

Form 3160-3
(March 2012)

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 16 2017

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMLC029435A
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator APACHE CORPORATION		7. If Unit or CA Agreement, Name and No. NMNM134086
3a. Address 303 Veterans Airpark Lane #1000 Midland TX		8. Lease Name and Well No. 315935 CEDAR LAKE FEDERAL CA 725H
3b. Phone No. (include area code) (432)818-1000		9. API Well No. 30-015-44399
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface LOT 3 / 2290 FSL / 485 FWL / LAT 32.8480264 / LONG -103.9152095 At proposed prod. zone SENE / 2390 FNL / 330 FEL / LAT 32.8497072 / LONG -103.9015596		10. Field and Pool, or Exploratory YESO / CEDAR LAKE; GLORIETA-YESC
14. Distance in miles and direction from nearest town or post office* 6.1 miles		11. Sec., T. R. M. or Blk. and Survey or Area SEC 7 / T17S / R31E / NMP
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) 485 feet	16. No. of acres in lease 606.92	12. County or Parish EDDY
17. Spacing Unit dedicated to this well 151.68	13. State NM	
18. Distance from proposed location* to nearest well, drilling, completed, 45 feet applied for, on this lease, ft	19. Proposed Depth 5339 feet / 9401 feet	20. BLM/BIA Bond No. on file FED: NMB000736
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3723 feet	22. Approximate date work will start* 01/15/2017	23. Estimated duration 15 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) Sorina Flores / Ph: (432)818-1167	Date 09/23/2016
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Title

Supv of Drilling Services

Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 08/14/2017
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Title

Supervisor Multiple Resources

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

NM OIL CONSERVATION
ARTESIA DISTRICT

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RWP 8-17-17

Additional Operator Remarks

Location of Well

1. SHL: LOT 3 / 2290 FSL / 485 FWL / TWSP: 17S / RANGE: 31E / SECTION: 7 / LAT: 32.8480264 / LONG: -103.9152095 (TVD: 0 feet, MD: 0 feet)

PPP: LOT 3 / 2361 FSL / 611 FWL / TWSP: 17S / RANGE: 31E / SECTION: 7 / LAT: 32.848222 / LONG: -103.9148004 (TVD: 5153 feet, MD: 5193 feet)

BHL: SENE / 2390 FNL / 330 FEL / TWSP: 17S / RANGE: 31E / SECTION: 7 / LAT: 32.8497072 / LONG: -103.9015596 (TVD: 5339 feet, MD: 9401 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:	Apache Corporation
LEASE NO.:	NMLC029435A
WELL NAME & NO.:	725H-Cedar Lake Federal CA
SURFACE HOLE FOOTAGE:	2290'/S & 485'/W
BOTTOM HOLE FOOTAGE	2390'/N & 330'/E
LOCATION:	Section 7, T.17 S., R.31 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. A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

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.

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

Possibility for water flows in the Artesia Group and Salado.

Possible lost circulation in the San Andres and Grayburg.

1. The 13-3/8 inch surface casing shall be set at approximately 400 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job 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.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

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

Option #1 (Single Stage):

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option #2:

Operator has proposed DV tool at depth of 700', 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. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

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 see B.1.a, c-d above. **Excess calculates to 12% - Additional cement will be required.**

3. The minimum required fill of cement behind the 7 X 5-1/2 inch production casing is:

Operator has proposed DV tool at depth of 4811', 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. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

☒ Cement should tie back at least 200 feet into previous casing. Operator shall provide method of verification. **Excess calculates to 5% - Additional cement will be required.**

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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi (Installing 3M annular, testing to 2,000 psi).**
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **2000 (2M) psi (Installing 3M BOP, testing to 2,000 psi).**
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. DRILL STEM TEST

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

E. 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.

MHH 06072017

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Apache Corporation
LEASE NO.:	NMLC029435A
WELL NAME & NO.:	725H-Cedar Lake Federal CA
SURFACE HOLE FOOTAGE:	2290'/S & 485'/W
BOTTOM HOLE FOOTAGE	2390'/N & 330'/E
LOCATION:	Section 7, T.17 S., R.31 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**
 - Lesser Prairie-Chicken Timing Stipulations
 - Below Ground-level Abandoned Well Marker
 - Dunes Sagebrush Lizard Trenching Monitor Stipulation
 - Watershed
- ☐ **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)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Belwo Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Dunes Sagebrush Lizard Trenching Monitor Stipulation

- Pre-construction contact with a BLM wildlife biologist is required 5 days prior to any ground disturbing activities associated with the project occurs.
- Successful completion of the BLM Trench Stipulation Workshop is required for a non-agency person to be approved as a monitor.
- Any trench left open for (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped vertebrates. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.
- For trenches left open for eight (8) hours or more the following requirements apply:
 - Earthen escape ramps and/or structures (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the

trench. Metal structures will not be authorized. Options will be discussed in detail at the required Trench Stipulation Workshop.

- One approved monitor shall be required to survey up to three miles of trench between the hours of 11 AM-2 PM. A daily report (consolidate if there is more than one monitor) on the vertebrates found and removed from the trench shall be provided to the BLM (email/fax is acceptable) the following morning.
 - Prior to backfilling of the trench all structures used as escape ramps will be removed and the bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.
- This stipulation shall apply to the entire length of the project in the DSL habitat polygon regardless of land ownership or CCA/CCAA enrollment status.
- A project closeout will be required within three business days of the completion of the project.

Watershed

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

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

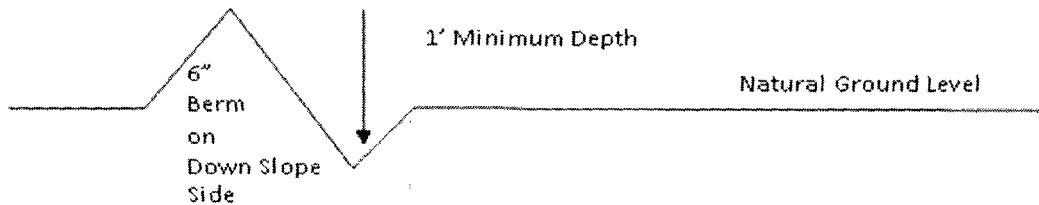
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and insloping, 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

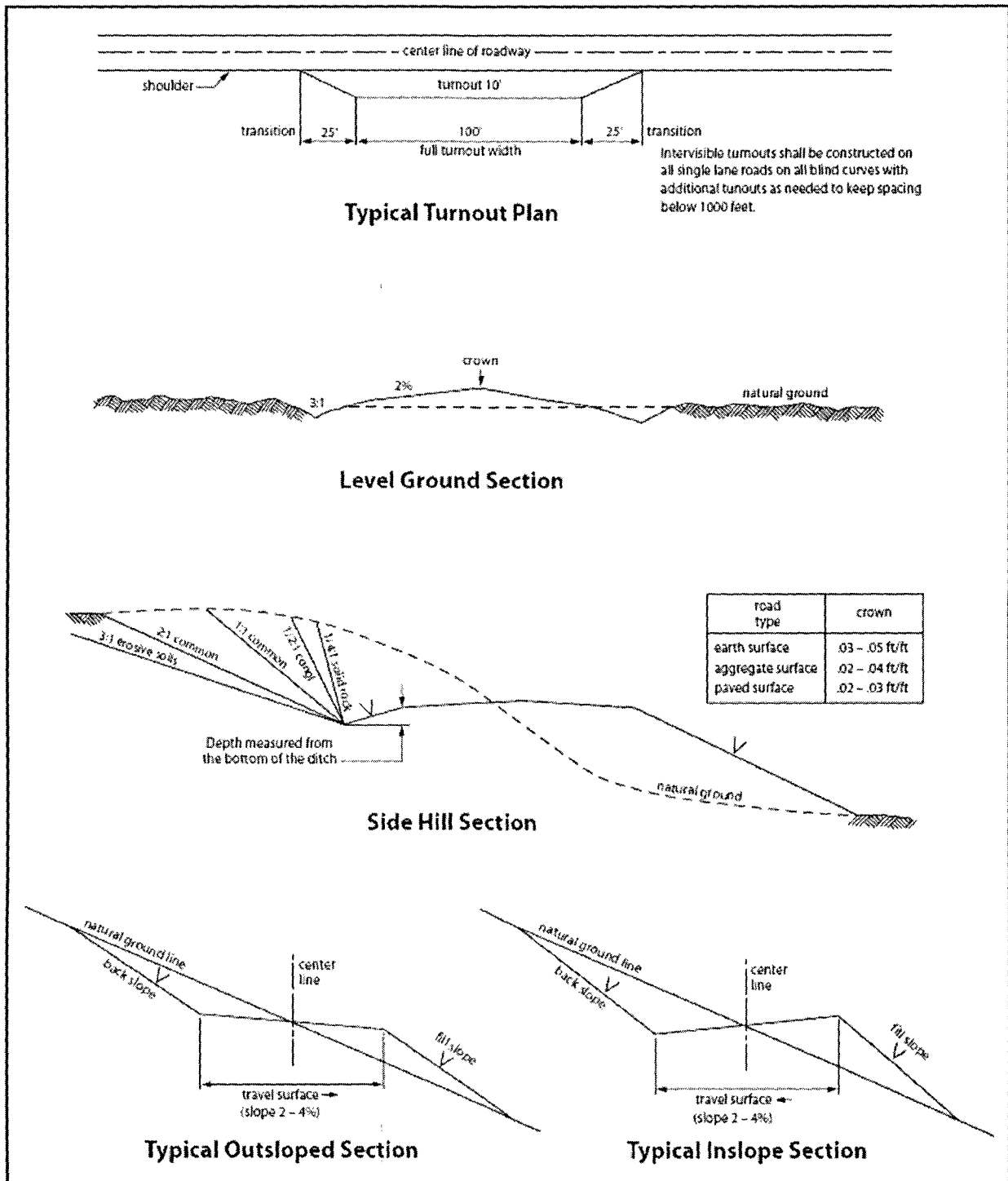


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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

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.

☐ seed mixture 1	☐ seed mixture 3
☐ seed mixture 2	☐ seed mixture 4
☒ seed mixture 2/LPC	☐ 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.

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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.

19. Special Stipulations:

Lesser Prairie-Chicken

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities

that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

Dunes Sagebrush Lizard Trenching Monitor Stipulation

- Pre-construction contact with a BLM wildlife biologist is required 5 days prior to any ground disturbing activities associated with the project occurs.
- Successful completion of the BLM Trench Stipulation Workshop is required for a non-agency person to be approved as a monitor.
- Any trench left open for (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped vertebrates. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.
- For trenches left open for eight (8) hours or more the following requirements apply:
 - Earthen escape ramps and/or structures (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Metal structures will not be authorized. Options will be discussed in detail at the required Trench Stipulation Workshop.
 - One approved monitor shall be required to survey up to three miles of trench between the hours of 11 AM-2 PM. A daily report (consolidate if there is more than one monitor) on the vertebrates found and removed from the trench shall be provided to the BLM (email/fax is acceptable) the following morning.
 - Prior to backfilling of the trench all structures used as escape ramps will be removed and the bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.

- This stipulation shall apply to the entire length of the project in the DSL habitat polygon regardless of land ownership or CCA/CCAA enrollment status.
- A project closeout will be required within three business days of the completion of the project.

