12,570.10	10,307.00	74.59	74.63	99.46	-2,370.03	-317.38	425.72	278.40	147.32	2.890		
12,600.00	10,237.00	12,670.10	10,307.00	76.08	76.11	99.46	-2,470.02	-319.20	425.72	275.45	150.27	2.833		
12,700.00	10,237.00	12,773.84	10,307.00	77.60	77.67	99.46	-2,573.75	-320.67	425.77	272.45	153.32	2.777		
12,800.00	10,237.00	12,873.84	10,307.00	79.16	79.22	99.46	-2,673.75	-321.59	425.77	269.37	156.40	2.722		
12,900.00	10,237.00	12,973.84	10,307.00	80.74	80.79	99.46	-2,773.74	-322.52	425.77	266.24	159.53	2.669		
13,000.00	10,237.00	13,073.84	10,307.00	82.35	82.38	99.46	-2,873.74	-323.45	425.77	263.06	162.71	2.617		
13,100.00	10,237.00	13,173.84	10,307.00	83.98	84.01	99.46	-2,973.73	-324.37	425.76	259.83	165.94	2.566		
13,200.00	10,237.00	13,273.84	10,307.00	85.63	85.65	99.46	-3,073.73	-325.30	425.76	256.55	169.21	2.516		
13,300.00	10,237.00	13,373.84	10,307.00	87.31	87.32	99.46	-3,173.72	-326.22	425.76	253.23	172.53	2.468		
13,400.00	10,237.00	13,473.84	10,307.00	89.01	89.01	99.46	-3,273.72	-327.15	425.76	249.87	175.89	2.421		
13,500.00	10,237.00	13,573.84	10,307.00	90.73	90.71	99.46	-3,373.72	-328.08	425.75	246.47	179.29	2.375		
13,600.00	10,237.00	13,673.84	10,307.00	92.46	92.44	99.46	-3,473.71	-329.00	425.75	243.03	182.72	2.330		
13,700.00	10,237.00	13,773.84	10,307.00	94.21	94.18	99.46	-3,573.71	-329.93	425.75	239.56	186.19	2.287		
13,800.00	10,237.00	13,873.84	10,307.00	95.98	95.94	99.46	-3,673.70	-330.86	425.74	236.06	189.69	2.244		
13,900.00	10,237.00	13,973.84	10,307.00	97.77	97.72	99.46	-3,773.70	-331.78	425.74	232.52	193.22	2.203		
14,000.00	10,237.00	14,073.84	10,307.00	99.56	99.51	99.46	-3,873.69	-332.71	425.74	228.96	196.78	2.164		
14,100.00	10,237.00	14,173.84	10,307.00	101.38	101.32	99.46	-3,973.69	-333.63	425.74	225.37	200.37	2.125		
14,200.00	10,237.00	14,273.84	10,307.00	103.20	103.14	99.46	-4,073.69	-334.56	425.73	221.75	203.98	2.087		
14,300.00	10,237.00	14,373.84	10,307.00	105.04	104.97	99.46	-4,173.68	-335.49	425.73	218.11	207.62	2.051		
14,400.00	10,237.00	14,473.84	10,307.00	106.89	106.81	99.46	-4,273.68	-336.41	425.73	214.45	211.28	2.015		
14,500.00	10,237.00	14,573.84	10,307.00	108.75	108.66	99.46	-4,373.67	-337.34	425.73	210.76	214.97	1.980		
14,600.00	10,237.00	14,673.84	10,307.00	110.62	110.53	99.46	-4,473.67	-338.27	425.72	207.05	218.67	1.947		
14,700.00	10,237.00	14,773.84	10,307.00	112.50	112.40	99.46	-4,573.66	-339.19	425.72	203.32	222.40	1.914		
14,800.00	10,237.00	14,873.84	10,307.00	114.39	114.29	99.46	-4,673.66	-340.12	425.72	199.58	226.14	1.883		
14,900.00	10,237.00	14,973.84	10,307.00	116.29	116.18	99.46	-4,773.66	-341.04	425.71	195.81	229.90	1.852		
15,000.00	10,237.00	15,073.84	10,307.00	118.20	118.09	99.46	-4,873.65	-341.97	425.71	192.03	233.68	1.822		
15,100.00	10,237.00	15,173.84	10,307.00	120.12	120.00	99.46	-4,973.65	-342.90	425.71	188.23	237.48	1.793		
15,200.00	10,237.00	15,273.84	10,307.00	122.04	121.92	99.46	-5,073.64	-343.82	425.71	184.42	241.29	1.764		
15,300.00	10,237.00	15,373.84	10,307.00	123.97	123.85	99.46	-5,173.64	-344.75	425.70	180.59	245.12	1.737		
15,400.00	10,237.00	15,473.84	10,307.00	125.91	125.78	99.46	-5,273.63	-345.67	425.70	176.74	248.96	1.710		
15,500.00	10,237.00	15,573.84	10,307.00	127.86	127.72	99.46	-5,373.63	-346.60	425.70	172.89	252.81	1.684		
15,600.00	10,237.00	15,673.84	10,307.00	129.81	129.67	99.46	-5,473.63	-347.53	425.70	169.02	256.68	1.658		
15,700.00	10,237.00	15,773.84	10,307.00	131.77	131.62	99.46	-5,573.62	-348.45	425.69	165.13	260.56	1.634		
15,800.00	10,237.00	15,873.84	10,307.00	133.74	133.58	99.46	-5,673.62	-349.38	425.69	161.24	264.45	1.610		
15,900.00	10,237.00	15,973.84	10,307.00	135.71	135.55	99.46	-5,773.61	-350.31	425.69	157.33	268.35	1.586		
16,000.00	10,237.00	16,073.84	10,307.00	137.68	137.52	99.46	-5,873.61	-351.23	425.68	153.42	272.27	1.563		
16,100.00	10,237.00	16,173.84	10,307.00	139.66	139.50	99.46	-5,973.60	-352.16	425.68	149.49	276.19	1.541		
16,200.00	10,237.00	16,273.84	10,307.00	141.65	141.48	99.46	-6,073.60	-353.08	425.68	145.55	280.12	1.520		
16,300.00	10,237.00	16,373.84	10,307.00	143.64	143.47	99.46	-6,173.60	-354.01	425.68	141.61	284.07	1.499 Level 3		
16,400.00	10,237.00	16,473.84	10,307.00	145.64	145.46	99.47	-6,273.59	-354.94	425.67	137.65	288.02	1.478 Level 3		
16,500.00	10,237.00	16,573.84	10,307.00	147.64	147.46	99.47	-6,373.59	-355.86	425.67	133.69	291.98	1.458 Level 3		
16,600.00	10,237.00	16,673.84	10,307.00	149.64	149.46	99.47	-6,473.58	-356.79	425.67	129.72	295.95	1.438 Level 3		
16,700.00	10,237.00	16,773.84	10,307.00	151.65	151.47	99.47	-6,573.58	-357.72	425.67	125.74	299.93	1.419 Level 3		
16,800.00	10,237.00	16,873.84	10,307.00	153.66	153.47	99.47	-6,673.57	-358.64	425.66	121.75	303.92	1.401 Level 3		
16,900.00	10,237.00	16,973.84	10,307.00	155.68	155.49	99.47	-6,773.57	-359.57	425.66	117.75	307.91	1.382 Level 3		
17,000.00	10,237.00	17,073.84	10,307.00	157.69	157.50	99.47	-6,873.57	-360.49	425.66	113.75	311.91	1.365 Level 3		

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



**Phoenix Technology Services LP**  
Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													HH CE 35 2 Fed - 62 - OH - Plan 1 12-19-16	Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
17,100.00	10,237.00	17,173.84	10,307.00	159.72	159.52	99.47	-6,973.56	-361.42	425.65	109.74	315.92	1.347	Level 3		
17,200.00	10,237.00	17,273.84	10,307.00	161.74	161.55	99.47	-7,073.56	-362.35	425.65	105.72	319.93	1.330	Level 3		
17,300.00	10,237.00	17,373.84	10,307.00	163.77	163.57	99.47	-7,173.55	-363.27	425.65	101.70	323.95	1.314	Level 3		
17,400.00	10,237.00	17,473.84	10,307.00	165.81	165.60	99.47	-7,273.55	-364.20	425.65	97.67	327.98	1.298	Level 3		
17,500.00	10,237.00	17,573.84	10,307.00	167.84	167.64	99.47	-7,373.54	-365.12	425.64	93.63	332.01	1.282	Level 3		
17,600.00	10,237.00	17,673.84	10,307.00	169.88	169.67	99.47	-7,473.54	-366.05	425.64	89.59	336.05	1.267	Level 3		
17,683.58	10,237.00	17,757.42	10,307.00	171.59	171.38	99.47	-7,557.11	-366.83	425.64	86.21	339.43	1.254	Level 3		



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 63 - OH - Plan 1 12-19-16														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance				Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	1.00	0.00	0.00	0.00	180.00	-50.00	0.00	50.00						
100.00	100.00	101.00	100.00	0.20	0.21	180.00	-50.00	0.00	50.00	49.59	0.41	122.352			
200.00	200.00	201.00	200.00	0.74	0.74	180.00	-50.00	0.00	50.00	48.52	1.48	33.691			
300.00	300.00	301.00	300.00	1.28	1.28	180.00	-50.00	0.00	50.00	47.44	2.56	19.535			
400.00	400.00	401.00	400.00	1.81	1.82	180.00	-50.00	0.00	50.00	46.37	3.63	13.756			
500.00	500.00	501.00	500.00	2.35	2.36	180.00	-50.00	0.00	50.00	45.29	4.71	10.615			
600.00	600.00	601.00	600.00	2.89	2.90	180.00	-50.00	0.00	50.00	44.21	5.79	8.642			
700.00	700.00	701.00	700.00	3.43	3.43	180.00	-50.00	0.00	50.00	43.14	6.86	7.287			
800.00	800.00	801.00	800.00	3.97	3.97	180.00	-50.00	0.00	50.00	42.06	7.94	6.300			
900.00	900.00	901.00	900.00	4.50	4.51	180.00	-50.00	0.00	50.00	40.99	9.01	5.548			
1,000.00	1,000.00	1,001.00	1,000.00	5.04	5.05	180.00	-50.00	0.00	50.00	39.91	10.09	4.957			
1,100.00	1,100.00	1,101.00	1,100.00	5.58	5.58	180.00	-50.00	0.00	50.00	38.84	11.16	4.479			
1,200.00	1,200.00	1,201.00	1,200.00	6.12	6.12	180.00	-50.00	0.00	50.00	37.76	12.24	4.086			
1,300.00	1,300.00	1,301.00	1,300.00	6.65	6.66	180.00	-50.00	0.00	50.00	36.69	13.31	3.756			
1,400.00	1,400.00	1,401.00	1,400.00	7.19	7.20	180.00	-50.00	0.00	50.00	35.61	14.39	3.475			
1,500.00	1,500.00	1,501.00	1,500.00	7.73	7.73	180.00	-50.00	0.00	50.00	34.54	15.46	3.233			
1,600.00	1,600.00	1,601.00	1,600.00	8.27	8.27	180.00	-50.00	0.00	50.00	33.46	16.54	3.023			
1,700.00	1,700.00	1,701.00	1,700.00	8.80	8.81	180.00	-50.00	0.00	50.00	32.38	17.62	2.838			
1,800.00	1,800.00	1,801.00	1,800.00	9.34	9.35	180.00	-50.00	0.00	50.00	31.31	18.69	2.675			
1,900.00	1,900.00	1,901.00	1,900.00	9.88	9.89	180.00	-50.00	0.00	50.00	30.23	19.77	2.530			
2,000.00	2,000.00	2,001.01	2,000.01	10.42	10.42	180.00	-50.00	0.00	50.00	29.16	20.84	2.399			
2,001.13	2,001.13	2,002.14	2,001.14	10.42	10.43	130.41	-50.00	0.00	50.00	29.15	20.85	2.398 CC			
2,100.00	2,099.98	2,101.60	2,100.58	10.95	10.96	130.00	-49.38	1.69	50.52	28.62	21.90	2.307			
2,200.00	2,199.87	2,201.87	2,200.73	11.48	11.48	128.93	-47.73	6.24	51.93	28.98	22.95	2.262			
2,300.00	2,299.74	2,301.86	2,300.58	12.01	12.01	127.81	-45.94	11.16	53.44	29.43	24.01	2.226			
2,400.00	2,399.61	2,401.84	2,400.43	12.54	12.53	126.75	-44.15	16.07	54.97	29.90	25.07	2.193			
2,500.00	2,499.49	2,501.82	2,500.27	13.08	13.06	125.75	-42.36	20.99	56.52	30.39	26.13	2.163			
2,600.00	2,599.36	2,601.81	2,600.12	13.61	13.59	124.60	-40.57	25.91	58.08	30.89	27.19	2.136			
2,700.00	2,699.23	2,701.79	2,699.96	14.15	14.12	123.90	-38.78	30.83	59.66	31.40	28.26	2.111			
2,800.00	2,799.11	2,801.77	2,799.81	14.68	14.65	123.05	-36.99	35.74	61.25	31.92	29.33	2.088			
2,900.00	2,898.98	2,901.76	2,899.66	15.22	15.19	122.24	-35.20	40.66	62.86	32.46	30.40	2.068			
3,000.00	2,998.85	3,001.74	2,999.50	15.76	15.72	121.47	-33.41	45.58	64.48	33.01	31.47	2.049			
3,100.00	3,098.73	3,101.72	3,099.35	16.29	16.26	120.74	-31.62	50.49	66.11	33.56	32.54	2.031			
3,200.00	3,198.60	3,201.71	3,199.20	16.83	16.79	120.05	-29.83	55.41	67.75	34.13	33.62	2.015			
3,300.00	3,298.47	3,301.69	3,299.04	17.37	17.33	119.39	-28.04	60.33	69.40	34.70	34.69	2.000			
3,400.00	3,398.35	3,401.67	3,398.89	17.91	17.87	118.75	-26.25	65.25	71.06	35.28	35.77	1.986			
3,500.00	3,498.22	3,501.65	3,498.73	18.45	18.41	118.15	-24.46	70.16	72.72	35.87	36.85	1.974			
3,600.00	3,598.09	3,601.64	3,598.56	18.99	18.94	117.58	-22.67	75.08	74.40	36.47	37.93	1.962			
3,700.00	3,697.97	3,701.62	3,698.43	19.53	19.48	117.03	-20.88	80.00	76.08	37.07	39.01	1.950			
3,800.00	3,797.84	3,801.60	3,798.27	20.07	20.02	116.50	-19.09	84.91	77.76	37.68	40.09	1.940			
3,900.00	3,897.71	3,901.59	3,898.12	20.61	20.56	116.00	-17.30	89.83	79.46	38.29	41.17	1.930			
4,000.00	3,997.59	4,001.57	3,997.97	21.15	21.10	115.51	-15.51	94.75	81.16	38.91	42.25	1.921			
4,100.00	4,097.46	4,101.55	4,097.81	21.69	21.64	115.05	-13.72	99.67	82.86	39.54	43.33	1.912			
4,200.00	4,197.33	4,201.54	4,197.66	22.23	22.18	114.61	-11.93	104.58	84.57	40.16	44.41	1.904			
4,300.00	4,297.21	4,301.52	4,297.50	22.78	22.73	114.18	-10.15	109.50	86.29	40.80	45.49	1.897			
4,400.00	4,397.08	4,401.50	4,397.35	23.32	23.27	113.77	-8.36	114.42	88.01	41.43	46.58	1.890			
4,500.00	4,496.95	4,501.49	4,497.20	23.86	23.81	113.37	-6.57	119.33	89.73	42.08	47.66	1.883			
4,600.00	4,596.82	4,601.47	4,597.04	24.40	24.35	112.99	-4.78	124.25	91.46	42.72	48.74	1.876			
4,700.00	4,696.70	4,701.45	4,696.89	24.94	24.89	112.63	-2.99	129.17	93.20	43.37	49.83	1.870			
4,800.00	4,796.57	4,801.44	4,796.74	25.49	25.43	112.28	-1.20	134.09	94.93	44.02	50.91	1.865			
4,900.00	4,896.44	4,901.42	4,896.58	26.03	25.98	111.94	0.59	139.00	96.67	44.67	52.00	1.859			
5,000.00	4,996.32	5,001.37	4,996.41	26.57	26.52	111.79	2.28	143.64	98.42	45.34	53.08	1.854			

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



# Phoenix Technology Services LP

## Anticollision Report



Company: Chevron  
 Project: Eddy County, NM (NAD27 NME)  
 Reference Site: HH CE 35 2 Fed  
 Site Error: 0.00 usft  
 Reference Well: 61  
 Well Error: 0.00 usft  
 Reference Wellbore: OH  
 Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
 TVD Reference: GL + KB @ 3169.00usft  
 MD Reference: GL + KB @ 3169.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 3.00 sigma  
 Database: Compass 5000 GCR  
 Offset TVD Reference: Reference Datum

Offset Design HH CE 35 2 Fed - 63 - OH - Plan 1 12-19-16												Offset Site Error:	0.00 usft	
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.00 usft	
Reference				Offset			Semi Major Axis			Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,096.19	5,101.19	5,096.21	27.11	27.05	113.28	2.98	145.56	100.28	46.12	54.16	1.852		
5,200.00	5,196.06	5,201.05	5,196.06	27.66	27.58	115.86	2.98	145.57	102.37	47.14	55.23	1.854		
5,300.00	5,295.94	5,300.92	5,295.94	28.20	28.11	118.34	2.98	145.57	104.67	48.37	56.29	1.859		
5,400.00	5,395.81	5,400.80	5,395.81	28.74	28.64	120.71	2.98	145.57	107.15	49.79	57.36	1.868		
5,500.00	5,495.68	5,500.67	5,495.68	29.29	29.17	122.97	2.98	145.57	109.81	51.38	58.43	1.879		
5,600.00	5,595.56	5,600.54	5,595.56	29.83	29.69	125.11	2.98	145.57	112.63	53.13	59.50	1.893		
5,700.00	5,695.43	5,700.42	5,695.43	30.37	30.22	127.15	2.98	145.57	115.60	55.04	60.57	1.909		
5,800.00	5,795.30	5,800.29	5,795.30	30.92	30.75	129.09	2.98	145.57	118.71	57.08	61.63	1.926		
5,900.00	5,895.19	5,900.18	5,895.19	31.46	31.28	130.84	2.98	145.57	121.78	59.07	62.71	1.942		
6,000.00	5,995.17	6,000.15	5,995.17	31.99	31.81	131.54	2.98	145.57	123.04	59.27	63.77	1.930		
6,100.00	6,095.17	6,100.15	6,095.17	32.52	32.35	-178.87	2.98	145.57	123.04	58.21	64.83	1.898		
6,200.00	6,195.17	6,200.15	6,195.17	33.06	32.88	-178.87	2.98	145.57	123.04	57.15	65.89	1.867		
6,300.00	6,295.17	6,300.15	6,295.17	33.59	33.41	-178.87	2.98	145.57	123.04	56.08	66.96	1.838		
6,400.00	6,395.17	6,400.15	6,395.17	34.12	33.94	-178.87	2.98	145.57	123.04	55.02	68.02	1.809		
6,500.00	6,495.17	6,500.15	6,495.17	34.65	34.47	-178.87	2.98	145.57	123.04	53.96	69.08	1.781		
6,600.00	6,595.17	6,600.15	6,595.17	35.18	35.00	-178.87	2.98	145.57	123.04	52.89	70.15	1.754		
6,700.00	6,695.17	6,700.15	6,695.17	35.71	35.54	-178.87	2.98	145.57	123.04	51.83	71.21	1.728		
6,800.00	6,795.17	6,800.15	6,795.17	36.24	36.07	-178.87	2.98	145.57	123.04	50.76	72.28	1.702		
6,900.00	6,895.17	6,900.15	6,895.17	36.77	36.60	-178.87	2.98	145.57	123.04	49.70	73.34	1.678		
7,000.00	6,995.17	7,000.15	6,995.17	37.31	37.13	-178.87	2.98	145.57	123.04	48.63	74.41	1.654		
7,100.00	7,095.17	7,100.15	7,095.17	37.84	37.67	-178.87	2.98	145.57	123.04	47.57	75.47	1.630		
7,200.00	7,195.17	7,200.15	7,195.17	38.37	38.20	-178.87	2.98	145.57	123.04	46.50	76.54	1.608		
7,300.00	7,295.17	7,300.15	7,295.17	38.90	38.73	-178.87	2.98	145.57	123.04	45.43	77.60	1.585		
7,400.00	7,395.17	7,400.15	7,395.17	39.44	39.27	-178.87	2.98	145.57	123.04	44.37	78.67	1.564		
7,500.00	7,495.17	7,500.15	7,495.17	39.97	39.80	-178.87	2.98	145.57	123.04	43.30	79.74	1.543		
7,600.00	7,595.17	7,600.15	7,595.17	40.50	40.33	-178.87	2.98	145.57	123.04	42.23	80.80	1.523		
7,700.00	7,695.17	7,700.15	7,695.17	41.03	40.87	-178.87	2.98	145.57	123.04	41.17	81.87	1.503		
7,800.00	7,795.17	7,800.15	7,795.17	41.57	41.40	-178.87	2.98	145.57	123.04	40.10	82.94	1.483 Level 3		
7,900.00	7,895.17	7,900.15	7,895.17	42.10	41.93	-178.87	2.98	145.57	123.04	39.03	84.01	1.465 Level 3		
8,000.00	7,995.17	8,000.15	7,995.17	42.63	42.47	-178.87	2.98	145.57	123.04	37.96	85.07	1.446 Level 3		
8,100.00	8,095.17	8,100.15	8,095.17	43.17	43.00	-178.87	2.98	145.57	123.04	36.90	86.14	1.428 Level 3		
8,200.00	8,195.17	8,200.15	8,195.17	43.70	43.54	-178.87	2.98	145.57	123.04	35.83	87.21	1.411 Level 3		
8,300.00	8,295.17	8,300.15	8,295.17	44.24	44.07	-178.87	2.98	145.57	123.04	34.76	88.28	1.394 Level 3		
8,400.00	8,395.17	8,400.15	8,395.17	44.77	44.60	-178.87	2.98	145.57	123.04	33.69	89.35	1.377 Level 3		
8,500.00	8,495.17	8,500.15	8,495.17	45.30	45.14	-178.87	2.98	145.57	123.04	32.62	90.42	1.361 Level 3		
8,600.00	8,595.17	8,600.15	8,595.17	45.84	45.67	-178.87	2.98	145.57	123.04	31.55	91.49	1.345 Level 3		
8,700.00	8,695.17	8,700.15	8,695.17	46.37	46.21	-178.87	2.98	145.57	123.04	30.49	92.55	1.329 Level 3		
8,800.00	8,795.17	8,800.15	8,795.17	46.91	46.74	-178.87	2.98	145.57	123.04	29.42	93.62	1.314 Level 3		
8,900.00	8,895.17	8,900.15	8,895.17	47.44	47.28	-178.87	2.98	145.57	123.04	28.35	94.69	1.299 Level 3		
9,000.00	8,995.17	9,000.15	8,995.17	47.97	47.81	-178.87	2.98	145.57	123.04	27.28	95.76	1.285 Level 3		
9,100.00	9,095.17	9,100.15	9,095.17	48.51	48.35	-178.87	2.98	145.57	123.04	26.21	96.83	1.271 Level 3		
9,200.00	9,195.17	9,200.15	9,195.17	49.04	48.88	-178.87	2.98	145.57	123.04	25.14	97.90	1.257 Level 3		
9,300.00	9,295.17	9,300.15	9,295.17	49.58	49.42	-178.87	2.98	145.57	123.04	24.07	98.97	1.243 Level 2		
9,400.00	9,395.17	9,400.15	9,395.17	50.11	49.95	-178.87	2.98	145.57	123.04	23.00	100.04	1.230 Level 2		
9,465.23	9,460.40	9,465.39	9,460.40	50.46	50.30	-178.87	2.98	145.57	123.04	22.30	100.74	1.221 Level 2		
9,500.00	9,495.17	9,499.42	9,494.44	50.65	50.48	-178.87	2.97	145.57	123.05	21.95	101.11	1.217 Level 2		
9,600.00	9,595.17	9,581.12	9,575.81	51.18	50.88	-178.87	-3.32	145.46	130.78	28.75	102.04	1.282 Level 3		
9,700.00	9,695.15	9,659.66	9,652.46	51.71	51.25	0.07	-20.22	145.15	151.54	48.79	102.75	1.475 Level 3		
9,800.00	9,794.02	9,735.86	9,723.93	52.18	51.58	0.06	-46.47	144.68	172.45	71.24	101.21	1.704		
9,900.00	9,888.95	9,870.76	9,790.18	52.62	51.89	0.06	-81.29	144.05	189.17	92.17	97.00	1.950		
10,000.00	9,977.04	9,884.73	9,850.60	53.00	52.16	0.05	-123.86	143.28	201.47	111.17	90.30	2.231		
10,100.00	10,055.62	9,958.08	9,904.62	53.32	52.43	0.05	-173.41	142.38	209.19	127.70	81.49	2.567		

CC - Min centre to center distance or covergent point. SF - min separation factor. ES - min ellipse separation



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 63 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,200.00	10,122.30	10,031.12	9,951.67	53.67	52.72	0.05	-229.20	141.37	212.24	141.12	71.12	2.984		
10,300.00	10,175.06	10,100.00	9,989.21	54.05	53.00	0.05	-286.89	140.33	210.63	150.59	60.04	3.508		
10,400.00	10,212.29	10,177.34	10,022.77	54.42	53.32	0.05	-356.50	139.06	204.22	154.49	49.73	4.106		
10,500.00	10,232.87	10,250.00	10,045.49	54.80	53.62	0.05	-425.45	137.82	193.25	150.72	42.53	4.544		
10,600.00	10,237.00	10,325.78	10,059.70	55.19	53.94	0.05	-499.82	136.47	178.64	137.53	41.11	4.346		
10,700.00	10,237.00	10,404.11	10,064.00	55.64	54.28	0.05	-577.96	135.05	173.00	131.30	41.70	4.149		
10,800.00	10,237.00	10,504.11	10,064.00	56.16	54.76	0.05	-677.95	133.24	173.00	130.54	42.46	4.074		
10,900.00	10,237.00	10,604.11	10,064.00	56.77	55.32	0.04	-777.93	131.43	173.00	129.66	43.34	3.992		
11,000.00	10,237.00	10,704.11	10,064.00	57.44	55.95	0.04	-877.91	129.62	173.00	128.68	44.32	3.904		
11,100.00	10,237.00	10,804.11	10,064.00	58.19	56.66	0.04	-977.90	127.81	173.00	127.60	45.40	3.810		
11,200.00	10,237.00	10,904.11	10,064.00	59.00	57.44	0.04	-1,077.88	126.00	173.00	126.42	46.58	3.714		
11,300.00	10,237.00	11,004.11	10,064.00	59.89	58.28	0.03	-1,177.86	124.19	173.00	125.15	47.85	3.616		
11,400.00	10,237.00	11,104.11	10,064.00	60.83	59.20	0.03	-1,277.85	122.38	173.00	123.81	49.19	3.517		
11,500.00	10,237.00	11,204.11	10,064.00	61.84	60.17	0.03	-1,377.83	120.57	173.00	122.39	50.61	3.418		
11,600.00	10,237.00	11,304.11	10,064.00	62.90	61.21	0.03	-1,477.81	118.76	173.00	120.90	52.10	3.321		
11,700.00	10,237.00	11,404.11	10,064.00	64.01	62.30	0.02	-1,577.80	116.95	173.00	119.35	53.65	3.225		
11,800.00	10,237.00	11,504.11	10,064.00	65.18	63.45	0.02	-1,677.78	115.14	173.00	117.75	55.25	3.131		
11,900.00	10,237.00	11,604.11	10,064.00	66.40	64.64	0.02	-1,777.76	113.33	173.00	116.09	56.91	3.040		
12,000.00	10,237.00	11,704.11	10,064.00	67.66	65.89	0.02	-1,877.75	111.52	173.00	114.38	58.62	2.951		
12,100.00	10,237.00	11,804.11	10,064.00	68.97	67.18	0.01	-1,977.73	109.71	173.00	112.63	60.37	2.866		
12,200.00	10,237.00	11,904.11	10,064.00	70.32	68.51	0.01	-2,077.72	107.90	173.00	110.84	62.16	2.783		
12,300.00	10,237.00	12,004.11	10,064.00	71.71	69.89	0.01	-2,177.70	106.09	173.00	109.01	63.99	2.704		
12,400.00	10,237.00	12,104.11	10,064.00	73.13	71.30	0.01	-2,277.68	104.28	173.00	107.15	65.85	2.627		
12,500.00	10,237.00	12,204.11	10,064.00	74.59	72.75	0.00	-2,377.67	102.47	173.00	105.26	67.74	2.554		
12,600.00	10,237.00	12,304.11	10,064.00	76.08	74.23	0.00	-2,477.65	100.66	173.00	103.34	69.66	2.484		
12,641.04	10,237.00	12,345.16	10,064.00	76.71	74.85	0.02	-2,518.69	99.92	173.00	102.55	70.45	2.456		
12,700.00	10,237.00	12,404.11	10,064.00	77.60	75.75	0.00	-2,577.64	99.30	173.00	101.40	71.60	2.416		
12,800.00	10,237.00	12,504.11	10,064.00	79.16	77.30	0.00	-2,677.64	98.37	173.00	99.43	73.57	2.352		
12,900.00	10,237.00	12,604.11	10,064.00	80.74	78.87	0.00	-2,777.63	97.44	173.00	97.44	75.56	2.290		
13,000.00	10,237.00	12,704.11	10,064.00	82.35	80.48	0.00	-2,877.63	96.51	173.00	95.43	77.57	2.230		
13,100.00	10,237.00	12,804.11	10,064.00	83.98	82.10	0.00	-2,977.62	95.58	173.00	93.40	79.60	2.173		
13,200.00	10,237.00	12,904.11	10,064.00	85.63	83.76	0.00	-3,077.62	94.65	173.00	91.35	81.65	2.119		
13,300.00	10,237.00	13,004.11	10,064.00	87.31	85.43	0.00	-3,177.61	93.72	173.00	89.29	83.71	2.067		
13,400.00	10,237.00	13,104.11	10,064.00	89.01	87.13	0.00	-3,277.61	92.79	173.00	87.21	85.79	2.016		
13,500.00	10,237.00	13,204.11	10,064.00	90.73	88.84	0.00	-3,377.61	91.87	173.00	85.11	87.89	1.968		
13,600.00	10,237.00	13,304.11	10,064.00	92.46	90.57	0.00	-3,477.60	90.94	173.00	83.01	89.99	1.922		
13,700.00	10,237.00	13,404.11	10,064.00	94.21	92.32	0.00	-3,577.60	90.01	173.00	80.89	92.11	1.878		
13,800.00	10,237.00	13,504.11	10,064.00	95.98	94.09	0.00	-3,677.59	89.08	173.00	78.76	94.24	1.836		
13,900.00	10,237.00	13,604.11	10,064.00	97.77	95.88	0.00	-3,777.59	88.15	173.00	76.62	96.38	1.795		
14,000.00	10,237.00	13,704.11	10,064.00	99.56	97.67	0.00	-3,877.58	87.22	173.00	74.47	98.53	1.756		
14,100.00	10,237.00	13,804.11	10,064.00	101.38	99.49	0.00	-3,977.58	86.29	173.00	72.32	100.68	1.718		
14,200.00	10,237.00	13,904.11	10,064.00	103.20	101.31	0.00	-4,077.58	85.36	173.00	70.15	102.85	1.682		
14,300.00	10,237.00	14,004.11	10,064.00	105.04	103.15	0.00	-4,177.57	84.43	173.00	67.97	105.03	1.647		
14,400.00	10,237.00	14,104.11	10,064.00	106.89	105.00	0.00	-4,277.57	83.50	173.00	65.79	107.21	1.614		
14,500.00	10,237.00	14,204.11	10,064.00	108.75	106.86	0.00	-4,377.56	82.58	173.00	63.60	109.40	1.581		
14,600.00	10,237.00	14,304.11	10,064.00	110.62	108.74	0.00	-4,477.56	81.65	173.00	61.40	111.60	1.550		
14,700.00	10,237.00	14,404.11	10,064.00	112.50	110.62	0.00	-4,577.55	80.72	173.00	59.20	113.80	1.520		
14,800.00	10,237.00	14,504.11	10,064.00	114.39	112.51	0.00	-4,677.55	79.79	173.00	56.99	116.01	1.491 Level 3		
14,900.00	10,237.00	14,604.11	10,064.00	116.29	114.41	0.00	-4,777.55	78.86	173.00	54.78	118.22	1.463 Level 3		
15,000.00	10,237.00	14,704.11	10,064.00	118.20	116.32	0.00	-4,877.54	77.93	173.00	52.56	120.44	1.436 Level 3		
15,100.00	10,237.00	14,804.11	10,064.00	120.12	118.24	0.00	-4,977.54	77.00	173.00	50.33	122.67	1.410 Level 3		
15,200.00	10,237.00	14,904.11	10,064.00	122.04	120.17	0.00	-5,077.53	76.07	173.00	48.11	124.89	1.385 Level 3		

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													HH CE 35 2 Fed - 63 - OH - Plan 1 12-19-16	Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis			Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
15,300.00	10,237.00	15,004.11	10,064.00	123.97	122.10	0.00	-5,177.53	75.14	173.00	45.87	127.13	1.361	Level 3		
15,400.00	10,237.00	15,104.11	10,064.00	125.91	124.04	0.00	-5,277.52	74.21	173.00	43.63	129.37	1.337	Level 3		
15,500.00	10,237.00	15,204.11	10,064.00	127.86	125.99	0.00	-5,377.52	73.29	173.00	41.39	131.61	1.314	Level 3		
15,600.00	10,237.00	15,304.11	10,064.00	129.81	127.94	0.00	-5,477.51	72.36	173.00	39.14	133.86	1.292	Level 3		
15,700.00	10,237.00	15,404.11	10,064.00	131.77	129.91	0.00	-5,577.51	71.43	173.00	36.90	136.10	1.271	Level 3		
15,800.00	10,237.00	15,504.11	10,064.00	133.74	131.87	0.00	-5,677.51	70.50	173.00	34.64	138.36	1.250	Level 3		
15,900.00	10,237.00	15,604.11	10,064.00	135.71	133.84	0.00	-5,777.50	69.57	173.00	32.39	140.61	1.230	Level 2		
16,000.00	10,237.00	15,704.11	10,064.00	137.68	135.82	0.00	-5,877.50	68.64	173.00	30.13	142.87	1.211	Level 2		
16,100.00	10,237.00	15,804.11	10,064.00	139.66	137.81	0.00	-5,977.49	67.71	173.00	27.86	145.14	1.192	Level 2		
16,200.00	10,237.00	15,904.11	10,064.00	141.65	139.79	0.00	-6,077.49	66.78	173.00	25.60	147.40	1.174	Level 2		
16,300.00	10,237.00	16,004.11	10,064.00	143.64	141.79	0.00	-6,177.48	65.85	173.00	23.33	149.67	1.156	Level 2		
16,400.00	10,237.00	16,104.11	10,064.00	145.64	143.78	0.00	-6,277.48	64.92	173.00	21.06	151.94	1.139	Level 2		
16,500.00	10,237.00	16,204.11	10,064.00	147.64	145.79	0.00	-6,377.48	64.00	173.00	18.78	154.22	1.122	Level 2		
16,600.00	10,237.00	16,304.11	10,064.00	149.64	147.79	0.00	-6,477.47	63.07	173.00	16.51	156.49	1.105	Level 2		
16,700.00	10,237.00	16,404.11	10,064.00	151.65	149.80	0.00	-6,577.47	62.14	173.00	14.23	158.77	1.090	Level 2		
16,800.00	10,237.00	16,504.11	10,064.00	153.66	151.82	0.00	-6,677.46	61.21	173.00	11.95	161.05	1.074	Level 2		
16,900.00	10,237.00	16,604.11	10,064.00	155.68	153.84	0.00	-6,777.46	60.28	173.00	9.67	163.33	1.059	Level 2		
17,000.00	10,237.00	16,704.11	10,064.00	157.69	155.86	0.00	-6,877.45	59.35	173.00	7.38	165.62	1.045	Level 2		
17,100.00	10,237.00	16,804.11	10,064.00	159.72	157.88	0.00	-6,977.45	58.42	173.00	5.10	167.90	1.030	Level 2		
17,200.00	10,237.00	16,904.11	10,064.00	161.74	159.91	0.00	-7,077.45	57.49	173.00	2.81	170.19	1.017	Level 2		
17,300.00	10,237.00	17,004.11	10,064.00	163.77	161.94	0.00	-7,177.44	56.56	173.00	0.52	172.48	1.003	Level 2		
17,400.00	10,237.00	17,104.11	10,064.00	165.81	163.98	0.00	-7,277.44	55.63	173.00	-1.77	174.77	0.990	Level 1		
17,500.00	10,237.00	17,204.11	10,064.00	167.84	166.01	0.00	-7,377.43	54.71	173.00	-4.07	177.07	0.977	Level 1		
17,600.00	10,237.00	17,304.11	10,064.00	169.88	168.05	0.00	-7,477.43	53.78	173.00	-6.36	179.36	0.965	Level 1		
17,683.58	10,237.00	17,387.69	10,064.00	171.59	169.76	0.00	-7,561.00	53.00	173.00	-8.28	181.28	0.954	Level 1, ES, SF		

CC - Min centre to center distance or covergent point. SF - min separation factor ES - min ellipse separation



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													HH CE 35 2 Fed - 64 - OH - Plan 1 12-19-16	Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	1.00	0.00	0.00	0.00	-179.24	-75.00	-1.00	75.01						
100.00	100.00	101.00	100.00	0.20	0.21	-179.24	-75.00	-1.00	75.01	74.60	0.41	183.544			
200.00	200.00	201.00	200.00	0.74	0.74	-179.24	-75.00	-1.00	75.01	73.52	1.48	50.541			
300.00	300.00	301.00	300.00	1.28	1.28	-179.24	-75.00	-1.00	75.01	72.45	2.56	29.305			
400.00	400.00	401.00	400.00	1.81	1.82	-179.24	-75.00	-1.00	75.01	71.37	3.63	20.635			
500.00	500.00	501.00	500.00	2.35	2.36	-179.24	-75.00	-1.00	75.01	70.30	4.71	15.924			
600.00	600.00	601.00	600.00	2.89	2.90	-179.24	-75.00	-1.00	75.01	69.22	5.79	12.964			
700.00	700.00	701.00	700.00	3.43	3.43	-179.24	-75.00	-1.00	75.01	68.15	6.86	10.932			
800.00	800.00	801.00	800.00	3.97	3.97	-179.24	-75.00	-1.00	75.01	67.07	7.94	9.451			
900.00	900.00	901.00	900.00	4.50	4.51	-179.24	-75.00	-1.00	75.01	65.99	9.01	8.323			
1,000.00	1,000.00	1,001.00	1,000.00	5.04	5.05	-179.24	-75.00	-1.00	75.01	64.92	10.09	7.436			
1,100.00	1,100.00	1,101.00	1,100.00	5.58	5.58	-179.24	-75.00	-1.00	75.01	63.84	11.16	6.719			
1,200.00	1,200.00	1,201.00	1,200.00	6.12	6.12	-179.24	-75.00	-1.00	75.01	62.77	12.24	6.129			
1,300.00	1,300.00	1,301.00	1,300.00	6.65	6.66	-179.24	-75.00	-1.00	75.01	61.69	13.31	5.634			
1,400.00	1,400.00	1,401.00	1,400.00	7.19	7.20	-179.24	-75.00	-1.00	75.01	60.62	14.39	5.213			
1,500.00	1,500.00	1,501.00	1,500.00	7.73	7.73	-179.24	-75.00	-1.00	75.01	59.54	15.46	4.850			
1,600.00	1,600.00	1,601.00	1,600.00	8.27	8.27	-179.24	-75.00	-1.00	75.01	58.47	16.54	4.535			
1,700.00	1,700.00	1,701.00	1,700.00	8.80	8.81	-179.24	-75.00	-1.00	75.01	57.39	17.62	4.258			
1,800.00	1,800.00	1,801.00	1,800.00	9.34	9.35	-179.24	-75.00	-1.00	75.01	56.32	18.69	4.013			
1,900.00	1,900.00	1,901.00	1,900.00	9.88	9.89	-179.24	-75.00	-1.00	75.01	55.24	19.77	3.795			
2,000.00	2,000.00	2,001.00	2,000.00	10.42	10.42	-179.24	-75.00	-1.00	75.01	54.17	20.84	3.599			
2,000.02	2,000.02	2,001.02	2,000.02	10.42	10.42	-179.24	-75.00	-1.00	75.01	54.17	20.84	3.599	CC		
2,100.00	2,099.98	2,101.02	2,100.00	10.95	10.95	130.80	-75.00	0.78	76.13	54.24	21.89	3.477			
2,200.00	2,199.87	2,200.97	2,199.83	11.48	11.46	129.87	-75.00	5.59	79.18	56.24	22.93	3.452			
2,300.00	2,299.74	2,300.91	2,299.63	12.01	11.98	128.92	-75.00	10.82	82.46	58.48	23.98	3.439			
2,400.00	2,399.61	2,400.84	2,399.43	12.54	12.50	128.04	-75.00	16.05	85.77	60.74	25.03	3.426			
2,500.00	2,499.49	2,500.78	2,499.23	13.08	13.02	127.23	-75.00	21.28	89.10	63.01	26.09	3.415			
2,600.00	2,599.36	2,600.72	2,599.03	13.61	13.55	126.47	-75.00	26.51	92.44	65.29	27.15	3.405			
2,700.00	2,699.23	2,700.66	2,698.83	14.15	14.07	125.77	-75.00	31.75	95.80	67.59	28.21	3.396			
2,800.00	2,799.11	2,800.81	2,798.90	14.68	14.60	125.69	-75.00	35.98	99.09	69.81	29.27	3.385			
2,900.00	2,898.98	2,900.91	2,898.98	15.22	15.13	125.45	-75.00	36.95	102.15	71.81	30.34	3.367			
3,000.00	2,998.85	3,000.78	2,998.85	15.76	15.67	129.63	-75.00	36.95	105.29	73.88	31.41	3.352			
3,100.00	3,098.73	3,100.65	3,098.73	16.29	16.20	131.67	-75.00	36.95	108.58	76.10	32.48	3.343			
3,200.00	3,198.60	3,200.53	3,198.60	16.83	16.74	133.59	-75.00	36.95	111.99	78.44	33.55	3.338			
3,300.00	3,298.47	3,300.40	3,298.47	17.37	17.27	135.40	-75.00	36.95	115.52	80.90	34.62	3.337			
3,400.00	3,398.35	3,400.27	3,398.35	17.91	17.81	137.10	-75.00	36.95	119.16	83.47	35.69	3.339			
3,500.00	3,498.22	3,500.14	3,498.22	18.45	18.34	138.70	-75.00	36.95	122.90	86.13	36.76	3.343			
3,600.00	3,598.09	3,600.02	3,598.09	18.99	18.88	140.20	-75.00	36.95	126.73	88.89	37.83	3.349			
3,700.00	3,697.97	3,699.89	3,697.97	19.53	19.41	141.61	-75.00	36.95	130.64	91.73	38.91	3.358			
3,800.00	3,797.84	3,799.76	3,797.84	20.07	19.95	142.94	-75.00	36.95	134.62	94.64	39.98	3.367			
3,900.00	3,897.71	3,899.64	3,897.71	20.61	20.48	144.20	-75.00	36.95	138.67	97.62	41.05	3.378			
4,000.00	3,997.59	3,999.51	3,997.59	21.15	21.02	145.38	-75.00	36.95	142.79	100.67	42.12	3.390			
4,100.00	4,097.46	4,099.38	4,097.46	21.69	21.55	146.49	-75.00	36.95	146.96	103.77	43.20	3.402			
4,200.00	4,197.33	4,199.26	4,197.33	22.23	22.09	147.55	-75.00	36.95	151.19	106.92	44.27	3.415			
4,300.00	4,297.21	4,299.13	4,297.21	22.78	22.63	148.54	-75.00	36.95	155.46	110.12	45.34	3.429			
4,400.00	4,397.08	4,399.00	4,397.08	23.32	23.16	149.48	-75.00	36.95	159.78	113.36	46.41	3.442			
4,500.00	4,496.95	4,498.88	4,496.95	23.86	23.70	150.38	-75.00	36.95	164.14	116.65	47.49	3.456			
4,600.00	4,596.82	4,598.75	4,596.82	24.40	24.23	151.22	-75.00	36.95	168.53	119.97	48.56	3.471			
4,700.00	4,696.70	4,698.62	4,696.70	24.94	24.77	152.02	-75.00	36.95	172.96	123.33	49.63	3.485			
4,800.00	4,796.57	4,798.50	4,796.57	25.49	25.31	152.79	-75.00	36.95	177.43	126.72	50.71	3.499			
4,900.00	4,896.44	4,898.37	4,896.44	26.03	25.84	153.51	-75.00	36.95	181.92	130.14	51.78	3.513			
5,000.00	4,996.32	4,998.24	4,996.32	26.57	26.38	154.20	-75.00	36.95	186.44	133.59	52.85	3.528			

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 64 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis			Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference (usft)	Offset (usft)	Reference (usft)		Offset (usft)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)			
5,100.00	5,096.19	5,098.12	5,096.19	27.11	26.91	154.86	-75.00	36.95	190.99	137.06	53.93	3.542		
5,200.00	5,196.06	5,197.99	5,196.06	27.66	27.45	155.49	-75.00	36.95	195.56	140.56	55.00	3.566		
5,300.00	5,295.94	5,297.86	5,295.94	28.20	27.99	156.06	-75.00	36.95	200.15	144.08	56.07	3.569		
5,400.00	5,395.81	5,397.74	5,395.81	28.74	28.52	156.65	-75.00	36.95	204.76	147.62	57.15	3.583		
5,500.00	5,495.68	5,497.61	5,495.68	29.29	29.06	157.20	-75.00	36.95	209.40	151.17	58.22	3.597		
5,600.00	5,595.56	5,597.48	5,595.56	29.83	29.59	157.72	-75.00	36.95	214.05	154.75	59.30	3.610		
5,700.00	5,695.43	5,697.35	5,695.43	30.37	30.13	158.22	-75.00	36.95	218.72	158.35	60.37	3.623		
5,800.00	5,795.30	5,797.23	5,795.30	30.92	30.67	158.70	-75.00	36.95	223.40	161.96	61.44	3.636		
5,900.00	5,895.19	5,897.11	5,895.19	31.46	31.20	159.15	-75.00	36.95	227.85	165.31	62.54	3.653		
6,000.00	5,995.17	5,997.09	5,995.17	31.99	31.74	159.33	-75.00	36.95	229.64	166.02	63.61	3.610		
6,100.00	6,095.17	6,097.09	6,095.17	32.52	32.28	-151.08	-75.00	36.95	229.64	164.96	64.68	3.550		
6,200.00	6,195.17	6,197.09	6,195.17	33.06	32.82	-151.08	-75.00	36.95	229.64	163.89	65.75	3.493		
6,300.00	6,295.17	6,297.09	6,295.17	33.59	33.35	-151.08	-75.00	36.95	229.64	162.82	66.82	3.437		
6,400.00	6,395.17	6,397.09	6,395.17	34.12	33.89	-151.08	-75.00	36.95	229.64	161.75	67.89	3.382		
6,500.00	6,495.17	6,497.09	6,495.17	34.65	34.43	-151.08	-75.00	36.95	229.64	160.68	68.96	3.330		
6,600.00	6,595.17	6,597.09	6,595.17	35.18	34.96	-151.08	-75.00	36.95	229.64	159.61	70.03	3.279		
6,700.00	6,695.17	6,697.09	6,695.17	35.71	35.50	-151.08	-75.00	36.95	229.64	158.54	71.10	3.230		
6,800.00	6,795.17	6,797.09	6,795.17	36.24	36.04	-151.08	-75.00	36.95	229.64	157.47	72.17	3.182		
6,900.00	6,895.17	6,897.09	6,895.17	36.77	36.58	-151.08	-75.00	36.95	229.64	156.40	73.24	3.135		
7,000.00	6,995.17	6,997.09	6,995.17	37.31	37.11	-151.08	-75.00	36.95	229.64	155.33	74.31	3.090		
7,100.00	7,095.17	7,097.09	7,095.17	37.84	37.65	-151.08	-75.00	36.95	229.64	154.26	75.38	3.046		
7,200.00	7,195.17	7,197.09	7,195.17	38.37	38.19	-151.08	-75.00	36.95	229.64	153.19	76.45	3.004		
7,300.00	7,295.17	7,297.09	7,295.17	38.90	38.72	-151.08	-75.00	36.95	229.64	152.11	77.52	2.962		
7,400.00	7,395.17	7,397.09	7,395.17	39.44	39.26	-151.08	-75.00	36.95	229.64	151.04	78.60	2.922		
7,500.00	7,495.17	7,497.09	7,495.17	39.97	39.80	-151.08	-75.00	36.95	229.64	149.97	79.67	2.882		
7,600.00	7,595.17	7,597.09	7,595.17	40.50	40.34	-151.08	-75.00	36.95	229.64	148.90	80.74	2.844		
7,700.00	7,695.17	7,697.09	7,695.17	41.03	40.87	-151.08	-75.00	36.95	229.64	147.83	81.81	2.807		
7,800.00	7,795.17	7,797.09	7,795.17	41.57	41.41	-151.08	-75.00	36.95	229.64	146.76	82.88	2.771		
7,900.00	7,895.17	7,897.09	7,895.17	42.10	41.95	-151.08	-75.00	36.95	229.64	145.69	83.95	2.735		
8,000.00	7,995.17	7,997.09	7,995.17	42.63	42.49	-151.08	-75.00	36.95	229.64	144.61	85.02	2.701		
8,100.00	8,095.17	8,097.09	8,095.17	43.17	43.02	-151.08	-75.00	36.95	229.64	143.54	86.10	2.667		
8,200.00	8,195.17	8,197.09	8,195.17	43.70	43.56	-151.08	-75.00	36.95	229.64	142.47	87.17	2.634		
8,300.00	8,295.17	8,297.09	8,295.17	44.24	44.10	-151.08	-75.00	36.95	229.64	141.40	88.24	2.602		
8,400.00	8,395.17	8,397.09	8,395.17	44.77	44.64	-151.08	-75.00	36.95	229.64	140.33	89.31	2.571		
8,500.00	8,495.17	8,497.09	8,495.17	45.30	45.17	-151.08	-75.00	36.95	229.64	139.25	90.38	2.541		
8,600.00	8,595.17	8,597.09	8,595.17	45.84	45.71	-151.08	-75.00	36.95	229.64	138.18	91.46	2.511		
8,700.00	8,695.17	8,697.09	8,695.17	46.37	46.25	-151.08	-75.00	36.95	229.64	137.11	92.53	2.482		
8,800.00	8,795.17	8,797.09	8,795.17	46.91	46.79	-151.08	-75.00	36.95	229.64	136.04	93.60	2.453		
8,900.00	8,895.17	8,897.09	8,895.17	47.44	47.32	-151.08	-75.00	36.95	229.64	134.97	94.67	2.426		
9,000.00	8,995.17	8,997.09	8,995.17	47.97	47.86	-151.08	-75.00	36.95	229.64	133.89	95.75	2.398		
9,100.00	9,095.17	9,097.09	9,095.17	48.51	48.40	-151.08	-75.00	36.95	229.64	132.82	96.82	2.372		
9,200.00	9,195.17	9,197.09	9,195.17	49.04	48.93	-151.08	-75.00	36.95	229.64	131.75	97.89	2.346		
9,300.00	9,295.17	9,297.09	9,295.17	49.58	49.47	-151.08	-75.00	36.95	229.64	130.67	98.96	2.320		
9,400.00	9,395.17	9,438.66	9,435.84	50.11	50.23	-149.52	-62.34	37.17	222.28	122.03	100.25	2.217		
9,500.00	9,495.17	9,576.26	9,565.67	50.65	50.91	-142.57	-17.77	37.94	194.30	92.86	101.45	1.915		
9,600.00	9,595.17	9,668.23	9,661.07	51.18	51.42	-128.10	40.51	38.96	153.43	50.97	102.46	1.498 Level 3		
9,700.00	9,695.15	9,774.24	9,725.60	51.71	51.81	75.32	97.25	39.95	115.66	12.31	103.35	1.119 Level 2		
9,753.30	9,748.16	9,807.50	9,748.15	51.96	51.96	89.96	121.68	40.38	107.53	3.72	103.80	1.036 Level 2. ES SF		
9,800.00	9,794.02	9,829.47	9,762.26	52.18	52.06	99.31	138.52	40.67	114.99	10.90	104.10	1.105 Level 2		
9,900.00	9,888.95	9,858.10	9,779.66	52.62	52.19	105.60	161.25	41.07	172.63	68.38	104.25	1.656		
10,000.00	9,977.04	9,867.82	9,785.30	53.00	52.23	94.10	169.16	41.21	257.60	152.50	105.10	2.451		
10,100.00	10,055.62	9,864.41	9,783.33	53.32	52.21	67.25	166.37	41.16	350.72	248.78	101.93	3.441		

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 64 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,200.00	10,122.30	9,850.00	9,774.85	53.67	52.15	40.86	154.73	40.96	444.67	358.02	86.65	5.132		
10,300.00	10,175.06	9,832.73	9,764.29	54.05	52.07	26.21	141.06	40.72	535.90	465.99	69.91	7.666		
10,400.00	10,212.29	9,800.00	9,743.19	54.42	51.93	17.83	116.06	40.28	622.36	566.71	55.65	11.183		
10,500.00	10,232.87	9,781.57	9,730.69	54.80	51.85	13.70	102.52	40.04	702.14	655.62	46.51	15.095		
10,600.00	10,237.00	9,750.00	9,708.28	55.19	51.70	11.49	80.29	39.66	775.04	731.42	43.62	17.769		
10,700.00	10,237.00	9,724.07	9,688.98	55.64	51.59	11.10	62.97	39.35	848.71	805.11	43.60	19.465		
10,800.00	10,237.00	9,700.00	9,670.39	56.16	51.48	10.74	47.69	39.09	925.47	881.78	43.69	21.184		
10,900.00	10,237.00	9,676.57	9,651.69	56.77	51.37	10.40	33.59	38.84	1,004.86	961.02	43.85	22.917		
11,000.00	10,237.00	9,650.00	9,629.80	57.44	51.24	10.04	18.53	38.58	1,086.56	1,042.52	44.04	24.672		
11,100.00	10,237.00	9,650.00	9,629.80	58.19	51.24	10.04	18.53	38.58	1,170.27	1,125.68	44.60	26.242		
11,200.00	10,237.00	9,621.27	9,605.38	59.00	51.11	9.65	3.41	38.31	1,255.33	1,210.45	44.87	27.974		
11,300.00	10,237.00	9,600.00	9,586.82	59.89	51.01	9.38	-6.99	38.13	1,342.05	1,296.76	45.29	29.630		
11,400.00	10,237.00	9,600.00	9,586.82	60.83	51.01	9.38	-6.99	38.13	1,430.01	1,384.03	45.98	31.102		
11,500.00	10,237.00	9,579.67	9,568.74	61.84	50.92	9.13	-16.28	37.97	1,518.96	1,472.47	46.49	32.673		
11,600.00	10,237.00	9,550.00	9,541.78	62.90	50.79	8.78	-28.66	37.75	1,609.33	1,562.38	46.95	34.274		
11,700.00	10,237.00	9,550.00	9,541.78	64.01	50.79	8.78	-28.66	37.75	1,699.83	1,652.09	47.74	35.605		
11,800.00	10,237.00	9,550.00	9,541.78	65.18	50.79	8.78	-28.66	37.75	1,791.35	1,742.79	48.56	36.891		
11,900.00	10,237.00	9,550.00	9,541.78	66.40	50.79	8.78	-28.66	37.75	1,883.72	1,834.32	49.40	38.132		
12,000.00	10,237.00	9,529.99	9,523.26	67.66	50.69	8.56	-36.22	37.62	1,976.39	1,926.31	50.07	39.469		
12,100.00	10,237.00	9,522.14	9,515.92	68.97	50.65	8.47	-39.01	37.57	2,069.74	2,018.85	50.89	40.671		
12,200.00	10,237.00	9,500.00	9,495.03	70.32	50.54	8.24	-46.33	37.45	2,163.80	2,112.20	51.60	41.936		
12,300.00	10,237.00	9,500.00	9,495.03	71.71	50.54	8.24	-46.33	37.45	2,257.87	2,205.34	52.52	42.987		
12,400.00	10,237.00	9,500.00	9,495.03	73.13	50.54	8.24	-46.33	37.45	2,352.43	2,298.96	53.47	43.997		
12,500.00	10,237.00	9,500.00	9,495.03	74.59	50.54	8.24	-46.33	37.45	2,447.42	2,393.00	54.43	44.967		
12,600.00	10,237.00	9,500.00	9,495.03	76.08	50.54	8.24	-46.33	37.45	2,542.80	2,487.40	55.40	45.898		
12,700.00	10,237.00	9,500.00	9,495.03	77.60	50.54	6.56	-46.33	37.45	2,638.54	2,582.98	55.55	47.496		
12,800.00	10,237.00	9,500.00	9,495.03	79.16	50.54	6.56	-46.33	37.45	2,734.59	2,678.04	56.55	48.358		
12,900.00	10,237.00	9,475.07	9,471.19	80.74	50.41	6.36	-53.60	37.32	2,830.27	2,772.89	57.38	49.322		
13,000.00	10,237.00	9,450.00	9,446.91	82.35	50.29	6.17	-59.86	37.21	2,927.04	2,868.81	58.23	50.263		
13,100.00	10,237.00	9,450.00	9,446.91	83.98	50.29	6.17	-59.86	37.21	3,023.41	2,964.15	59.26	51.020		
13,200.00	10,237.00	9,450.00	9,446.91	85.63	50.29	6.17	-59.86	37.21	3,120.00	3,059.71	60.29	51.747		
13,300.00	10,237.00	9,450.00	9,446.91	87.31	50.29	6.17	-59.86	37.21	3,216.81	3,155.47	61.34	52.446		
13,400.00	10,237.00	9,450.00	9,446.91	89.01	50.29	6.17	-59.86	37.21	3,313.80	3,251.41	62.39	53.118		
13,500.00	10,237.00	9,450.00	9,446.91	90.73	50.29	6.17	-59.86	37.21	3,410.97	3,347.52	63.44	53.765		
13,600.00	10,237.00	9,450.00	9,446.91	92.46	50.29	6.17	-59.86	37.21	3,508.29	3,443.78	64.51	54.387		
13,700.00	10,237.00	9,450.00	9,446.91	94.21	50.29	6.17	-59.86	37.21	3,605.76	3,540.19	65.58	54.987		
13,800.00	10,237.00	9,450.00	9,446.91	95.98	50.29	6.17	-59.86	37.21	3,703.37	3,636.72	66.65	55.564		
13,900.00	10,237.00	9,450.00	9,446.91	97.77	50.29	6.17	-59.86	37.21	3,801.10	3,733.37	67.73	56.120		
14,000.00	10,237.00	9,450.00	9,446.91	99.56	50.29	6.17	-59.86	37.21	3,898.95	3,830.13	68.82	56.657		
14,100.00	10,237.00	9,450.00	9,446.91	101.38	50.29	6.17	-59.86	37.21	3,996.90	3,926.99	69.91	57.174		
14,200.00	10,237.00	9,450.00	9,446.91	103.20	50.29	6.17	-59.86	37.21	4,094.95	4,023.95	71.00	57.673		
14,300.00	10,237.00	9,450.00	9,446.91	105.04	50.29	6.17	-59.86	37.21	4,193.09	4,120.99	72.10	58.156		
14,400.00	10,237.00	9,427.16	9,424.57	106.89	50.17	6.01	-64.63	37.13	4,290.81	4,217.76	73.05	58.740		
14,500.00	10,237.00	9,424.97	9,422.42	108.75	50.16	5.99	-65.04	37.12	4,389.02	4,314.88	74.14	59.200		
14,600.00	10,237.00	9,422.87	9,420.36	110.62	50.14	5.98	-65.43	37.11	4,487.29	4,412.06	75.23	59.644		
14,700.00	10,237.00	9,400.00	9,397.80	112.50	50.02	5.82	-69.14	37.05	4,586.06	4,509.87	76.19	60.189		
14,800.00	10,237.00	9,400.00	9,397.80	114.39	50.02	5.82	-69.14	37.05	4,684.39	4,607.08	77.31	60.593		
14,900.00	10,237.00	9,400.00	9,397.80	116.29	50.02	5.82	-69.14	37.05	4,782.79	4,704.37	78.43	60.984		
15,000.00	10,237.00	9,400.00	9,397.80	118.20	50.02	5.82	-69.14	37.05	4,881.26	4,801.71	79.55	61.362		
15,100.00	10,237.00	9,400.00	9,397.80	120.12	50.02	5.82	-69.14	37.05	4,979.78	4,899.11	80.67	61.729		
15,200.00	10,237.00	9,400.00	9,397.80	122.04	50.02	5.82	-69.14	37.05	5,078.37	4,996.57	81.80	62.085		
15,300.00	10,237.00	9,400.00	9,397.80	123.97	50.02	5.82	-69.14	37.05	5,177.00	5,094.08	82.92	62.430		

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



Phoenix Technology Services LP  
Anticollision Report



Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Reference Site: HH CE 35 2 Fed  
Site Error: 0.00 usft  
Reference Well: 61  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 3.00 sigma  
Database: Compass 5000 GCR  
Offset TVD Reference: Reference Datum

Offset Design HH CE 35 2 Fed - 64 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
15,400.00	10,237.00	9,400.00	9,397.80	125.91	50.02	5.82	-69.14	37.05	5,275.69	5,191.64	84.06	62.765		
15,500.00	10,237.00	9,400.00	9,397.80	127.86	50.02	5.82	-69.14	37.05	5,374.43	5,289.24	85.19	63.089		
15,600.00	10,237.00	9,400.00	9,397.80	129.81	50.02	5.82	-69.14	37.05	5,473.21	5,386.89	86.32	63.405		
15,700.00	10,237.00	9,400.00	9,397.80	131.77	50.02	5.82	-69.14	37.05	5,572.04	5,484.58	87.46	63.711		
15,800.00	10,237.00	9,400.00	9,397.80	133.74	50.02	5.82	-69.14	37.05	5,670.91	5,582.31	88.60	64.009		
15,900.00	10,237.00	9,400.00	9,397.80	135.71	50.02	5.82	-69.14	37.05	5,769.81	5,680.08	89.74	64.298		
16,000.00	10,237.00	9,400.00	9,397.80	137.68	50.02	5.82	-69.14	37.05	5,868.76	5,777.88	90.88	64.579		
16,100.00	10,237.00	9,400.00	9,397.80	139.66	50.02	5.82	-69.14	37.05	5,967.73	5,875.71	92.02	64.852		
16,200.00	10,237.00	9,400.00	9,397.80	141.65	50.02	5.82	-69.14	37.05	6,066.75	5,973.58	93.16	65.119		
16,300.00	10,237.00	9,400.00	9,397.80	143.64	50.02	5.82	-69.14	37.05	6,165.79	6,071.48	94.31	65.378		
16,400.00	10,237.00	9,400.00	9,397.80	145.64	50.02	5.82	-69.14	37.05	6,264.87	6,169.41	95.46	65.630		
16,500.00	10,237.00	9,400.00	9,397.80	147.64	50.02	5.82	-69.14	37.05	6,363.97	6,267.36	96.61	65.875		
16,600.00	10,237.00	9,400.00	9,397.80	149.64	50.02	5.82	-69.14	37.05	6,463.10	6,365.35	97.76	66.115		
16,700.00	10,237.00	9,400.00	9,397.80	151.65	50.02	5.82	-69.14	37.05	6,562.26	6,463.35	98.91	66.348		
16,800.00	10,237.00	9,400.00	9,397.80	153.66	50.02	5.82	-69.14	37.05	6,661.44	6,561.38	100.06	66.575		
16,900.00	10,237.00	9,400.00	9,397.80	155.68	50.02	5.82	-69.14	37.05	6,760.65	6,659.44	101.21	66.797		
17,000.00	10,237.00	9,400.00	9,397.80	157.69	50.02	5.82	-69.14	37.05	6,859.88	6,757.51	102.37	67.013		
17,100.00	10,237.00	9,400.00	9,397.80	159.72	50.02	5.82	-69.14	37.05	6,959.13	6,855.61	103.52	67.224		
17,200.00	10,237.00	9,400.00	9,397.80	161.74	50.02	5.82	-69.14	37.05	7,058.40	6,953.72	104.68	67.430		
17,300.00	10,237.00	9,400.00	9,397.80	163.77	50.02	5.82	-69.14	37.05	7,157.70	7,051.86	105.84	67.631		
17,400.00	10,237.00	9,400.00	9,397.80	165.81	50.02	5.82	-69.14	37.05	7,257.01	7,150.02	106.99	67.827		
17,500.00	10,237.00	9,400.00	9,397.80	167.84	50.02	5.82	-69.14	37.05	7,356.34	7,248.19	108.15	68.018		
17,600.00	10,237.00	9,400.00	9,397.80	169.88	50.02	5.82	-69.14	37.05	7,455.69	7,346.38	109.31	68.206		
17,683.58	10,237.00	9,400.00	9,397.80	171.59	50.02	5.82	-69.14	37.05	7,538.73	7,428.45	110.28	68.359		