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).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery 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 will be tested and the viability testing of seed shall 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 will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/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 will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. 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 Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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



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



Operator Certification

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

NAME: Sorina Flores

Signed on: 09/23/2016

Title: Supv of Drilling Services

Street Address: 303 Veterans Airpark Ln #1000

City: Midland

State: TX

Zip: 79705

Phone: (432)818-1167

Email address: sorina.flores@apachecorp.com

Field Representative

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



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

Application Data Report

08/14/2017

APD ID: 10400005377

Submission Date: 09/23/2016

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400005377

Tie to previous NOS? 10400002740

Submission Date: 09/23/2016

BLM Office: CARLSBAD

User: Sorina Flores

Title: Supv of Drilling Services

Federal/Indian APD: FED

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

Lease number: NMLC029435A

Lease Acres: 606.92

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? YES

Federal or Indian agreement: FEDERAL

Agreement number: NMNM134086

Agreement name:

Keep application confidential? NO

Permitting Agent? NO

APD Operator: APACHE CORPORATION

Operator letter of designation:

Keep application confidential? NO

Operator Info

Operator Organization Name: APACHE CORPORATION

Operator Address: 303 Veterans Airpark Lane #1000

Zip: 79705

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)818-1000

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: YESO

Pool Name: CEDAR
LAKE;GLORIETA-YESO

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

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

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** YES **New surface disturbance?** Y

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: PAD **Number:** 725H

3W

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 6.1 Miles

Distance to nearest well: 45 FT

Distance to lease line: 485 FT

Reservoir well spacing assigned acres Measurement: 151.68 Acres

Well plat: CedarLakeFedCA_725H_NAD83_Plat_09-19-2016.pdf

Well work start Date: 01/15/2017

Duration: 15 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

	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	229 0	FSL	485	FWL	17S	31E	7	Lot 3	32.84802 64	- 103.9152 095	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMLC0 29435A	372 3	0	0
KOP Leg #1	229 0	FSL	485	FWL	17S	31E	7	Lot 3	32.84802 64	- 103.9152 095	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMLC0 29435A	- 108 8	481 1	481 1
PPP Leg #1	236 1	FSL	611	FWL	17S	31E	7	Lot 3	32.84822 2	- 103.9148 004	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMLC0 29435A	- 143 0	519 3	515 3

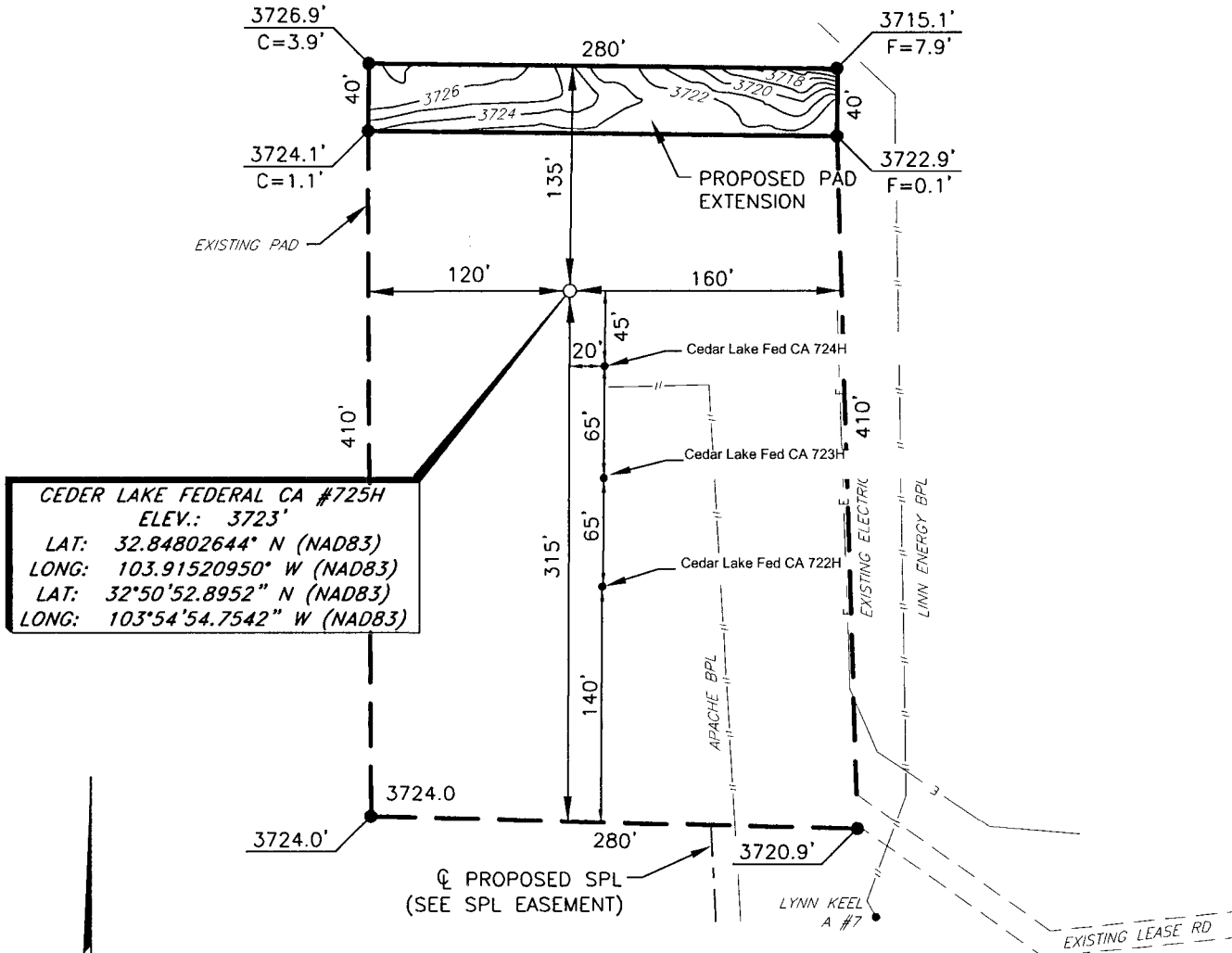
Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

	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
EXIT Leg #1	239 0	FNL	330	FEL	17S	31E	7	Aliquot SENE	32.84970 72	- 103.9015 596	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMLC0 29435A	- 161 6	940 1	533 9
BHL Leg #1	239 0	FNL	330	FEL	17S	31E	7	Aliquot SENE	32.84970 72	- 103.9015 596	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMLC0 29435A	- 161 6	940 1	533 9

**APACHE CORPORATION
CEDAR LAKE FEDERAL CA #725H
(2290' FSL & 485' FWL)
SECTION 7, T17S, R31E
N. M. P. M., EDDY CO., NEW MEXICO**



CEDAR LAKE FEDERAL CA #725H
 ELEV.: 3723'
 LAT: 32.84802644° N (NAD83)
 LONG: 103.91520950° W (NAD83)
 LAT: 32°50'52.8952" N (NAD83)
 LONG: 103°54'54.7542" W (NAD83)

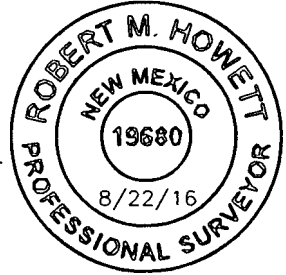


SCALE: 1" = 100'
 0 50 100

BEARINGS ARE
 NAD 83 GRID - NM EAST
 DISTANCES ARE
 GROUND.

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this unclassified survey of a well location from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
 Robert M. Howett NM PS 19680



Firm No.: TX 10193838 NM 4655451

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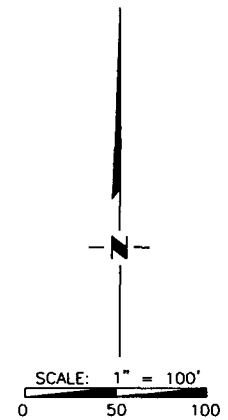
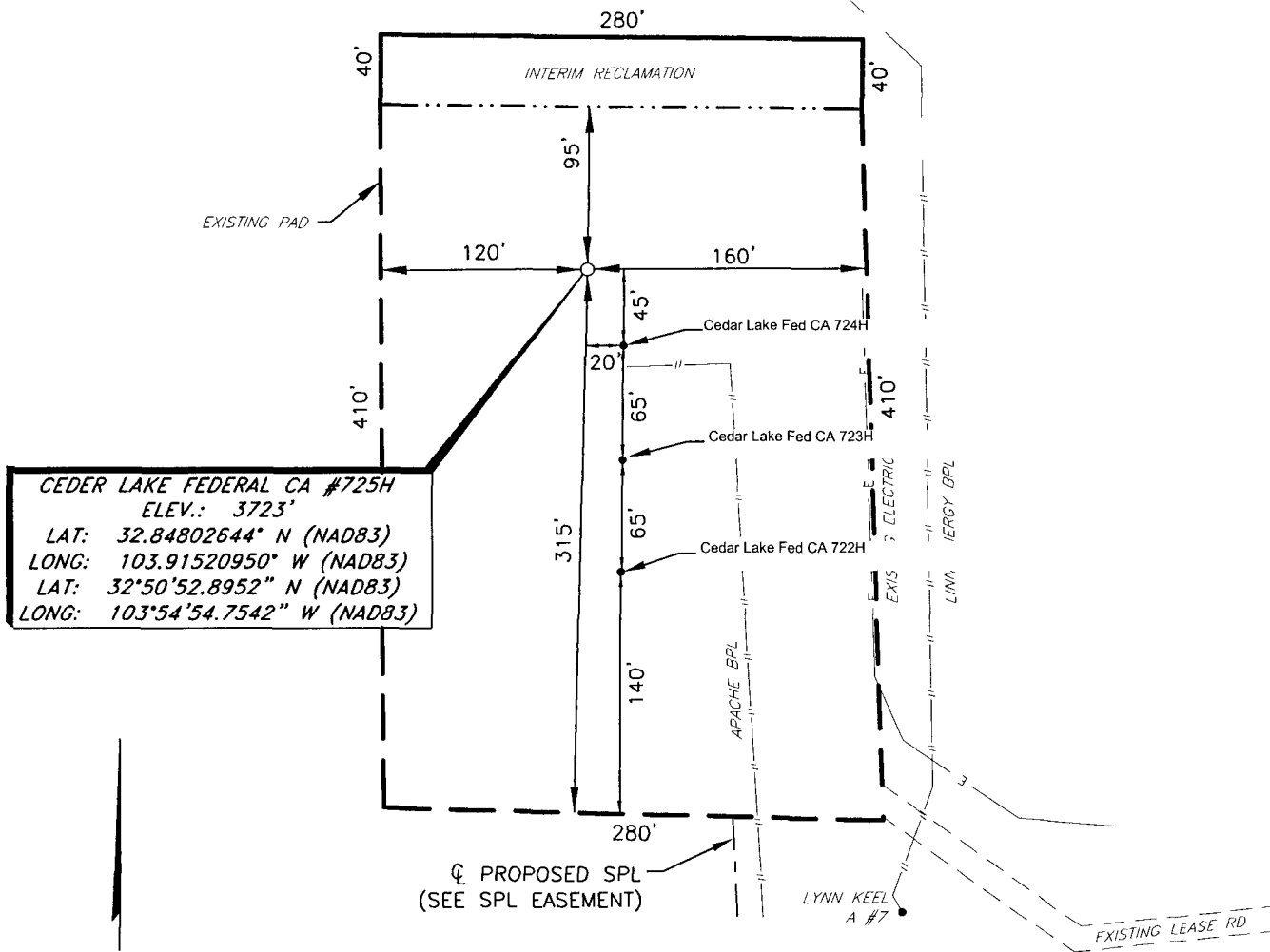
NO.	REVISION	DATE
JOB NO.:	LS1608260A	
DWG. NO.:	1608260PAD	



308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE:	1" = 100'
DATE:	8-19-16
SURVEYED BY:	JM/HD
DRAWN BY:	LPS
APPROVED BY:	RMH
SHEET:	1 OF 1

APACHE CORPORATION
INTERIM RELAMATION
CEDAR LAKE FEDERAL CA #275H
(2290' FSL & 485' FWL)
SECTION 7, T17S, R31E
N. M. P. M., EDDY CO., NEW MEXICO



BEARINGS ARE
 NAD 83 GRID - NM EAST
 DISTANCES ARE
 GROUND.

From the intersection of US HWY 82 and CR-221 (Skelly Rd.)
 Go North on CR-221 approx. 1.5 miles to a lease road on the right;
 Turn right and go Northeast approx. 0.6 miles to lease road on the left;
 Turn left and go Northwest approx. 0.35 miles to location on the North.