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



# Phoenix Technology Services LP

## Anticollision Report



Company: Chevron  
 Project: Eddy County, NM (NAD27 NME)  
 Reference Site: HH CE 35 2 Fed  
 Site Error: 0.00 usft  
 Reference Well: 61  
 Well Error: 0.00 usft  
 Reference Wellbore: OH  
 Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
 TVD Reference: GL + KB @ 3169.00usft  
 MD Reference: GL + KB @ 3169.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 3.00 sigma  
 Database: Compass 5000 GCR  
 Offset TVD Reference: Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	1.00	0.00	0.00	0.00	-179.43	-100.00	-1.00	100.01					
100.00	100.00	101.00	100.00	0.20	0.21	-179.43	-100.00	-1.00	100.01	99.60	0.41	244.716		
200.00	200.00	201.00	200.00	0.74	0.74	-179.43	-100.00	-1.00	100.01	98.52	1.48	67.386		
300.00	300.00	301.00	300.00	1.28	1.28	-179.43	-100.00	-1.00	100.01	97.45	2.56	39.072		
400.00	400.00	401.00	400.00	1.81	1.82	-179.43	-100.00	-1.00	100.01	96.37	3.63	27.512		
500.00	500.00	501.00	500.00	2.35	2.36	-179.43	-100.00	-1.00	100.01	95.29	4.71	21.231		
600.00	600.00	601.00	600.00	2.89	2.90	-179.43	-100.00	-1.00	100.01	94.22	5.79	17.285		
700.00	700.00	701.00	700.00	3.43	3.43	-179.43	-100.00	-1.00	100.01	93.14	6.86	14.576		
800.00	800.00	801.00	800.00	3.97	3.97	-179.43	-100.00	-1.00	100.01	92.07	7.94	12.601		
900.00	900.00	901.00	900.00	4.50	4.51	-179.43	-100.00	-1.00	100.01	90.99	9.01	11.097		
1,000.00	1,000.00	1,001.00	1,000.00	5.04	5.05	-179.43	-100.00	-1.00	100.01	89.92	10.09	9.914		
1,100.00	1,100.00	1,101.00	1,100.00	5.58	5.58	-179.43	-100.00	-1.00	100.01	88.84	11.16	8.959		
1,200.00	1,200.00	1,201.00	1,200.00	6.12	6.12	-179.43	-100.00	-1.00	100.01	87.77	12.24	8.172		
1,300.00	1,300.00	1,301.00	1,300.00	6.65	6.66	-179.43	-100.00	-1.00	100.01	86.69	13.31	7.511		
1,400.00	1,400.00	1,401.00	1,400.00	7.19	7.20	-179.43	-100.00	-1.00	100.01	85.62	14.39	6.950		
1,500.00	1,500.00	1,501.00	1,500.00	7.73	7.73	-179.43	-100.00	-1.00	100.01	84.54	15.46	6.467		
1,600.00	1,600.00	1,601.00	1,600.00	8.27	8.27	-179.43	-100.00	-1.00	100.01	83.47	16.54	6.046		
1,700.00	1,700.00	1,701.00	1,700.00	8.80	8.81	-179.43	-100.00	-1.00	100.01	82.39	17.62	5.677		
1,800.00	1,800.00	1,801.00	1,800.00	9.34	9.35	-179.43	-100.00	-1.00	100.01	81.31	18.69	5.351		
1,900.00	1,900.00	1,901.00	1,900.00	9.88	9.89	-179.43	-100.00	-1.00	100.01	80.24	19.77	5.059		
2,000.00	2,000.00	2,001.02	2,000.02	10.42	10.42	-179.43	-100.00	-1.00	100.00	79.16	20.84	4.798		
2,003.86	2,003.86	2,004.95	2,003.95	10.44	10.44	130.99	-100.00	-1.00	100.00	79.12	20.88	4.789 CC		
2,100.00	2,099.98	2,102.75	2,101.73	10.95	10.96	132.65	-99.04	-2.57	100.26	78.35	21.91	4.576		
2,200.00	2,199.87	2,204.03	2,202.86	11.48	11.50	137.31	-96.22	-7.20	101.17	78.20	22.97	4.405		
2,300.00	2,299.74	2,304.67	2,303.09	12.01	12.03	143.81	-91.58	-14.82	101.84	77.81	24.03	4.238 ES		
2,400.00	2,399.61	2,404.03	2,401.79	12.54	12.57	151.54	-85.59	-24.65	103.26	78.17	25.09	4.116		
2,500.00	2,499.49	2,503.02	2,500.09	13.08	13.10	159.01	-79.52	-34.61	106.50	80.36	26.15	4.073 SF		
2,600.00	2,599.36	2,602.01	2,598.39	13.61	13.64	165.94	-73.46	-44.58	111.47	84.26	27.21	4.096		
2,700.00	2,699.23	2,701.01	2,696.69	14.15	14.18	172.20	-67.39	-54.54	117.93	89.66	28.28	4.171		
2,800.00	2,799.11	2,800.00	2,795.00	14.68	14.72	177.77	-61.32	-64.50	125.67	96.33	29.34	4.283		
2,900.00	2,898.98	2,898.99	2,893.30	15.22	15.27	-177.35	-55.25	-74.46	134.46	104.05	30.41	4.422		
3,000.00	2,998.85	2,997.98	2,991.60	15.76	15.82	-173.08	-49.18	-84.42	144.10	112.63	31.47	4.578		
3,100.00	3,098.73	3,096.97	3,089.90	16.29	16.37	-169.36	-43.12	-94.38	154.45	121.90	32.54	4.746		
3,200.00	3,198.60	3,195.96	3,188.20	16.83	16.93	-166.12	-37.05	-104.34	165.36	131.75	33.61	4.920		
3,300.00	3,298.47	3,294.96	3,286.51	17.37	17.48	-163.28	-30.98	-114.30	176.73	142.05	34.68	5.096		
3,400.00	3,398.35	3,393.95	3,384.81	17.91	18.04	-160.79	-24.91	-124.26	188.48	152.74	35.75	5.273		
3,500.00	3,498.22	3,492.94	3,483.11	18.45	18.60	-158.59	-18.84	-134.22	200.55	163.73	36.82	5.447		
3,600.00	3,598.09	3,591.93	3,581.41	18.99	19.16	-156.64	-12.78	-144.19	212.87	174.98	37.89	5.619		
3,700.00	3,697.97	3,690.92	3,679.72	19.53	19.72	-154.91	-6.71	-154.15	225.41	186.45	38.96	5.786		
3,800.00	3,797.84	3,789.92	3,778.02	20.07	20.29	-153.36	-0.64	-164.11	238.13	198.10	40.03	5.949		
3,900.00	3,897.71	3,888.91	3,876.32	20.61	20.85	-151.97	5.43	-174.07	251.01	209.91	41.10	6.107		
4,000.00	3,997.59	3,987.90	3,974.62	21.15	21.41	-150.71	11.50	-184.03	264.01	221.84	42.17	6.260		
4,100.00	4,097.46	4,086.89	4,072.93	21.69	21.98	-149.57	17.56	-193.99	277.14	233.89	43.25	6.408		
4,200.00	4,197.33	4,185.88	4,171.23	22.23	22.55	-148.54	23.63	-203.95	290.36	246.03	44.32	6.551		
4,300.00	4,297.21	4,284.87	4,269.53	22.78	23.11	-147.59	29.70	-213.91	303.66	258.26	45.40	6.689		
4,400.00	4,397.08	4,383.87	4,367.83	23.32	23.68	-146.73	35.77	-223.87	317.04	270.57	46.47	6.822		
4,500.00	4,496.95	4,482.86	4,466.13	23.86	24.25	-145.93	41.83	-233.84	330.48	282.93	47.55	6.950		
4,600.00	4,596.82	4,581.85	4,564.44	24.40	24.82	-145.20	47.90	-243.80	343.99	295.36	48.63	7.074		
4,700.00	4,696.70	4,680.84	4,662.74	24.94	25.39	-144.52	53.97	-253.76	357.54	307.84	49.70	7.194		
4,800.00	4,796.57	4,779.83	4,761.04	25.49	25.96	-143.89	60.04	-263.72	371.14	320.36	50.78	7.309		
4,900.00	4,896.44	4,878.83	4,859.34	26.03	26.53	-143.31	66.11	-273.68	384.78	332.92	51.86	7.420		
5,000.00	4,996.32	4,977.82	4,957.65	26.57	27.10	-142.77	72.17	-283.64	398.46	345.52	52.94	7.527		

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													Offset Site Error:	0.00 usft
HH CE 35 2 Fed - 65 - OH - Plan 1 12-19-16													Offset Well Error:	0.00 usft
Survey Program: 0-MWD+HDGM														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,096.19	5,076.81	5,056.95	27.11	27.67	-142.26	78.24	-293.60	412.16	358.15	54.01	7.631		
5,200.00	5,196.06	5,175.80	5,154.25	27.66	28.24	-141.78	84.31	-303.56	425.90	370.81	55.09	7.731		
5,300.00	5,295.94	5,274.79	5,252.55	28.20	28.82	-141.34	90.38	-313.52	439.67	383.50	56.17	7.827		
5,400.00	5,395.81	5,373.78	5,350.85	28.74	29.39	-140.92	96.45	-323.48	453.46	396.21	57.25	7.920		
5,500.00	5,495.68	5,472.78	5,449.16	29.29	29.96	-140.53	102.51	-333.45	467.27	408.94	58.33	8.011		
5,600.00	5,595.56	5,571.77	5,547.46	29.83	30.54	-140.15	108.58	-343.41	481.11	421.69	59.41	8.098		
5,700.00	5,695.43	5,670.76	5,645.76	30.37	31.11	-139.80	114.65	-353.37	494.96	434.47	60.49	8.182		
5,800.00	5,795.30	5,784.60	5,758.99	30.92	31.76	-139.52	120.76	-363.40	507.61	445.96	61.65	8.234		
5,900.00	5,895.19	5,902.14	5,876.29	31.46	32.41	-139.54	124.63	-369.75	516.64	453.78	62.86	8.219		
6,000.00	5,995.17	6,020.36	5,994.46	31.99	33.03	-139.59	126.00	-372.00	519.99	455.92	64.07	8.116		
6,100.00	6,095.17	6,121.06	6,095.17	32.52	33.65	-90.00	126.00	-372.00	520.00	454.86	65.14	7.983		
6,200.00	6,195.17	6,221.06	6,195.17	33.06	34.06	-90.00	126.00	-372.00	520.00	453.80	66.20	7.856		
6,300.00	6,295.17	6,321.06	6,295.17	33.59	34.57	-90.00	126.00	-372.00	520.00	452.75	67.25	7.732		
6,400.00	6,395.17	6,421.06	6,395.17	34.12	35.09	-90.00	126.00	-372.00	520.00	451.70	68.30	7.613		
6,500.00	6,495.17	6,521.06	6,495.17	34.65	35.61	-90.00	126.00	-372.00	520.00	450.64	69.36	7.497		
6,600.00	6,595.17	6,621.06	6,595.17	35.18	36.12	-90.00	126.00	-372.00	520.00	449.58	70.42	7.385		
6,700.00	6,695.17	6,721.06	6,695.17	35.71	36.64	-90.00	126.00	-372.00	520.00	448.53	71.47	7.276		
6,800.00	6,795.17	6,821.06	6,795.17	36.24	37.16	-90.00	126.00	-372.00	520.00	447.47	72.53	7.170		
6,900.00	6,895.17	6,921.06	6,895.17	36.77	37.68	-90.00	126.00	-372.00	520.00	446.41	73.59	7.066		
7,000.00	6,995.17	7,021.06	6,995.17	37.31	38.20	-90.00	126.00	-372.00	520.00	445.36	74.64	6.966		
7,100.00	7,095.17	7,121.06	7,095.17	37.84	38.72	-90.00	126.00	-372.00	520.00	444.30	75.70	6.869		
7,200.00	7,195.17	7,221.06	7,195.17	38.37	39.24	-90.00	126.00	-372.00	520.00	443.24	76.76	6.774		
7,300.00	7,295.17	7,321.06	7,295.17	38.90	39.76	-90.00	126.00	-372.00	520.00	442.18	77.82	6.682		
7,400.00	7,395.17	7,421.06	7,395.17	39.44	40.28	-90.00	126.00	-372.00	520.00	441.12	78.88	6.592		
7,500.00	7,495.17	7,521.06	7,495.17	39.97	40.80	-90.00	126.00	-372.00	520.00	440.06	79.94	6.505		
7,600.00	7,595.17	7,621.06	7,595.17	40.50	41.32	-90.00	126.00	-372.00	520.00	439.00	81.00	6.420		
7,700.00	7,695.17	7,721.06	7,695.17	41.03	41.84	-90.00	126.00	-372.00	520.00	437.94	82.06	6.337		
7,800.00	7,795.17	7,821.06	7,795.17	41.57	42.36	-90.00	126.00	-372.00	520.00	436.87	83.13	6.256		
7,900.00	7,895.17	7,921.06	7,895.17	42.10	42.89	-90.00	126.00	-372.00	520.00	435.81	84.19	6.177		
8,000.00	7,995.17	8,021.06	7,995.17	42.63	43.41	-90.00	126.00	-372.00	520.00	434.75	85.25	6.100		
8,100.00	8,095.17	8,121.06	8,095.17	43.17	43.93	-90.00	126.00	-372.00	520.00	433.69	86.31	6.025		
8,200.00	8,195.17	8,221.06	8,195.17	43.70	44.46	-90.00	126.00	-372.00	520.00	432.62	87.38	5.951		
8,300.00	8,295.17	8,321.06	8,295.17	44.24	44.98	-90.00	126.00	-372.00	520.00	431.56	88.44	5.880		
8,400.00	8,395.17	8,421.06	8,395.17	44.77	45.51	-90.00	126.00	-372.00	520.00	430.50	89.50	5.810		
8,500.00	8,495.17	8,521.06	8,495.17	45.30	46.03	-90.00	126.00	-372.00	520.00	429.43	90.57	5.742		
8,600.00	8,595.17	8,621.06	8,595.17	45.84	46.56	-90.00	126.00	-372.00	520.00	428.37	91.63	5.675		
8,700.00	8,695.17	8,721.06	8,695.17	46.37	47.08	-90.00	126.00	-372.00	520.00	427.31	92.69	5.610		
8,800.00	8,795.17	8,822.06	8,795.16	46.91	47.62	-89.96	126.35	-371.98	519.98	426.22	93.76	5.546		
8,900.00	8,895.17	8,925.39	8,898.54	47.44	48.17	-88.54	139.23	-371.27	519.45	424.60	94.85	5.477		
8,959.89	8,955.06	8,984.00	8,955.06	47.76	48.49	-86.84	154.64	-370.42	519.21	423.73	95.47	5.438		
9,000.00	8,995.17	9,021.23	8,990.02	47.97	48.68	-85.43	167.39	-369.71	519.39	423.51	95.88	5.417		
9,100.00	9,095.17	9,105.78	9,065.84	48.51	49.12	-81.34	204.57	-367.66	522.43	425.59	96.85	5.394		
9,200.00	9,195.17	9,177.92	9,125.62	49.04	49.49	-76.97	244.82	-365.44	531.57	433.83	97.74	5.439		
9,300.00	9,295.17	9,238.39	9,171.49	49.58	49.79	-72.82	284.11	-363.27	549.26	450.70	98.56	5.573		
9,400.00	9,395.17	9,288.75	9,206.36	50.11	50.04	-69.11	320.37	-361.26	576.87	477.54	99.32	5.808		
9,500.00	9,495.17	9,330.73	9,232.90	50.65	50.25	-65.92	352.83	-359.47	614.62	514.59	100.03	6.144		
9,600.00	9,595.17	9,365.91	9,253.26	51.18	50.43	-63.21	381.48	-357.89	661.88	561.18	100.71	6.572		
9,700.00	9,695.15	9,400.00	9,271.27	51.71	50.61	-116.38	410.37	-356.29	717.86	616.57	101.29	7.087		
9,800.00	9,794.02	9,414.13	9,278.22	52.18	50.68	109.23	422.65	-355.61	785.17	683.55	101.62	7.727		
9,900.00	9,888.95	9,422.54	9,282.22	52.62	50.73	98.42	430.04	-355.20	861.98	759.52	102.46	8.413		
10,000.00	9,977.04	9,422.43	9,282.16	53.00	50.73	83.85	429.94	-355.21	944.43	841.19	103.25	9.147		
10,100.00	10,055.62	9,415.52	9,278.89	53.32	50.69	67.85	423.87	-355.54	1,028.99	928.06	100.93	10.195		

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** G1  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 65 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,200.00	10,122.30	9,400.00	9,271.27	53.67	50.61	53.42	410.37	-356.29	1,112.63	1,019.23	93.40	11.912		
10,300.00	10,175.06	9,400.00	9,271.27	54.05	50.61	43.34	410.37	-356.29	1,192.99	1,109.68	83.30	14.321		
10,400.00	10,212.29	9,366.97	9,253.84	54.42	50.43	35.06	382.36	-357.84	1,267.43	1,195.78	71.66	17.688		
10,500.00	10,232.87	9,350.00	9,244.27	54.80	50.35	29.78	368.37	-358.61	1,334.95	1,272.09	62.85	21.239		
10,600.00	10,237.00	9,320.35	9,226.56	55.19	50.19	26.86	344.63	-359.92	1,394.50	1,335.54	58.95	23.654		
10,700.00	10,237.00	9,300.00	9,213.71	55.64	50.09	26.60	328.88	-360.79	1,454.48	1,395.58	58.90	24.694		
10,800.00	10,237.00	9,275.01	9,197.16	56.16	49.97	26.26	310.17	-361.83	1,517.52	1,458.71	58.81	25.803		
10,900.00	10,237.00	9,250.00	9,179.81	56.77	49.84	25.92	292.19	-362.82	1,583.42	1,524.65	58.77	26.942		
11,000.00	10,237.00	9,250.00	9,179.81	57.44	49.84	25.92	292.19	-362.82	1,652.10	1,592.82	59.28	27.870		
11,100.00	10,237.00	9,200.00	9,142.85	58.19	49.60	25.21	258.60	-364.67	1,723.01	1,664.17	58.84	29.284		
11,200.00	10,237.00	9,200.00	9,142.85	59.00	49.60	25.21	258.60	-364.67	1,795.61	1,736.16	59.45	30.204		
11,300.00	10,237.00	9,200.00	9,142.85	59.89	49.60	25.21	258.60	-364.67	1,870.75	1,810.64	60.11	31.122		
11,400.00	10,237.00	9,170.71	9,119.88	60.83	49.45	24.78	240.46	-365.68	1,947.18	1,886.97	60.22	32.336		
11,500.00	10,237.00	9,150.00	9,103.09	61.84	49.35	24.47	228.35	-366.35	2,025.53	1,964.99	60.54	33.458		
11,600.00	10,237.00	9,150.00	9,103.09	62.90	49.35	24.47	228.35	-366.35	2,105.27	2,043.95	61.32	34.330		
11,700.00	10,237.00	9,150.00	9,103.09	64.01	49.35	24.47	228.35	-366.35	2,186.68	2,124.54	62.15	35.186		
11,800.00	10,237.00	9,120.94	9,078.82	65.18	49.20	24.04	212.40	-367.23	2,268.68	2,206.28	62.40	36.356		
11,900.00	10,237.00	9,100.00	9,060.84	66.40	49.09	23.73	201.68	-367.82	2,352.26	2,289.40	62.86	37.423		
12,000.00	10,237.00	9,100.00	9,060.84	67.66	49.09	23.73	201.68	-367.82	2,436.63	2,372.86	63.77	38.209		
12,100.00	10,237.00	9,100.00	9,060.84	68.97	49.09	23.73	201.68	-367.82	2,522.15	2,457.44	64.71	38.975		
12,200.00	10,237.00	9,100.00	9,060.84	70.32	49.09	23.73	201.68	-367.82	2,608.70	2,543.02	65.68	39.718		
12,300.00	10,237.00	9,073.60	9,037.64	71.71	48.96	23.34	189.11	-368.51	2,695.46	2,629.34	66.12	40.766		
12,400.00	10,237.00	9,050.00	9,016.43	73.13	48.84	22.99	178.79	-369.08	2,783.55	2,716.90	66.64	41.769		
12,500.00	10,237.00	9,050.00	9,016.43	74.59	48.84	22.99	178.79	-369.08	2,871.87	2,804.20	67.67	42.439		
12,600.00	10,237.00	9,050.00	9,016.43	76.08	48.84	22.99	178.79	-369.08	2,960.95	2,892.21	68.72	43.088		
12,700.00	10,237.00	9,050.00	9,016.43	77.60	48.84	22.03	178.79	-369.08	3,050.75	2,982.11	68.64	44.445		
12,800.00	10,237.00	9,050.00	9,016.43	79.16	48.84	22.03	178.79	-369.08	3,141.25	3,071.53	69.72	45.058		
12,900.00	10,237.00	9,050.00	9,016.43	80.74	48.84	22.03	178.79	-369.08	3,232.31	3,161.51	70.81	45.651		
13,000.00	10,237.00	9,025.84	8,994.29	82.35	48.71	21.70	169.13	-369.62	3,323.30	3,251.88	71.42	46.530		
13,100.00	10,237.00	9,000.00	8,970.18	83.98	48.57	21.34	159.84	-370.13	3,415.46	3,343.44	72.02	47.423		
13,200.00	10,237.00	9,000.00	8,970.18	85.63	48.57	21.34	159.84	-370.13	3,507.42	3,434.28	73.14	47.953		
13,300.00	10,237.00	9,000.00	8,970.18	87.31	48.57	21.34	159.84	-370.13	3,599.81	3,525.53	74.28	48.465		
13,400.00	10,237.00	9,000.00	8,970.18	89.01	48.57	21.34	159.84	-370.13	3,692.59	3,617.17	75.42	48.960		
13,500.00	10,237.00	9,000.00	8,970.18	90.73	48.57	21.34	159.84	-370.13	3,785.74	3,709.16	76.57	49.439		
13,600.00	10,237.00	9,000.00	8,970.18	92.46	48.57	21.34	159.84	-370.13	3,879.23	3,801.49	77.74	49.903		
13,700.00	10,237.00	9,000.00	8,970.18	94.21	48.57	21.34	159.84	-370.13	3,973.03	3,894.13	78.91	50.351		
13,800.00	10,237.00	9,000.00	8,970.18	95.98	48.57	21.34	159.84	-370.13	4,067.14	3,987.05	80.09	50.785		
13,900.00	10,237.00	9,000.00	8,970.18	97.77	48.57	21.34	159.84	-370.13	4,161.51	4,080.24	81.27	51.205		
14,000.00	10,237.00	9,000.00	8,970.18	99.56	48.57	21.34	159.84	-370.13	4,256.15	4,173.88	82.46	51.612		
14,100.00	10,237.00	8,976.53	8,947.95	101.38	48.45	21.01	152.36	-370.54	4,350.49	4,267.31	83.17	52.307		
14,200.00	10,237.00	8,973.07	8,944.65	103.20	48.43	20.97	151.33	-370.60	4,445.42	4,361.11	84.30	52.732		
14,300.00	10,237.00	8,950.00	8,922.46	105.04	48.30	20.65	145.00	-370.95	4,540.92	4,455.89	85.03	53.405		
14,400.00	10,237.00	8,950.00	8,922.46	106.89	48.30	20.65	145.00	-370.95	4,636.12	4,549.88	86.24	53.759		
14,500.00	10,237.00	8,950.00	8,922.46	108.75	48.30	20.65	145.00	-370.95	4,731.51	4,644.06	87.45	54.103		
14,600.00	10,237.00	8,950.00	8,922.46	110.62	48.30	20.65	145.00	-370.95	4,827.10	4,738.42	88.67	54.437		
14,700.00	10,237.00	8,950.00	8,922.46	112.50	48.30	20.65	145.00	-370.95	4,922.85	4,832.96	89.90	54.761		
14,800.00	10,237.00	8,950.00	8,922.46	114.39	48.30	20.65	145.00	-370.95	5,018.78	4,927.65	91.13	55.075		
14,900.00	10,237.00	8,950.00	8,922.46	116.29	48.30	20.65	145.00	-370.95	5,114.86	5,022.50	92.36	55.381		
15,000.00	10,237.00	8,950.00	8,922.46	118.20	48.30	20.65	145.00	-370.95	5,211.08	5,117.49	93.59	55.677		
15,100.00	10,237.00	8,950.00	8,922.46	120.12	48.30	20.65	145.00	-370.95	5,307.45	5,212.61	94.83	55.965		
15,200.00	10,237.00	8,950.00	8,922.46	122.04	48.30	20.65	145.00	-370.95	5,403.95	5,307.87	96.08	56.245		
15,300.00	10,237.00	8,950.00	8,922.46	123.97	48.30	20.65	145.00	-370.95	5,500.57	5,403.24	97.32	56.518		

CC - Min centre to center distance or covergent point. SF - min separation factor ES - min ellipse separation



Phoenix Technology Services LP  
Anticollision Report



Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Reference Site: HH CE 35 2 Fed  
Site Error: 0.00 usft  
Reference Well: 61  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 3.00 sigma  
Database: Compass 5000 GCR  
Offset TVD Reference: Reference Datum

Offset Design													HH CE 35 2 Fed - 65 - OH - Plan 1 12-19-16	Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
15,400.00	10,237.00	8,950.00	8,922.46	125.91	48.30	20.65	145.00	-370.95	5,597.31	5,498.74	98.57	56.782		
15,500.00	10,237.00	8,950.00	8,922.46	127.86	48.30	20.65	145.00	-370.95	5,694.17	5,594.34	99.83	57.040		
15,600.00	10,237.00	8,950.00	8,922.46	129.81	48.30	20.65	145.00	-370.95	5,791.13	5,690.04	101.08	57.291		
15,700.00	10,237.00	8,950.00	8,922.46	131.77	48.30	20.65	145.00	-370.95	5,888.19	5,785.85	102.34	57.535		
15,800.00	10,237.00	8,950.00	8,922.46	133.74	48.30	20.65	145.00	-370.95	5,985.35	5,881.75	103.60	57.772		
15,900.00	10,237.00	8,950.00	8,922.46	135.71	48.30	20.65	145.00	-370.95	6,082.60	5,977.74	104.87	58.004		
16,000.00	10,237.00	8,950.00	8,922.46	137.68	48.30	20.65	145.00	-370.95	6,179.94	6,073.81	106.13	58.229		
16,100.00	10,237.00	8,925.97	8,899.11	139.66	48.17	20.33	139.35	-371.26	6,276.82	6,169.98	106.84	58.749		
16,200.00	10,237.00	8,924.19	8,897.37	141.65	48.16	20.31	138.97	-371.28	6,374.24	6,266.17	108.07	58.985		
16,300.00	10,237.00	8,900.00	8,873.63	143.64	48.03	19.99	134.36	-371.54	6,472.21	6,363.43	108.78	59.499		
16,400.00	10,237.00	8,900.00	8,873.63	145.64	48.03	19.99	134.36	-371.54	6,569.70	6,459.66	110.04	59.701		
16,500.00	10,237.00	8,900.00	8,873.63	147.64	48.03	19.99	134.36	-371.54	6,667.27	6,555.96	111.31	59.897		
16,600.00	10,237.00	8,900.00	8,873.63	149.64	48.03	19.99	134.36	-371.54	6,764.91	6,652.33	112.58	60.089		
16,700.00	10,237.00	8,900.00	8,873.63	151.65	48.03	19.99	134.36	-371.54	6,862.61	6,748.76	113.85	60.277		
16,800.00	10,237.00	8,900.00	8,873.63	153.66	48.03	19.99	134.36	-371.54	6,960.39	6,845.26	115.12	60.459		
16,900.00	10,237.00	8,900.00	8,873.63	155.68	48.03	19.99	134.36	-371.54	7,058.22	6,941.82	116.40	60.638		
17,000.00	10,237.00	8,900.00	8,873.63	157.69	48.03	19.99	134.36	-371.54	7,156.11	7,038.44	117.67	60.813		
17,100.00	10,237.00	8,900.00	8,873.63	159.72	48.03	19.99	134.36	-371.54	7,254.07	7,135.11	118.95	60.983		
17,200.00	10,237.00	8,900.00	8,873.63	161.74	48.03	19.99	134.36	-371.54	7,352.07	7,231.84	120.23	61.150		
17,300.00	10,237.00	8,900.00	8,873.63	163.77	48.03	19.99	134.36	-371.54	7,450.13	7,328.62	121.51	61.313		
17,400.00	10,237.00	8,900.00	8,873.63	165.81	48.03	19.99	134.36	-371.54	7,548.24	7,425.45	122.79	61.472		
17,500.00	10,237.00	8,900.00	8,873.63	167.84	48.03	19.99	134.36	-371.54	7,646.40	7,522.33	124.07	61.628		
17,600.00	10,237.00	8,900.00	8,873.63	169.88	48.03	19.99	134.36	-371.54	7,744.61	7,619.25	125.36	61.780		
17,683.58	10,237.00	8,900.00	8,873.63	171.59	48.03	19.99	134.36	-371.54	7,826.72	7,700.29	126.43	61.905		



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													HH CE 35 2 Fed - 66 - OH - Plan 1 12-19-16	Offset Site Error:	0.00 usft
Survey Program:													0-MWD+HDGM	Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	2.00	0.00	0.00	0.00	-179.08	-125.00	-2.00	125.02						
100.00	100.00	102.00	100.00	0.20	0.21	-179.08	-125.00	-2.00	125.02	124.60	0.41	301.945			
200.00	200.00	202.00	200.00	0.74	0.75	-179.08	-125.00	-2.00	125.02	123.53	1.49	83.934			
300.00	300.00	302.00	300.00	1.28	1.29	-179.08	-125.00	-2.00	125.02	122.45	2.56	48.742			
400.00	400.00	402.00	400.00	1.81	1.83	-179.08	-125.00	-2.00	125.02	121.38	3.64	34.342			
500.00	500.00	502.00	500.00	2.35	2.36	-179.08	-125.00	-2.00	125.02	120.30	4.72	26.511			
600.00	600.00	602.00	600.00	2.89	2.90	-179.08	-125.00	-2.00	125.02	119.22	5.79	21.588			
700.00	700.00	702.00	700.00	3.43	3.44	-179.08	-125.00	-2.00	125.02	118.15	6.87	18.207			
800.00	800.00	802.00	800.00	3.97	3.98	-179.08	-125.00	-2.00	125.02	117.07	7.94	15.741			
900.00	900.00	902.00	900.00	4.50	4.51	-179.08	-125.00	-2.00	125.02	116.00	9.02	13.864			
1,000.00	1,000.00	1,002.00	1,000.00	5.04	5.05	-179.08	-125.00	-2.00	125.02	114.92	10.09	12.387			
1,100.00	1,100.00	1,102.00	1,100.00	5.58	5.59	-179.08	-125.00	-2.00	125.02	113.85	11.17	11.194			
1,200.00	1,200.00	1,202.00	1,200.00	6.12	6.13	-179.08	-125.00	-2.00	125.02	112.77	12.24	10.211			
1,300.00	1,300.00	1,302.00	1,300.00	6.65	6.66	-179.08	-125.00	-2.00	125.02	111.70	13.32	9.386			
1,400.00	1,400.00	1,402.00	1,400.00	7.19	7.20	-179.08	-125.00	-2.00	125.02	110.62	14.39	8.685			
1,500.00	1,500.00	1,502.00	1,500.00	7.73	7.74	-179.08	-125.00	-2.00	125.02	109.55	15.47	8.081			
1,600.00	1,600.00	1,602.00	1,600.00	8.27	8.28	-179.08	-125.00	-2.00	125.02	108.47	16.55	7.556			
1,700.00	1,700.00	1,702.00	1,700.00	8.80	8.82	-179.08	-125.00	-2.00	125.02	107.40	17.62	7.095			
1,800.00	1,800.00	1,802.00	1,800.00	9.34	9.35	-179.08	-125.00	-2.00	125.02	106.32	18.70	6.687			
1,900.00	1,900.00	1,902.00	1,900.00	9.88	9.89	-179.08	-125.00	-2.00	125.02	105.24	19.77	6.323			
2,000.00	2,000.00	2,002.03	2,000.03	10.42	10.43	-179.08	-125.00	-2.00	125.02	104.17	20.85	5.997			
2,002.02	2,002.02	2,004.08	2,002.08	10.43	10.44	131.33	-125.00	-2.00	125.02	104.15	20.87	5.991 CC			
2,100.00	2,099.98	2,103.38	2,101.36	10.95	10.97	132.73	-124.36	-3.75	125.60	103.69	21.91	5.732			
2,200.00	2,199.87	2,204.17	2,202.00	11.48	11.49	136.59	-122.51	-8.83	127.45	104.49	22.96	5.551			
2,300.00	2,299.74	2,303.62	2,301.21	12.01	12.02	141.09	-120.14	-15.35	129.84	105.83	24.01	5.407			
2,400.00	2,399.61	2,403.08	2,400.42	12.54	12.54	145.39	-117.77	-21.87	133.01	107.94	25.07	5.306			
2,500.00	2,499.49	2,502.54	2,499.64	13.08	13.07	149.48	-115.40	-28.39	136.90	110.77	26.13	5.240			
2,600.00	2,599.36	2,601.99	2,598.85	13.61	13.60	153.32	-113.02	-34.91	141.44	114.26	27.19	5.203			
2,700.00	2,699.23	2,701.45	2,698.07	14.15	14.13	156.91	-110.65	-41.43	146.59	118.35	28.25	5.190			
2,800.00	2,799.11	2,800.91	2,797.28	14.68	14.67	160.25	-108.28	-47.95	152.28	122.97	29.31	5.196			
2,900.00	2,898.98	2,900.36	2,896.50	15.22	15.20	163.34	-105.90	-54.47	158.45	128.08	30.37	5.217			
3,000.00	2,998.85	2,999.82	2,995.71	15.76	15.74	166.19	-103.53	-60.99	165.04	133.61	31.43	5.250			
3,100.00	3,098.73	3,099.28	3,094.92	16.29	16.28	168.82	-101.16	-67.50	172.02	139.52	32.50	5.293			
3,200.00	3,198.60	3,200.95	3,196.45	16.83	16.82	170.76	-99.34	-72.50	178.71	145.14	33.57	5.323			
3,300.00	3,298.47	3,302.99	3,298.47	17.37	17.37	171.52	-98.75	-74.11	184.28	149.63	34.65	5.318			
3,400.00	3,398.35	3,402.86	3,398.35	17.91	17.90	171.74	-98.75	-74.11	189.26	153.54	35.72	5.299			
3,500.00	3,498.22	3,502.74	3,498.22	18.45	18.43	171.95	-98.75	-74.11	194.24	157.46	36.79	5.280			
3,600.00	3,598.09	3,602.61	3,598.09	18.99	18.97	172.16	-98.75	-74.11	199.23	161.38	37.86	5.263			
3,700.00	3,697.97	3,702.48	3,697.97	19.53	19.50	172.35	-98.75	-74.11	204.22	165.29	38.92	5.247			
3,800.00	3,797.84	3,802.36	3,797.84	20.07	20.03	172.53	-98.75	-74.11	209.21	169.22	39.99	5.231			
3,900.00	3,897.71	3,902.23	3,897.71	20.61	20.57	172.71	-98.75	-74.11	214.20	173.14	41.06	5.216			
4,000.00	3,997.59	4,002.10	3,997.59	21.15	21.10	172.88	-98.75	-74.11	219.20	177.06	42.13	5.202			
4,100.00	4,097.46	4,101.98	4,097.46	21.69	21.63	173.03	-98.75	-74.11	224.20	180.99	43.20	5.189			
4,200.00	4,197.33	4,201.85	4,197.33	22.23	22.17	173.19	-98.75	-74.11	229.19	184.92	44.28	5.177			
4,300.00	4,297.21	4,301.72	4,297.21	22.78	22.70	173.33	-98.75	-74.11	234.19	188.85	45.35	5.165			
4,400.00	4,397.08	4,401.60	4,397.08	23.32	23.24	173.47	-98.75	-74.11	239.20	192.78	46.42	5.153			
4,500.00	4,496.95	4,501.47	4,496.95	23.86	23.77	173.61	-98.75	-74.11	244.20	196.71	47.49	5.142			
4,600.00	4,596.82	4,601.34	4,596.82	24.40	24.31	173.74	-98.75	-74.11	249.20	200.64	48.56	5.132			
4,700.00	4,696.70	4,701.22	4,696.70	24.94	24.84	173.86	-98.75	-74.11	254.21	204.57	49.63	5.122			
4,800.00	4,796.57	4,801.09	4,796.57	25.49	25.38	173.98	-98.75	-74.11	259.21	208.51	50.71	5.112			
4,900.00	4,896.44	4,900.96	4,896.44	26.03	25.91	174.09	-98.75	-74.11	264.22	212.44	51.78	5.103			
5,000.00	4,996.32	5,000.83	4,996.32	26.57	26.45	174.20	-98.75	-74.11	269.23	216.38	52.85	5.094			

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 66 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference				Offset			Semi Major Axis		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,096.19	5,100.71	5,096.19	27.11	26.98	174.31	-98.75	-74.11	274.24	220.32	53.92	5.086		
5,200.00	5,196.06	5,200.58	5,196.06	27.66	27.52	174.41	-98.75	-74.11	279.25	224.25	55.00	5.078		
5,300.00	5,295.94	5,300.45	5,295.94	28.20	28.05	174.51	-98.75	-74.11	284.26	228.19	56.07	5.070		
5,400.00	5,395.81	5,400.33	5,395.81	28.74	28.59	174.61	-98.75	-74.11	289.27	232.13	57.14	5.062		
5,500.00	5,495.68	5,500.20	5,495.68	29.29	29.12	174.70	-98.75	-74.11	294.29	236.07	58.22	5.055		
5,600.00	5,595.56	5,600.07	5,595.56	29.83	29.66	174.79	-98.75	-74.11	299.30	240.01	59.29	5.048		
5,700.00	5,695.43	5,699.95	5,695.43	30.37	30.19	174.87	-98.75	-74.11	304.32	243.95	60.36	5.041		
5,800.00	5,795.30	5,799.82	5,795.30	30.92	30.73	174.96	-98.75	-74.11	309.33	247.89	61.44	5.035		
5,900.00	5,895.19	5,899.71	5,895.19	31.46	31.27	175.04	-98.75	-74.11	314.08	251.54	62.54	5.022		
6,000.00	5,995.17	5,999.68	5,995.17	31.99	31.80	175.07	-98.75	-74.11	315.98	252.36	63.62	4.967		
6,100.00	6,095.17	6,099.68	6,095.17	32.52	32.34	-135.34	-98.75	-74.11	315.99	251.30	64.69	4.885		
6,200.00	6,195.17	6,199.68	6,195.17	33.06	32.87	-135.34	-98.75	-74.11	315.99	250.23	65.76	4.805		
6,300.00	6,295.17	6,299.68	6,295.17	33.59	33.41	-135.34	-98.75	-74.11	315.99	249.16	66.83	4.728		
6,400.00	6,395.17	6,399.68	6,395.17	34.12	33.95	-135.34	-98.75	-74.11	315.99	248.09	67.90	4.654		
6,500.00	6,495.17	6,499.68	6,495.17	34.65	34.48	-135.34	-98.75	-74.11	315.99	247.02	68.97	4.582		
6,600.00	6,595.17	6,599.68	6,595.17	35.18	35.02	-135.34	-98.75	-74.11	315.99	245.95	70.04	4.512		
6,700.00	6,695.17	6,699.68	6,695.17	35.71	35.56	-135.34	-98.75	-74.11	315.99	244.88	71.11	4.444		
6,800.00	6,795.17	6,799.68	6,795.17	36.24	36.09	-135.34	-98.75	-74.11	315.99	243.81	72.18	4.378		
6,900.00	6,895.17	6,899.68	6,895.17	36.77	36.63	-135.34	-98.75	-74.11	315.99	242.74	73.25	4.314		
7,000.00	6,995.17	6,999.68	6,995.17	37.31	37.17	-135.34	-98.75	-74.11	315.99	241.67	74.32	4.252		
7,100.00	7,095.17	7,099.68	7,095.17	37.84	37.70	-135.34	-98.75	-74.11	315.99	240.60	75.39	4.192		
7,200.00	7,195.17	7,199.68	7,195.17	38.37	38.24	-135.34	-98.75	-74.11	315.99	239.53	76.46	4.133		
7,300.00	7,295.17	7,299.68	7,295.17	38.90	38.78	-135.34	-98.75	-74.11	315.99	238.46	77.53	4.076		
7,400.00	7,395.17	7,399.68	7,395.17	39.44	39.32	-135.34	-98.75	-74.11	315.99	237.39	78.60	4.020		
7,500.00	7,495.17	7,499.68	7,495.17	39.97	39.85	-135.34	-98.75	-74.11	315.99	236.32	79.67	3.966		
7,600.00	7,595.17	7,599.68	7,595.17	40.50	40.39	-135.34	-98.75	-74.11	315.99	235.25	80.74	3.914		
7,700.00	7,695.17	7,699.68	7,695.17	41.03	40.93	-135.34	-98.75	-74.11	315.99	234.17	81.81	3.862		
7,800.00	7,795.17	7,799.68	7,795.17	41.57	41.46	-135.34	-98.75	-74.11	315.99	233.10	82.88	3.812		
7,900.00	7,895.17	7,899.68	7,895.17	42.10	42.00	-135.34	-98.75	-74.11	315.99	232.03	83.95	3.764		
8,000.00	7,995.17	7,999.68	7,995.17	42.63	42.54	-135.34	-98.75	-74.11	315.99	230.96	85.03	3.716		
8,100.00	8,095.17	8,099.68	8,095.17	43.17	43.07	-135.34	-98.75	-74.11	315.99	229.89	86.10	3.670		
8,200.00	8,195.17	8,199.68	8,195.17	43.70	43.61	-135.34	-98.75	-74.11	315.99	228.82	87.17	3.625		
8,300.00	8,295.17	8,299.68	8,295.17	44.24	44.15	-135.34	-98.75	-74.11	315.99	227.75	88.24	3.581		
8,400.00	8,395.17	8,399.68	8,395.17	44.77	44.68	-135.34	-98.75	-74.11	315.99	226.67	89.31	3.538		
8,500.00	8,495.17	8,499.68	8,495.17	45.30	45.22	-135.34	-98.75	-74.11	315.99	225.60	90.38	3.496		
8,600.00	8,595.17	8,599.68	8,595.17	45.84	45.76	-135.34	-98.75	-74.11	315.99	224.53	91.46	3.455		
8,700.00	8,695.17	8,699.68	8,695.17	46.37	46.30	-135.34	-98.75	-74.11	315.99	223.46	92.53	3.415		
8,800.00	8,795.17	8,799.68	8,795.17	46.91	46.83	-135.34	-98.75	-74.11	315.99	222.39	93.60	3.376		
8,900.00	8,895.17	8,899.68	8,895.17	47.44	47.37	-135.34	-98.75	-74.11	315.99	221.31	94.67	3.338		
9,000.00	8,995.17	9,070.52	9,063.73	47.97	48.27	-132.66	-75.43	-70.62	305.08	208.97	96.10	3.174		
9,100.00	9,095.17	9,219.70	9,199.68	48.51	48.97	-124.05	-15.69	-61.70	273.81	176.47	97.35	2.813		
9,200.00	9,195.17	9,333.36	9,290.19	49.04	49.49	-110.34	52.00	-51.58	233.10	134.72	98.39	2.369		
9,300.00	9,295.17	9,416.71	9,347.04	49.58	49.87	-94.15	112.18	-42.59	198.00	98.68	99.32	1.994		
9,382.59	9,377.76	9,468.63	9,377.76	50.02	50.11	-81.50	153.56	-36.40	186.45	86.43	100.02	1.864 ES, SF		
9,400.00	9,395.17	9,478.05	9,382.92	50.11	50.15	-79.08	161.35	-35.24	187.02	86.86	100.16	1.867		
9,500.00	9,495.17	9,524.10	9,406.25	50.65	50.36	-67.19	200.60	-29.37	211.97	111.08	100.89	2.101		
9,600.00	9,595.17	9,559.53	9,421.98	51.18	50.52	-58.46	231.99	-24.68	266.54	165.00	101.54	2.625		
9,700.00	9,695.15	9,586.90	9,432.78	51.71	50.65	-123.68	256.86	-20.96	338.71	236.63	102.08	3.318		
9,800.00	9,794.02	9,600.00	9,437.52	52.18	50.71	-112.38	268.94	-19.16	424.11	321.73	102.38	4.143		
9,900.00	9,888.95	9,600.00	9,437.52	52.62	50.71	87.89	268.94	-19.16	516.86	413.67	103.19	5.009		
10,000.00	9,977.04	9,600.00	9,437.52	53.00	50.71	59.59	268.94	-19.16	611.67	512.02	99.65	6.138		
10,100.00	10,055.62	9,583.54	9,431.52	53.32	50.63	37.65	253.78	-21.42	705.01	616.27	88.74	7.945		

CC - Min centre to center distance or covergent point. SF - min separation factor. ES - min ellipse separation



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design HH CE 35 2 Fed - 66 - OH - Plan 1 12-19-16													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,200.00	10,122.30	9,565.09	9,424.27	53.67	50.55	26.03	237.00	-23.93	794.35	718.17	76.18	10.428		
10,300.00	10,175.06	9,550.00	9,417.94	54.05	50.48	19.70	223.46	-25.96	877.87	813.99	63.88	13.742		
10,400.00	10,212.29	9,517.54	9,403.12	54.42	50.33	15.73	194.90	-30.22	953.89	901.11	52.77	18.075		
10,500.00	10,232.87	9,500.00	9,394.44	54.80	50.25	13.33	179.83	-32.48	1,021.60	976.49	45.11	22.645		
10,600.00	10,237.00	9,450.00	9,367.17	55.19	50.02	12.12	138.40	-38.67	1,080.46	1,037.40	43.06	25.095		
10,700.00	10,237.00	9,433.04	9,357.11	55.64	49.95	12.10	124.89	-40.69	1,139.81	1,096.48	43.33	26.304		
10,800.00	10,237.00	9,400.00	9,336.36	56.16	49.80	12.03	99.47	-44.49	1,202.98	1,159.39	43.60	27.593		
10,900.00	10,237.00	9,382.88	9,325.03	56.77	49.72	11.99	86.77	-46.38	1,269.27	1,225.30	43.97	28.865		
11,000.00	10,237.00	9,350.00	9,302.23	57.44	49.57	11.88	63.35	-49.88	1,338.67	1,294.35	44.32	30.205		
11,100.00	10,237.00	9,350.00	9,302.23	58.19	49.57	11.88	63.35	-49.88	1,410.53	1,365.66	44.87	31.433		
11,200.00	10,237.00	9,320.24	9,280.46	59.00	49.43	11.77	43.29	-52.88	1,484.60	1,439.29	45.32	32.759		
11,300.00	10,237.00	9,300.00	9,265.06	59.89	49.34	11.69	30.31	-54.82	1,560.91	1,515.06	45.85	34.044		
11,400.00	10,237.00	9,300.00	9,265.06	60.83	49.34	11.69	30.31	-54.82	1,639.32	1,592.79	46.54	35.227		
11,500.00	10,237.00	9,269.99	9,241.39	61.64	49.20	11.55	12.06	-57.55	1,718.95	1,671.87	47.08	36.511		
11,600.00	10,237.00	9,250.00	9,225.11	62.90	49.11	11.45	0.59	-59.26	1,800.37	1,752.66	47.71	37.793		
11,700.00	10,237.00	9,250.00	9,225.11	64.01	49.11	11.45	0.59	-59.26	1,883.17	1,834.67	48.50	38.826		
11,800.00	10,237.00	9,229.37	9,207.89	65.18	49.02	11.34	-10.64	-60.94	1,967.09	1,917.91	49.19	39.992		
11,900.00	10,237.00	9,200.00	9,182.69	66.40	48.89	11.18	-25.56	-63.17	2,052.55	2,002.71	49.84	41.185		
12,000.00	10,237.00	9,200.00	9,182.69	67.66	48.89	11.18	-25.56	-63.17	2,138.39	2,087.66	50.71	42.171		
12,100.00	10,237.00	9,200.00	9,182.69	68.97	48.89	11.18	-25.56	-63.17	2,225.41	2,173.81	51.60	43.128		
12,200.00	10,237.00	9,200.00	9,182.69	70.32	48.89	11.18	-25.56	-63.17	2,313.48	2,260.96	52.51	44.054		
12,300.00	10,237.00	9,177.30	9,162.71	71.71	48.79	11.05	-36.21	-64.76	2,401.93	2,348.65	53.29	45.074		
12,400.00	10,237.00	9,150.00	9,138.14	73.13	48.66	10.89	-47.96	-66.52	2,491.65	2,437.61	54.04	46.104		
12,500.00	10,237.00	9,150.00	9,138.14	74.59	48.66	10.89	-47.96	-66.52	2,581.39	2,526.38	55.01	46.925		
12,600.00	10,237.00	9,150.00	9,138.14	76.08	48.66	10.89	-47.96	-66.52	2,671.86	2,615.87	55.99	47.718		
12,700.00	10,237.00	9,150.00	9,138.14	77.60	48.66	9.77	-47.96	-66.52	2,763.02	2,706.81	56.21	49.159		
12,800.00	10,237.00	9,150.00	9,138.14	79.16	48.66	9.77	-47.96	-66.52	2,854.80	2,797.59	57.21	49.900		
12,900.00	10,237.00	9,150.00	9,138.14	80.74	48.66	9.77	-47.96	-66.52	2,947.11	2,888.89	58.23	50.614		
13,000.00	10,237.00	9,126.20	9,116.27	82.35	48.55	9.65	-57.26	-67.91	3,039.34	2,980.24	59.10	51.426		
13,100.00	10,237.00	9,100.00	9,091.77	83.98	48.42	9.51	-66.44	-69.28	3,132.69	3,072.72	59.97	52.240		
13,200.00	10,237.00	9,100.00	9,091.77	85.63	48.42	9.51	-66.44	-69.28	3,225.78	3,164.76	61.01	52.871		
13,300.00	10,237.00	9,100.00	9,091.77	87.31	48.42	9.51	-66.44	-69.28	3,319.27	3,257.20	62.07	53.479		
13,400.00	10,237.00	9,100.00	9,091.77	89.01	48.42	9.51	-66.44	-69.28	3,413.13	3,350.00	63.13	54.066		
13,500.00	10,237.00	9,100.00	9,091.77	90.73	48.42	9.51	-66.44	-69.28	3,507.33	3,443.13	64.20	54.632		
13,600.00	10,237.00	9,100.00	9,091.77	92.46	48.42	9.51	-66.44	-69.28	3,601.84	3,536.57	65.28	55.179		
13,700.00	10,237.00	9,100.00	9,091.77	94.21	48.42	9.51	-66.44	-69.28	3,696.64	3,630.28	66.36	55.706		
13,800.00	10,237.00	9,100.00	9,091.77	95.98	48.42	9.51	-66.44	-69.28	3,791.71	3,724.26	67.45	56.216		
13,900.00	10,237.00	9,100.00	9,091.77	97.77	48.42	9.51	-66.44	-69.28	3,887.03	3,818.48	68.54	56.709		
14,000.00	10,237.00	9,100.00	9,091.77	99.56	48.42	9.51	-66.44	-69.28	3,982.57	3,912.93	69.64	57.185		
14,100.00	10,237.00	9,074.98	9,068.01	101.38	48.29	9.37	-74.16	-70.43	4,077.72	4,007.15	70.57	57.780		
14,200.00	10,237.00	9,050.00	9,043.96	103.20	48.17	9.23	-80.84	-71.43	4,173.94	4,102.44	71.50	58.374		
14,300.00	10,237.00	9,050.00	9,043.96	105.04	48.17	9.23	-80.84	-71.43	4,269.76	4,197.14	72.62	58.799		
14,400.00	10,237.00	9,050.00	9,043.96	106.89	48.17	9.23	-80.84	-71.43	4,365.76	4,292.02	73.73	59.210		
14,500.00	10,237.00	9,050.00	9,043.96	108.75	48.17	9.23	-80.84	-71.43	4,461.94	4,387.08	74.85	59.608		
14,600.00	10,237.00	9,050.00	9,043.96	110.62	48.17	9.23	-80.84	-71.43	4,558.28	4,482.30	75.98	59.994		
14,700.00	10,237.00	9,050.00	9,043.96	112.50	48.17	9.23	-80.84	-71.43	4,654.77	4,577.67	77.11	60.368		
14,800.00	10,237.00	9,050.00	9,043.96	114.39	48.17	9.23	-80.84	-71.43	4,751.41	4,673.18	78.24	60.730		
14,900.00	10,237.00	9,050.00	9,043.96	116.29	48.17	9.23	-80.84	-71.43	4,848.19	4,768.82	79.37	61.082		
15,000.00	10,237.00	9,050.00	9,043.96	118.20	48.17	9.23	-80.84	-71.43	4,945.10	4,864.59	80.51	61.423		
15,100.00	10,237.00	9,050.00	9,043.96	120.12	48.17	9.23	-80.84	-71.43	5,042.12	4,960.47	81.65	61.754		
15,200.00	10,237.00	9,050.00	9,043.96	122.04	48.17	9.23	-80.84	-71.43	5,139.26	5,056.47	82.79	62.075		
15,300.00	10,237.00	9,050.00	9,043.96	123.97	48.17	9.23	-80.84	-71.43	5,236.51	5,152.57	83.94	62.387		

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



# Phoenix Technology Services LP

## Anticollision Report



**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** HH CE 35 2 Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 61  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 3.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Reference Datum

Offset Design													HH CE 35 2 Fed - 66 - OH - Plan 1 12-19-16	Offset Site Error:	0.00 usft
Survey Program:													0-MWD+HDGM	Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
15,400.00	10,237.00	9,050.00	9,043.96	125.91	48.17	9.23	-80.84	-71.43	5,333.86	5,248.78	85.08	62.690			
15,500.00	10,237.00	9,050.00	9,043.96	127.86	48.17	9.23	-80.84	-71.43	5,431.30	5,345.07	86.23	62.984			
15,600.00	10,237.00	9,050.00	9,043.96	129.81	48.17	9.23	-80.84	-71.43	5,528.84	5,441.46	87.38	63.270			
15,700.00	10,237.00	9,050.00	9,043.96	131.77	48.17	9.23	-80.84	-71.43	5,626.47	5,537.93	88.54	63.549			
15,800.00	10,237.00	9,050.00	9,043.96	133.74	48.17	9.23	-80.84	-71.43	5,724.17	5,634.48	89.69	63.819			
15,900.00	10,237.00	9,050.00	9,043.96	135.71	48.17	9.23	-80.84	-71.43	5,821.95	5,731.10	90.85	64.083			
16,000.00	10,237.00	9,025.90	9,020.50	137.68	48.04	9.09	-86.30	-72.25	5,919.26	5,827.45	91.82	64.467			
16,100.00	10,237.00	9,024.08	9,018.72	139.66	48.03	9.08	-86.67	-72.30	6,017.11	5,924.14	92.96	64.725			
16,200.00	10,237.00	9,000.00	8,995.06	141.65	47.91	8.94	-91.07	-72.96	6,115.48	6,021.55	93.93	65.106			
16,300.00	10,237.00	9,000.00	8,995.06	143.64	47.91	8.94	-91.07	-72.96	6,213.38	6,118.29	95.09	65.340			
16,400.00	10,237.00	9,000.00	8,995.06	145.64	47.91	8.94	-91.07	-72.96	6,311.34	6,215.09	96.26	65.568			
16,500.00	10,237.00	9,000.00	8,995.06	147.64	47.91	8.94	-91.07	-72.96	6,409.37	6,311.95	97.42	65.790			
16,600.00	10,237.00	9,000.00	8,995.06	149.64	47.91	8.94	-91.07	-72.96	6,507.46	6,408.87	98.59	66.007			
16,700.00	10,237.00	9,000.00	8,995.06	151.65	47.91	8.94	-91.07	-72.96	6,605.60	6,505.85	99.76	66.218			
16,800.00	10,237.00	9,000.00	8,995.06	153.66	47.91	8.94	-91.07	-72.96	6,703.80	6,602.88	100.92	66.424			
16,900.00	10,237.00	9,000.00	8,995.06	155.68	47.91	8.94	-91.07	-72.96	6,802.05	6,699.96	102.09	66.626			
17,000.00	10,237.00	9,000.00	8,995.06	157.69	47.91	8.94	-91.07	-72.96	6,900.35	6,797.09	103.26	66.822			
17,100.00	10,237.00	9,000.00	8,995.06	159.72	47.91	8.94	-91.07	-72.96	6,998.70	6,894.27	104.44	67.014			
17,200.00	10,237.00	9,000.00	8,995.06	161.74	47.91	8.94	-91.07	-72.96	7,097.10	6,991.49	105.61	67.202			
17,300.00	10,237.00	9,000.00	8,995.06	163.77	47.91	8.94	-91.07	-72.96	7,195.54	7,088.76	106.78	67.385			
17,400.00	10,237.00	9,000.00	8,995.06	165.81	47.91	8.94	-91.07	-72.96	7,294.02	7,186.07	107.96	67.564			
17,500.00	10,237.00	9,000.00	8,995.06	167.84	47.91	8.94	-91.07	-72.96	7,392.55	7,283.41	109.13	67.739			
17,600.00	10,237.00	9,000.00	8,995.06	169.88	47.91	8.94	-91.07	-72.96	7,491.11	7,380.80	110.31	67.910			
17,683.58	10,237.00	9,000.00	8,995.06	171.59	47.91	8.94	-91.07	-72.96	7,573.51	7,462.22	111.29	68.050			



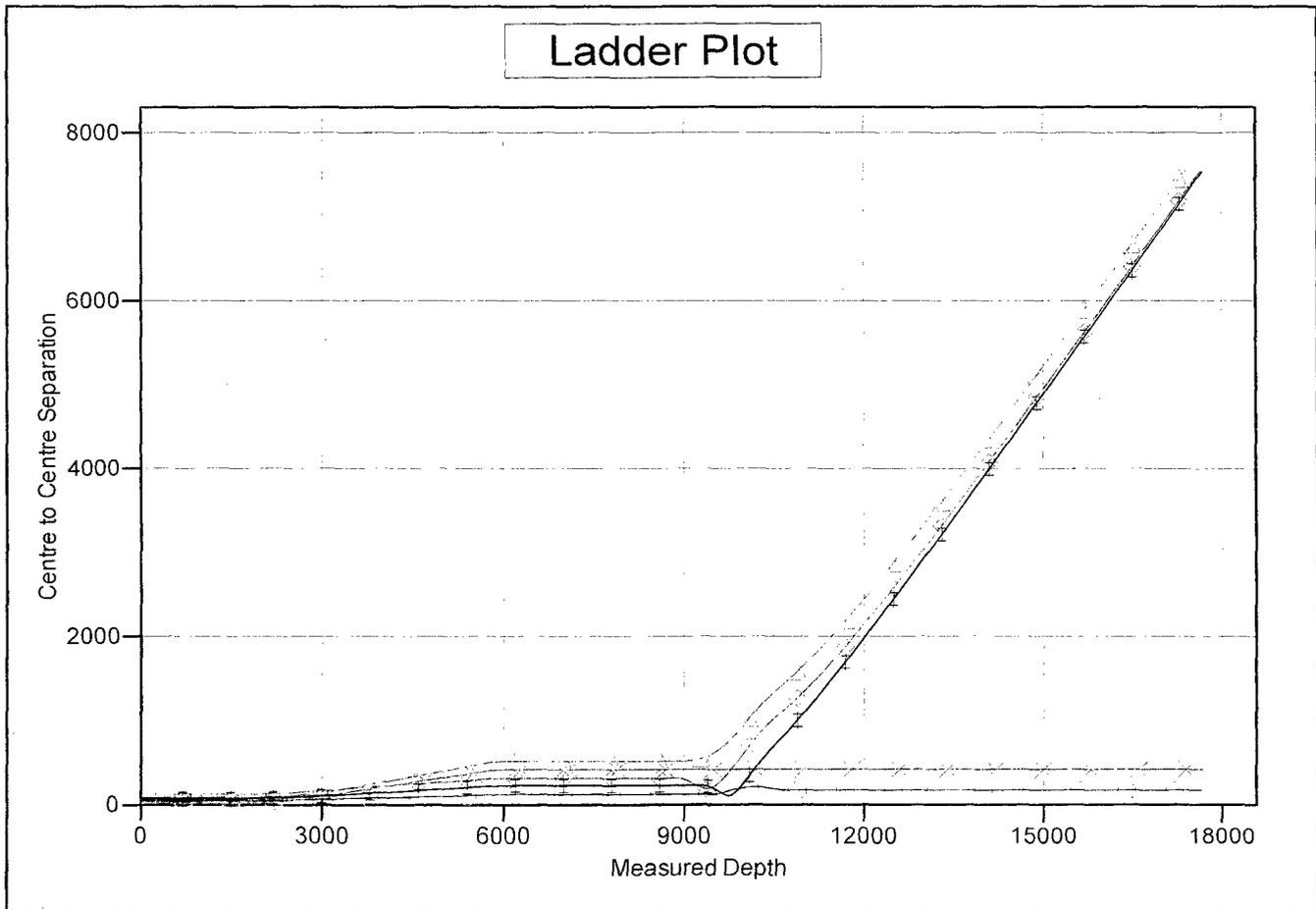
Phoenix Technology Services LP  
Anticollision Report



Company: Chevron  
 Project: Eddy County, NM (NAD27 NME)  
 Reference Site: HH CE 35 2 Fed  
 Site Error: 0.00 usft  
 Reference Well: 61  
 Well Error: 0.00 usft  
 Reference Wellbore: OH  
 Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
 TVD Reference: GL + KB @ 3169.00usft  
 MD Reference: GL + KB @ 3169.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 3.00 sigma  
 Database: Compass 5000 GCR  
 Offset TVD Reference: Reference Datum

Reference Depths are relative to GL + KB @ 3169.00usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 104° 19' 60.00000 W  
 Coordinates are relative to: 61  
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
 Grid Convergence at Surface is: 0.10°



LEGEND

- 63, OH, Plan 1 12-19-16 V0
- ✕— 62, OH, Plan 1 12-19-16 V0
- ⊕— 64, OH, Plan 1 12-19-16 V0
- ◇— 66, OH, Plan 1 12-19-16 V0
- ⊙— 65, OH, Plan 1 12-19-16 V0



Phoenix Technology Services LP  
Anticollision Report



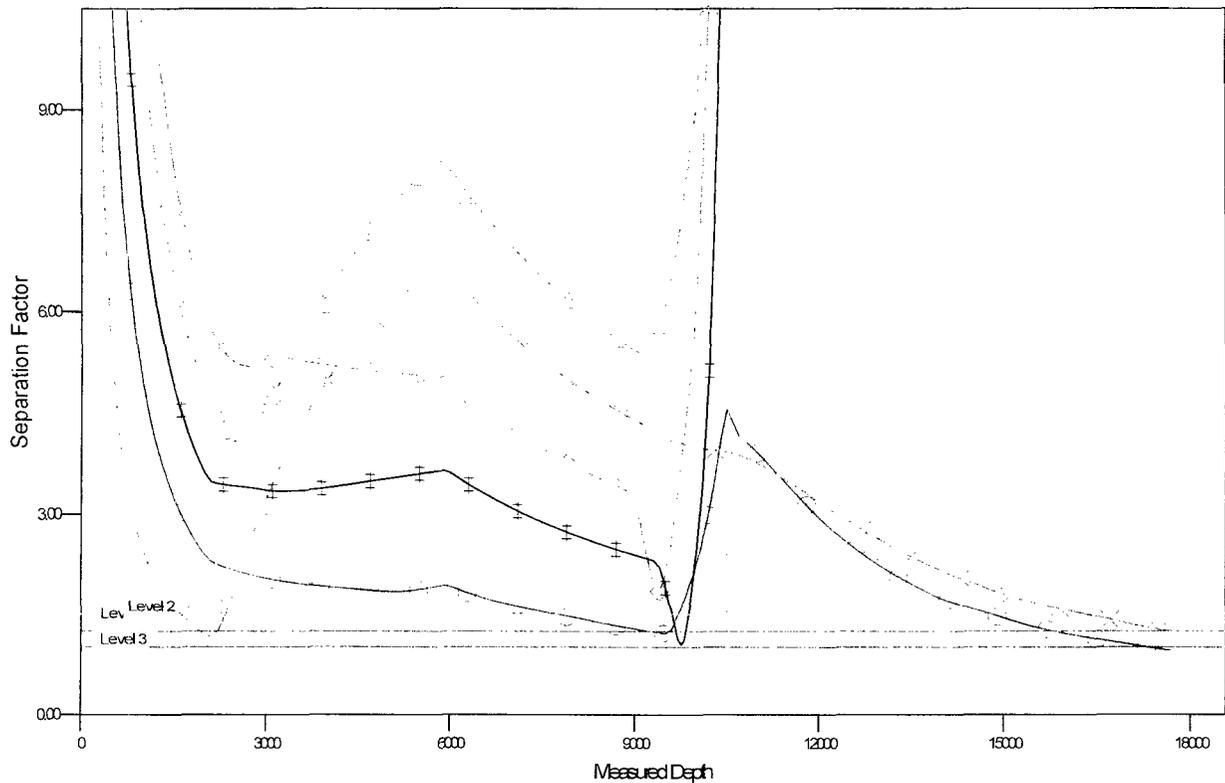
Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Reference Site: HH CE 35 2 Fed  
Site Error: 0.00 usft  
Reference Well: 61  
Well Error: 0.00 usft  
Reference Wellbore: OH  
Reference Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 3.00 sigma  
Database: Compass 5000 GCR  
Offset TVD Reference: Reference Datum

Reference Depths are relative to GL + KB @ 3169.00usft  
Offset Depths are relative to Offset Datum  
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: 61  
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
Grid Convergence at Surface is: 0.10°

### Separation Factor Plot



#### LEGEND

- 63, OH, Plan 1 12-19-16 V0
- 64, OH, Plan 1 12-19-16 V0
- △ 65, OH, Plan 1 12-19-16 V0
- ◇ 66, OH, Plan 1 12-19-16 V0



Project: Eddy County, NM (NAD27 NME)  
 Site: HH CE 35 2 Fed  
 Well: 61  
 Wellbore: OH  
 Design: Plan 1 12-19-16  
 Rig:



Azimuths to Grid North  
 True North: 0.10°  
 Magnetic North: 7.30°  
 Magnetic Field  
 Strength: 48095.0nT  
 Dip Angle: 58.85°  
 Date: 12/19/2018  
 Model: HDGM

WELL DETAILS						
	North	East	Latitude	Longitude		
Ground Level	3144.00					
N/E/W	0.00	0.00	32° 5' 8.02863 N	104° 9' 11.75714 W		