Firm No.: TX 10193838 NM 4655451

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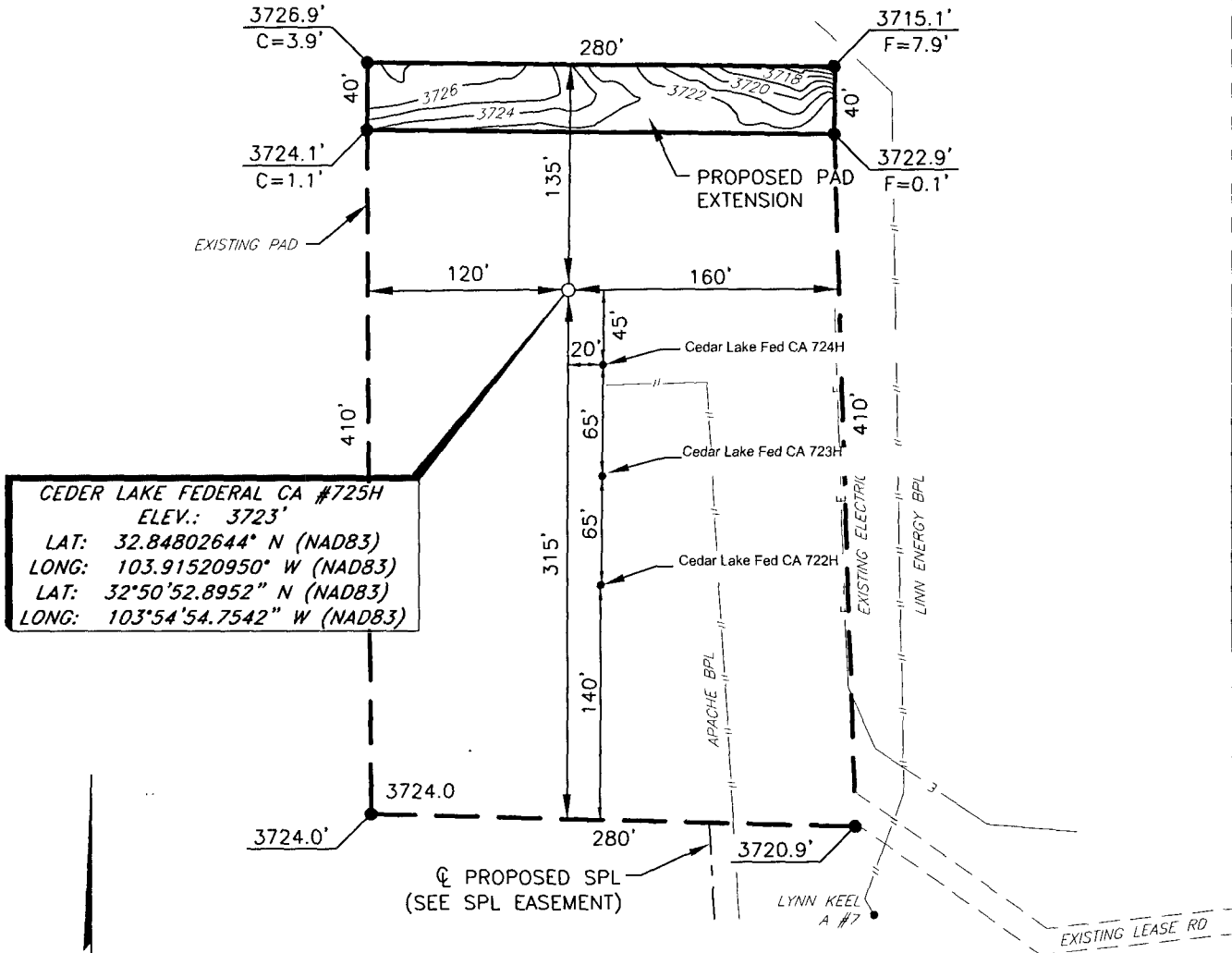
NO.	REVISION	DATE
JOB NO.: LS1608260A		
DWG. NO.: 1608260PAD		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 8-19-16
SURVEYED BY: JM/HD
DRAWN BY: LPS
APPROVED BY: RMH
SHEET: 1 OF 1

**APACHE CORPORATION
CEDAR LAKE FEDERAL CA #725H
(2290' FSL & 485' FWL)
SECTION 7, T17S, R31E
N. M. P. M., EDDY CO., NEW MEXICO**



SCALE: 1" = 100'
 0 50 100
 BEARINGS ARE
 NAD 83 GRID - NM EAST
 DISTANCES ARE
 GROUND.

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this unclassified survey of a well location from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
 Robert M. Howett NM PS 19680



Firm No.: TX 10193838 NM 4655451

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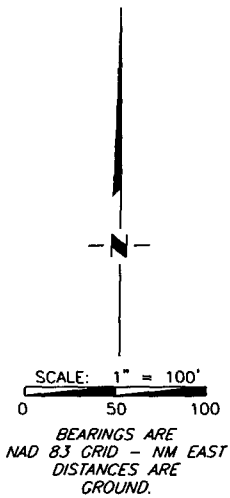
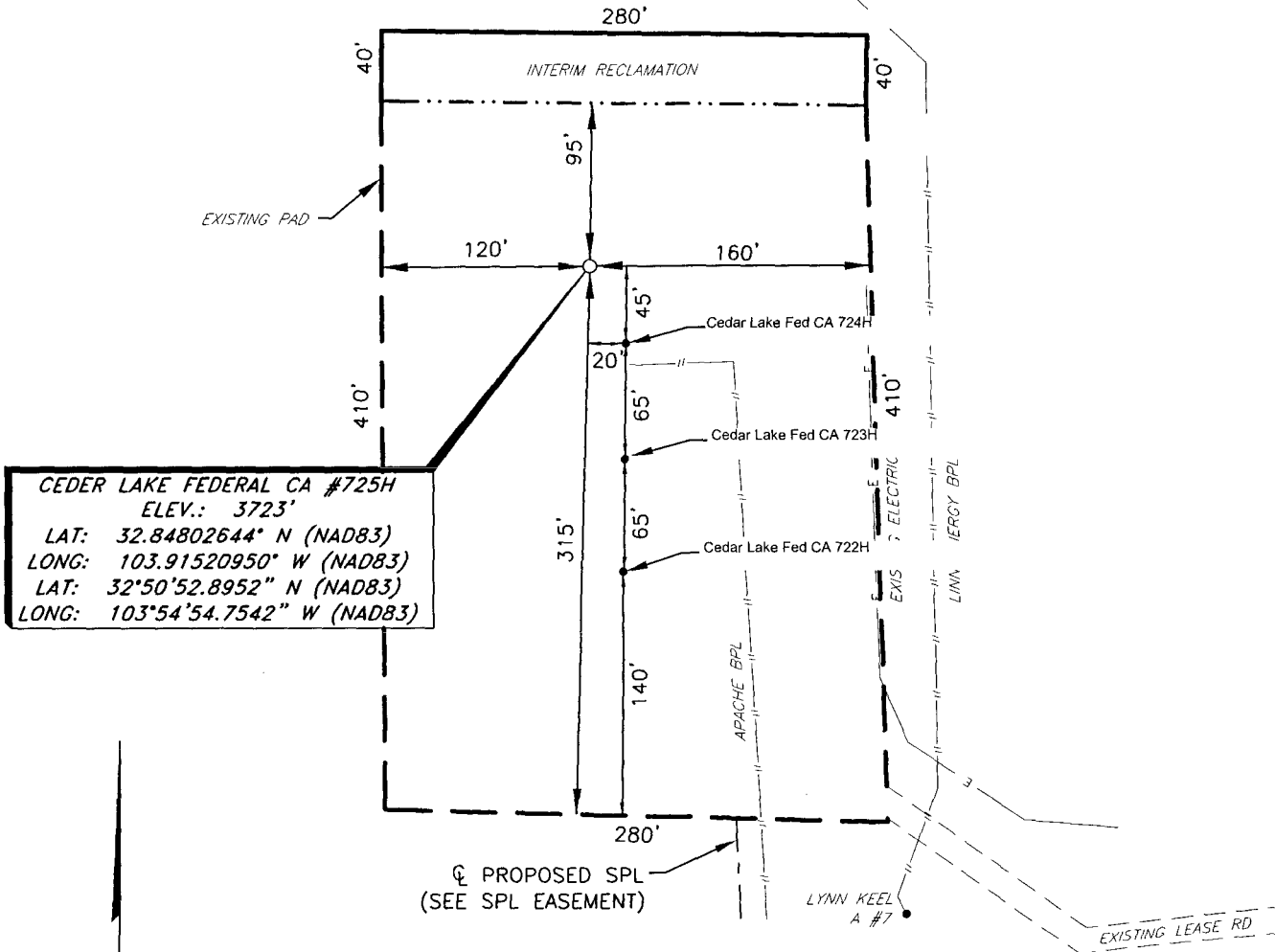
NO.	REVISION	DATE
JOB NO.:	LS1608260A	
DWG. NO.:	1608260PAD	



308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 8-19-16
SURVEYED BY: JM/HD
DRAWN BY: LPS
APPROVED BY: RMH
SHEET: 1 OF 1

APACHE CORPORATION
INTERIM RELAMATION
CEDAR LAKE FEDERAL CA #275H
(2290' FSL & 485' FWL)
SECTION 7, T17S, R31E
N. M. P. M., EDDY CO., NEW MEXICO



From the intersection of US HWY 82 and CR-221 (Skelly Rd.)
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 Turn right and go Northeast approx. 0.6 miles to lease road on the left;
 Turn left and go Northwest approx. 0.35 miles to location on the North.

Firm No.: TX 10193838 NM 4655451

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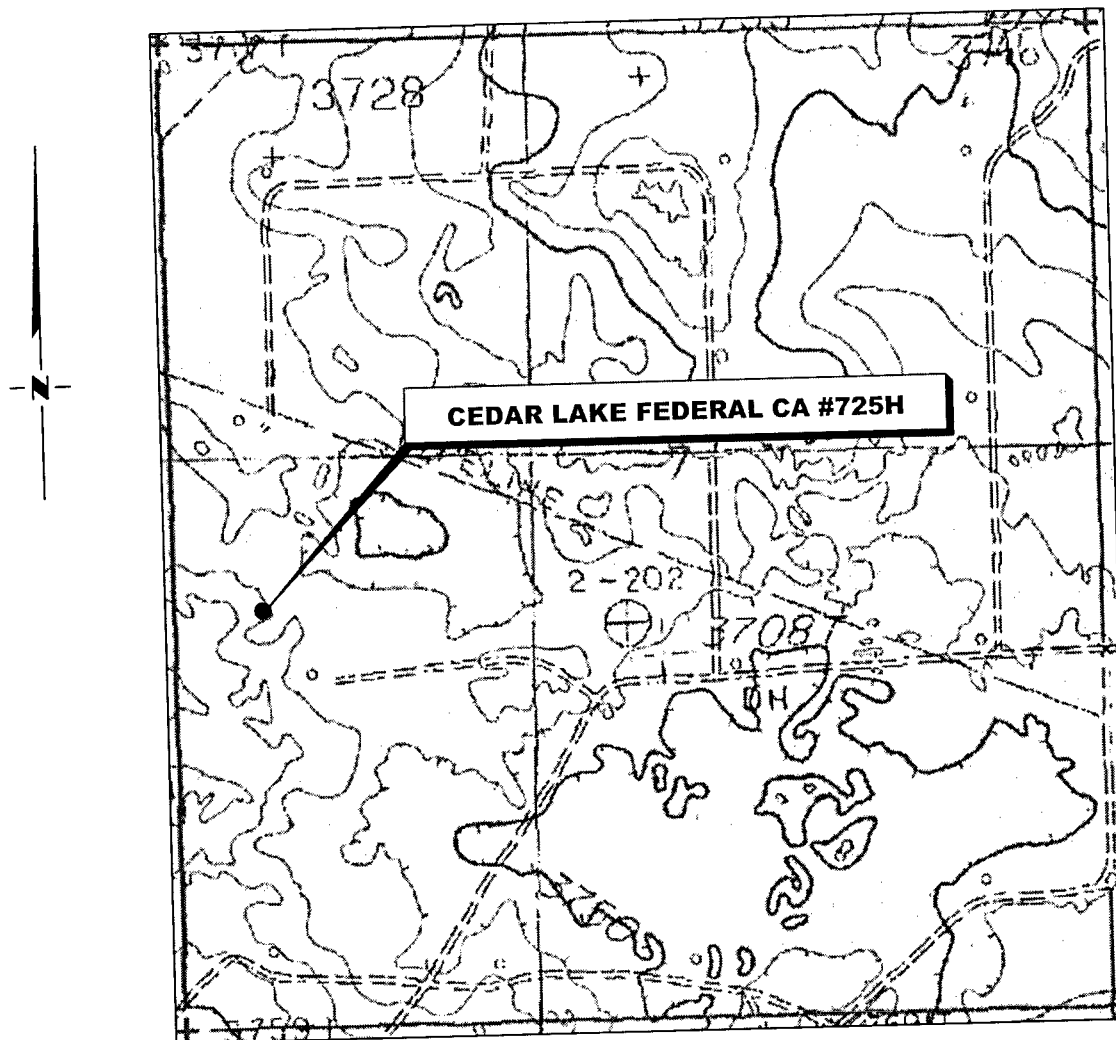
NO.	REVISION	DATE
JOB NO.:	LS1608260A	
DWG. NO.:	1608260PAD	