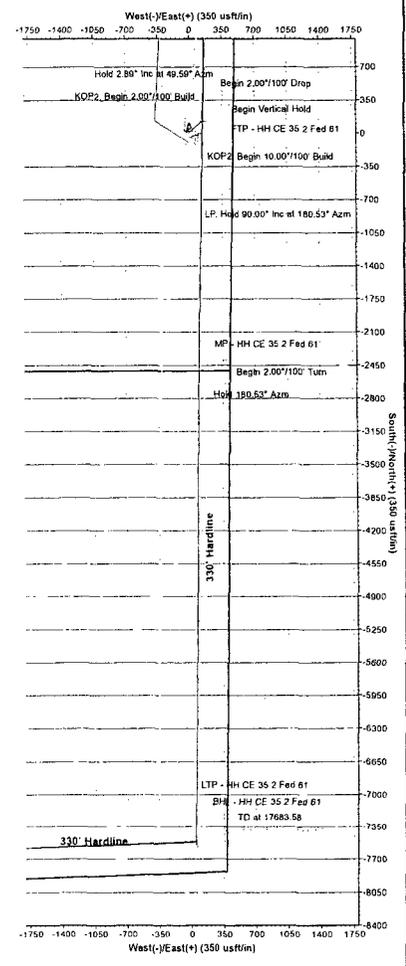
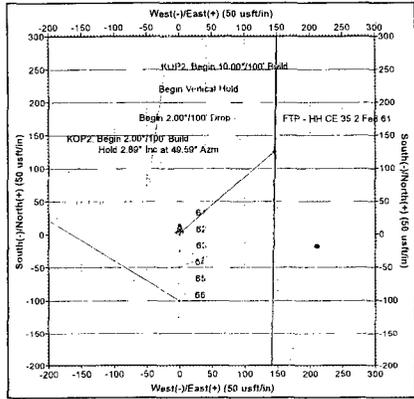
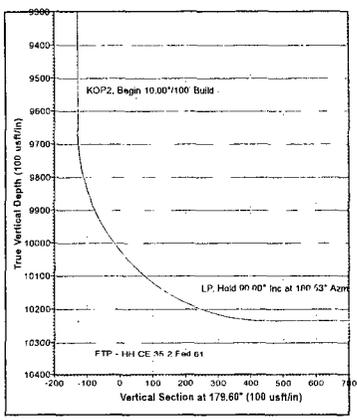
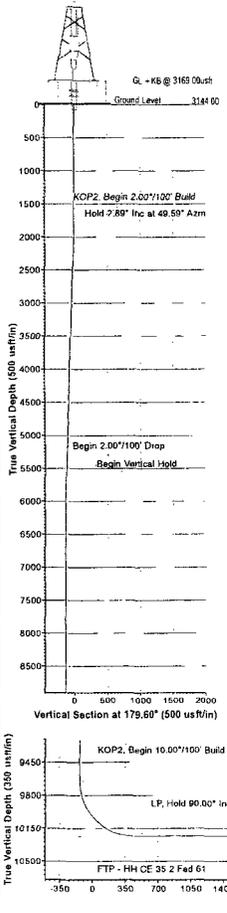
SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	N/E/W	E/W	Diag	TFace	Vsect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2090.00	0.00	0.00	2090.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	2144.30	2.89	49.59	2144.24	2.36	2.77	2.00	49.55	-2.34		KOP2 Begin 2.00°/100' Build Hold 2.89° Inc at 49.59° Azm
4	5820.54	2.89	49.59	5855.76	123.64	145.23	0.00	-122.82			Begin 2.00°/100' Drop
5	5924.84	0.00	0.00	6020.00	126.00	148.00	2.00	180.00	-124.96		Begin Vertical Hold
6	9868.88	0.00	0.00	9864.04	126.00	148.00	0.00	0.00	-124.96		KOP2 Begin 10.00°/100' Build
7	10565.88	90.00	181.04	10227.00	-446.86	137.58	10.00	181.04	447.82		LP Hold 90.00° Inc at 180.53° Azm
8	12626.36	90.00	181.04	10227.00	-2514.00	102.00	0.00	0.00	2514.64		MP - HH CE 35 2 Fed 61 Begin 2.00°/100' Turn Hold 180.53° Azm
9	12661.82	90.00	180.53	10227.00	-2539.47	99.65	2.00	80.00	2540.10		
10	17683.58	90.00	180.53	10227.00	-7561.00	53.00	0.00	0.00	7561.19		BHL - HH CE 35 2 Fed 61 TD at 17683.58

DESIGN TARGET DETAILS							
Name	TVD	N/E/W	E/W	North	East	Latitude	Longitude
BHL - HH CE 35 2 Fed 61	10227.00	7561.00	53.00	387356.00	555821.00	32° 5' 8.02863 N	104° 9' 11.75714 W
FTP - HH CE 35 2 Fed 61	10227.00	126.00	148.00	395983.00	555916.00	32° 5' 9.85314 N	104° 9' 10.63436 W
LTP - HH CE 35 2 Fed 61	10227.00	7511.00	53.00	387446.00	555921.00	32° 5' 54.27462 N	104° 9' 11.28989 W
MP - HH CE 35 2 Fed 61	10227.00	-2514.00	102.00	392443.00	555868.00	32° 4' 43.72102 N	104° 9' 10.54262 W

Map System: US State Plane 1927 (Exact solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone Name: New Mexico East 3001  
 Local Origin: Well 61, Grid North  
 Latitude: 32° 5' 8.02863 N  
 Longitude: 104° 9' 11.75714 W  
 Grid East: 555769.00  
 Grid North: 334867.00  
 Scale Factor: 1.000  
 Geomagnetic Model: HDGM  
 Sample Date: 19-Dec-16  
 Magnetic Declination: 7.40°  
 Dip Angle from Horizontal: 59.85°  
 Magnetic Field Strength: 48095  
 To convert a Magnetic Direction to a Grid Direction, Add 7.30°  
 To convert a Magnetic Direction to a True Direction, Add 7.40° East  
 To convert a True Direction to a Grid Direction, Subtract 0.10°

**FORMATION TOP DETAILS**  
 No formation data is available

CASING DETAILS		LEGEND	
No casing data is available		--- 63, CH, Plan 1 12-19-16 VO	
		--- 66, CH, Plan 1 12-19-16 VO	
		--- 62, CH, Plan 1 12-19-16 VO	
		--- 65, CH, Plan 1 12-19-16 VO	
		--- 64, CH, Plan 1 12-19-16 VO	
		--- Plan 1 12-19-16	





## **Chevron**

Eddy County, NM (NAD27 NME)

HH CE 35 2 Fed

61

OH

Plan: Plan 1 12-19-16

# **Standard Planning Report**

20 December, 2016





Phoenix Technology Services LP  
Planning Report



Database: Compass 5000 GCR  
Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Site: HH CE 35 2 Fed  
Well: 61  
Wellbore: OH  
Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

<b>Project</b>	Eddy County, NM (NAD27 NME)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site</b>	HH CE 35 2 Fed				
<b>Site Position:</b>		<b>Northing:</b>	394,832.00 usft	<b>Latitude:</b>	32° 5' 7.37159 N
<b>From:</b>	Map	<b>Easting:</b>	555,766.00 usft	<b>Longitude:</b>	104° 9' 11.78281 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.10 °

<b>Well</b>	61					
<b>Well Position</b>	<b>+N/-S</b>	125.00 usft	<b>Northing:</b>	394,957.00 usft	<b>Latitude:</b>	32° 5' 8.60863 N
	<b>+E/-W</b>	2.00 usft	<b>Easting:</b>	555,768.00 usft	<b>Longitude:</b>	104° 9' 11.75714 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	3,144.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	12/19/2016	7.40	59.85	48,095

<b>Design</b>	Plan 1 12-19-16			
<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	179.60

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,144.30	2.89	49.59	2,144.24	2.36	2.77	2.00	2.00	0.00	49.59	
5,860.54	2.89	49.59	5,855.76	123.64	145.23	0.00	0.00	0.00	0.00	
6,004.84	0.00	0.00	6,000.00	126.00	148.00	2.00	-2.00	0.00	180.00	
9,668.88	0.00	0.00	9,664.04	126.00	148.00	0.00	0.00	0.00	0.00	
10,568.88	90.00	181.04	10,237.00	-446.86	137.58	10.00	10.00	0.00	181.04	
12,636.36	90.00	181.04	10,237.00	-2,514.00	100.00	0.00	0.00	0.00	0.00	MP - HH CE 35 2 Fed
12,661.82	90.00	180.53	10,237.00	-2,539.47	99.65	2.00	0.00	-2.00	-90.00	
17,683.58	90.00	180.53	10,237.00	-7,561.00	53.00	0.00	0.00	0.00	0.00	BHL - HH CE 35 2 Fe



# Phoenix Technology Services LP

## Planning Report



**Database:** Compass 5000 GCR  
**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Site:** HH CE 35 2 Fed  
**Well:** 61  
**Wellbore:** OH  
**Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>KOP2, Begin 2.00°/100' Build</b>										
2,100.00	2.00	49.59	2,099.98	1.13	1.33	-1.12	2.00	2.00	0.00	
2,144.30	2.89	49.59	2,144.24	2.36	2.77	-2.34	2.00	2.00	0.00	
<b>Hold 2.89° Inc at 49.59° Azm</b>										
2,200.00	2.89	49.59	2,199.87	4.17	4.90	-4.14	0.00	0.00	0.00	
2,300.00	2.89	49.59	2,299.74	7.44	8.74	-7.38	0.00	0.00	0.00	
2,400.00	2.89	49.59	2,399.61	10.70	12.57	-10.61	0.00	0.00	0.00	
2,500.00	2.89	49.59	2,499.49	13.96	16.40	-13.85	0.00	0.00	0.00	
2,600.00	2.89	49.59	2,599.36	17.23	20.24	-17.09	0.00	0.00	0.00	
2,700.00	2.89	49.59	2,699.23	20.49	24.07	-20.32	0.00	0.00	0.00	
2,800.00	2.89	49.59	2,799.11	23.76	27.90	-23.56	0.00	0.00	0.00	
2,900.00	2.89	49.59	2,898.98	27.02	31.74	-26.80	0.00	0.00	0.00	
3,000.00	2.89	49.59	2,998.85	30.28	35.57	-30.03	0.00	0.00	0.00	
3,100.00	2.89	49.59	3,098.73	33.55	39.40	-33.27	0.00	0.00	0.00	
3,200.00	2.89	49.59	3,198.60	36.81	43.24	-36.51	0.00	0.00	0.00	
3,300.00	2.89	49.59	3,298.47	40.07	47.07	-39.74	0.00	0.00	0.00	
3,400.00	2.89	49.59	3,398.35	43.34	50.91	-42.98	0.00	0.00	0.00	
3,500.00	2.89	49.59	3,498.22	46.60	54.74	-46.22	0.00	0.00	0.00	
3,600.00	2.89	49.59	3,598.09	49.87	58.57	-49.45	0.00	0.00	0.00	
3,700.00	2.89	49.59	3,697.97	53.13	62.41	-52.69	0.00	0.00	0.00	
3,800.00	2.89	49.59	3,797.84	56.39	66.24	-55.93	0.00	0.00	0.00	
3,900.00	2.89	49.59	3,897.71	59.66	70.07	-59.16	0.00	0.00	0.00	
4,000.00	2.89	49.59	3,997.59	62.92	73.91	-62.40	0.00	0.00	0.00	
4,100.00	2.89	49.59	4,097.46	66.18	77.74	-65.64	0.00	0.00	0.00	
4,200.00	2.89	49.59	4,197.33	69.45	81.57	-68.88	0.00	0.00	0.00	
4,300.00	2.89	49.59	4,297.21	72.71	85.41	-72.11	0.00	0.00	0.00	
4,400.00	2.89	49.59	4,397.08	75.98	89.24	-75.35	0.00	0.00	0.00	
4,500.00	2.89	49.59	4,496.95	79.24	93.08	-78.59	0.00	0.00	0.00	
4,600.00	2.89	49.59	4,596.82	82.50	96.91	-81.82	0.00	0.00	0.00	
4,700.00	2.89	49.59	4,696.70	85.77	100.74	-85.06	0.00	0.00	0.00	
4,800.00	2.89	49.59	4,796.57	89.03	104.58	-88.30	0.00	0.00	0.00	
4,900.00	2.89	49.59	4,896.44	92.30	108.41	-91.53	0.00	0.00	0.00	
5,000.00	2.89	49.59	4,996.32	95.56	112.24	-94.77	0.00	0.00	0.00	
5,100.00	2.89	49.59	5,096.19	98.82	116.08	-98.01	0.00	0.00	0.00	
5,200.00	2.89	49.59	5,196.06	102.09	119.91	-101.24	0.00	0.00	0.00	
5,300.00	2.89	49.59	5,295.94	105.35	123.74	-104.48	0.00	0.00	0.00	
5,400.00	2.89	49.59	5,395.81	108.61	127.58	-107.72	0.00	0.00	0.00	
5,500.00	2.89	49.59	5,495.68	111.88	131.41	-110.95	0.00	0.00	0.00	
5,600.00	2.89	49.59	5,595.56	115.14	135.25	-114.19	0.00	0.00	0.00	
5,700.00	2.89	49.59	5,695.43	118.41	139.08	-117.43	0.00	0.00	0.00	
5,800.00	2.89	49.59	5,795.30	121.67	142.91	-120.66	0.00	0.00	0.00	
5,860.54	2.89	49.59	5,855.76	123.64	145.23	-122.62	0.00	0.00	0.00	
<b>Begin 2.00°/100' Drop</b>										
5,900.00	2.10	49.59	5,895.19	124.76	146.54	-123.73	2.00	-2.00	0.00	
6,000.00	0.10	49.59	5,995.17	126.00	148.00	-124.96	2.00	-2.00	0.00	
6,004.84	0.00	0.00	6,000.00	126.00	148.00	-124.96	2.00	-2.00	-1,025.63	
<b>Begin Vertical Hold</b>										
9,668.88	0.00	0.00	9,664.04	126.00	148.00	-124.96	0.00	0.00	0.00	
<b>KOP2, Begin 10.00°/100' Build</b>										
9,700.00	3.11	181.04	9,695.15	125.16	147.98	-124.11	10.00	10.00	0.00	
9,800.00	13.11	181.04	9,794.02	111.06	147.73	-110.03	10.00	10.00	0.00	
9,900.00	23.11	181.04	9,888.95	80.02	147.16	-78.99	10.00	10.00	0.00	



# Phoenix Technology Services LP

## Planning Report



Database: Compass 5000 GCR  
 Company: Chevron  
 Project: Eddy County, NM (NAD27 NME)  
 Site: HH CE 35 2 Fed  
 Well: 61  
 Wellbore: OH  
 Design: Plan 1 12-19-16

Local Co-ordinate Reference: Well 61  
 TVD Reference: GL + KB @ 3169.00usft  
 MD Reference: GL + KB @ 3169.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,000.00	33.11	181.04	9,977.04	32.97	146.31	-31.94	10.00	10.00	0.00
10,100.00	43.11	181.04	10,055.62	-28.66	145.19	29.68	10.00	10.00	0.00
10,200.00	53.11	181.04	10,122.30	-103.00	143.84	104.01	10.00	10.00	0.00
10,300.00	63.11	181.04	10,175.06	-187.79	142.29	188.78	10.00	10.00	0.00
10,400.00	73.11	181.04	10,212.29	-280.45	140.61	281.43	10.00	10.00	0.00
10,500.00	83.11	181.04	10,232.87	-378.16	138.83	379.13	10.00	10.00	0.00
10,568.88	90.00	181.04	10,237.00	-446.86	137.58	447.82	10.00	10.00	0.00
<b>LP, Hold 90.00° Inc at 180.53° Azm</b>									
10,600.00	90.00	181.04	10,237.00	-477.98	137.02	478.93	0.00	0.00	0.00
10,700.00	90.00	181.04	10,237.00	-577.96	135.20	578.90	0.00	0.00	0.00
10,800.00	90.00	181.04	10,237.00	-677.95	133.38	678.87	0.00	0.00	0.00
10,900.00	90.00	181.04	10,237.00	-777.93	131.56	778.83	0.00	0.00	0.00
11,000.00	90.00	181.04	10,237.00	-877.91	129.75	878.80	0.00	0.00	0.00
11,100.00	90.00	181.04	10,237.00	-977.90	127.93	978.77	0.00	0.00	0.00
11,200.00	90.00	181.04	10,237.00	-1,077.88	126.11	1,078.74	0.00	0.00	0.00
11,300.00	90.00	181.04	10,237.00	-1,177.86	124.29	1,178.71	0.00	0.00	0.00
11,400.00	90.00	181.04	10,237.00	-1,277.85	122.48	1,278.68	0.00	0.00	0.00
11,500.00	90.00	181.04	10,237.00	-1,377.83	120.66	1,378.64	0.00	0.00	0.00
11,600.00	90.00	181.04	10,237.00	-1,477.82	118.84	1,478.61	0.00	0.00	0.00
11,700.00	90.00	181.04	10,237.00	-1,577.80	117.02	1,578.58	0.00	0.00	0.00
11,800.00	90.00	181.04	10,237.00	-1,677.78	115.20	1,678.55	0.00	0.00	0.00
11,900.00	90.00	181.04	10,237.00	-1,777.77	113.39	1,778.52	0.00	0.00	0.00
12,000.00	90.00	181.04	10,237.00	-1,877.75	111.57	1,878.49	0.00	0.00	0.00
12,100.00	90.00	181.04	10,237.00	-1,977.73	109.75	1,978.45	0.00	0.00	0.00
12,200.00	90.00	181.04	10,237.00	-2,077.72	107.93	2,078.42	0.00	0.00	0.00
12,300.00	90.00	181.04	10,237.00	-2,177.70	106.11	2,178.39	0.00	0.00	0.00
12,400.00	90.00	181.04	10,237.00	-2,277.68	104.30	2,278.36	0.00	0.00	0.00
12,500.00	90.00	181.04	10,237.00	-2,377.67	102.48	2,378.33	0.00	0.00	0.00
12,600.00	90.00	181.04	10,237.00	-2,477.65	100.66	2,478.29	0.00	0.00	0.00
12,636.36	90.00	181.04	10,237.00	-2,514.00	100.00	2,514.64	0.00	0.00	0.00
<b>Begin 2.00°/100' Turn</b>									
12,661.82	90.00	180.53	10,237.00	-2,539.47	99.65	2,540.10	2.00	0.00	-2.00
<b>Hold 180.53° Azm</b>									
12,700.00	90.00	180.53	10,237.00	-2,577.64	99.30	2,578.27	0.00	0.00	0.00
12,800.00	90.00	180.53	10,237.00	-2,677.64	98.37	2,678.26	0.00	0.00	0.00
12,900.00	90.00	180.53	10,237.00	-2,777.63	97.44	2,778.25	0.00	0.00	0.00
13,000.00	90.00	180.53	10,237.00	-2,877.63	96.51	2,878.23	0.00	0.00	0.00
13,100.00	90.00	180.53	10,237.00	-2,977.62	95.58	2,978.22	0.00	0.00	0.00
13,200.00	90.00	180.53	10,237.00	-3,077.62	94.65	3,078.21	0.00	0.00	0.00
13,300.00	90.00	180.53	10,237.00	-3,177.61	93.72	3,178.19	0.00	0.00	0.00
13,400.00	90.00	180.53	10,237.00	-3,277.61	92.79	3,278.18	0.00	0.00	0.00
13,500.00	90.00	180.53	10,237.00	-3,377.61	91.86	3,378.17	0.00	0.00	0.00
13,600.00	90.00	180.53	10,237.00	-3,477.60	90.93	3,478.15	0.00	0.00	0.00
13,700.00	90.00	180.53	10,237.00	-3,577.60	90.01	3,578.14	0.00	0.00	0.00
13,800.00	90.00	180.53	10,237.00	-3,677.59	89.08	3,678.13	0.00	0.00	0.00
13,900.00	90.00	180.53	10,237.00	-3,777.59	88.15	3,778.11	0.00	0.00	0.00
14,000.00	90.00	180.53	10,237.00	-3,877.58	87.22	3,878.10	0.00	0.00	0.00
14,100.00	90.00	180.53	10,237.00	-3,977.58	86.29	3,978.09	0.00	0.00	0.00
14,200.00	90.00	180.53	10,237.00	-4,077.58	85.36	4,078.07	0.00	0.00	0.00
14,300.00	90.00	180.53	10,237.00	-4,177.57	84.43	4,178.06	0.00	0.00	0.00
14,400.00	90.00	180.53	10,237.00	-4,277.57	83.50	4,278.05	0.00	0.00	0.00
14,500.00	90.00	180.53	10,237.00	-4,377.56	82.57	4,378.03	0.00	0.00	0.00
14,600.00	90.00	180.53	10,237.00	-4,477.56	81.65	4,478.02	0.00	0.00	0.00



**Phoenix Technology Services LP**  
Planning Report



**Database:** Compass 5000 GCR  
**Company:** Chevron  
**Project:** Eddy County, NM (NAD27 NME)  
**Site:** HH CE 35 2 Fed  
**Well:** 61  
**Wellbore:** OH  
**Design:** Plan 1 12-19-16

**Local Co-ordinate Reference:** Well 61  
**TVD Reference:** GL + KB @ 3169.00usft  
**MD Reference:** GL + KB @ 3169.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

**Planned Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,700.00	90.00	180.53	10,237.00	-4,577.55	80.72	4,578.01	0.00	0.00	0.00
14,800.00	90.00	180.53	10,237.00	-4,677.55	79.79	4,677.99	0.00	0.00	0.00
14,900.00	90.00	180.53	10,237.00	-4,777.55	78.86	4,777.98	0.00	0.00	0.00
15,000.00	90.00	180.53	10,237.00	-4,877.54	77.93	4,877.97	0.00	0.00	0.00
15,100.00	90.00	180.53	10,237.00	-4,977.54	77.00	4,977.95	0.00	0.00	0.00
15,200.00	90.00	180.53	10,237.00	-5,077.53	76.07	5,077.94	0.00	0.00	0.00
15,300.00	90.00	180.53	10,237.00	-5,177.53	75.14	5,177.93	0.00	0.00	0.00
15,400.00	90.00	180.53	10,237.00	-5,277.52	74.21	5,277.91	0.00	0.00	0.00
15,500.00	90.00	180.53	10,237.00	-5,377.52	73.28	5,377.90	0.00	0.00	0.00
15,600.00	90.00	180.53	10,237.00	-5,477.51	72.36	5,477.89	0.00	0.00	0.00
15,700.00	90.00	180.53	10,237.00	-5,577.51	71.43	5,577.87	0.00	0.00	0.00
15,800.00	90.00	180.53	10,237.00	-5,677.51	70.50	5,677.86	0.00	0.00	0.00
15,900.00	90.00	180.53	10,237.00	-5,777.50	69.57	5,777.85	0.00	0.00	0.00
16,000.00	90.00	180.53	10,237.00	-5,877.50	68.64	5,877.83	0.00	0.00	0.00
16,100.00	90.00	180.53	10,237.00	-5,977.49	67.71	5,977.82	0.00	0.00	0.00
16,200.00	90.00	180.53	10,237.00	-6,077.49	66.78	6,077.81	0.00	0.00	0.00
16,300.00	90.00	180.53	10,237.00	-6,177.48	65.85	6,177.79	0.00	0.00	0.00
16,400.00	90.00	180.53	10,237.00	-6,277.48	64.92	6,277.78	0.00	0.00	0.00
16,500.00	90.00	180.53	10,237.00	-6,377.48	63.99	6,377.77	0.00	0.00	0.00
16,600.00	90.00	180.53	10,237.00	-6,477.47	63.07	6,477.75	0.00	0.00	0.00
16,700.00	90.00	180.53	10,237.00	-6,577.47	62.14	6,577.74	0.00	0.00	0.00
16,800.00	90.00	180.53	10,237.00	-6,677.46	61.21	6,677.73	0.00	0.00	0.00
16,900.00	90.00	180.53	10,237.00	-6,777.46	60.28	6,777.71	0.00	0.00	0.00
17,000.00	90.00	180.53	10,237.00	-6,877.45	59.35	6,877.70	0.00	0.00	0.00
17,100.00	90.00	180.53	10,237.00	-6,977.45	58.42	6,977.69	0.00	0.00	0.00
17,200.00	90.00	180.53	10,237.00	-7,077.45	57.49	7,077.68	0.00	0.00	0.00
17,300.00	90.00	180.53	10,237.00	-7,177.44	56.56	7,177.66	0.00	0.00	0.00
17,400.00	90.00	180.53	10,237.00	-7,277.44	55.63	7,277.65	0.00	0.00	0.00
17,500.00	90.00	180.53	10,237.00	-7,377.43	54.71	7,377.64	0.00	0.00	0.00
17,600.00	90.00	180.53	10,237.00	-7,477.43	53.78	7,477.62	0.00	0.00	0.00
17,683.58	90.00	180.53	10,237.00	-7,561.00	53.00	7,561.19	0.00	0.00	0.00

**TD at 17683.58**

**Design Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - HH CE 35 2 Fed 6 - hit/miss target - Shape	0.00	0.00	10,237.00	126.00	148.00	395,083.00	555,916.00	32° 5' 9.85314 N	104° 9' 10.03436 W
- plan misses target center by 237.82usft at 10105.95usft MD (10059.94 TVD, -32.75 N, 145.11 E)									
- Point									
MP - HH CE 35 2 Fed 6 - plan hits target center - Point	0.00	0.00	10,237.00	-2,514.00	100.00	392,443.00	555,868.00	32° 4' 43.72703 N	104° 9' 10.64362 W
BHL - HH CE 35 2 Fed 6 - plan hits target center - Point	0.00	0.00	10,237.00	-7,561.00	53.00	387,396.00	555,821.00	32° 3' 53.77979 N	104° 9' 11.28786 W
LTP - HH CE 35 2 Fed 6 - plan misses target center by 33.58usft at 17600.00usft MD (10237.00 TVD, -7477.43 N, 53.78 E) - Point	0.00	0.00	10,237.00	-7,511.00	53.00	387,446.00	555,821.00	32° 3' 54.27462 N	104° 9' 11.28689 W



Phoenix Technology Services LP  
Planning Report



Database: Compass 5000 GCR  
Company: Chevron  
Project: Eddy County, NM (NAD27 NME)  
Site: HH CE 35 2 Fed  
Well: 61  
Wellbore: OH  
Design: Plan 1 12-19-16

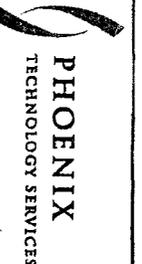
Local Co-ordinate Reference: Well 61  
TVD Reference: GL + KB @ 3169.00usft  
MD Reference: GL + KB @ 3169.00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	KOP2, Begin 2.00°/100' Build
2,144.30	2,144.24	2.36	2.77	Hold 2.89° Inc at 49.59° Azm
5,860.54	5,855.76	123.64	145.23	Begin 2.00°/100' Drop
6,004.84	6,000.00	126.00	148.00	Begin Vertical Hold
9,668.88	9,664.04	126.00	148.00	KOP2, Begin 10.00°/100' Build
10,568.88	10,237.00	-446.86	137.58	LP, Hold 90.00° Inc at 180.53° Azm
12,636.36	10,237.00	-2,514.00	100.00	Begin 2.00°/100' Turn
12,661.82	10,237.00	-2,539.47	99.65	Hold 180.53° Azm
17,683.58	10,237.00	-7,561.00	53.00	TD at 17683.58



Project: Eddy County, NM (NAD21 NME)  
 Site: HH CE 35 2 Fed  
 Well: 61  
 Wellbore: OH  
 Design: Plan 112-19-16  
 Rtg:



AS MEASURED TO GRID NORTH  
 Magnetic North 7.30°  
 Magnetic Field Strength 4685 Gauss  
 Dip Angle 18205  
 Model HD08M

**WELL DETAILS**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

**SECTION DETAILS**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

**DESIGN TARGET DETAILS**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

**CASING DETAILS**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

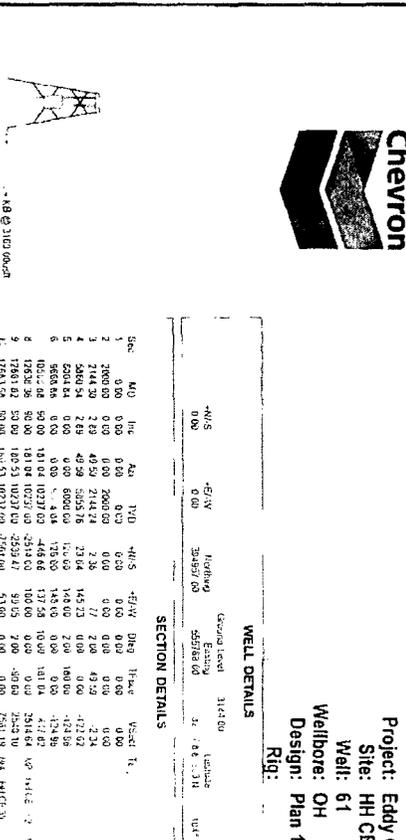
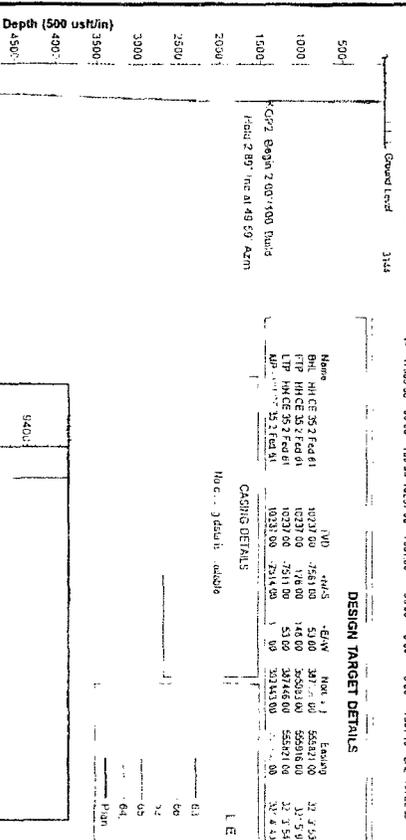
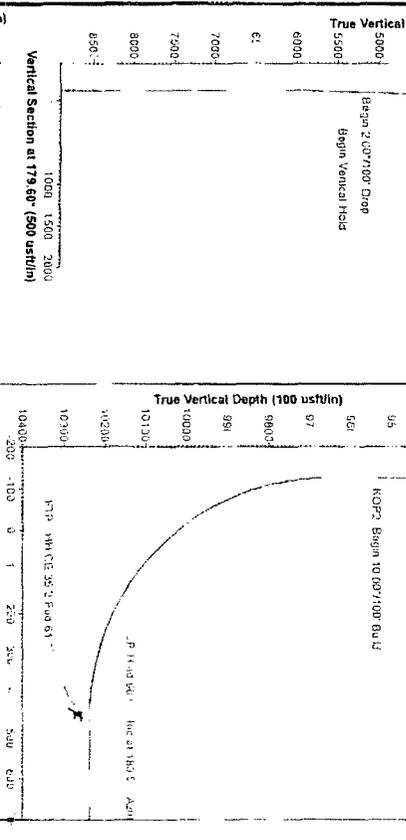
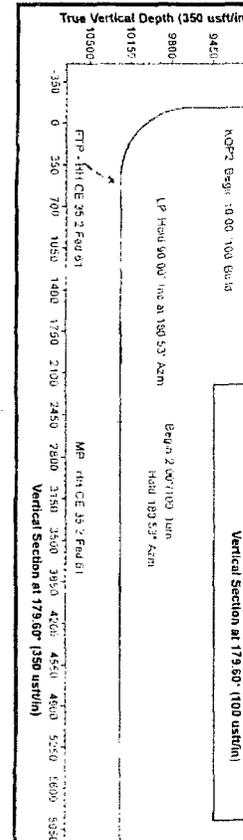
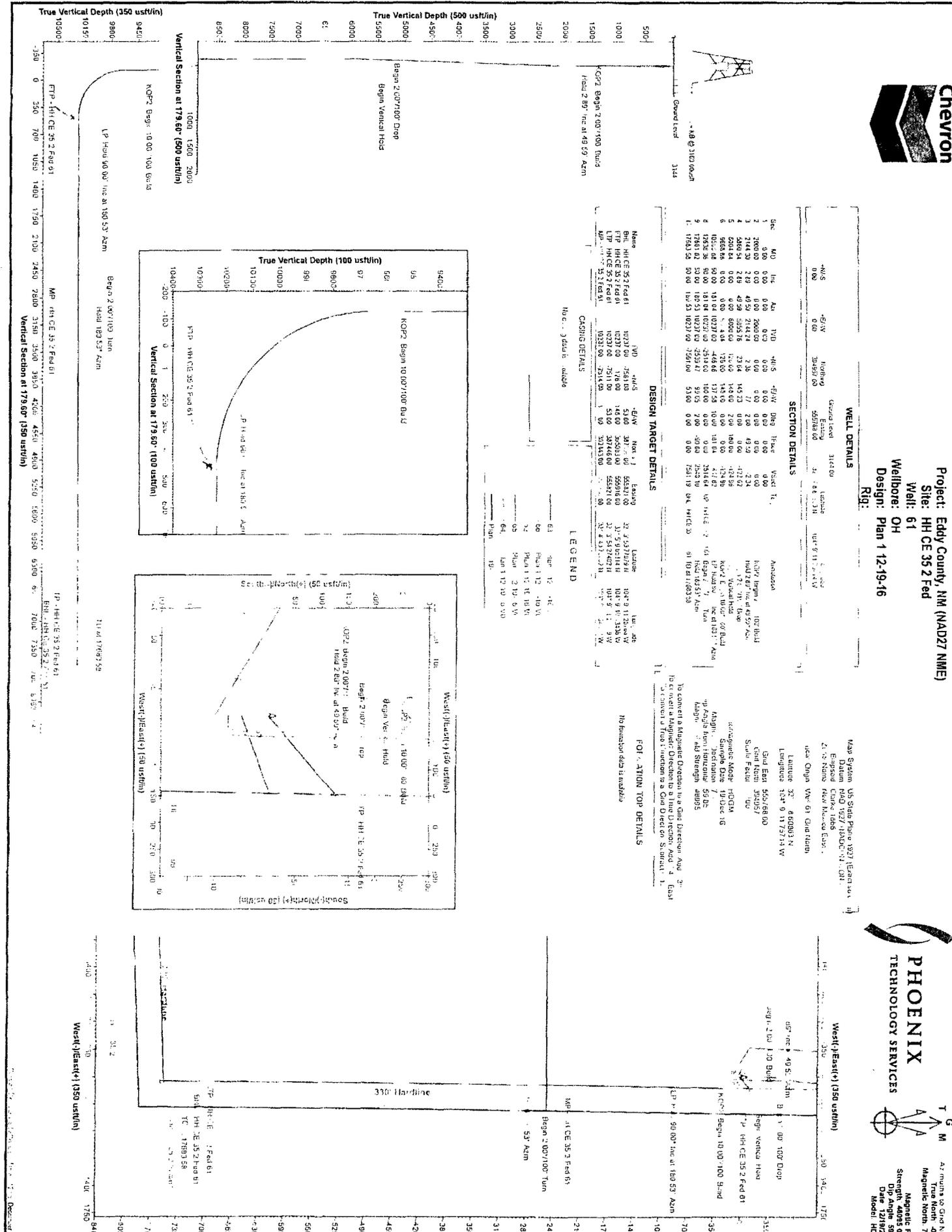
**LEGEND**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

**FOI - ATTION TOP DETAILS**

Name	MD	TYD	WGS	DIR	TRK	WGS	TRK
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00
3	2144.30	2144.30	4.99	2144.30	2.36	0.77	43.59
4	5204.84	2.89	49.89	5055.76	23.64	145.73	0.00
5	6204.84	0.00	0.00	6204.84	12.60	148.00	0.00
6	9603.86	0.00	0.00	9603.86	0.00	0.00	-124.98
7	10212.08	80.00	181.84	10272.08	-48.66	100.00	181.84
8	11261.82	100.00	180.51	11271.82	-252.47	99.55	200.00
9	11763.52	50.00	180.51	11271.82	-761.00	53.00	0.00

**Map System** US State Plane 2011 (NAD 83)  
**Datum** NAD 1983  
**Ellipsoid** Clarke 1866  
**Zone** 10  
**Units** Meter  
**Scale Factor** 1.0  
**False Easting** 500000.00  
**False Northing** 0.00  
**Projection** UTM  
**Sample Date** 19/Dec/16  
**APPROXIMATE STRENGTH** 55.00  
**APPROXIMATE DIP** 18205  
**APPROXIMATE MODEL** HD08M



APD ID: 10400009344

Submission Date: 12/22/2016

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

**Section 1 - Existing Roads**

Will existing roads be used? YES

Existing Road Map:

HH CE 35 2 FED 61\_Roads\_12-20-2016.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

**ROW ID(s)**

ID:

Do the existing roads need to be improved? YES

Existing Road Improvement Description: repair any pot holes, clear ditches, repair crown

Existing Road Improvement Attachment:

**Section 2 - New or Reconstructed Access Roads**

Will new roads be needed? YES

New Road Map:

HH CE 35 2 FED 61\_New Roads\_12-20-2016.pdf

New road type: LOCAL

Length: 4034.49

Feet

Width (ft.): 24

Max slope (%): 2

Max grade (%): 3

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 24

**New road access erosion control:** Erosion / Drainage: Drainage control system shall be constructed on the entire length of road by the use of any of the following: ditching and will be graveled as needed for drilling, side hill out-sloping and insloping, lead-off ditches, culvert installation, or low water crossings, culverts, and water bars where needed: straw waddles will be used on the down-slope side of new roads where undisturbed grades away from the roadway are 5% or greater

New road access plan or profile prepared? NO

New road access plan attachment:

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

**Access road engineering design?** NO

**Access road engineering design attachment:**

**Access surfacing type:** NONE

**Access topsoil source:** ONSITE

**Access surfacing type description:**

**Access onsite topsoil source depth:** 0

**Offsite topsoil source description:**

**Onsite topsoil removal process:** none needed

**Access other construction information:** Enclosure fencing will be installed around open cellar to prevent livestock or large wildlife from being trapped after installation. Fencing will remain in place while no activity is present and until back-filling takes place.