308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 8-19-16
SURVEYED BY: JM/HD
DRAWN BY: LPS
APPROVED BY: RMH
SHEET: 1 OF 1

LOCATION VERIFICATION MAP



*SECTION 7, TWP. 17 SOUTH, RGE. 31 EAST,
N. M. P. M., EDDY CO., NEW MEXICO*

OPERATOR: Apache Corporation
LEASE: Cedar Lake Federal CA
WELL NO.: 725H
ELEVATION: 3723'

LOCATION: 2290' FSL & 485' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Loco Hills, NM (P. E. 1985)

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Firm No.: TX 10193838 NM 4655451

NO.	REVISION	DATE
JOB NO.:	LS1608260A	
DWG. NO.:	1608260LVM	

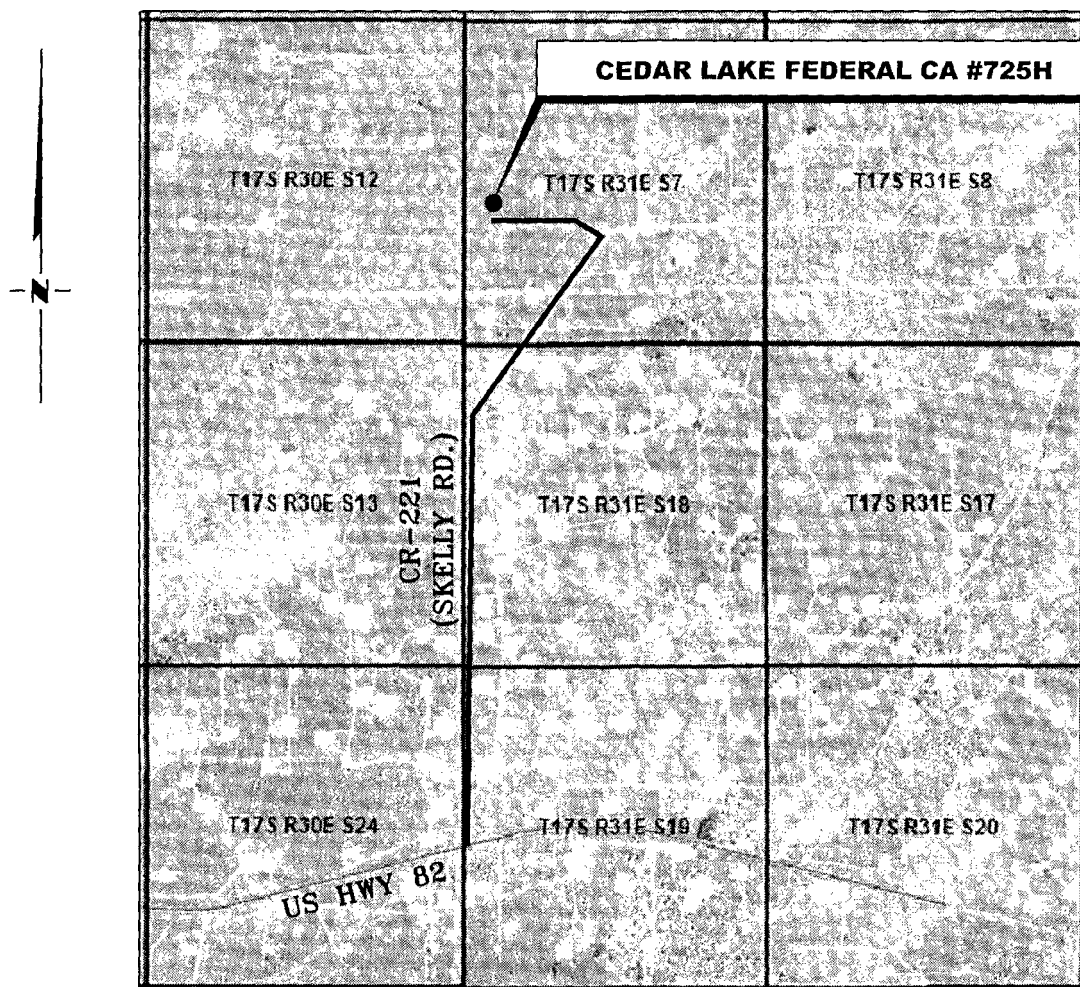
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 8-19-16
SURVEYED BY: JM/HD
DRAWN BY: LPS
APPROVED BY: RMH
SHEET: 1 OF 1

VICINITY MAP

NOT TO SCALE



From the intersection of US HWY 82 and CR-221 (Skelly Rd.)
Go North on CR-221 approx. 1.5 miles to a lease road on the right;
Turn right and go Northeast approx. 0.6 miles to lease road on the left;
Turn left and go Northwest approx. 0.35 miles to location on the North.

**SECTION 7, TWP. 17 SOUTH, RGE. 31 EAST,
N. M. P. M., EDDY CO., NEW MEXICO**

OPERATOR: Apache Corporation
LEASE: Cedar Lake Federal CA
WELL NO.: 725H

LOCATION: 2290' FSL & 485' FWL
ELEVATION: 3723'

Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS1608260A	
DWG. NO.:	1608260VM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE:	N. T. S.
DATE:	8-19-16
SURVEYED BY:	JM/HD
DRAWN BY:	LPS
APPROVED BY:	RMH
SHEET:	1 OF 1



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

Drilling Plan Data Report

08/14/2017

APD ID: 10400005377

Submission Date: 09/23/2016

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
17746	RUSTLER	3734	296	296		POTASH,TRONA	No
18574	SALADO	3262	472	472		POTASH,TRONA	No
17724	TANSILL	2404	1330	1330		POTASH,TRONA	No
17694	YATES	2272	1462	1462		NATURAL GAS,OIL	No
15319	SEVEN RIVERS	1994	1740	1740		NATURAL GAS,OIL	No
15318	QUEEN	1391	2343	2343		NATURAL GAS,OIL	No
17683	GRAYBURG	988	2746	2746		NATURAL GAS,OIL	No
15314	SAN ANDRES	666	3068	3068		NATURAL GAS,OIL	No
17701	GLORIETA	-816	4550	4550		NATURAL GAS,OIL	No
17700	PADDOCK	-870	4604	4604		NATURAL GAS,OIL	No
15342	BLINEBRY	-1418	5152	5152		NATURAL GAS,OIL	Yes
17685	TUBB	-2296	6030	6030		NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M

Rating Depth: 6818

Equipment: Rotating Head, Mud Gas Separator, Blow Down Pit, Flare Line, Ignitor.

Requesting Variance? NO

Variance request:

Testing Procedure: BOP/BOPE will be tested by independent service company to 250psi low and high pressure indicated above per Onshore Order 2 requirements. System may be upgraded to higher pressure but sill tested to WP listed . If system is upgraded, all components installed will be functional and tested. Pipe rams will be operationally checked each 24 hr period.

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Blind rams will be operationally checked on each TOOH. These checks will be noted on daily tour sheets. Other accessories to BOP equipment will include Kelly cock and floor safety valve (inside BOP), choke lines and choke manifold. (see attached schematic)

Choke Diagram Attachment:

BOP_3M_2M_Annular_Manifold_Schematic_09-19-2016.pdf

BOP Diagram Attachment:

BOP_3M_2M_Annular_PipeRam_BlindRam_09-19-2016.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	400	0	400		3323	400	H-40	48	STC	5.28	1.44	BUOY	2.07	BUOY	3.47
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	3500	0	3500	3723	223	3500	J-55	36	LTC	2.03	1.94	BUOY	1.99	BUOY	2.45
3	PRODUCTION	8.5	7.0	NEW	API	N	0	4811	0	4811	3723	-1088	4811	L-80	29	LTC	3.1	1.37	BUOY	2.44	BUOY	2.78
4	OTHER	8.5	5.5	NEW	API	Y	4811	9401	4811	5339	-1088	-1616	4590	K-55	17	LTC	2.5	1.14	BUOY	1.82	BUOY	2.12

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Taperd String Spec:

Casing Design Assumptions and Worksheet(s):

CedarLakeFedCA 725H SurfCsgAssumpt_09-19-2016.pdf

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Taperd String Spec:

Casing Design Assumptions and Worksheet(s):

CedarLakeFedCA 725H IntermCsgAssumpt_09-19-2016.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Taperd String Spec:

Casing Design Assumptions and Worksheet(s):

CedarLakeFedCA 725H ProdCsgAssumpt_09-19-2016.pdf

Casing ID: 4 **String Type:** OTHER - TAPERED

Inspection Document:

Spec Document:

Taperd String Spec:

CedarLakeFedCA725HProdCsgTaperedSpecs_09-19-2016.pdf

Casing Design Assumptions and Worksheet(s):

CedarLakeFedCA725HProdCsgTaperedSpecs_09-19-2016.pdf

Section 4 - Cement

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	400	342	1.33	14.8	454.86	50	CI C	1% Calcium Chloride
INTERMEDIATE	Lead		0	2575	565	1.84	12.9	1039.6	30	CI C	5% Salt + 6% Bentonite + 1#/sk Kolseal + 0.125#/sk CF
INTERMEDIATE	Tail		2575	3500	300	1.32	14.8	396	30	CI C	0.1% Retarder
PRODUCTION	Lead	4811	0	2883	245	1.97	12.6	482.65	20	CI C	5% Salt, 6% Bentonite
PRODUCTION	Tail		2883	4811	210	1.44	13	302.4	20	TXI Lite	3% Gas Migration Expansion Additive + 0.3% Fluid Loss Agent + 1.5% Sodium Metasilicate
OTHER	Lead	4811	0	2883	245	1.97	12.6	482.65		CI C	5% Salt + 6% Bentonite
OTHER	Tail		2883	4811	210	1.44	13	302.4	20	TXI Light	3% Gas Migration Expansion Additive + 0.3% Fluid Loss Agent + 1.5% Sodium Metasilicate

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: BOP, Choke Manifold, Gas Buster, Blow Down Pit, Flare Line with Igniter, Pre-Mix Pit, Rotating Head

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

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	400	SPUD MUD	8.3	9							
400	3500	SALT SATURATED	9.8	10.5							
3500	5339	OTHER : Cut Brine	8.6	9.5							

Section 6 - Test, Logging, Coring

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

If drill stem tests are performed, Onshore Order 2.111.D shall be followed.

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

CBL,DS,GR,MWD,MUDLOG

Coring operation description for the well:

n/a

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 2350

Anticipated Surface Pressure: 1175.42

Anticipated Bottom Hole Temperature(F): 117

Anticipated abnormal pressures, temperatures, or potential geologic hazards? YES

Describe:

There may be water flows encountered from 600' to 3200' due to offset waterflood.

Contingency Plans geohazards description:

The plan will be to set intermediate deeper than deepest offset injector. Wrapped pipe will be used for intermediate csg around water flow zone to help preserve life of casing. Depending on severity of flow, a DVT may be used and a 2 stage cement job will be performed. May also use a 12 ppg spacer ahead of cement to help control water flow utilizing top kill method. H2S may be encountered, but there will be H2S equipment on location along with a detection system. See attached H2S drilling ops plan.

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2SOpsContgPlan_CedarLakeFedCA725H_09-19-2016.pdf

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

CedarLakeFedCA 725H_Dir Plan_09-19-2016.pdf

CedarLakeFedCA 725H_AC Report_09-19-2016.pdf

Other proposed operations facets description:

**Cement 2 stage contingency plan attached. 5-1/2" tapered string will be open hole -uncemented. 7" from DVT to surf will be cemented.

**Cmt info is duplicated in Sec 4 for Prod Cmt. AFMSS requires equal segments in cmt & csg. AFMS application is needing to correlate Sec 3 & Sec 4. Lucinda Lewis with AFMSS is aware of issue. Team working on issue.