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** CULVERT,OTHER

**Drainage Control comments:** Sediment traps (hay bales suggested by BLM)

**Road Drainage Control Structures (DCS) description:** see surface use plan in MDP pgs. 579-590 also attached

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

HH CE 35 2 FED 61\_APD SUPO\_12-20-2016.pdf

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

HH CE 35 2 FED 61\_Radius Map\_12-20-2016.pdf

**Existing Wells description:**

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

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Estimated Production Facilities description:**

**Production Facilities description:** Facilities: New production facilities located in the NE corner of Sec. 35, T26S-R27E where oil and gas sales will take place.

**Production Facilities map:**

Operator Name: CHEVRON USA INCORPORATED

Well Name: HH CE 35 2 FED

Well Number: 61

HH\_CE\_35\_2\_FED\_61\_FAC\_CTB\_\_Redlined\_Plot\_Plan\_\_11x17\_\_06-09-2017.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING,  
SURFACE CASING

Water source type: GW WELL

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: FEDERAL

Water source transport method: PIPELINE

Source transportation land ownership: FEDERAL

Water source volume (barrels): 775006.3

Source volume (acre-feet): 99.89297

Source volume (gal): 32550266

Water source and transportation map:

HH\_CE\_35\_2\_FED\_61\_30\_\_ROW\_Detail\_06-09-2017.pdf

Water source comments:

New water well? NO

### New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

**State appropriation permit:**

**Additional information attachment:**

### Section 6 - Construction Materials

**Construction Materials description:** Caliche will be sourced from a Chevron operated NMSLO pit in S2 NW4 Section 16 T26S R27E or an alternate private pit in Section 13, T24S R27E in Eddy County, NM.

**Construction Materials source location attachment:**

### Section 7 - Methods for Handling Waste

**Waste type:** GARBAGE

**Waste content description:** Garbage and Trash, Human waste and grey water Other wastes material i.e. chemicals, salts, frac sand and drill cutting

**Amount of waste:** 200 pounds

**Waste disposal frequency :** Daily

**Safe containment description:** collected in a trash container, collected for disposal, properly contained and disposed of state approved disposal facility & properly disposed of into steel tanks.

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** State approved facility

### Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**                      **Reserve pit width (ft.)**

**Reserve pit depth (ft.)**    **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** NO

**Description of cuttings location**

**Cuttings area length (ft.)**    **Cuttings area width (ft.)**

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

**Cuttings area depth (ft.)**

**Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

## **Section 8 - Ancillary Facilities**

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## **Section 9 - Well Site Layout**

**Well Site Layout Diagram:**

HH CE 35 2 FED 61\_Well Pad Layout\_12-20-2016.pdf

HH CE 35 2 FED 61\_Well Plat\_12-20-2016.pdf

**Comments:** please refer to the attached SUPO

## **Section 10 - Plans for Surface Reclamation**

**Type of disturbance:** NEW

**Recontouring attachment:**

HH\_CE\_35\_2\_FED\_61\_APD\_SUP\_06-09-2017.pdf

HH\_CE\_35\_2\_FED\_61\_IR\_06-09-2017.pdf

**Drainage/Erosion control construction:** Proper erosion control methods will be used on the area to control erosion, runoff, and siltation of the surrounding area.

**Drainage/Erosion control reclamation:** Drainage/Erosion control reclamation: The well pad, road, and surrounding area will be cleared of material, trash, and equipment. All surfacing material will be removed and returned to the original mineral pit or recycled to repair for build roads and well pads.

**Wellpad long term disturbance (acres):** 1.5

**Wellpad short term disturbance (acres):** 4.71

**Access road long term disturbance (acres):** 1.85

**Access road short term disturbance (acres):** 1.85

**Pipeline long term disturbance (acres):** 0.0022038568

**Pipeline short term disturbance (acres):** 0.0022038568

**Other long term disturbance (acres):** 0

**Other short term disturbance (acres):** 0

**Total long term disturbance:** 3.3522038

**Total short term disturbance:** 6.562204

**Reconstruction method:** surface use plan

**Topsoil redistribution:** surface use plan

**Soil treatment:** surface use plan

**Existing Vegetation at the well pad:** mesquite, shrubs, grass

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

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

**Existing Vegetation Community at the road:** mesquite, shrubs, grass

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

**Existing Vegetation Community at the pipeline:** mesquite, shrubs, grass

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

**Existing Vegetation Community at other disturbances:** mesquite, shrubs, grass

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

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

### **Seed Management**

#### **Seed Table**

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

#### **Seed Summary**

**Total pounds/Acre:**

**Seed Type**

**Pounds/Acre**

**Seed reclamation attachment:**

#### **Operator Contact/Responsible Official Contact Info**

**First Name:** Kevin

**Last Name:** Dickerson

**Phone:**

**Email:** lfuh@chevron.com

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** see surface use plan in the hayhurst development area

**Weed treatment plan attachment:**

**Monitoring plan description:** see surface use plan in the hayhurst development area

**Monitoring plan attachment:**

**Success standards:** As per BLM requirements

**Pit closure description:** None

**Pit closure attachment:**

## **Section 11 - Surface Ownership**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Operator Name:** CHEVRON USA INCORPORATED

**Well Name:** HH CE 35 2 FED

**Well Number:** 61

## **Section 12 - Other Information**

**Right of Way needed?** YES

**Use APD as ROW?** YES

**ROW Type(s):** 287001 ROW – Water Facility,288100 ROW – O&G Pipeline,Other

## **ROW Applications**

**SUPO Additional Information:**

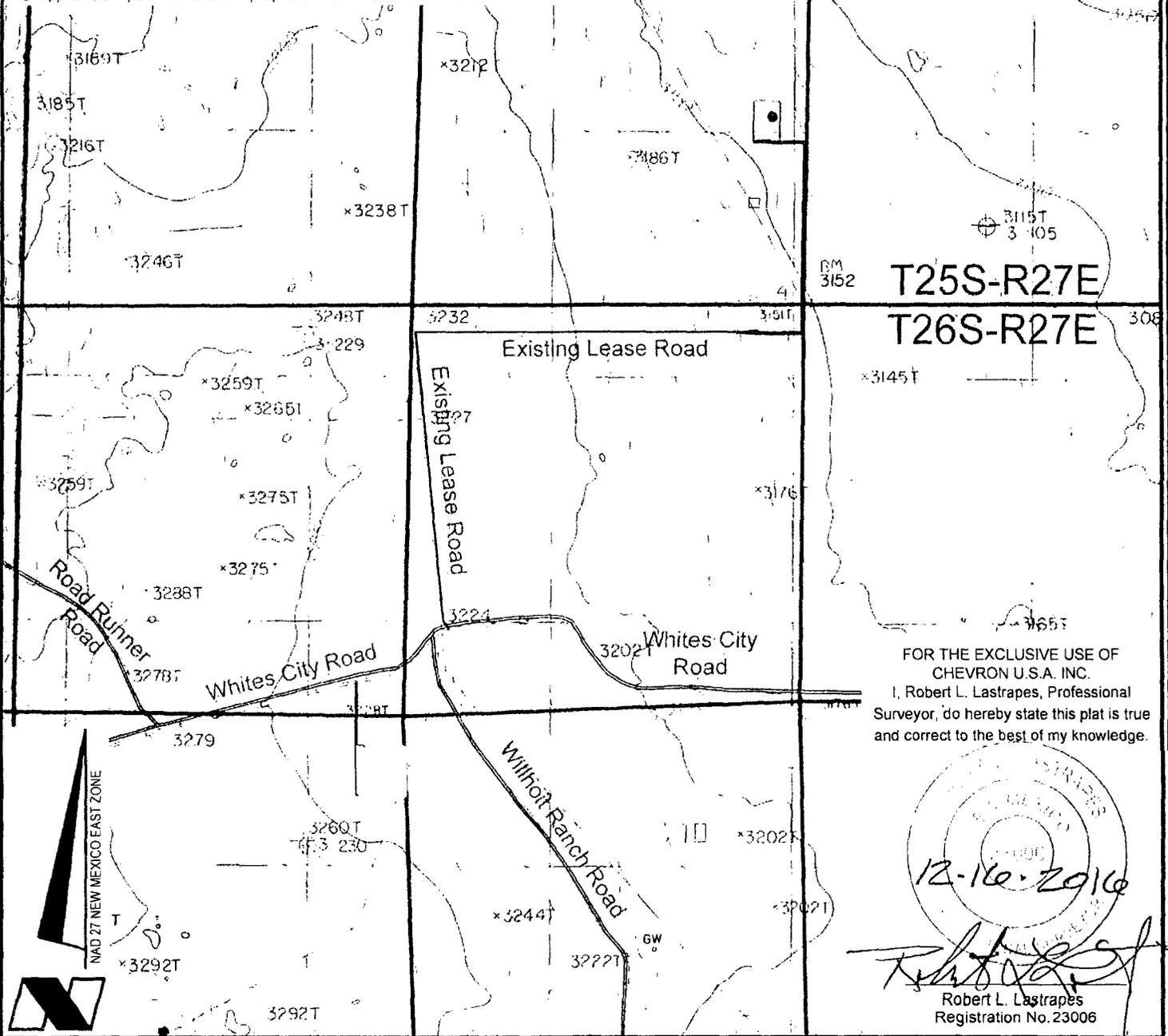
**Use a previously conducted onsite?** YES

**Previous Onsite information:** On-site performed by NRS BLM PAUL MURPHY 01/07/2017

## **Other SUPO Attachment**

**DIRECTIONS TO LOCATION:**

From HWY 285 (Pecos Hwy), head West on Whites City Road for approximately 7.1 miles to a Lease road on the North side of Whites City Road. Head North on said Lease road for approximately 1.59 miles to the proposed access road on South side of Lease road.

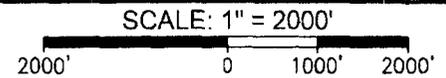


FOR THE EXCLUSIVE USE OF  
CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.



Robert L. Lastrapes  
Registration No. 23006

VICINITY MAP



**LEGEND**

- Proposed Well
- Proposed Access Road
- - - Proposed Drill Site
- Existing Road
- Section Line
- Existing Frac Pond

**CHEVRON U.S.A. INC.**  
HH CE 35 2 FED NO. 61 WELL  
LOCATED 2514' FSL AND 475' FEL  
SECTION 35, T25S-R27E  
EDDY COUNTY, NEW MEXICO

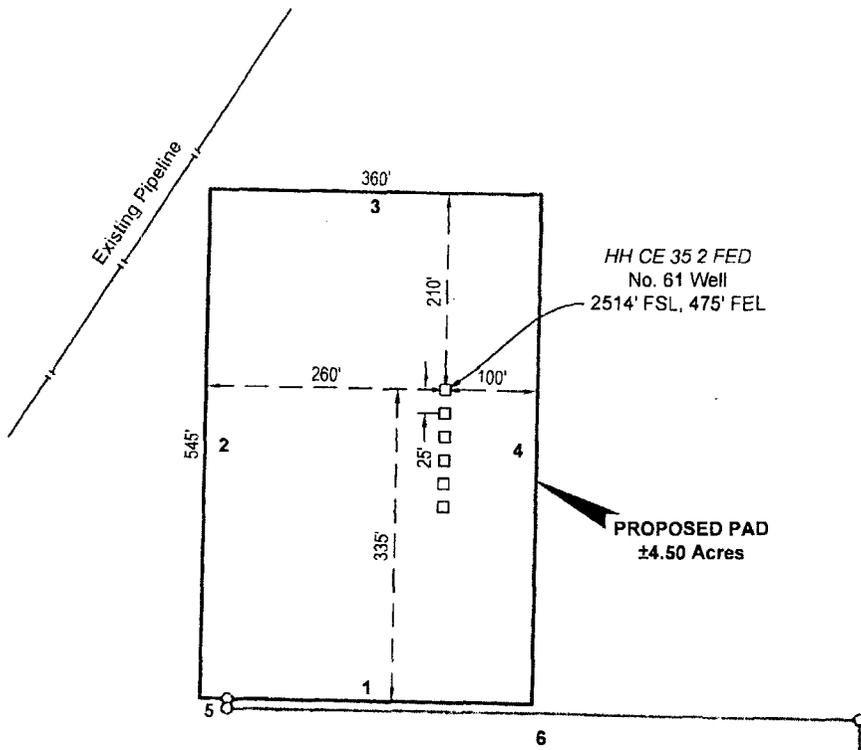


C H Fenstermaker & Associates, L L C  
135 Regency Sq. Lafayette, LA 70508  
Ph. 337-237-2200 Fax 337-232-3299  
www.fenstermaker.com

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PROJ. MGR. GDG	No.	DATE:	REVISED BY:
DATE: 12/09/2016	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61 APD.dwg			

R 27 E

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**Sec. 35**  
Bureau of Land Management  
±4.50 Acres- Proposed Pad  
±2,856.46', ±173.12 Rods,  
±1.31 Acres- Proposed Access Road

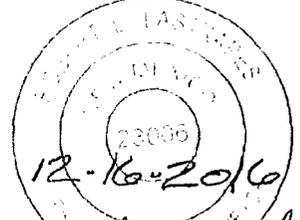
**CENTERLINE PROPOSED ACCESS ROAD**  
20' X ±4,034.49'  
±244.51 Rods  
±1.85 Acres

NW PAD CORNER		NE PAD CORNER		
X=	555,512 NAD 27	X=	555,872 NAD 27	
Y=	395,172	Y=	395,166	
ELEVATION +3142' NAVD 88		ELEVATION +3141' NAVD 88		
SW PAD CORNER		SE PAD CORNER		
X=	555,502 NAD 27	X=	555,862 NAD 27	
Y=	394,627	Y=	394,621	
ELEVATION +3150' NAVD 88		ELEVATION +3146' NAVD 88		
HH CE 35 2 FED NO. 61 WELL				
X=	555,768 NAD 27	Y=	394,957	
LAT.	32.085725		LONG.	104.153265
X=	596,952 NAD83	Y=	395,015	
LAT.	32.085847		LONG.	104.153756
ELEVATION +3144' NAVD 88				

Sec. 36

LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Existing R.O.W.

FOR THE EXCLUSIVE USE OF CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional Surveyor, do hereby state this plat is true and correct to the best of my knowledge.

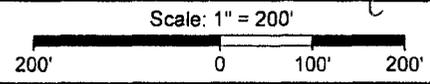


*Robert L. Lastrapes*  
Robert L. Lastrapes  
Registration No. 23006



PAGE 1 OF 3

SURFACE USE PLAT



**CHEVRON U.S.A. INC.**  
PROPOSED PAD & ACCESS ROAD  
HH CE 35 2 FED NO. 61 WELL  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



C. H. Fenstermaker & Associates, L.L.C  
135 Regency Sq. Lafayette, LA 70508  
Ph. 337-237-2200 Fax. 337-232-3299  
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LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Fenceline
	Existing R.O.W.
	Existing Road
	Fnd. Monument

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 CHEVRON U.S.A. INC.  
 I, Robert L. Lastrapes, Professional  
 Surveyor, do hereby state this plat is true  
 and correct to the best of my knowledge



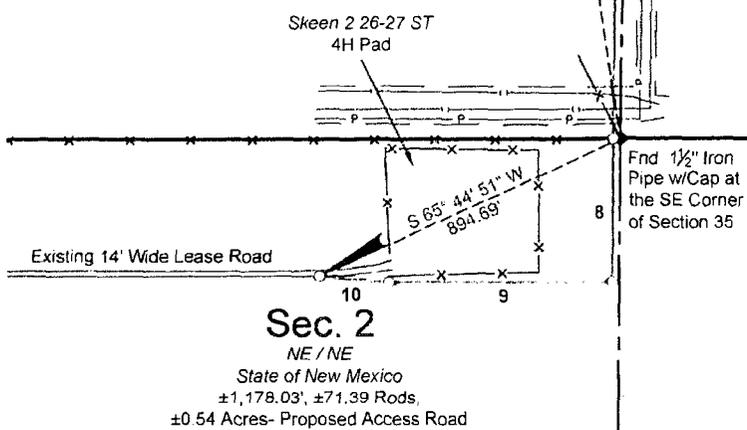
*Robert L. Lastrapes*  
 Robert L. Lastrapes  
 Registration No. 23006

SEE PAGE  
 1 OF 3

**Sec. 35**

Bureau of Land Management  
 ±4.50 Acres- Proposed Pad  
 ±2,856.46', ±173.12 Rods,  
 ±1.31 Acres- Proposed Access Road

**Sec. 36**

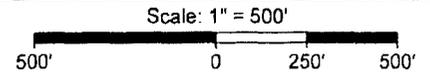


**T25S-R27E**  
**T26S-R27E**

**Sec. 1**

**Sec. 2**

NE / NE  
 State of New Mexico  
 ±1,178.03', ±71.39 Rods,  
 ±0.54 Acres- Proposed Access Road



**CHEVRON U.S.A. INC.**  
 PROPOSED PAD & ACCESS ROAD  
 HH CE 35 2 FED NO. 61 WELL  
 SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
 EDDY COUNTY, NEW MEXICO



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 Ph. 337-237-2200 Fax 337-232-3299  
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DISCLAIMER: At this time, C. H. Fenstermaker & Associates, L.L.C. has not performed nor was asked to perform any type of engineering, hydrological modeling, flood plain, or "No Rise" certification analyses, including but not limited to determining whether the project will impact flood hazards in connection with federal/FEMA, state, and/or local laws, ordinances and regulations. Accordingly, Fenstermaker makes no warranty or representation of any kind as to the foregoing issues, and persons or entities using this information shall do so at their own risk.

PROPOSED PAD		
COURSE	BEARING	DISTANCE
1	N 88° 58' 29" W	360.00'
2	N 01° 01' 31" E	545.00'
3	S 88° 58' 29" E	360.00'
4	S 01° 01' 31" W	545.00'

**NOTE:**

Please be advised, that while reasonable efforts are made to locate and verify pipelines and anomalies using our standard pipeline locating equipment, it is impossible to be 100 % effective. As such, we advise using caution when performing work as there is a possibility that pipelines and other hazards, such as fiber optic cables, PVC pipelines, etc. may exist undetected on site.

CENTERLINE PROPOSED ACCESS ROAD		
COURSE	BEARING	DISTANCE
5	S 00° 49' 37" W	10.09'
6	S 88° 58' 40" E	684.96'
7	S 01° 01' 34" W	2161.41'
8	S 00° 30' 12" W	384.92'
9	N 89° 57' 38" W	602.95'
10	N 84° 52' 17" W	190.16'

**NOTE:**

Many states maintain information centers that establish links between those who dig (excavators) and those who own and operate underground facilities (operators). It is advisable and in most states, law, for the contractor to contact the center for assistance in locating and marking underground utilities. For guidance: New Mexico One Call. [www.nmonecall.org](http://www.nmonecall.org)

FOR THE EXCLUSIVE USE OF  
CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.

Robert L. Lastrapes  
Registration No. 23006

SURFACE USE PLAT

**CHEVRON U.S.A. INC.**  
PROPOSED PAD & ACCESS ROAD  
HH CE 35 2 FED NO. 61 WELL  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



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# Surface Use Plan of Operations

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## Existing Roads (Exhibit 1 – see Proposed Action Appendix E, Figure E.9)

- Chevron U.S.A. Inc (Chevron) will improve or maintain existing roads in a condition the same as or better than before operations begin. Chevron will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattle guards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use. Chevron will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or wind events. BLM written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways. Existing lease roads operated by Chevron will be maintained as needed or upon request (based on historical weather data, Chevron expects that maintenance will likely occur four to five times annually). Existing lease roads used by multiple operators will be maintained through road maintenance agreements with all parties.
- Driving Directions – From Carlsbad, NM. The location is approximately 35 miles from Carlsbad, NM. From Carlsbad, proceed south on Highway 285 (Pecos Hwy) for approximately 29 miles and turn right (west) onto Whites City Rd (CR 724). Travel west on Whites City Road for roughly 6 miles.

## New or Reconstructed Access Roads – Representative Map (Exhibit 2 – see Proposed Action Appendix E, Figure E.10)

- There will be approximately 20 miles of new access road to be constructed.
- New access road will be upgraded to a crowned and ditched road and will be graveled as needed for drilling. If requested by the surface tenant, upgrading of this portion of the road will be kept to a minimum.
- All new roads (previously improved) will be used “as is” with the exception of minor blading as needed.
- Surfacing material (road base derived from caliche or river rock) will be placed on the access road during construction. All surface disturbing activities will be discussed with and agreed to with the surface tenant.
- Surface disturbance and vehicular travel will be limited to the approved access route. Any additional area will be approved in advance.
- Road width: 24 feet traveling surface
- Construction Easement: no additional construction easement will be required for new roads as they will be constructed within right-of-way corridors
- Maximum Grade: Road gradient less than 8%

CHEVRON U.S.A. Inc  
Hayhurst Development Area (HDA)  
Master Development Plan

- Turnouts: none required due to 24 feet travelling surface
- Ditch design: Drainage, ditch diversions and outlets shall be placed in roadway and angled away from road at approximately 45 degrees. At each diversion, straw waddles or equivalent will be utilized perpendicular flow.
- Crown design: 2%
- Erosion control: 6" rock under road; roadway water diversions (identified on each APD as applicable), low water crossings, culverts, and water bars where needed; straw waddles will be used on the downslope side of new roads where undisturbed grades away from the roadway are 5% or greater.
- Proposed culverts: Culverts and low water crossings will be installed where applicable; culvert sizing details will be included in each APD's SUP and shown on exhibit.
- Major Cuts and Fills: 2:1 slope until completed, reduce to 3:1 slope during interim reclamation
- Cattle guard(s) will be installed as needed and shown in each APD's SUP and exhibit.
- Storage Placement of Topsoil:
  - Topsoil will be stored on the upslope edge of each disturbance (unless otherwise directed by BLM) no higher than 3 feet, and will be promptly seeded to control erosion, prevent weed establishment and maintain soil microbial activity. Along pipelines and roads, topsoil will be wind-rowed, segregated and stored for later spreading across the disturbed corridor. Topsoil will be promptly seeded to control erosion, prevent weed establishment and maintain soil microbial activity.
  - In areas of high wind or water erosion, staked soil retention blankets will be used in combination with seeding to prevent topsoil erosion. Retention blankets will be a straw/coconut blend (or similar) and will be covered on the top and bottom with 100% fiber netting to reduce entanglement of small animals.
- Chevron will prevent and abate fugitive dust using water trucks as necessary (typically twice each week during drilling, completion, and construction operations and once monthly during operations), whether dust is created by vehicular traffic, equipment operations, or wind events.

#### Location of Existing Wells (Exhibit 3)

- 1-Mile radius map covering all wells in the HDA is attached
- A localized map will be included with each APD

#### Location of Existing and/or Proposed Production Facilities (Exhibit 4 - see Proposed Action Appendix F, Figures F.1 through F.8)

- Existing Facilities: No existing facilities will be used for the Proposed Action. The existing Chevron-operated facilities within the HDA are:
  - Cotton Hills 23 CTB: B-S23-T26S-R27E
  - Hayhurst 16 CTB: C-S16-T25S-R27E
  - Hayhurst 17 CTB: D-S17-T25S-R27E

CHEVRON U.S.A. Inc  
 Hayhurst Development Area (HDA)  
 Master Development Plan

- Skeen 2 CTB: C-S02-T26S-R27E
- Chevron submits this plan with the reasonable expectation that it will have the flexibility to change the locations and dimensions of any facility, pipeline, or disturbance, so long as the total disturbance remains within the boundary of the HDA EA and the total acreage of disturbance remains equal to or less than that proposed in the HDA Master Development Plan, without the necessity of revising the MDP. Any change in location from those outlined in the HDA MDP will require BLM approval through the APD or Sundry process.
- Proposed Facilities: 16 proposed CTB facilities are located across the HDA:

	Township	Range	Section	Unit Letter <sup>1</sup>	Lease
1	26S	27E	10	A	NMNM 121473
2	25S	27E	9	O	VB 1865 (off-lease)
3	26S	27E	8	P	NMNM 118108
4	25S	27E	35	L	NMNM 107369
5	25S	27E	17	H	NMNM 113954
6	26S	27E	12	E	NMNM 116028
7	25S	27E	35	L	NMNM 107369
8	25S	27E	31	B	NMNM 109756 (off-lease)
9	26S	27E	12	E	NMNM 116028
10	26S	27E	10	B	NMNM 121473
11	26S	27E	12	G	NMNM 116028
12	26S	27E	10	P	NMNM 121473
13	26S	27E	8	O	NMNM 118108
14	25S	27E	35	K	NMNM 107369
15	25S	27E	16	E	NMNM 113954
16	25S	27E	31	B	NMNM 109756 (off-lease)

<sup>1</sup>: Chevron submits this proposed action with the reasonable expectation that it will have the flexibility relocate facilities within the NEPA "drill island" corridors without the necessity of revising the MDP.

- Open top tanks or open containments will be netted.
- Open vent exhaust stacks will be modified to prevent birds or bats from entering, discourage perching, roosting, and nesting.
- Facilities will have a secondary containment 1.5 times the holding capacity of largest storage tank.
- All above ground structures will be painted non-reflective shale green for blending with surrounding environment.
- The permanent water disposal system will be determined prior to construction of any water transfer pipeline. Until permanent water takeaway is available, produced water will be hauled off location in trucks.

CHEVRON U.S.A. Inc  
 Hayhurst Development Area (HDA)  
 Master Development Plan

- Proposed Facilities: 7 proposed compression facilities are located across the HDA:

ID	Township	Range	Section	Unit Letter <sup>1</sup>
1	26S	27E	10	H
2	25S	27E	16	F
3	26S	27E	8	A
4	25S	27E	35	J
5	25S	27E	17	G
6	26S	27E	12	G
7	25S	27E	31	B

1: Chevron submits this proposed action with the reasonable expectation that it will have the flexibility relocate facilities within the NEPA "drill island" corridors without the necessity of revising the MDP.

- Proposed Facilities: 5 proposed SWD facilities are located across the HDA:

ID	Township	Range	Section	Unit Letter <sup>1</sup>
1	26S	27E	2	M
2	25S	27E	16	F
3	25S	27E	26	P
4	26S	27E	12	L
5	26S	27E	2	P

1: Chevron submits this proposed action with the reasonable expectation that it will have the flexibility relocate facilities within the NEPA "drill island" corridors without the necessity of revising the MDP.

- Pipelines: A number of pipelines will be required throughout the HDA:

Pipeline Service	Size (inches)	Length (miles)	Pressure (psig)	Material of Construction	ROW Width (ft) <sup>1</sup>
Gas lift	4	26.2	1100	Flexpipe	4
HP gas gathering <sup>2</sup>	12	14.7	1400	Steel	8
HF water <sup>3</sup>	12	14.3	200	HDPE	8
Produced water	12	17.8	150	HDPE	4
LP gas gathering	24	22.9	150	Steel	4
Oil gathering <sup>4</sup>	12	22.9	150	Steel	4
Temp Frac water <sup>5</sup>	10	TBD <sup>5</sup>	200	Polyurethane	N/A

1: All ROW also require an additional 10' construction corridor per Table 3 in the Proposed Action

2: HP gas gathering ROW will include some third-party pipelines

3: HF water includes all water to be used for hydraulic fracturing, which may be fresh, brackish or recycled

4: Oil gathering pipeline will be managed by a third party

5: See next section "Location and Types of Water Supply"

- ROWs will be applied for through the BLM.
- All construction activity will be confined to the approved ROW.
- All permanent pipelines will be buried (none are surface-laid).
- Temporary water lines will be surface laid for a period no longer than one year or time allotted by BLM Realty.
- Pipeline will run parallel to existing disturbances wherever possible and will stay within approved ROW.

CHEVRON U.S.A. Inc  
 Hayhurst Development Area (HDA)  
 Master Development Plan

- Power lines: 37.3 total miles of power lines will be required across the HDA. All powerlines will be overhead (none are buried). The average span between power poles will be 250 feet and a total of 788 poles will be required. All distribution lines will operate at 12.47 kV and are designed to APLIC standards.

Location and Types of Water Supply (Exhibit 5 - see Proposed Action Appendix I, Figure 6.11)

- Four ponds, designed as permanent recycling containments per NMAC 19.15.34, will be required across the HDA:

Pond ID	Section	Township	Range	Unit Letter <sup>1</sup>	Capacity (MBBL)
1	10	26S	27E	A	770
2	8	26S	27E	P	770
3	18	25S	27E	A	770
4	26	25S	27E	P	770

<sup>1</sup>: Chevron submits this proposed action with the reasonable expectation that it will have the flexibility relocate facilities within the NEPA "drill island" corridors without the necessity of revising the MDP.

- Water will be obtained from a variety of sources:

Source	Location	Quality	Transport Method
Local ground water	Within 15 miles of HDA	Fresh (0-5,000 TDS)	Pipeline or Truck
Capitan Reef	Near Jal, NM	Brackish (25-40,000 TDS)	Pipeline
Rustler Aquifer	Near Orla, TX	Brackish (25-40,000 TDS)	Pipeline
Recycled Produced	Within HDA	Saline (150-210,000 TDS)	Pipeline

- Local ground water will be sourced from the following vendors:

Vendor	Address
Gregory Rockhouse Ranch, Inc	1108 W Pierce St, Carlsbad NM 88220
MMX Excavating, Inc	2373 Pecos Hwy, Carlsbad NM 88220
Wolfcamp Water Partners	4800 Bryant Irvin Ct, Fort Worth TX 76107
XRI Blue	415 W Wall St #130, Midland TX 79701

- Water well locations are as follows:

Source	Vendor	Latitude	Longitude	Data Quality
Ground Water	Gregory Rockhouse Ranch, Inc	32° 12' 6.92" N	104° 15' 15.54" W	Exact
Ground Water	Gregory Rockhouse Ranch, Inc	32° 10' 17.39" N	104° 16' 35.76" W	Exact
Ground Water	Gregory Rockhouse Ranch, Inc	32° 12' 13.95" N	104° 14' 49.47" W	Exact
Ground Water	Gregory Rockhouse Ranch, Inc	32° 10' 52.89" N	104° 17' 38.43" W	Exact
Ground Water	MMX Excavating, Inc	TBD	TBD	TBD
Capitan Reef	Chevron U.S.A. Inc	31° 58' 23.81" N	103° 12' 52.12" W	Approx

- A temporary 10" expanding pipe surface transfer line will run along established disturbance corridors, such as along access roads or on top of flowline or pipeline rights-of-way.
  - Water line will run parallel to road and will stay within 10' of access road.
  - Temporary BLM ROWs will be applied for as needed for the water transfer lines.