Other proposed operations facets attachment:

CedarLkFedCA725H_Cmt_2StageContg_03-07-2017.pdf

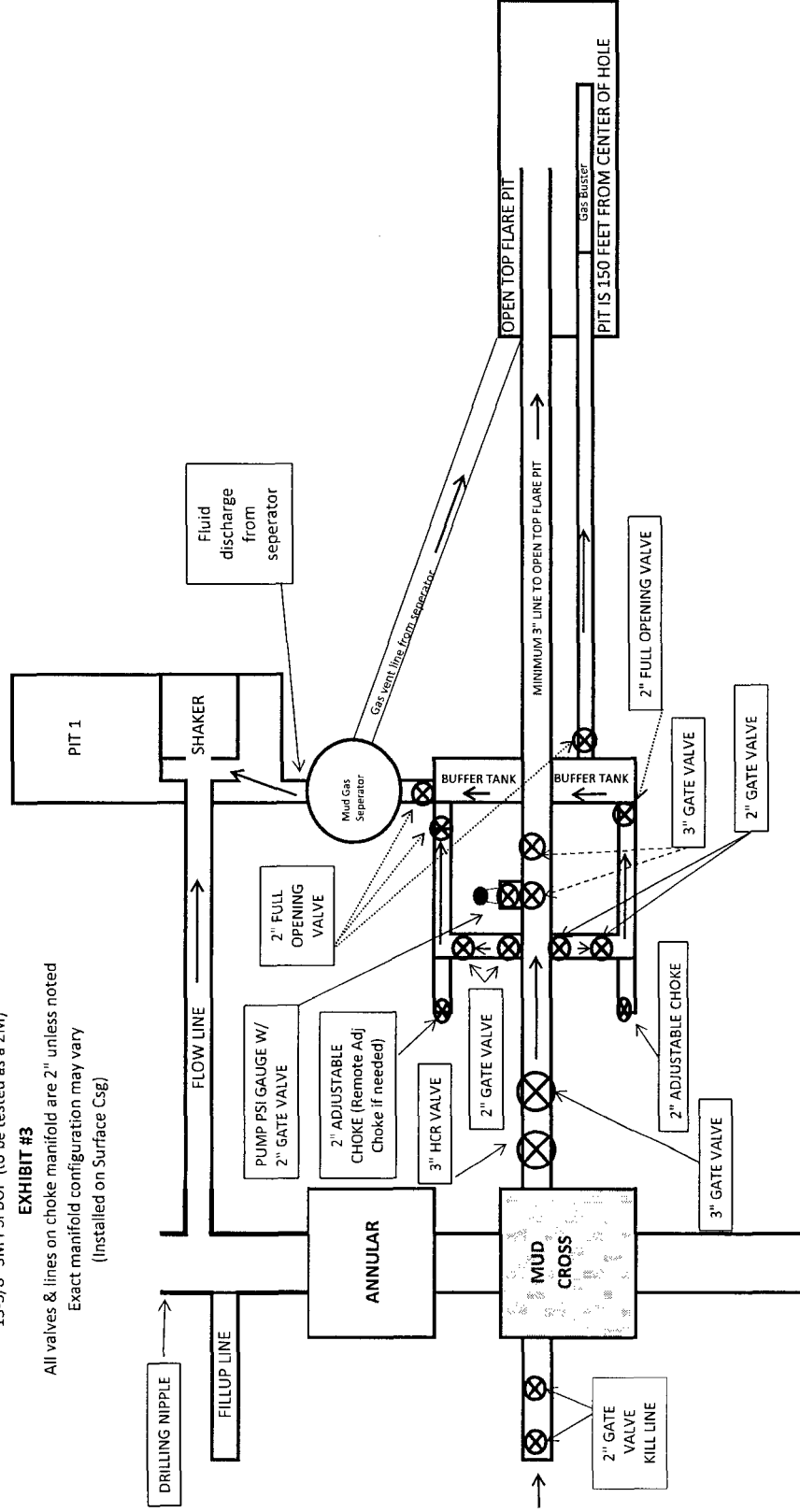
Other Variance attachment:

APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

13-5/8" 3M PSI BOP (to be tested as a 2M)

EXHIBIT #3

All valves & lines on choke manifold are 2" unless noted
Exact manifold configuration may vary
(Installed on Surface Csg)



*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***

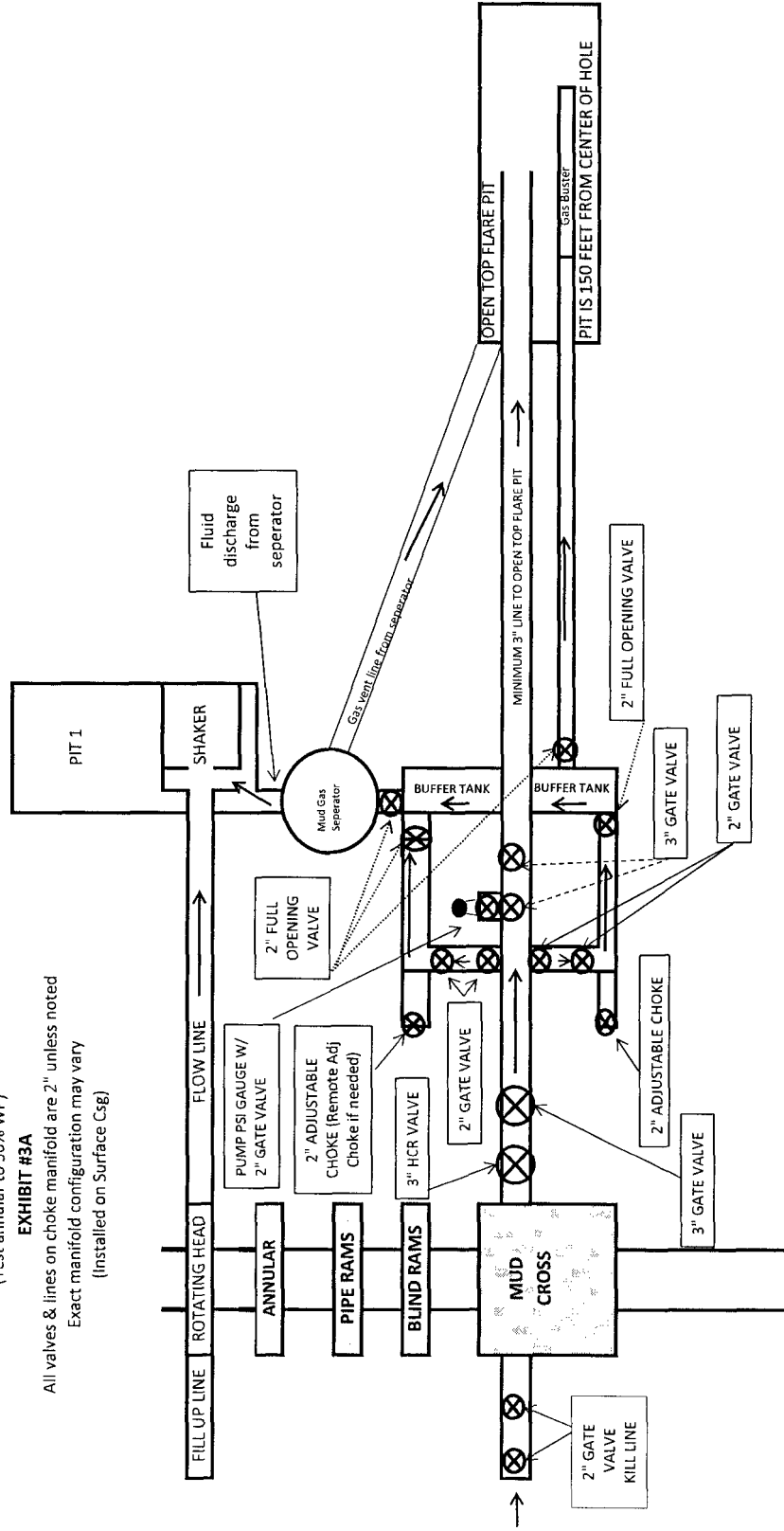
APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

11" 3M PSI BOP (to be tested as a 2M)

(Test annular to 50% WP)

EXHIBIT #3A

All valves & lines on choke manifold are 2" unless noted
Exact manifold configuration may vary
(Installed on Surface Csg)



*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***

Cedar Lake Federal CA 725H Production Casing Tapered String Specs

String	OD/Weight/Grade	Connection	MD Interval (ft)	Minimum Safety Factor (Abs)		
				Burst	Collapse	Axial
Production Casing	7", 29.000 ppf, L-80	LTC, L-80	0-4811.0	1.37	3.10	2.44
	5 1/2", 17.000 ppf, L-80	LTC, L-80	4811.0-9401.9	1.14	2.50	1.82

*This will have an open hole completion consisting of open hole hydraulic packers and sliding sleeves attached to the 5-1/2" casing. 5-1/2" will crossover to 7" where a DV tool will be placed at the bottom of the 7" (KOP @ ~4811'). The 5-1/2" casing will be uncemented and the 7" from the DV tool to surface will be cemented.

Production Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Pressure Test
 - 6500 psi with 8.33 ppg fresh water
- Green Cement Pressure Test
 - 3050 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water at the DV Tool located at kick off point

Production Loads

- Tubing Leak
 - Packer Fluid Density at 8.6 ppg
 - Packer Depth of 4780'
 - Perf Depth at 9401.9' MD
 - Gas/Oil Gradient 0.35 psi/ft
 - Reservoir pressure at 2349 psi
- Injection Down Casing
 - Injection pressure of 6500 psi
 - Injection density of 9.4 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
 - 9.0 ppg mud weight above TOC
 - 8.33 ppg below TOC
 - Pore pressure applied in the openhole

Collapse Loads

Internal Profile

Drilling Loads

- Cementing
 - Mud weight at shoe is 9.0 ppg
 - TOC at surface
 - Lead Slurry Density is 12.6 ppg
 - Tail Slurry Density is 13.0 ppg
 - Tail Slurry Length at 1000'.
 - Displacement fluid density is 8.33 ppg

Production Loads

- Full Evacuation
- Above/Below Packer
 - Reservoir pressure at 2350 psi
 - Density Above Packer at 8.6 ppg
 - Density Below Packer at 6.0 ppg
 - Assuming a fluid drop above the packer

External Profile

- Fluid Gradients w/ Pore Pressure
 - Fluid Gradient Above TOC is 9.0 ppg
 - Fluid Gradient Below TOC is 9.0 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 3050 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Cedar Lake Federal CA 725H Surface Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
11	0	8.33	No
300	130	8.33	No
2343	1031	8.47	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
11	0	9
300	187	12.0
2343	1644	13.5
4550	2364	10.0

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.7°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Surface Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Fracture @ Shoe w/ Gas Gradient Above
 - No margin of error on frac gradient
 - Using a 0.7 ppg gas gradient
- Lost Returns with Water
 - No margin of error on frac gradient
 - Mud/Water Interface at 400'
 - Mud weight with losses at 10.2 ppg
- Pressure Test
 - 1200 psi casing pressure test with 8.33 ppg fresh water
- Green Cement Pressure Test
 - 750 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water

External Profile

- Mud and Cement Mix-Water
 - TOC at surface
 - Mud weight is 8.6 ppg
 - Cement Mix-Water Density is 8.33 ppg

Collapse Loads

Internal Profile

Drilling Loads

- Partial Evacuation
 - 50% evacuation. Top of mud level at 200'.
 - Mud Weight is 8.6 ppg
- Lost Returns with Mud Drop
 - Losses occurring at 750'
 - Pore Pressure at 8.0 ppg
 - Current Mud Weight at 10.2 ppg
 - Mud level drops to 162'
- Cementing
 - Single Slurry at 14.8 ppg

- TOC at surface
- Mud Weight at shoe 8.6 ppg
- Displacement fluid density at 8.33 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
 - Fluid Gradient Above TOC is 8.6 ppg
 - Fluid Gradient Below TOC is 8.6 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 750 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Cedar Lake Federal CA 725H Intermediate Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
11	0	8.33	No
300	130	8.33	No
2343	1031	8.47	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
11	0	9
300	187	12.0
2343	1644	13.5
4550	2364	10.0

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.7°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Intermediate Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Fracture @ Shoe w/ Gas Gradient Above
 - No margin of error on frac gradient
 - Using a 0.7 ppg gas gradient
- Lost Returns with Water
 - No margin of error on frac gradient
 - Mud/Water Interface at 3500'
 - Mud weight with losses at 9.0 ppg
- Pressure Test
 - 1500 psi casing pressure test with 8.33 ppg fresh water
- Green Cement Pressure Test
 - 1800 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water

External Profile

- Mud and Cement Mix-Water
 - TOC at surface
 - Mud weight is 10.2 ppg
 - Cement Mix-Water Density is 8.33 ppg

Collapse Loads

Internal Profile

Drilling Loads

- Partial Evacuation
 - 50% evacuation. Top of mud level at 1750'.
 - Mud Weight is 10.2 ppg
- Lost Returns with Mud Drop
 - Losses occurring at 9401.9' MD
 - Pore Pressure at 8.33 ppg
 - Current Mud Weight at 9.0 ppg
 - Mud level drops to 398'
- Cementing
 - Lead Slurry Density at 12.9 ppg

- Tail Slurry Density at 14.8 ppg
- Tail Slurry Length of 500'
- TOC at surface
- Mud Weight at shoe 10.2 ppg
- Displacement fluid density at 8.33 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
 - Fluid Gradient Above TOC is 10.2 ppg
 - Fluid Gradient Below TOC is 10.2 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 1800 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Cedar Lake Federal CA 725H Production Casing Design Assumptions

Pore Pressure

Vertical Depth (ft)	Pore Pressure/EMW		Permeable Zones
Depth (ft)	(psi)	(ppg)	Zones
11	0	8.33	No
300	130	8.33	No
2343	1031	8.47	No

Fracture Pressure

Vertical Depth (ft)	Fracture Pressure/EMW	
Depth (ft)	(psi)	(ppg)
11	0	9
300	187	12.0
2343	1644	13.5
4550	2364	10.0

Temperature Gradient

Ambient Temperature is 80° F

Temperature gradient of 0.7°/100' TVD

Analysis Options

- Single External Pressure Profile
- Temperature Deration
- Buckling

Production Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Pressure Test
 - 6500 psi with 8.33 ppg fresh water
- Green Cement Pressure Test
 - 3050 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water at the DV Tool located at kick off point

Production Loads

- Tubing Leak
 - Packer Fluid Density at 8.6 ppg
 - Packer Depth of 4780'
 - Perf Depth at 9401.9' MD
 - Gas/Oil Gradient 0.35 psi/ft
 - Reservoir pressure at 2349 psi
- Injection Down Casing
 - Injection pressure of 6500 psi
 - Injection density of 9.4 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
 - 9.0 ppg mud weight above TOC
 - 8.33 ppg below TOC
 - Pore pressure applied in the openhole

Collapse Loads

Internal Profile

Drilling Loads

- Cementing
 - Mud weight at shoe is 9.0 ppg
 - TOC at surface
 - Lead Slurry Density is 12.6 ppg
 - Tail Slurry Density is 13.0 ppg
 - Tail Slurry Length at 1000'.

- Displacement fluid density is 8.33 ppg

Production Loads

- Full Evacuation
- Above/Below Packer
 - Reservoir pressure at 2350 psi
 - Density Above Packer at 8.6 ppg
 - Density Below Packer at 6.0 ppg
 - Assuming a fluid drop above the packer

External Profile

- Fluid Gradients w/ Pore Pressure
 - Fluid Gradient Above TOC is 9.0 ppg
 - Fluid Gradient Below TOC is 9.0 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 3050 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

Cedar Lake Federal CA 725H Production Casing Tapered String Specs

String	OD/Weight/Grade	Connection	MD Interval (ft)	Minimum Safety Factor (Abs)		
				Burst	Collapse	Axial
Production Casing	7", 29.000 ppf, L-80	LTC, L-80	0-4811.0	1.37	3.10	2.44
	5 1/2", 17.000 ppf, L-80	LTC, L-80	4811.0-9401.9	1.14	2.50	1.82

*This will have an open hole completion consisting of open hole hydraulic packers and sliding sleeves attached to the 5-1/2" casing. 5-1/2" will crossover to 7" where a DV tool will be placed at the bottom of the 7" (KOP @ ~4811'). The 5-1/2" casing will be uncemented and the 7" from the DV tool to surface will be cemented.

Production Casing Loads

Burst Loads

Internal Profile

Drilling Loads

- Pressure Test
 - 6500 psi with 8.33 ppg fresh water
- Green Cement Pressure Test
 - 3050 psi put on casing when bumping the plug with 8.33 ppg displacement fresh water at the DV Tool located at kick off point

Production Loads

- Tubing Leak
 - Packer Fluid Density at 8.6 ppg
 - Packer Depth of 4780'
 - Perf Depth at 9401.9' MD
 - Gas/Oil Gradient 0.35 psi/ft
 - Reservoir pressure at 2349 psi
- Injection Down Casing
 - Injection pressure of 6500 psi
 - Injection density of 9.4 ppg

External Profile

- Fluid Gradients w/ Pore Pressure
 - 9.0 ppg mud weight above TOC
 - 8.33 ppg below TOC
 - Pore pressure applied in the openhole

Collapse Loads

Internal Profile

Drilling Loads

- Cementing
 - Mud weight at shoe is 9.0 ppg
 - TOC at surface
 - Lead Slurry Density is 12.6 ppg
 - Tail Slurry Density is 13.0 ppg
 - Tail Slurry Length at 1000'.
 - Displacement fluid density is 8.33 ppg

Production Loads

- Full Evacuation
- Above/Below Packer
 - Reservoir pressure at 2350 psi
 - Density Above Packer at 8.6 ppg
 - Density Below Packer at 6.0 ppg
 - Assuming a fluid drop above the packer

External Profile

- Fluid Gradients w/ Pore Pressure
 - Fluid Gradient Above TOC is 9.0 ppg
 - Fluid Gradient Below TOC is 9.0 ppg

Axial Loads

- Average Running in hole speed at 2.0 ft/s
- Overpull of 100,000 lbf
- 3050 psi Green Cement Pressure Test
- Service Loads from Burst and Collapse

HYDROGEN SULFIDE (H₂S) DRILLING OPERATIONS PLAN

Hydrogen Sulfide Training:

All regularly assigned personnel, contracted or employed by Apache Corporation will receive training from qualified instructor(s) in the following areas prior to commencing drilling possible hydrogen sulfide bearing formations in this well:

- The hazards and characteristics of hydrogen sulfide (H₂S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S detectors, alarms, warning systems, briefing area, evacuation procedures & prevailing winds.
- The proper techniques for first aid and rescue procedures.

Supervisory personnel will be trained in the following areas:

- The effects of H₂S on metal components. If high tensile tubulars are to be utilized, personnel will be trained in their special maintenance requirements.
- Corrective action & shut-in procedures when drilling or reworking a well & blowout prevention / well control procedures.
- The contents and requirements of the H₂S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500') and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received proper training.

H₂S SAFETY EQUIPMENT AND SYSTEMS:

Well Control Equipment that will be available & installed if H₂S is encountered:

- Flare Line with electronic igniter or continuous pilot.
- Choke manifold with a minimum of one remote choke.
- Blind rams & pipe rams to accommodate all pipe sizes with properly sized closing unit.
- Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head & flare gun with flares

Protective Equipment for Essential Personnel:

- Mark II Survive-air 30 minute units located in dog house & at briefing areas, as indicated on wellsite diagram.

H₂S Detection and Monitoring Equipment:

- Two portable H₂S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H₂S levels of 20 ppm are reached.
- One portable H₂S monitor positioned near flare line.

H₂S Visual Warning Systems:

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

Mud Program:

- The Mud Program has been designed to minimize the volume of H₂S circulated to the surface. Proper mud weights, safe drilling practices & the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.
- A mud-gas separator and H₂S gas buster will be utilized as needed.

Metallurgy:

- All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold & lines, & valves will be suitable for H₂S service.
- All elastomers used for packing & seals shall be H₂S trim.

Communication:

- Cellular telephone and 2-way radio communications in company vehicles, rig floor and mud logging trailer.

HYDROGEN SULFIDE (H₂S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H₂S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operators and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the :
 - Detection of H₂S, and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

Characteristics of H₂S and SO₂

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

Contacting Authorities

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

WELL CONTROL EMERGENCY RESPONSE PLAN

I. GENERAL PHILOSOPHY

Our objective is to ensure that during an emergency, a predetermined procedure is followed so that prompt decisions can be made based on accurate information.

The best way to handle an emergency is with an experienced organization set up for the sole purpose of solving the problem. The *Well Control Emergency Response Team* was organized to handle dangerous & expensive well control problems. The *Team* is structured such that each individual can contribute the most from his area of expertise. Key decision-makers are determined prior to an emergency to avoid confusion about who is in charge.

If the well is flowing uncontrolled at the surface or subsurface, *The Emergency Response Team* will be mobilized. The *Team* is customized for the people currently on the Apache staff. Staff changes may require a change in the plan.

II. EMERGENCY PROCEDURE ON DRILLING OR COMPLETION OPERATIONS

- A. In the event of an emergency the *Drilling Foreman* or *Tool-Pusher* will immediately contact only one of the following starting with the first name listed:

Name	Office	Mobile	Home
Danny Laman – Drlg Superintendent	432-818-1022	432-634-0288	
John Vacek – Drilling Engineer	432-818-1882	281-222-1812	
Bobby Smith – Drilling Manager	432-818-1020	432-556-7701	
Bill Jones – EH&S Coordinator		432-967-9576	

***This one phone call will free the Drilling Foreman to devote his full time to securing the safety of personnel & equipment. This call will initiate the process to mobilize the Well Control Emergency Response Team. Apache maintains an Emergency Telephone Conference Room in the Houston office. This room is available for us by the Permian Region. The room has 50 separate telephone lines.*

- B. The Apache employee contacted by the Drilling Foreman will begin contacting the rest of the *Team*. If **DANNY LAMAN** is out of contact, **JOHN VACEK** will be notified.
- C. If a member of the *Emergency Response Team* is away from the job, he must be available for call back. Telephone numbers should be left with secretaries or a key decision-maker.
- D. Apache's reporting procedure for spills or releases of oil or hazardous materials will be implemented when spills or releases have occurred or are probable.

EMERGENCY RESPONSE NUMBERS:

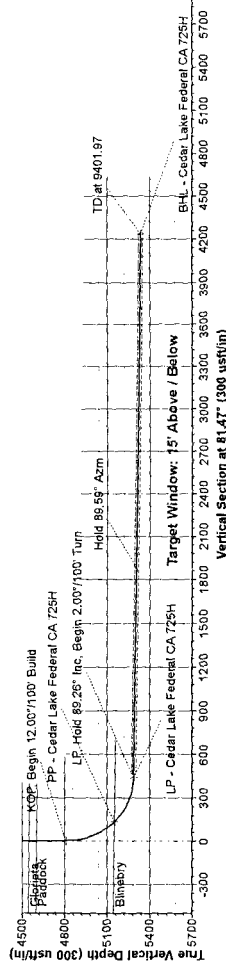
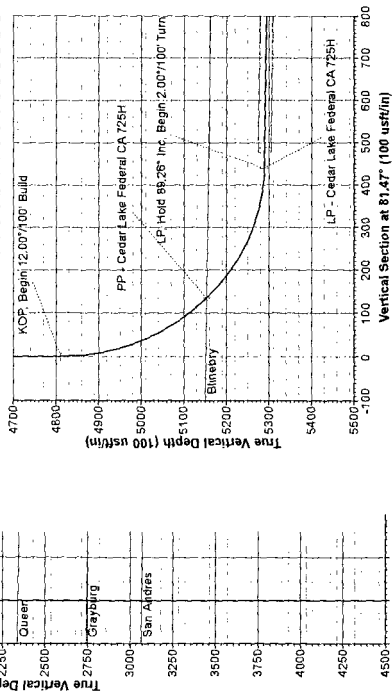
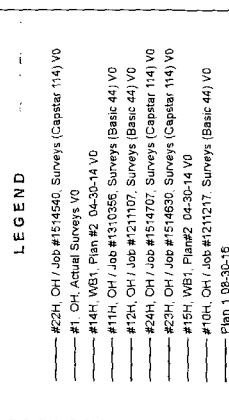
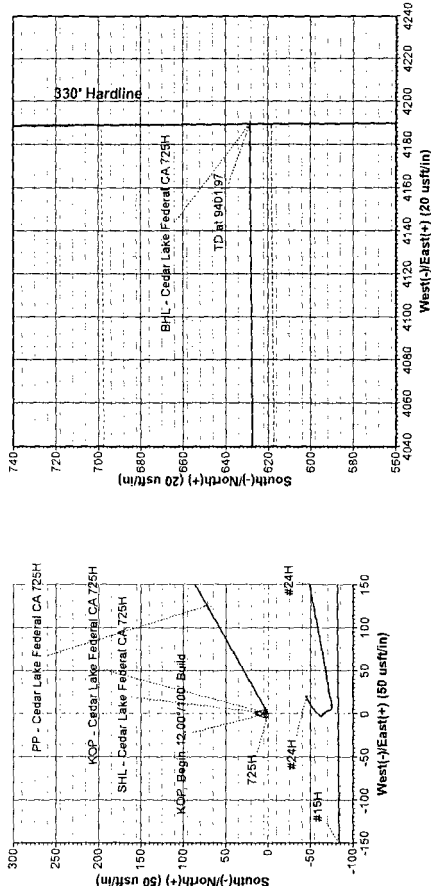
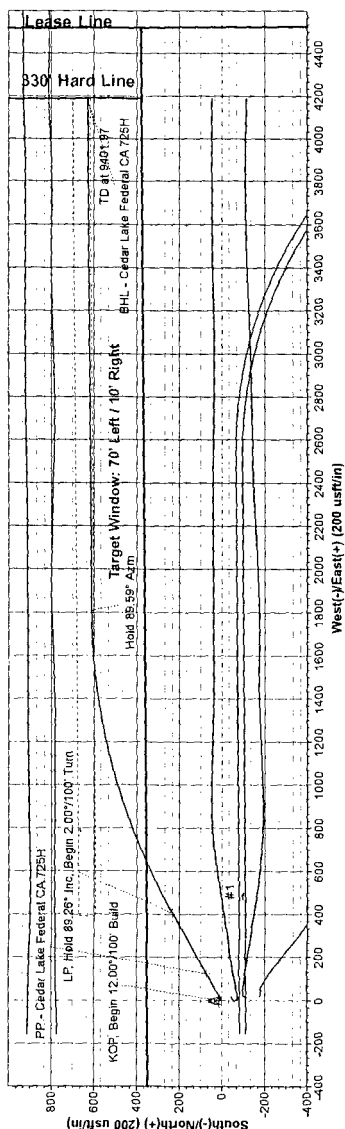
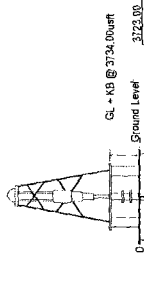
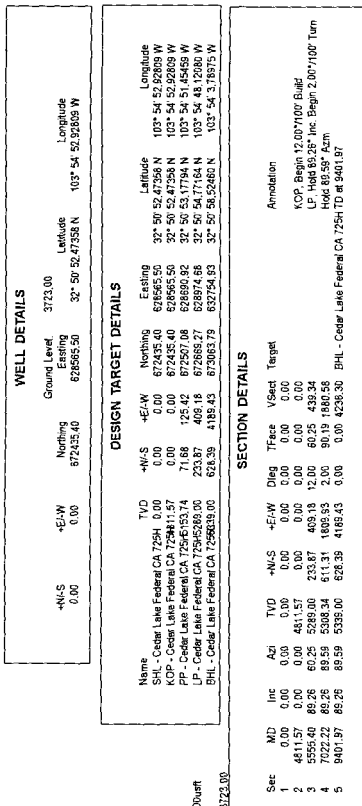
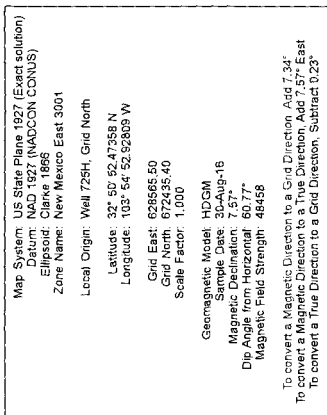
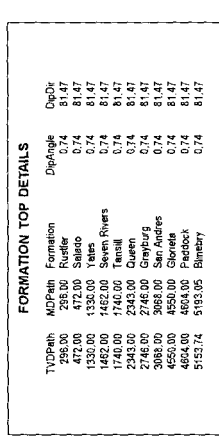
SHERIFF DEPARTMENT	
Eddy County	575-887-7551
Lea County	575-396-3611
FIRE DEPARTMENT	
	911
Artesia	575-746-5050
Carlsbad	575-885-2111
Eunice	575-394-2111
Hobbs	575-397-9308
Jal	575-395-2221
Lovington	575-396-2359
HOSPITALS	
	911
Artesia Medical Emergency	575-746-5050
Carlsbad Medical Emergency	575-885-2111
Eunice Medical Emergency	575-394-2112
Hobbs Medical Emergency	575-397-9308
Jal Medical Emergency	575-395-2221
Lovington Medical Emergency	575-396-2359
AGENT NOTIFICATIONS	
Bureau of Land Management	575-393-3612
New Mexico Oil Conservation Division	575-393-6161



**PHOENIX
TECHNOLOGY SERVICES**

Project: Eddy County, NM (NAD27 NME)
Site: Cedar Lake Federal CA
Well: 725H
Wellbore: OH
Design: Plan 1 08-30-16
Rig:

EXPLORING WHAT'S POSSIBLE





Apache Corporation

Eddy County, NM (NAD27 NME)

Cedar Lake Federal CA

725H

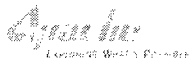
OH

Plan: Plan 1 08-30-16

Standard Planning Report

30 August, 2016





Phoenix Technology Services LP Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 725H
Company:	Apache Corporation	TVD Reference:	GL + KB @ 3734.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3734.00usft
Site:	Cedar Lake Federal CA	North Reference:	Grid
Well:	725H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 08-30-16		

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

Site	Cedar Lake Federal CA		
Site Position:		Northing:	670,624.80 usft
From:	Map	Easting:	633,024.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 34.37962 N
		Longitude:	103° 54' 0.75173 W
		Grid Convergence:	0.23 °

Well	725H		
Well Position	+N/-S	1,810.60 usft	Northing: 672,435.40 usft
	+E/-W	-4,458.60 usft	Easting: 628,565.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 50' 52.47358 N
		Longitude:	103° 54' 52.92809 W
		Ground Level:	3,723.00 usft

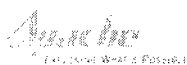
Wellbore	OH		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/30/2016	7.57	60.77	48,458

Design	Plan 1 08-30-16		
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Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 81.47

Plan Sections										
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	
4,811.57	0.00	0.00	4,811.57	0.00	0.00	0.00	0.00	0.00	0.00	
5,555.40	89.26	60.25	5,289.00	233.87	409.18	12.00	12.00	0.00	60.25	
7,022.22	89.26	89.59	5,308.34	611.31	1,809.93	2.00	0.00	2.00	90.19	
9,401.97	89.26	89.59	5,339.00	628.39	4,189.43	0.00	0.00	0.00	0.00	BHL - Cedar Lake F



Phoenix Technology Services LP

Planning Report



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Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3734.00usft
Site:	Cedar Lake Federal CA	North Reference:	Grid
Well:	725H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 08-30-16		

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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	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
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,811.57	0.00	0.00	4,811.57	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 12.00°/100' Build									
4,900.00	10.61	60.25	4,899.50	4.05	7.09	7.61	12.00	12.00	0.00
5,000.00	22.61	60.25	4,995.15	18.21	31.86	34.21	12.00	12.00	0.00
5,100.00	34.61	60.25	5,082.78	41.93	73.36	78.77	12.00	12.00	0.00



Phoenix Technology Services LP

Planning Report



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Company:	Apache Corporation	TVD Reference:	GL + KB @ 3734.00usft
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Site:	Cedar Lake Federal CA	North Reference:	Grid
Well:	725H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 08-30-16		

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)
5,200.00	46.61	60.25	5,158.55	74.17	129.77	139.34	12.00	12.00	0.00
5,300.00	58.61	60.25	5,219.16	113.53	198.63	213.27	12.00	12.00	0.00
5,400.00	70.61	60.25	5,261.96	158.27	276.92	297.33	12.00	12.00	0.00
5,500.00	82.61	60.25	5,285.07	206.46	361.23	387.85	12.00	12.00	0.00
5,555.40	89.26	60.25	5,289.00	233.87	409.18	439.34	12.00	12.00	0.00
LP, Hold 89.26° Inc, Begin 2.00°/100' Turn									
5,600.00	89.26	61.14	5,289.57	255.69	448.07	481.03	2.00	-0.01	2.00
5,700.00	89.25	63.14	5,290.87	302.41	536.47	575.39	2.00	-0.01	2.00
5,800.00	89.25	65.14	5,292.18	346.02	626.44	670.83	2.00	0.00	2.00
5,900.00	89.24	67.14	5,293.50	386.46	717.88	767.26	2.00	0.00	2.00
6,000.00	89.24	69.14	5,294.83	423.69	810.68	864.56	2.00	0.00	2.00
6,100.00	89.24	71.14	5,296.16	457.65	904.72	962.59	2.00	0.00	2.00
6,200.00	89.24	73.14	5,297.49	488.31	999.89	1,061.26	2.00	0.00	2.00
6,300.00	89.24	75.14	5,298.82	515.63	1,096.07	1,160.43	2.00	0.00	2.00
6,400.00	89.24	77.14	5,300.16	539.58	1,193.15	1,259.98	2.00	0.00	2.00
6,500.00	89.24	79.14	5,301.49	560.12	1,291.00	1,359.80	2.00	0.00	2.00
6,600.00	89.24	81.14	5,302.81	577.23	1,389.51	1,459.76	2.00	0.00	2.00
6,700.00	89.24	83.14	5,304.14	590.90	1,488.56	1,559.74	2.00	0.00	2.00
6,800.00	89.25	85.14	5,305.45	601.10	1,588.03	1,659.62	2.00	0.00	2.00
6,900.00	89.25	87.14	5,306.76	607.83	1,687.79	1,759.27	2.00	0.01	2.00
7,000.00	89.26	89.14	5,308.05	611.06	1,787.72	1,858.58	2.00	0.01	2.00
7,022.22	89.26	89.59	5,308.34	611.31	1,809.93	1,880.58	2.00	0.01	2.00
Hold 89.59° Azm									
7,100.00	89.26	89.59	5,309.34	611.87	1,887.71	1,957.58	0.00	0.00	0.00
7,200.00	89.26	89.59	5,310.63	612.59	1,987.70	2,056.57	0.00	0.00	0.00
7,300.00	89.26	89.59	5,311.92	613.30	2,087.69	2,155.56	0.00	0.00	0.00
7,400.00	89.26	89.59	5,313.21	614.02	2,187.68	2,254.55	0.00	0.00	0.00
7,500.00	89.26	89.59	5,314.50	614.74	2,287.66	2,353.54	0.00	0.00	0.00
7,600.00	89.26	89.59	5,315.78	615.46	2,387.65	2,452.53	0.00	0.00	0.00
7,700.00	89.26	89.59	5,317.07	616.17	2,487.64	2,551.52	0.00	0.00	0.00
7,800.00	89.26	89.59	5,318.36	616.89	2,587.63	2,650.51	0.00	0.00	0.00
7,900.00	89.26	89.59	5,319.65	617.61	2,687.62	2,749.50	0.00	0.00	0.00
8,000.00	89.26	89.59	5,320.94	618.33	2,787.61	2,848.49	0.00	0.00	0.00
8,100.00	89.26	89.59	5,322.23	619.05	2,887.60	2,947.48	0.00	0.00	0.00
8,200.00	89.26	89.59	5,323.51	619.76	2,987.59	3,046.47	0.00	0.00	0.00
8,300.00	89.26	89.59	5,324.80	620.48	3,087.58	3,145.46	0.00	0.00	0.00
8,400.00	89.26	89.59	5,326.09	621.20	3,187.57	3,244.45	0.00	0.00	0.00
8,500.00	89.26	89.59	5,327.38	621.92	3,287.56	3,343.44	0.00	0.00	0.00
8,600.00	89.26	89.59	5,328.67	622.63	3,387.55	3,442.43	0.00	0.00	0.00
8,700.00	89.26	89.59	5,329.96	623.35	3,487.53	3,541.42	0.00	0.00	0.00
8,800.00	89.26	89.59	5,331.24	624.07	3,587.52	3,640.41	0.00	0.00	0.00
8,900.00	89.26	89.59	5,332.53	624.79	3,687.51	3,739.39	0.00	0.00	0.00
9,000.00	89.26	89.59	5,333.82	625.50	3,787.50	3,838.38	0.00	0.00	0.00
9,100.00	89.26	89.59	5,335.11	626.22	3,887.49	3,937.37	0.00	0.00	0.00
9,200.00	89.26	89.59	5,336.40	626.94	3,987.48	4,036.36	0.00	0.00	0.00
9,300.00	89.26	89.59	5,337.69	627.66	4,087.47	4,135.35	0.00	0.00	0.00
9,400.00	89.26	89.59	5,338.97	628.38	4,187.46	4,234.34	0.00	0.00	0.00
9,401.97	89.26	89.59	5,339.00	628.39	4,189.43	4,236.30	0.00	0.00	0.00
TD at 9401.97									