### Construction Material

- Caliche will be used to construct well pad and roads. Caliche will be purchased from the nearest federal, state, or private permitted pit
- Caliche will be used as surface material or fill for roads and pads, or to construct containment berms or low water crossings.
- The specific source of construction material will be specified in each APD's SUP
- The proposed source of construction material will be located and purchased by construction contractor.
  - Payment shall be made by contractor prior to any removal of federal minerals material by contacting agent at (575) 234-5972.
  - Notification shall be given to BLM at (575) 234-5909 at least 3 working days prior to commencing construction of access road and/or well pad.

### Methods for Handling Waste

- Drilling fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility.

CHEVRON U.S.A. Inc  
 Hayhurst Development Area (HDA)  
 Master Development Plan

- Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around the well site will be collected for disposal.
- Human waste and grey water will be properly contained and disposed of properly at a state approved disposal facility.
- After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a state approved disposal facility.
- The well will be drilled utilizing a closed loop system (no reserve pits will be constructed). Drill cutting will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.
- Chevron plans to utilize the following waste disposal sites:

Nearest City	Disposal Facility	Address	Phone Number
Carlsbad		6601 Hobbs Hwy, Carlsbad, NM	(575) 393-1079
Eunice	Sundance Services	5 miles east of Eunice on Hwy 18 and Wallach Ln	(575) 390-0342
Seminole, TX	Permian Disposal	587 US Hwy 385 S	(432) 955-0322

- Proposed Facilities: 5 proposed SWD facilities are located across the HDA:

ID	Township	Range	Section	Unit Letter <sup>1</sup>
1	26S	27E	2	M
2	25S	27E	16	F
3	25S	27E	26	P
4	26S	27E	12	L
5	26S	27E	2	P

<sup>1</sup> Chevron submits this proposed action with the reasonable expectation that it will have the flexibility relocate facilities within the NEPA "drill island" corridors without the necessity of revising the MDP.

### Ancillary Facilities

- Three ancillary facilities are envisioned for the HDA – a water tank facility, an electrical substation, and a central housing facility. Detailed proposals for these facilities will be included in the APD submitted prior to their construction.

### Well Site Layout (Exhibit 6)

- Rig Layout (Exhibit 6)
  - Exterior well pad dimensions are 475' x 330'
  - Interior well pad dimensions from point of entry (well head) of the westernmost well are N-150', S-80', E-255', W-220'. The length to the east includes 25' spacing for next well on multi-well pad (four wells). Total disturbance area needed for construction of well pad will be 3.60 acres
  - Topsoil placement is on the upslope edge of each pad (unless otherwise directed by BLM – final placement to be included in APD's SUP) no higher than 3 feet where interim reclamation is planned to be completed upon completion of well and evaluation of best management practices.
  - Construction methods: Pads would be constructed by clearing vegetation, salvaging and storing topsoil and leveling the drilling area using cut-and-fill techniques where appropriate.

### Plans for Surface Reclamation

#### Reclamation Objectives

- The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities.
- The long-term objective of final reclamation is to return the land to a condition similar to what existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological functioning, and vegetative productivity.
- The BLM will be notified at least 3 days prior to commencement of any reclamation procedures.
- If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will gain written permission from the BLM if more time is needed.
- Reclamation will be performed by using the following procedures:

#### Interim Reclamation Procedures

- Within 6 months, Chevron will contact BLM Surface Management Specialists to devise the best strategies to reduce the size of the location.
- Within 30 days of well completion, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production. A plan will be submitted showing where interim reclamation will be

completed in order to allow for safe operations, protection of the environment outside of drilled well, and following best management practices found in the BLM "Gold Book".

- In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.
- The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.
- Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used.
- Before commencing construction activities, proper erosion control methods will be determined for use on the area including and outside area of topsoil placement to control erosion, runoff and siltation of the surrounding area.
- The interim reclamation will be monitored periodically to ensure that vegetation has reestablished

**Final Reclamation (well pad, buried pipelines, and power lines, etc.)**

- Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment.
- All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.
- All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be recontoured to the contour existing prior to initial construction or a contour that blends in distinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.
- After all the disturbed areas have been properly prepared; the areas will be seeded with the proper BLM seed mixture, free of noxious weeds.
- Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.

**Surface Ownership (Exhibit 7 - see Proposed Action Appendix E)**

- All surface is owned by BLM with the exception of the following:

Land Status	Township	Range	Section	Unit Letters
State Owned	25S	27E	16	All
Private	25S	27E	20	B, C, G, H, I, and J
State Owned	25S	27E	21	A, G, H, M, N, O, and P
Private	25S	27E	21	E and F
State Owned	25S	27E	26	C, F, I, J, and P
State Owned	26S	27E	2	All
Private	26S	27E	5	I, N, O, and P
State Owned	26S	27E	12	L

- BLM Surface - a number of surface tenants occupy the surface in the HDA:

Tenant Name	Allotment	Address
Forest A Connally	78094	126 S. Donaldson Farm Rd. Loving, NM 88256
Ogden Farm & Cattle Co.	78087	159 W. Ogden, Loving, NM 88256
Joy E. Cooksey	78101	P.O. Box 45, Carlsbad, NM 88221
Forehand Ranches, Inc.	78104	P.O. Box 5373, Carlsbad, NM 88221
Johnny Laxson	78102	224 W. Ogden, Loving, NM 88256
Martha Skeen	78142	P.O. Box 696, Loving, NM 88256
Owen Carleton	78107	P.O. Box 14, Malaga, NM 88263
Philip & Kendra Stell	78103	1305 Janway, Carlsbad NM 88220

- **Nearest Post Office:** Malaga Post Office; 15.4 Miles north

**Other Information**

- **Recycle Containment Pond Design Features:**
  - Four permanent recycle containment ponds will be required across the HDA. The ponds will be centralized and used across multiple leases (see Exhibit 5).
  - Permanent buried pipelines will be installed to transport water between the four ponds (see Exhibit 4). Temporary surface pipelines will be installed between the ponds and the site of hydraulic fracturing operations. All wells covered by the HDA MDP will require hydraulic fracturing
  - The ponds will be designed as "multiwell fluid management pits" in compliance with NMAC 19.15.34 and will include the following design features:
    - Berms
      - Berms shall be sloped at 3:1 both internally and externally
      - Berm top will have at least 12 feet of working area and be capable of supporting light vehicle traffic
      - Berm height, thickness, and depth will be determined based on site-specific information and included in each APD and SF-299.

- Liners
  - Ponds shall be double-lined and have a method of leak detection, typically trenched HDPE pipe between liners
  - An 8 oz geotextile fabric shall be used to line the soil prior to installation of a secondary (bottom) liner
  - Primary liner should be 60-mil smooth HDPE; secondary liner should be 40-mil smooth HDPE
  - Minimum 200-mil geonet shall be installed between primary and secondary liner to maintain an interstitial space
- Fencing
  - Ponds shall have eight-foot game fencing installed around the perimeter, outside of bottom berm.
  - The fence bottom shall be keyed-in around the perimeter of the pond site and include the use of two-foot silt fencing to prevent access of smaller animals.
- Wildlife Protection
  - Typical bird deterrent options include molded decoy owls and noise-making streamers.
  - Wildlife protection measures, including those for migratory birds, shall be monitored at least monthly to ensure deterrents are effective.

CHEVRON U.S.A. Inc  
Hayhurst Development Area (HDA)  
Master Development Plan

**Chevron Representatives**  
Primary point of contact:  
Jennifer Van Curen  
Jennifer.VanCuren@arcadis-us.com  
M- 432-270-8753

**Chevron Functional Contacts**

<p><b>Project Manager</b> Name: Sean Cheben  Address: 1400 Smith Street Houston, TX 77002  Phone: (713) 372-9392  Email: <a href="mailto:scnf@chevron.com">scnf@chevron.com</a></p>	<p><b>Drilling Engineer</b> Name: Roderick Milligan  Address: 1400 Smith Street Houston, TX 77002  Phone: (713) 372-2011  Email: <a href="mailto:RoderickMilligan@chevron.com">RoderickMilligan@chevron.com</a></p>
<p><b>Surface Land Representative</b> Name: Kevin Dickerson  Address: 15 Smith Road Midland Texas 79705  Phone: (432) 687-7104  Email: <a href="mailto:KevinDickerson@chevron.com">KevinDickerson@chevron.com</a></p>	<p><b>Facility Lead</b> Name: Tyler Weaver  Address: 1400 Smith Street Houston, TX 77002  Phone: (713) 372-9689  Email: <a href="mailto:Tyler.Weaver@chevron.com">Tyler.Weaver@chevron.com</a></p>
<p><b>Geologist</b> Name: Jeff Fabre  Address: 1400 Smith Street Houston, TX 77002  Phone: (713) 372-0523  Email: <a href="mailto:JeffreyFabre@chevron.com">JeffreyFabre@chevron.com</a></p>	<p><b>Regulatory Specialist</b> Cindy Herrera-Murillo  Address: 1616 W. Bender Blvd, Hobbs, NM 88240  Office: (575) 263-0431  Email: <a href="mailto:CHerreraMurillo@chevron.com">CHerreraMurillo@chevron.com</a></p>

SKEEN 2-26-27 STATE 1H  
CHEVRON U.S.A INCORPORATED

MIDNIGHT SUN 2 26 27 5H  
CHEVRON U.S.A INC

SKEEN 2-26-27 STATE 2H  
CHEVRON U.S.A INCORPORATED

HH\_SO\_10\_P3\_16H  
CHEVRON U.S.A INC  
HH\_SO\_10\_P3\_15H  
CHEVRON U.S.A INC  
HH\_SO\_10\_P3\_8H  
CHEVRON U.S.A INC  
HH\_SO\_10\_P3\_7H  
CHEVRON U.S.A INC  
HH\_SO\_10\_P3\_24H  
CHEVRON U.S.A INC  
HH\_SO\_10\_P3\_23H  
CHEVRON U.S.A INC

SKEEN 2 SWD 1 SWD  
CHEVRON U.S.A INCORPORATED

GRAVITAS 2 STATE SWD 2  
CHEVRON U.S.A INCORPORATED

CLUSTER STATE COM 1  
COG OPERATING LIMITED LIABILITY CORP

CLUSTER STATE COM 2H  
COG OPERATING LIMITED LIABILITY CORP

CLUSTER STATE COM 3H  
COG OPERATING LIMITED LIABILITY CORP

CLUSTER STATE COM 4H  
COG OPERATING LIMITED LIABILITY CORP

CLUSTER STATE COM 5H  
COG OPERATING LIMITED LIABILITY CORP

WELCH UNIT 8  
EL PASO NAT GAS CO

WELCH UNIT 7  
EL PASO NAT GAS CO

BLAST 'BLA' FEDERAL 3H  
YATES PETROLEUM CORPORATION

BLAST 'BLA' FEDERAL 9-H  
YATES PETROLEUM CORP

CHAPARRAL STATE 1  
COLLIER ENERGY INC

WELCH UNIT 5  
RITCHIE J M C

OWL DRAW 22/27 B2BO 2H  
MEWBOURNE OIL CO

OWL DRAW 22 BO FEDE 1H  
MEWBOURNE OIL CO

OWL DRAW 27 22 B2MD 1H  
MEWBOURNE OIL CO

OWL DRAW 23 DM FEDE 2H  
MEWBOURNE OIL COMPANY

OWL DRAW 23 B2CN FE 1H  
MEWBOURNE OIL CO

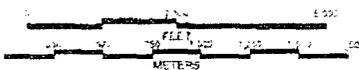
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MEWBOURNE OIL COMPANY

OWL DRAW 22 AP FEDE 1H  
MEWBOURNE OIL COMPANY

OWL DRAW 22 W1AP FE 1H  
MEWBOURNE OIL COMPANY

HH SO 10 P3 Mile Radius Wells

Chevron USA Inc.



January 15 2016



**LEGEND**

- Section Line
- - - Section Break
- - - 30' Right of Way
- Frac Water Flowline
- High Pressure Gas Line
- SWD Flowline
- Low Pressure Gas Line
- Gas Lift Line
- Temporary Water Line
- WFMP Lines
- Future Lease
- Road/Pads
- Found Monument

R 27 E

Sec 35 CTB Site

SEE INSET A

SEE INSET B

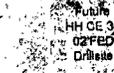
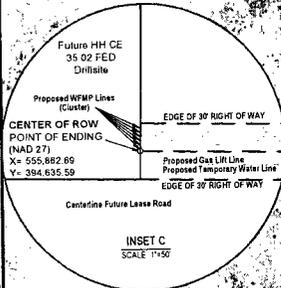
Sec 35

Bureau of Land Management  
 Proposed 30' ROW ± 227.8' ± 227.82 Rods, 1.77 Acres  
 Proposed Frac Water Line ± 227.8' ± 1.82 Rods  
 Proposed SWD Flowline ± 227.8' ± 1.82 Rods  
 Proposed High Pressure Gas Flowline ± 30' ± 1.82 Rods  
 Proposed Low Pressure Gas Flowline ± 30' ± 1.82 Rods  
 Proposed Temporary Water Line ± 30' ± 1.82 Rods  
 Proposed Gas Lift Line ± 254.7' ± 1.82 Rods  
 Proposed WFMP Flowline ± 254.7' ± 1.82 Rods

Sec 35

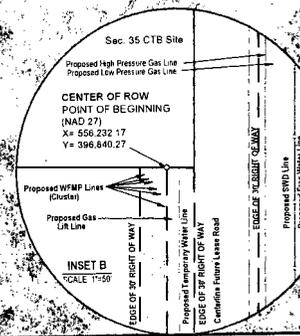
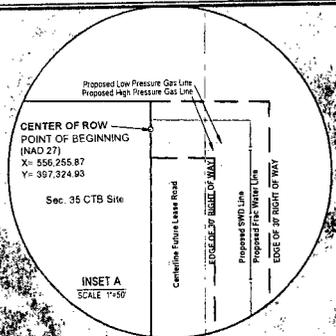
Bureau of Land Management  
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 Proposed Frac Water Line ± 4612' ± 227.70 Rods  
 Proposed SWD Flowline ± 4612' ± 227.73 Rods  
 Proposed High Pressure Gas Flowline ± 4600' ± 225.76 Rods  
 Proposed Low Pressure Gas Flowline ± 4600' ± 225.24 Rods

T 25 S



SEE INSET C

PROPOSED 30' ROW  
 ± 27,473' ± 452.91 Rods, ± 5.16 Acres  
 PROPOSED FRAC WATER LINE  
 ± 13,134' ± 296.00 Rods  
 PROPOSED SWD FLOWLINE  
 ± 15,888' ± 242.21 Rods  
 PROPOSED HIGH PRESSURE GAS FLOWLINE  
 ± 15,948' ± 295.42 Rods  
 PROPOSED LOW PRESSURE GAS FLOWLINE  
 ± 15,924' ± 295.03 Rods  
 PROPOSED TEMPORARY WATER LINE  
 ± 2,558' ± 54.85 Rods  
 PROPOSED GAS LIFT LINE  
 ± 1,547' ± 54.35 Rods  
 PROPOSED WFMP FLOWLINES  
 ± 1,530' ± 53.32 Rods  
 RECYCLED WATER LINE  
 ± 3,309' ± 220.55 Rods



DETAIL SHEET 1 OF 4

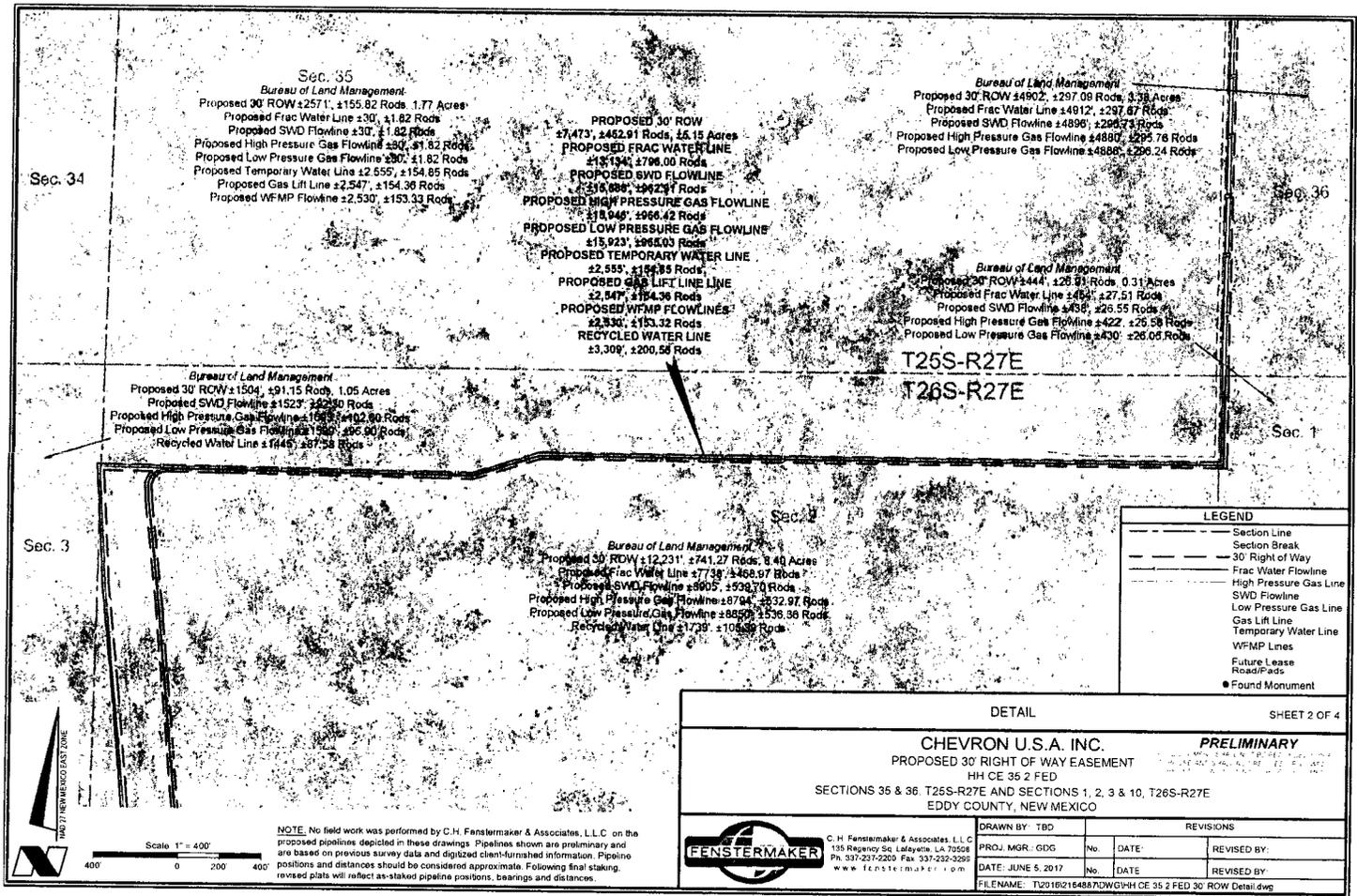
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PROPOSED 30' RIGHT OF WAY EASEMENT			
HH CE 35 2 FED			
SECTIONS 35 & 36, T25S-R27E AND SECTIONS 1, 2, 3 & 10, T26S-R27E			
EDDY COUNTY, NEW MEXICO			
DRAWN BY: T8D	REVISIONS		
PROJ MGR: GDG	No	DATE:	REVISED BY:
DATE: JUNE 5, 2017	No	DATE:	REVISED BY:
FILENAME: T201802164887DWG\HH CE 35 2 FED 30' ROW Detail.dwg			



C. H. Fenstermaker & Associates, L.L.C.  
 135 Regency Sq. Lafayette, LA 70506  
 Ph. 337-237-2200 Fax 337-239-3299  
 www.fenstermaker.com

**NOTE:** No field work was performed by C.H. Fenstermaker & Associates, L.L.C. on the proposed pipelines depicted in these drawings. Pipelines shown are preliminary and are based on previous survey data and digitized client-furnished information. Pipeline positions and distances should be considered approximate. Following final staking revised plats will reflect as-staked pipeline positions, bearings, and distances.





**Sec. 35**  
 Bureau of Land Management  
 Proposed 30' ROW ±257.1', ±155.82 Rods, 1.77 Acres  
 Proposed Frac Water Line ±30', ±1.82 Rods  
 Proposed SWD Flowline ±30', ±1.82 Rods  
 Proposed High Pressure Gas Flowline ±30', ±1.82 Rods  
 Proposed Low Pressure Gas Flowline ±30', ±1.82 Rods  
 Proposed Temporary Water Line ±2,555', ±154.85 Rods  
 Proposed Gas Lift Line ±2,547', ±154.36 Rods  
 Proposed WFMP Flowline ±2,530', ±153.33 Rods

PROPOSED 30' ROW  
 ±7,473', ±462.91 Rods, 8.40 Acres  
 PROPOSED FRAC WATER LINE  
 ±15,154', ±966.00 Rods  
 PROPOSED SWD FLOWLINE  
 ±15,088', ±962.97 Rods  
 PROPOSED HIGH PRESSURE GAS FLOWLINE  
 ±15,048', ±966.42 Rods  
 PROPOSED LOW PRESSURE GAS FLOWLINE  
 ±15,023', ±965.03 Rods  
 PROPOSED TEMPORARY WATER LINE  
 ±2,555', ±154.85 Rods  
 PROPOSED GAS LIFT LINE LINE  
 ±2,547', ±154.36 Rods  
 PROPOSED WFMP FLOWLINES  
 ±2,530', ±153.32 Rods  
 RECYCLED WATER LINE  
 ±3,309', ±200.56 Rods

**Bureau of Land Management**  
 Proposed 30' ROW ±4902', ±297.09 Rods, 3.38 Acres  
 Proposed Frac Water Line ±4912', ±297.67 Rods  
 Proposed SWD Flowline ±4896', ±295.73 Rods  
 Proposed High Pressure Gas Flowline ±4890', ±295.78 Rods  
 Proposed Low Pressure Gas Flowline ±4886', ±295.24 Rods

**Bureau of Land Management**  
 Proposed 30' ROW ±444', ±26.91 Rods, 0.31 Acres  
 Proposed Frac Water Line ±454', ±27.51 Rods  
 Proposed SWD Flowline ±438', ±26.55 Rods  
 Proposed High Pressure Gas Flowline ±422', ±26.56 Rods  
 Proposed Low Pressure Gas Flowline ±430', ±26.05 Rods

**Bureau of Land Management**  
 Proposed 30' ROW ±1504', ±91.15 Rods, 1.05 Acres  
 Proposed SWD Flowline ±1529', ±92.50 Rods  
 Proposed High Pressure Gas Flowline ±1529', ±92.50 Rods  
 Proposed Low Pressure Gas Flowline ±1529', ±92.50 Rods  
 Recycled Water Line ±1445', ±87.28 Rods

**Bureau of Land Management**  
 Proposed 30' ROW ±12,231', ±741.27 Rods, 8.40 Acres  
 Proposed Frac Water Line ±7,738', ±468.97 Rods  
 Proposed SWD Flowline ±8,905', ±538.70 Rods  
 Proposed High Pressure Gas Flowline ±8,794', ±532.97 Rods  
 Proposed Low Pressure Gas Flowline ±8,679', ±536.36 Rods  
 Recycled Water Line ±1,729', ±106.69 Rods

**LEGEND**

- Section Line
- - - Section Break
- 30' Right of Way
- Frac Water Flowline
- High Pressure Gas Line
- SWD Flowline
- Low Pressure Gas Line
- Gas Lift Line
- Temporary Water Line
- WFMP Lines
- Future Lease
- Road/Pads
- Found Monument

DETAIL SHEET 2 OF 4

**CHEVRON U.S.A. INC.**  
 PROPOSED 30' RIGHT OF WAY EASEMENT  
 HH CE 35 2 FED  
 SECTIONS 35 & 36, T26S-R27E AND SECTIONS 1, 2, 3 & 10, T26S-R27E  
 EDDY COUNTY, NEW MEXICO

**PRELIMINARY**

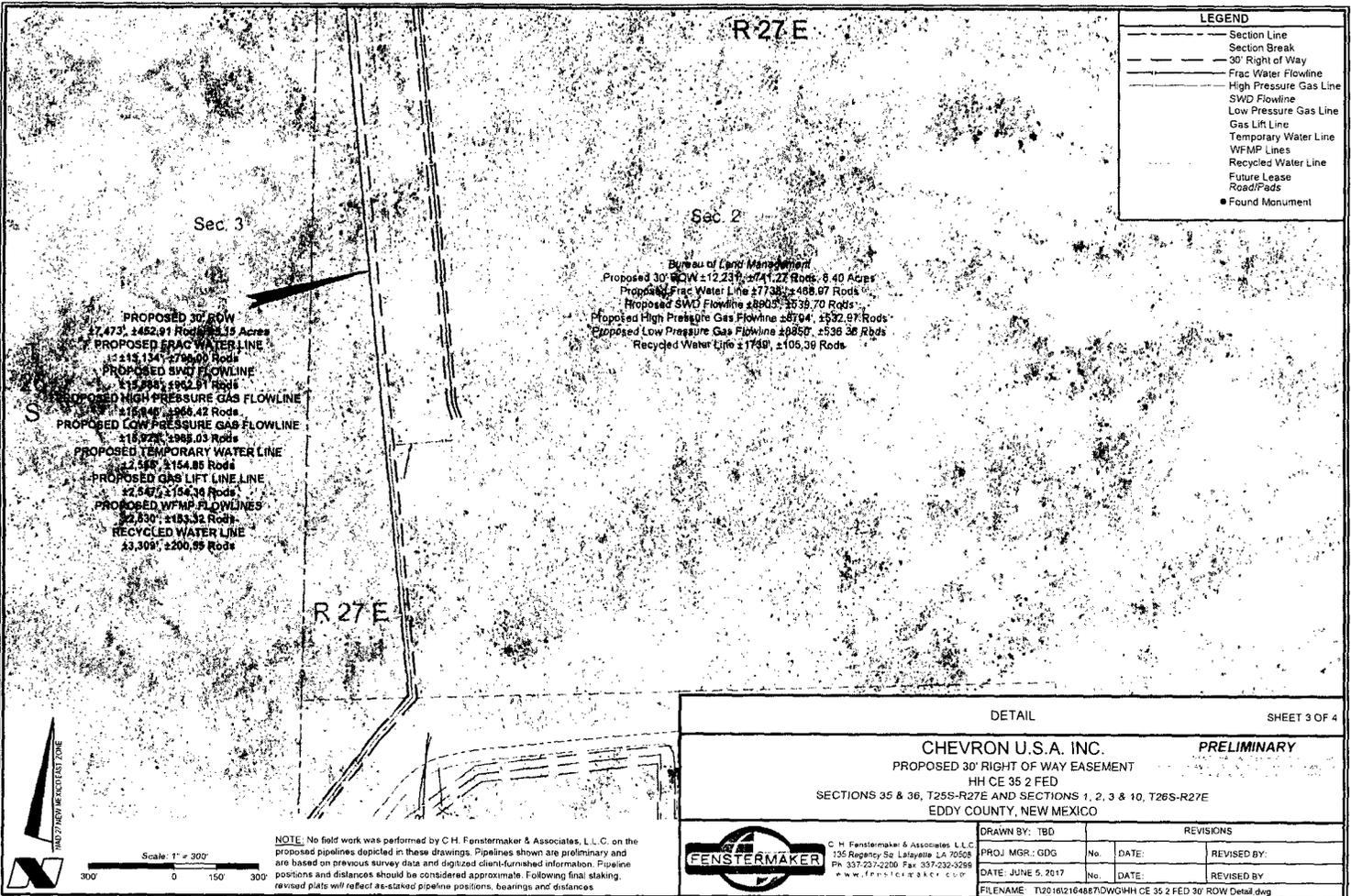
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PROJ. MGR: GDG	No.	DATE	REVISED BY
DATE: JUNE 5, 2017	No.	DATE	REVISED BY
FILENAME: T26S16R21648670WGVH CE 35 2 FED 30' ROW Detail.dwg			



**NOTE:** No field work was performed by C.H. Fenstermaker & Associates, L.L.C. on the proposed pipelines depicted in these drawings. Pipelines shown are preliminary and are based on previous survey data and digitized client-furnished information. Pipeline positions and distances should be considered approximate. Following final staking, revised plans will reflect as-staked pipeline positions, bearings and distances.



C.H. Fenstermaker & Associates, L.L.C.  
 135 Rapway St. Lafayette, LA 70508  
 Ph. 337-237-2200 Fax 337-232-3295  
 www.fenstermaker.com



**LEGEND**

- Section Line
- - - Section Break
- - - 30' Right of Way
- - - Frac Water Flowline
- - - High Pressure Gas Line
- - - SWD Flowline
- - - Low Pressure Gas Line
- - - Gas Lift Line
- - - Temporary Water Line
- - - WFMP Lines
- - - Recycled Water Line
- - - Future Lease
- - - Road/Paths
- Found Monument

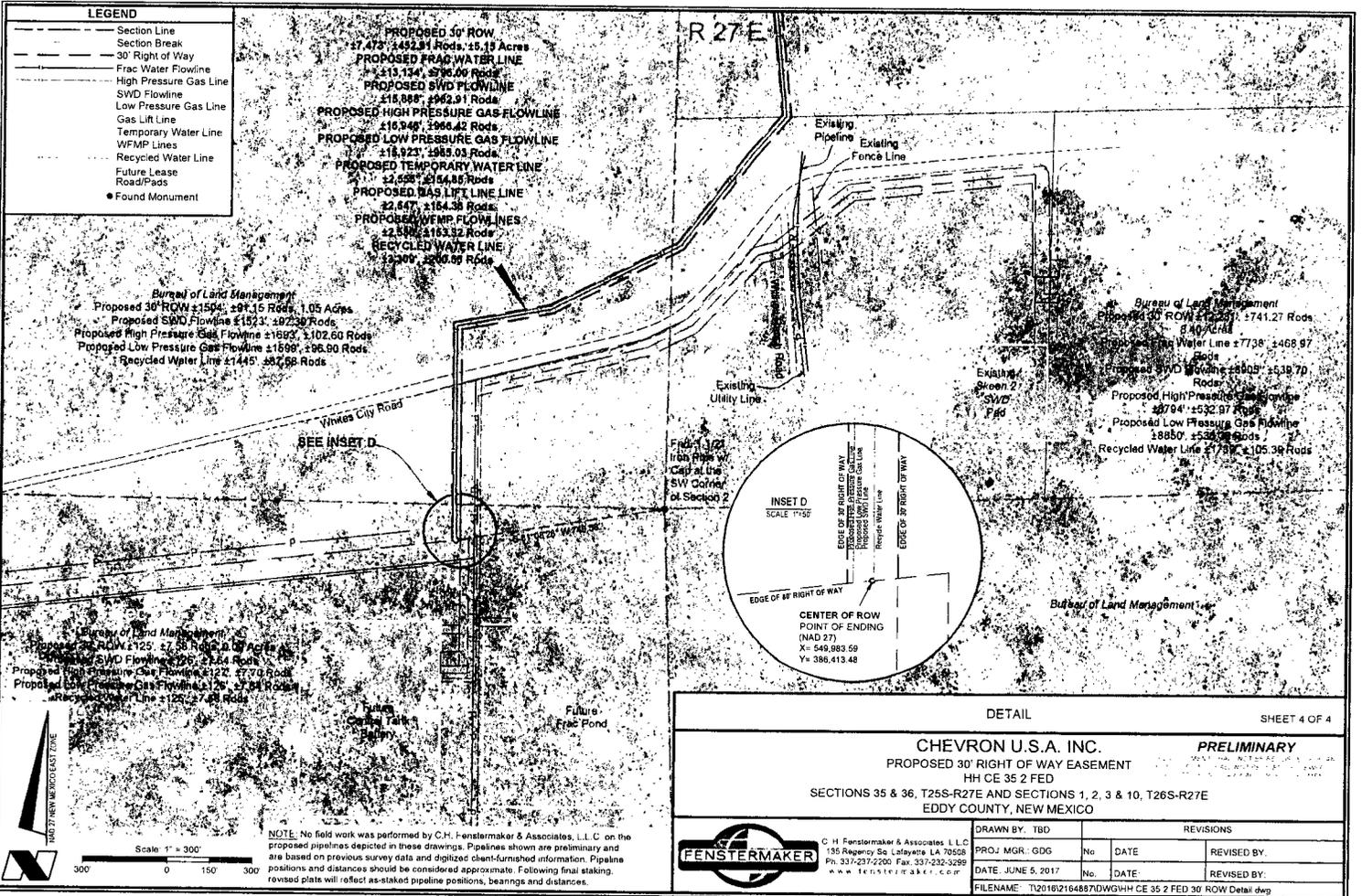
Bureau of Land Management  
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 Proposed Frac Water Line ±77.38°; 488.97 Rods  
 Proposed SWD Flowline ±89.03°; 3538.70 Rods  
 Proposed High Pressure Gas Flowline ±87.04°; 1532.97 Rods  
 Proposed Low Pressure Gas Flowline ±88.50°; 1536.36 Rods  
 Recycled Water Line ±17.91°; ±106.38 Rods

PROPOSED 30' ROW  
 ±7.473°; 1482.91 Rods; 3.15 Acres  
 PROPOSED FRAC WATER LINE  
 ±115.134°; 2766.00 Rods  
 PROPOSED SWD FLOWLINE  
 ±15.898°; 1962.91 Rods  
 PROPOSED HIGH PRESSURE GAS FLOWLINE  
 ±116.848°; 1369.42 Rods  
 PROPOSED LOW PRESSURE GAS FLOWLINE  
 ±116.878°; 1398.03 Rods  
 PROPOSED TEMPORARY WATER LINE  
 ±2.587°; 1154.85 Rods  
 PROPOSED GAS LIFT LINE LINE  
 ±2.547°; 1154.14 Rods  
 PROPOSED WFMP FLOWLINES  
 ±2.830°; 1183.32 Rods  
 RECYCLED WATER LINE  
 ±3.309°; 1200.99 Rods

DETAIL		SHEET 3 OF 4	
<b>CHEVRON U.S.A. INC.</b> <span style="float: right;"><b>PRELIMINARY</b></span>			
PROPOSED 30' RIGHT OF WAY EASEMENT			
HH CE 35 2 FED			
SECTIONS 35 & 36, T26S-R27E AND SECTIONS 1, 2, 3 & 10, T26S-R27E			
EDDY COUNTY, NEW MEXICO			
DRAWN BY: TBD		REVISIONS	
PROJ MGR: GDG	No.	DATE:	REVISED BY:
DATE: JUNE 5, 2017	No.	DATE:	REVISED BY:
FILENAME: T26S-R27E-35 2 FED 30' ROW Detail.dwg			

**NOTE:** No field work was performed by C.H. Fenstermaker & Associates, L.L.C. on the proposed pipelines depicted in these drawings. Pipelines shown are preliminary and are based on previous survey data and digitized client-furnished information. Pipeline positions and distances should be considered approximate. Following final staking, revised plans will reflect as-staked pipeline positions, bearings and distances.

**FENSTERMAKER**  
 C.H. Fenstermaker & Associates, L.L.C.  
 135 Regency Sq. Lafayette, LA 70508  
 Ph: 337-237-2200 Fax: 337-232-9299  
 www.fenstermaker.com



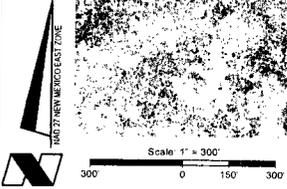
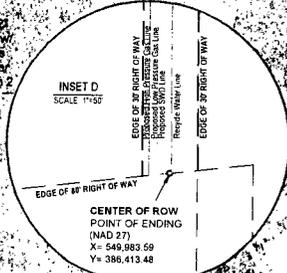
**LEGEND**

- Section Line
- - - Section Break
- 30' Right of Way
- Frac Water Flowline
- High Pressure Gas Line
- SWD Flowline
- Low Pressure Gas Line
- Gas Lift Line
- Temporary Water Line
- WFMP Lines
- Recycled Water Line
- Future Lease
- Road/Pads
- Found Monument

PROPOSED 30' ROW  
 ±7,473' ±452.91 Rods ±5.19 Acres  
 PROPOSED FRAC WATER LINE  
 ±13,134' ±336.09 Rods  
 PROPOSED SWD FLOWLINE  
 ±15,898' ±462.91 Rods  
 PROPOSED HIGH PRESSURE GAS FLOWLINE  
 ±16,748' ±466.42 Rods  
 PROPOSED LOW PRESSURE GAS FLOWLINE  
 ±18,923' ±525.03 Rods  
 PROPOSED TEMPORARY WATER LINE  
 ±1,698' ±45.46 Rods  
 PROPOSED GAS LIFT LINE LINE  
 ±2,547' ±71.58 Rods  
 PROPOSED WFMP FLOWLINES  
 ±2,538' ±71.32 Rods  
 RECYCLED WATER LINE  
 ±3,200' ±87.69 Rods

Bureau of Land Management  
 Proposed 30' ROW ±1564' ±47.16 Rods ±1.05 Acres  
 Proposed SWD Flowline ±1833' ±52.38 Rods  
 Proposed High Pressure Gas Flowline ±1893' ±54.60 Rods  
 Proposed Low Pressure Gas Flowline ±1698' ±46.90 Rods  
 Recycled Water Line ±1445' ±41.78 Rods

Bureau of Land Management  
 Proposed 30' ROW ±1731' ±50.31 Rods  
 Proposed SWD Flowline ±7738' ±218.70 Rods  
 Proposed High Pressure Gas Flowline ±8794' ±252.97 Rods  
 Proposed Low Pressure Gas Flowline ±9850' ±282.95 Rods  
 Recycled Water Line ±1738' ±50.38 Rods



NOTE: No field work was performed by C.H. Fenstermaker & Associates, L.L.C. on the proposed pipelines depicted in these drawings. Pipelines shown are preliminary and are based on previous survey data and digitized client-furnished information. Pipeline positions and distances should be considered approximate. Following final staking, revised plans will reflect as-staked pipeline positions, bearings and distances.

DETAIL SHEET 4 OF 4

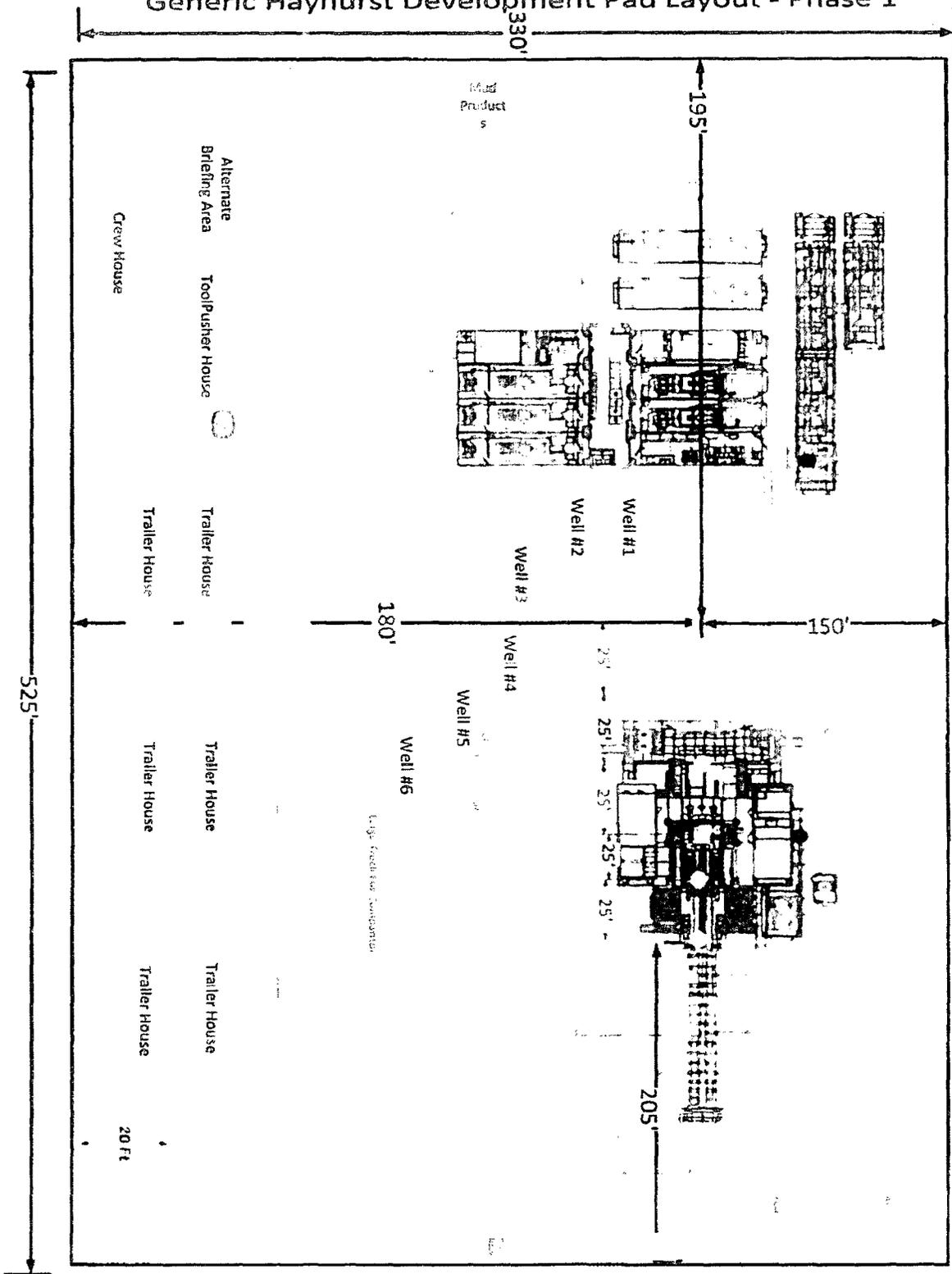
**CHEVRON U.S.A. INC.**  
 PROPOSED 30' RIGHT OF WAY EASEMENT  
 HH CE 35 2 FED  
 SECTIONS 35 & 36, T25S-R27E AND SECTIONS 1, 2, 3 & 10, T26S-R27E  
 EDDY COUNTY, NEW MEXICO

**PRELIMINARY**

DRAWN BY: TBD	REVISIONS		
PROJ MGR: GDG	No.	DATE	REVISOR BY:
DATE: JUNE 5, 2017	No.	DATE	REVISOR BY:
FILENAME: T2016021648870DWGHH CE 35 2 FED 30' ROW Detail.dwg			

C H Fenstermaker & Associates, L.L.C.  
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 Ph. 337-237-2200 Fax. 337-232-3259  
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# Generic Hayhurst Development Pad Layout - Phase 1

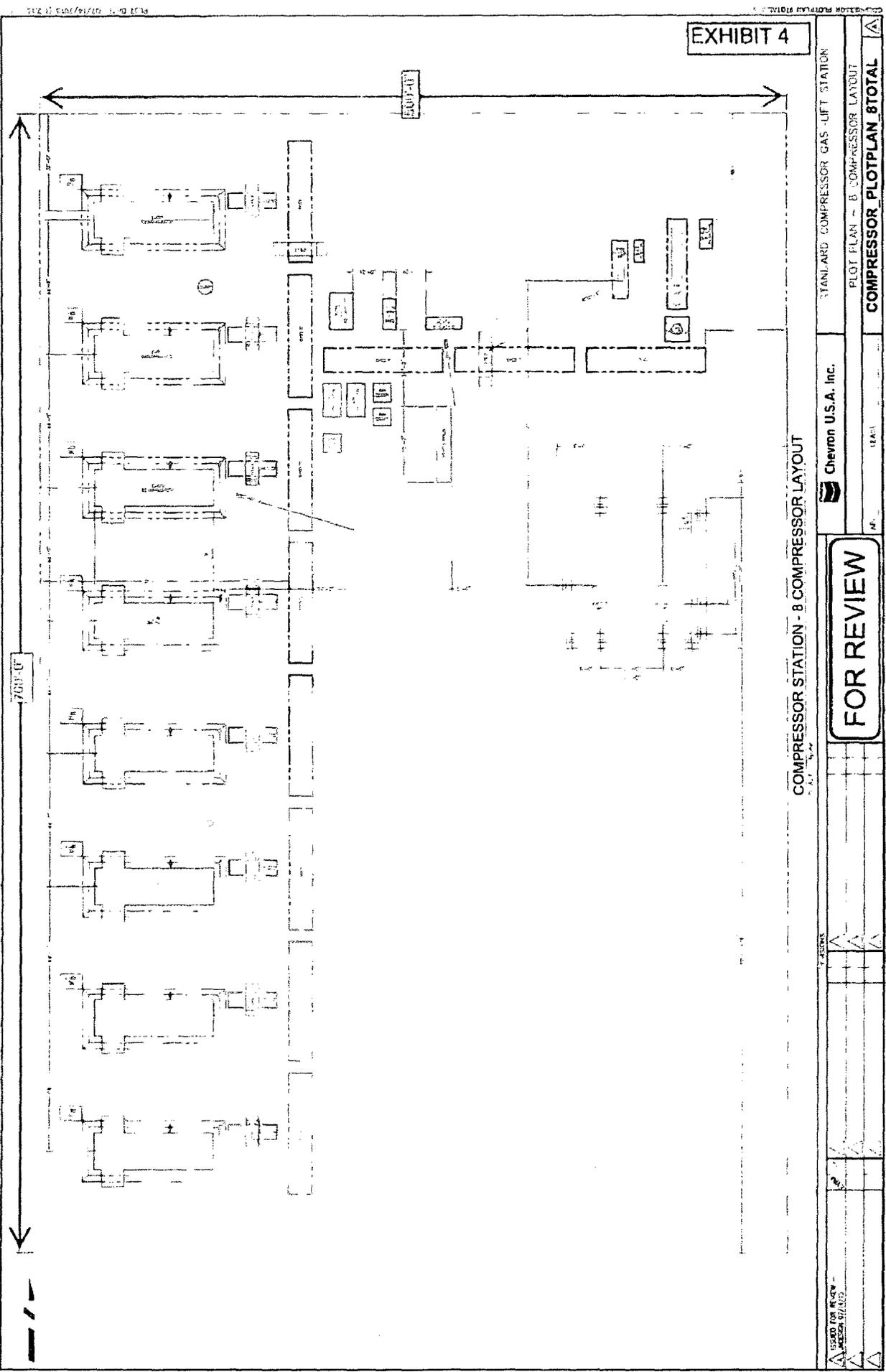


**Legend**

- H2S Monitor
- ⊙ Flag
- ▭ Location Entrance

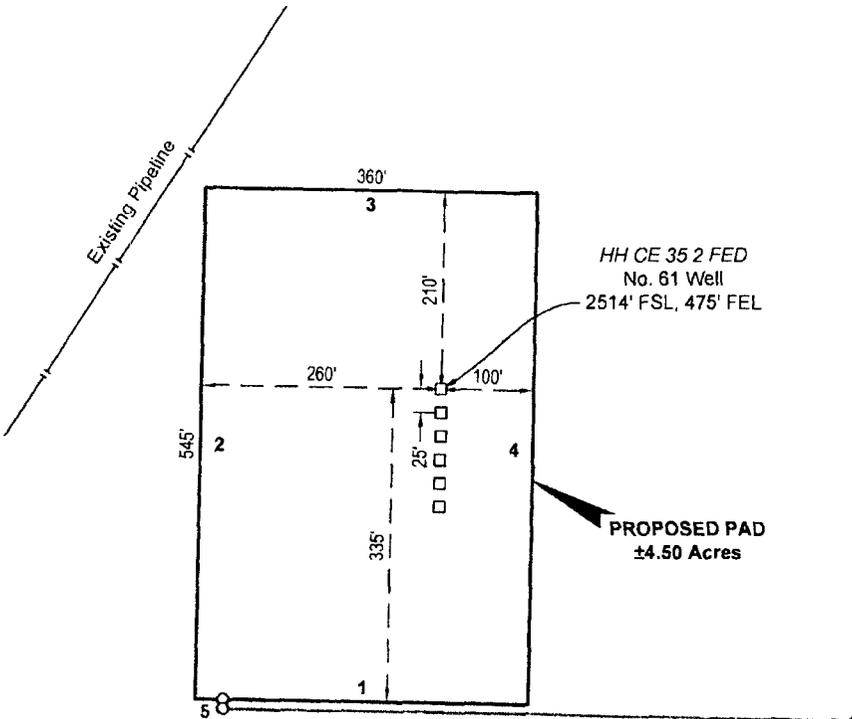
- H2S Monitor Locations**
- Equip. Cellar
  - Rig Floor
  - Shell - Skid
  - Tool House
- 10 Minute Escape Packs**
- 1st Floor
  - 2nd Floor
  - 3rd Floor
- 45 Minute Escape Packs**
- 2nd Briefing Area
  - 2nd Alternate Briefing Area





R 27 E

T  
25  
S



**Sec. 35**  
Bureau of Land Management  
±4.50 Acres- Proposed Pad  
±2,856.46', ±173.12 Rods,  
±1.31 Acres- Proposed Access Road

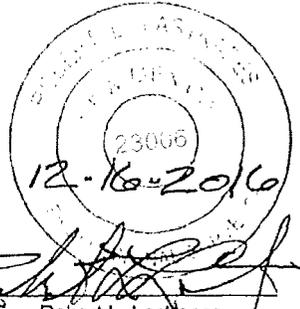
**CENTERLINE  
PROPOSED  
ACCESS ROAD**  
20' X ±4,034.49'  
±244.51 Rods  
±1.85 Acres

NW PAD CORNER		NE PAD CORNER	
X=	555,512 NAD 27	X=	555,872 NAD 27
Y=	395,172	Y=	395,166
ELEVATION +3142' NAVD 88		ELEVATION +3141' NAVD 88	
SW PAD CORNER		SE PAD CORNER	
X=	555,502 NAD 27	X=	555,862 NAD 27
Y=	394,627	Y=	394,621
ELEVATION +3150' NAVD 88		ELEVATION +3146' NAVD 88	
HH CE 35 2 FED NO. 61 WELL			
X=	555,788 NAD 27	Y=	394,957
LAT.	32.085725	LONG.	104.153265
X=	596,952 NAD83	Y=	395,015
LAT.	32.085847	LONG.	104.153756
ELEVATION +3144' NAVD 88			

Sec. 36

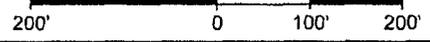
LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Existing R O W.

FOR THE EXCLUSIVE USE OF  
CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.



Robert L. Lastrapes  
Registration No. 23006

Scale: 1" = 200'



**CHEVRON U.S.A. INC.**  
PROPOSED PAD & ACCESS ROAD  
HH CE 35 2 FED NO. 61 WELL  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



C H Fenstermaker & Associates, L L C  
135 Regency Sq. Lafayette, LA 70508  
Ph. 337-237-2200 · Fax. 337-232-3299  
www.fenstermaker.com

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PROJ. MGR.: GDG	No.	DATE:	REVISED BY:
DATE: 12/09/2016	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61 SUP.dwg			

LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Fenceline
	Existing R.O.W.
	Existing Road
	Fnd. Monument

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SEE PAGE  
1 OF 3

**Sec. 35**

Bureau of Land Management  
±4.50 Acres- Proposed Pad  
±2,856.46', ±173.12 Rods,  
±1.31 Acres- Proposed Access Road

**Sec. 36**

N 08° 46' 20" W - 2,203.24'  
to SE Corner of Drill Pad

Skeen 2 26-27 ST  
4H Pad

**T25S-R27E**

**T26S-R27E**

Fnd 1/2" Iron  
Pipe w/Cap at  
the SE Corner  
of Section 35

Existing 14' Wide Lease Road

**Sec. 2**

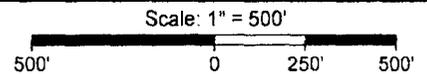
NE / NE  
State of New Mexico  
±1,178.03', ±71.39 Rods,  
±0.54 Acres- Proposed Access Road

**Sec. 1**



PAGE 2 OF 3

SURFACE USE PLAT



**CHEVRON U.S.A. INC.**  
PROPOSED PAD & ACCESS ROAD  
HH CE 35 2 FED NO. 61 WELL  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



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DATE: 12/09/2016	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61 SUP.dwg			

DISCLAIMER: At this time, C. H. Fenstermaker & Associates, L.L.C. has not performed nor was asked to perform any type of engineering, hydrological modeling, flood plain, or "No Rise" certification analyses, including but not limited to determining whether the project will impact flood hazards in connection with federal/FEMA, state, and/or local laws, ordinances and regulations. Accordingly, Fenstermaker makes no warranty or representation of any kind as to the foregoing issues, and persons or entities using this information shall do so at their own risk.

**NOTE:**

Please be advised, that while reasonable efforts are made to locate and verify pipelines and anomalies using our standard pipeline locating equipment, it is impossible to be 100 % effective. As such, we advise using caution when performing work as there is a possibility that pipelines and other hazards, such as fiber optic cables, PVC pipelines, etc. may exist undetected on site.

**NOTE:**

Many states maintain information centers that establish links between those who dig (excavators) and those who own and operate underground facilities (operators). It is advisable and in most states, law, for the contractor to contact the center for assistance in locating and marking underground utilities. For guidance: New Mexico One Call. [www.nmonecall.org](http://www.nmonecall.org)

PROPOSED PAD		
COURSE	BEARING	DISTANCE
1	N 88° 58' 29" W	360.00'
2	N 01° 01' 31" E	545.00'
3	S 88° 58' 29" E	360.00'
4	S 01° 01' 31" W	545.00'

CENTERLINE PROPOSED ACCESS ROAD		
COURSE	BEARING	DISTANCE
5	S 00° 49' 37" W	10.09'
6	S 88° 58' 40" E	684.96'
7	S 01° 01' 34" W	2161.41'
8	S 00° 30' 12" W	384.92'
9	N 89° 57' 38" W	602.95'
10	N 84° 52' 17" W	190.16'

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CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.

Robert L. Lastrapes  
Registration No. 23006

**SURFACE USE PLAT**

**CHEVRON U.S.A. INC.**  
PROPOSED PAD & ACCESS ROAD  
HH CE 35 2 FED NO. 61 WELL  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



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DATE: 12/09/2016	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61 SUP.dwg			

CHEVRON U.S.A. INC.  
HH CE 35 2 FED 61  
NMNM 107369  
SECTION 35, T25S, R27E  
SHL 2514' FSL & 475' FEL

SECTION 2, T26S, R27E  
BHL 280' FNL & 330' FEL

# APD Surface Use Plan of Operations

## HDA Master Development Plan Reference Table

The contents referenced below apply to all HDA APD's

Existing Roads	Exhibit 1, MDP SUPO Page 1
Construction Materials	MDP SUPO Page 6
Methods for Handling Waste	MDP SUPO Page 6
Reclamation Objectives	MDP SUPO Page 6-8
Final Surface Reclamation	MDP SUPO Page 6-8

- Driving Directions – From Malaga, New Mexico. The location is approximately 11.5 miles from the nearest town, which is Malaga, New Mexico. From Malaga, proceed South on Highway 285 approximately 11.5 miles and turn right (West) onto White City Rd and go approximately 6.8 miles on White City Road until the road reaches an intersection with Roadrunner Rd. Turn right onto this and travel 100 yards, then the access road and well location is on the right.

- There will be 4034.49' of new road construction for this proposal (1.85 acres)
- Ditches: See MDP
- Culverts: See MDP
- Road Cuts: See MDP

- 1-Mile radius map is attached

CHEVRON U.S.A. INC.  
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SECTION 2, T26S, R27E  
BHL 280' FNL & 330' FEL

#### Location of Production Facilities (see map on page 10)

- Facilities: New production facilities located in the NE corner of Sec. 35, T26S-R27E where oil and gas sales will take place.
  - The New facility is 500' X 700'
  - Gas compression will occur within the proposed facility boundaries
  - Gas purchaser pipeline is in place at the tank battery.
  - Open top tanks or open containments will be netted.
  - Open vent exhaust stacks will be modified to prevent birds or bats from entering, discourage perching, roosting, and nesting.
  - Facilities will have a secondary containment 1.5 times the holding capacity of largest storage tank.
  - All above ground structures will be painted non-reflective shale green for blending with surrounding environment.
  - The permanent water disposal system will be determined prior to construction of any water transfer pipeline. Until permanent water takeaway is available, produced water will be hauled off location in trucks.

**Notification will be provided to BLM upon site selection and survey – plats (including SWD well information) will be provided.**
- Pipelines: See Detail
  - Pipelines Include:
    - 2530' of Flowlines carrying production (buried)
    - 2547' Gas Lift Line carrying pressurized gas (buried)
    - 2555' Temporary Water line carrying fresh water (surface)
  - A ROW will be applied for through the State and BLM. (30' wide, 3.2 acres)
  - All construction activity will be confined to the approved ROW.
  - Pipeline will run parallel to the road and will stay within approved ROW.

#### Location of Water Sources (see map on page 10)

- Existing ponds in Section 2, 9 & 10, T26S-R27E will be utilized for fresh water or recycled water.
- Fresh water will be obtained from a private water source.

CHEVRON U.S.A. INC.  
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NMNM 107369  
SECTION 35, T25S, R27E  
SHL 2514' FSL & 475' FEL

SECTION 2, T26S, R27E  
BHL 280' FNL & 330' FEL

- Caliche will be sourced from a Chevron operated NMSLO pit in S2 NW4 Section 16 T26S R27E, or an alternate private pit in Section 13, T24S R27E in Eddy County, NM.

- Drilling fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility.
- Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around the well site will be collected for disposal.
- Human waste and grey water will be properly contained and disposed of properly at a state approved disposal facility.
- After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a state approved disposal facility.
- The well will be drilled utilizing a closed loop system. Drill cutting will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

- Surveyor Plat
  - Exterior well pad dimensions are 545' x 360'
  - Interior well pad dimensions from point of entry (well head) of the well are N-335', S-210', E-100', W-260'. Total disturbance area needed for construction of well pad will be approximately 4.50 acres
  - Topsoil placement is on the west where interim reclamation is planned to be completed upon completion of well and evaluation of best management practices.
  - Cut and fill: will be minimal.
- Rig Layout (see diagram)

#### **Interim Reclamation Procedures**

- Reclaimed pad size: 200' x 325' (approximately 1.5 acres)
- Reclaimed pad layout, topsoil location & erosion control features

CHEVRON U.S.A. INC.  
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SECTION 35, T25S, R27E  
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SECTION 2, T26S, R27E  
BHL 280' FNL & 330' FEL

*Inventory of Wetlands*

- BLM Surface
  - Surface Tenant – Forehand Ranches, Inc.
- **Nearest Post Office:** Malaga Post Office; 11.4 Miles north

*On-site Cultural Resources*

- On-site performed by BLM NRS: Paul Murphy 1/7/2017 (pad) 5/16/17 (CTB)
- Cultural report attached: **Yes** Participating Agreement attached: N/A

*Administrative Contact Information*

Primary point of contact:  
Kevin Dickerson  
kevin.dickerson@chevron.com  
M- 432-687-7104

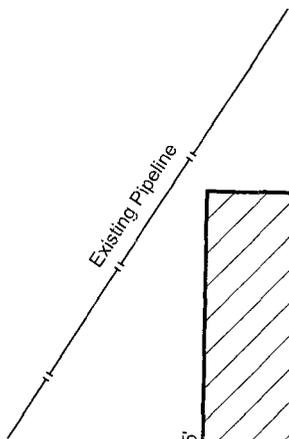
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SECTION 2, T26S, R27E  
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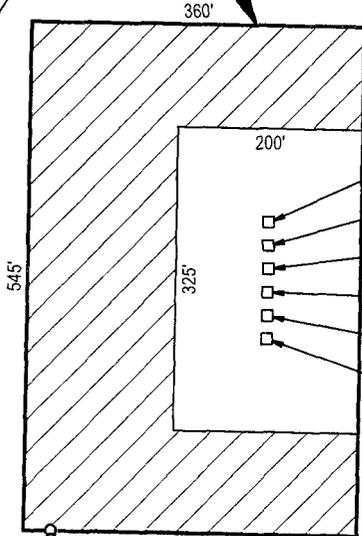
<p><b>Project Engineer</b> Name: Justin Freeman Address: 1400 Smith Street Houston, TX 77002 Phone: 713-372-2151 Email: <a href="mailto:FreemJ@chevron.com">FreemJ@chevron.com</a></p>	<p><b>Project Engineer</b> Name: Roderick Milligan Address: 1400 Smith Street Houston, TX 77002 Phone: (281) 413-9794 Email: <a href="mailto:RoderickMilligan@chevron.com">RoderickMilligan@chevron.com</a></p>
<p><b>Senior Project Engineer</b> Name: Kevin Dickerson Address: 6301 Deauville BLVD Midland TX 79706 Phone: (432) 687-7104 Email: <a href="mailto:Kevin.Dickerson@chevron.com">Kevin.Dickerson@chevron.com</a></p>	<p><b>Senior Project Engineer</b> Name: Angel Bermea Address: 6301 Deauville BLVD Midland TX 79706 Phone: 432-770-7564 Email: <a href="mailto:Angel.Bermea@chevron.com">Angel.Bermea@chevron.com</a></p>
<p><b>Manager</b> Name: Frank Karmanocky Address: 6301 Deauville BLVD Midland TX 79706 Phone: 432-687-7361 Email: <a href="mailto:FKarmanocky@chevron.com">FKarmanocky@chevron.com</a></p>	<p><b>Senior Project Engineer</b> Dorian K. Fuentes Address: 6301 Deauville BLVD Midland TX 79706 Office: (432) 687-7631 Email: <a href="mailto:djvo@chevron.com">djvo@chevron.com</a></p>

R 27 E

T  
25  
S



PROPOSED  
TEMPORARY  
PAD AREA  
±3.01 Acres



PROPOSED  
PERMANENT  
PAD AREA  
±1.49 Acres

- HH CE 35 2 FED No. 61 Well
- HH CE 35 2 FED No. 62 Well
- HH CE 35 2 FED No. 63 Well
- HH CE 35 2 FED No. 64 Well
- HH CE 35 2 FED No. 65 Well
- HH CE 35 2 FED No. 66 Well

Sec. 35  
Bureau of Land Management  
±2,856.46', ±173.12 Rods,  
±1.31 Acres- Proposed Access Road

CENTERLINE  
PROPOSED  
ACCESS ROAD  
20' X ±4,034.49'  
±244.51 Rods  
±1.85 Acres



NW PAD CORNER		NE PAD CORNER	
X=	555,512 NAD 27	X=	555,872 NAD 27
Y=	395,172	Y=	395,166
ELEVATION +3142' NAVD 88		ELEVATION +3141' NAVD 88	
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LAT.	32.085847	LONG.	104.153756
ELEVATION +3144' NAVD 88			

Sec. 36

LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Existing R.O.W.

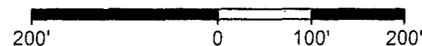
FOR THE EXCLUSIVE USE OF  
CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.

*Not to be used for construction  
bidding recordation conveyance  
sales, or engineering design*

**PRELIMINARY**

Robert L. Lastrapes  
Registration No. 23006

Scale: 1" = 200'



**CHEVRON U.S.A. INC.**  
INTERIM RECLAMATION  
HH CE 35 2 FED NOS. 61-66 WELLS  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



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DRAWN BY: BOR		REVISIONS	
PROJ. MGR.: GDG	No.	DATE:	REVISED BY:
DATE: JUNE 01, 2017	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61_IR.dwg			

LEGEND	
	Proposed Pad
	Proposed Access
	Section Line
	Utility Line
	Pipeline
	Fenceline
	Existing R.O.W.
	Existing Road
	Fnd. Monument

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Registration No. 23006

SEE PAGE  
1 OF 3

**Sec. 35**

Bureau of Land Management  
±2,856.46', ±173.12 Rods,  
±1.31 Acres- Proposed Access Road

**Sec. 36**

**T25S-R27E**

**T26S-R27E**

**Sec. 1**

Skeen 2 26-27 ST  
4H Pad

Fnd. 1 1/2" Iron  
Pipe w/Cap at  
the SE Corner  
of Section 35

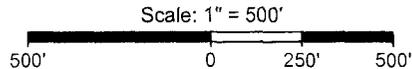
Existing 14' Wide Lease Road

**Sec. 2**

NE / NE  
State of New Mexico  
±1,178.03', ±71.39 Rods,  
±0.54 Acres- Proposed Access Road

N 08° 46' 20" W - 2,203.24'  
to SE Corner of Drill Pad

S 65° 44' 51" W  
894.69'



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PROJ. MGR.: GDG	No.	DATE:	REVISED BY:		
DATE: JUNE 01, 2017	No.	DATE:	REVISED BY:		
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61_IR.dwg					

DISCLAIMER: At this time, C. H. Fenstermaker & Associates, L.L.C. has not performed nor was asked to perform any type of engineering, hydrological modeling, flood plain, or "No Rise" certification analyses, including but not limited to determining whether the project will impact flood hazards in connection with federal/FEMA, state, and/or local laws, ordinances and regulations. Accordingly, Fenstermaker makes no warranty or representation of any kind as to the foregoing issues, and persons or entities using this information shall do so at their own risk.

**NOTE:**

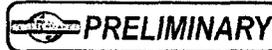
Please be advised, that while reasonable efforts are made to locate and verify pipelines and anomalies using our standard pipeline locating equipment, it is impossible to be 100 % effective. As such, we advise using caution when performing work as there is a possibility that pipelines and other hazards, such as fiber optic cables, PVC pipelines, etc. may exist undetected on site.

**NOTE:**

Many states maintain information centers that establish links between those who dig (excavators) and those who own and operate underground facilities (operators). It is advisable and in most states, law, for the contractor to contact the center for assistance in locating and marking underground utilities. For guidance: New Mexico One Call. [www.nmonecall.org](http://www.nmonecall.org)

FOR THE EXCLUSIVE USE OF  
CHEVRON U.S.A. INC.  
I, Robert L. Lastrapes, Professional  
Surveyor, do hereby state this plat is true  
and correct to the best of my knowledge.

*Not to be used for construction  
bidding recordation conveyance  
sales or engineering design*



Robert L. Lastrapes  
Registration No. 23006

PAGE 3 OF 3

SURFACE USE PLAT

CHEVRON U.S.A. INC.  
INTERIM RECLAMATION  
HH CE 35 2 FED NOS. 61-66 WELLS  
SECTION 35, T25S-R27E & SECTION 2, T26S-R27E  
EDDY COUNTY, NEW MEXICO



C. H. Fenstermaker & Associates, L.L.C.  
135 Regency Sq. Lafayette, LA 70508  
Ph. 337-237-2200 Fax. 337-232-3299  
[www.fenstermaker.com](http://www.fenstermaker.com)

DRAWN BY: BOR		REVISIONS	
PROJ. MGR.: GDG	No.	DATE:	REVISED BY:
DATE: JUNE 01, 2017	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164887\DWG\HH CE 35 2 FED 61_IR.dwg			

**Section 1 - General**

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

**Section 2 - Lined Pits**

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### **Section 3 - Unlined Pits**

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

## **Section 5 - Surface Discharge**

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

## **Section 6 - Other**

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

**Bond Information**

Federal/Indian APD: FED

BLM Bond number: CA0329

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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