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 725H
Company:	Apache Corporation	TVD Reference:	GL + KB @ 3734.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL + KB @ 3734.00usft
Site:	Cedar Lake Federal CA	North Reference:	Grid
Well:	725H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 08-30-16		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL - Cedar Lake Fer - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	672,435.40	628,565.50	32° 50' 52.47358 N 03° 54' 52.92809 W	
KOP - Cedar Lake Fe - plan hits target center - Point	0.00	0.00	4,811.57	0.00	0.00	672,435.40	628,565.50	32° 50' 52.47358 N 03° 54' 52.92809 W	
PP - Cedar Lake Fede - plan misses target center by 0.02usft at 5193.07usft MD (5153.75 TVD, 71.69 N, 125.43 E) - Point	0.00	0.00	5,153.74	71.68	125.42	672,507.08	628,690.92	32° 50' 53.17795 N 03° 54' 51.45459 W	
LP - Cedar Lake Fede - plan hits target center - Point	0.00	0.00	5,289.00	233.87	409.18	672,669.26	628,974.68	32° 50' 54.77165 N 03° 54' 48.12080 W	
BHL - Cedar Lake Fer - plan hits target center - Rectangle (sides W80.00 H3,796.96 D30.00)	0.74	89.59	5,339.00	628.39	4,189.43	673,063.79	632,754.93	32° 50' 58.52460 N 103° 54' 3.78975 W	

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
296.00	296.00	Rustler		0.74	81.47
472.00	472.00	Salado		0.74	81.47
1,330.00	1,330.00	Yates		0.74	81.47
1,462.00	1,462.00	Seven Rivers		0.74	81.47
1,740.00	1,740.00	Tansill		0.74	81.47
2,343.00	2,343.00	Queen		0.74	81.47
2,746.00	2,746.00	Grayburg		0.74	81.47
3,068.00	3,068.00	San Andres		0.74	81.47
4,550.00	4,550.00	Glorieta		0.74	81.47
4,604.00	4,604.00	Paddock		0.74	81.47
5,193.05	5,153.74	Blainebr		0.74	81.47

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,811.57	4,811.57	0.00	0.00	KOP, Begin 12.00°/100' Build
5,555.40	5,289.00	233.87	409.18	LP, Hold 89.26° Inc, Begin 2.00°/100' Turn
7,022.22	5,308.34	611.31	1,809.93	Hold 89.59° Azm
9,401.97	5,339.00	628.39	4,189.43	TD at 9401.97



Apache Corporation

**Eddy County, NM (NAD27 NME)
Cedar Lake Federal CA
725H**

**OH
Plan 1 08-30-16**

Anticollision Report

30 August, 2016





Phoenix Technology Services LP

Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

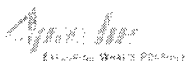
Reference	Plan 1 08-30-16
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.00usft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000.00 u
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program		Date	8/30/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	9,401.97	Plan 1 08-30-16 (OH)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Raven Federal						
#1 - OH - Actual Surveys	5,456.04	5,262.89	321.65	292.19	10.915	CC, ES
#1 - OH - Actual Surveys	5,500.00	5,269.95	324.58	294.68	10.855	SF
#10H - OH / Job #1211217 - Surveys (Basic 44)	4,900.00	9,455.44	776.03	629.65	5.302	SF
#10H - OH / Job #1211217 - Surveys (Basic 44)	9,330.23	5,319.05	485.06	423.76	7.913	CC, ES
#11H - OH / Job #1310356 - Surveys (Basic 44)	9,402.54	3,501.00	1,932.47	1,892.94	48.896	CC, ES, SF
#12H - OH / Job #1211107 - Surveys (Basic 44)	9,402.54	5,346.65	582.40	455.26	4.581	CC, ES, SF
#14H - WB1 - Plan #2 04-30-14	4,788.72	8,921.59	112.58	54.62	1.942	CC
#14H - WB1 - Plan #2 04-30-14	4,900.00	8,912.54	160.72	38.59	1.316	Level 3, ES, SF
#15H - WB1 - Plan #2 04-30-14	5,248.94	9,307.75	208.84	102.24	1.959	CC, ES, SF
#22H - OH / Job #1514540 - Surveys (Capstar 114)	0.00	0.00	176.57			
#22H - OH / Job #1514540 - Surveys (Capstar 114)	4,500.00	4,500.00	187.26	155.45	5.888	ES
#22H - OH / Job #1514540 - Surveys (Capstar 114)	4,700.00	4,696.57	188.85	155.69	5.694	SF
#23H - OH / Job #1514630 - Surveys (Capstar 114)	4,277.97	4,277.13	102.37	50.84	1.986	CC
#23H - OH / Job #1514630 - Surveys (Capstar 114)	4,300.00	4,298.99	102.39	50.68	1.980	ES, SF
#24H - OH / Job #1514707 - Surveys (Capstar 114)	276.76	277.77	49.15	47.58	31.192	CC
#24H - OH / Job #1514707 - Surveys (Capstar 114)	4,810.79	4,812.86	76.30	44.27	2.382	ES, SF

Offset Design Raven Federal - #1 - OH - Actual Surveys													Offset Site Error: 0.00 usft	
Survey Program: 100-NS-GYRO-MS													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	0.00	17.00	0.00	0.00	101.15	-96.41	489.08	498.78					
100.00	100.00	83.51	100.51	0.16	0.10	101.16	-96.48	489.02	498.45	498.20	0.25	1,955.461		
143.20	143.20	126.20	143.20	0.31	0.17	101.17	-96.57	488.97	498.42	497.93	0.49	1,022.601		
200.00	200.00	181.70	198.70	0.52	0.30	101.19	-96.73	489.01	498.49	497.67	0.82	611.140		
300.00	300.00	279.37	296.36	0.88	0.51	101.22	-97.07	489.44	498.98	497.60	1.39	359.859		
400.00	400.00	382.92	399.91	1.23	0.75	101.28	-97.70	489.83	499.48	497.50	1.98	252.271		
468.69	468.69	451.54	468.53	1.48	0.91	101.36	-98.39	489.65	499.44	497.04	2.39	208.538		
500.00	500.00	482.32	499.31	1.59	0.99	101.39	-98.65	489.63	499.47	496.88	2.58	193.248		
600.00	600.00	581.83	598.82	1.95	1.25	101.48	-99.45	489.68	499.67	496.47	3.20	156.011		
700.00	700.00	681.50	698.48	2.31	1.51	101.56	-100.19	489.80	499.94	496.12	3.82	130.770		
800.00	800.00	781.70	798.68	2.67	1.78	101.61	-100.70	489.99	500.24	495.79	4.44	112.552		
900.00	900.00	881.30	898.28	3.03	2.02	101.65	-101.07	490.21	500.53	495.47	5.05	99.073		

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



Phoenix Technology Services LP

Anticollision Report

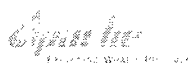


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #1 - OH - Actual Surveys											Offset Site Error:	0.00 usft
Survey Program: 100-NS-GYRO-MS											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)		Between Centres (usft)	Between Ellipses (usft)				
1,000.00	1,000.00	980.70	997.68	3.39	2.25	101.67	-101.28	490.58	500.93	495.29	5.64	88.887
1,100.00	1,100.00	1,077.23	1,094.21	3.74	2.44	101.65	-101.30	491.32	501.68	495.50	6.18	81.168
1,200.00	1,200.00	1,175.49	1,192.46	4.10	2.61	101.58	-101.00	492.77	503.07	496.36	6.71	74.976
1,300.00	1,300.00	1,274.67	1,291.62	4.46	2.78	101.50	-100.60	494.45	504.65	497.41	7.25	69.645
1,400.00	1,400.00	1,374.72	1,391.65	4.82	2.98	101.42	-100.28	496.23	506.33	498.52	7.80	64.878
1,500.00	1,500.00	1,476.54	1,493.46	5.18	3.22	101.40	-100.33	497.78	507.83	499.44	8.39	60.497
1,600.00	1,600.00	1,578.02	1,594.93	5.54	3.46	101.40	-100.61	498.89	508.96	499.95	9.00	56.545
1,700.00	1,700.00	1,679.77	1,696.68	5.90	3.72	101.41	-100.82	499.71	509.79	500.17	9.62	53.017
1,800.00	1,800.00	1,779.55	1,796.46	6.25	3.98	101.42	-101.07	500.30	510.42	500.19	10.23	49.891
1,900.00	1,900.00	1,879.60	1,896.51	6.61	4.24	101.44	-101.35	500.96	511.12	500.27	10.85	47.114
2,000.00	2,000.00	1,982.08	1,998.98	6.97	4.51	101.45	-101.59	501.42	511.61	500.13	11.48	44.582
2,100.00	2,100.00	2,082.88	2,099.79	7.33	4.75	101.46	-101.67	501.49	511.69	499.61	12.08	42.355
2,200.00	2,200.00	2,182.88	2,199.79	7.69	4.94	101.46	-101.71	501.52	511.73	499.10	12.63	40.532
2,300.00	2,300.00	2,282.99	2,299.89	8.05	5.06	101.45	-101.61	501.57	511.76	498.65	13.11	39.038
2,400.00	2,400.00	2,382.90	2,399.81	8.40	5.18	101.44	-101.47	501.63	511.79	498.21	13.58	37.686
2,500.00	2,500.00	2,483.67	2,500.58	8.76	5.27	101.41	-101.25	501.65	511.76	497.73	14.03	36.466
2,600.00	2,600.00	2,583.88	2,600.79	9.12	5.33	101.39	-101.05	501.54	511.62	497.17	14.45	35.415
2,700.00	2,700.00	2,683.54	2,700.45	9.48	5.37	101.39	-101.00	501.42	511.49	496.64	14.85	34.445
2,800.00	2,800.00	2,783.40	2,800.30	9.84	5.47	101.40	-101.09	501.33	511.42	496.12	15.31	33.413
2,900.00	2,900.00	2,883.86	2,900.76	10.20	5.62	101.44	-101.43	501.16	511.33	495.51	15.81	32.336
3,000.00	3,000.00	2,983.66	3,000.57	10.56	5.76	101.47	-101.69	500.97	511.18	494.87	16.32	31.328
3,100.00	3,100.00	3,084.21	3,101.11	10.91	5.88	101.49	-101.78	500.79	511.03	494.24	16.80	30.424
3,200.00	3,200.00	3,184.97	3,201.87	11.27	5.98	101.50	-101.79	500.49	510.74	493.49	17.26	29.599
3,300.00	3,300.00	3,284.96	3,301.87	11.63	6.09	101.51	-101.80	500.10	510.36	492.65	17.72	28.806
3,400.00	3,400.00	3,385.18	3,402.08	11.99	6.19	101.51	-101.72	499.73	509.98	491.80	18.18	28.052
3,500.00	3,500.00	3,483.78	3,500.68	12.35	6.29	101.49	-101.54	499.47	509.69	491.05	18.64	27.342
3,600.00	3,600.00	3,584.58	3,601.48	12.71	6.41	101.48	-101.42	499.32	509.52	490.40	19.11	26.657
3,700.00	3,700.00	3,685.61	3,702.51	13.06	6.53	101.47	-101.24	498.95	509.12	489.53	19.59	25.983
3,800.00	3,800.00	3,785.98	3,802.87	13.42	6.66	101.45	-100.98	498.45	508.58	488.50	20.08	25.324
3,900.00	3,900.00	3,886.58	3,903.48	13.78	6.80	101.43	-100.70	497.87	507.96	487.38	20.58	24.682
4,000.00	4,000.00	3,986.24	4,003.13	14.14	6.94	101.40	-100.26	497.28	507.30	486.22	21.08	24.066
4,100.00	4,100.00	4,088.12	4,105.01	14.50	7.09	101.35	-99.67	496.60	506.53	484.94	21.59	23.463
4,200.00	4,200.00	4,188.46	4,205.34	14.86	7.25	101.29	-98.92	495.68	505.48	483.38	22.10	22.870
4,300.00	4,300.00	4,287.84	4,304.72	15.22	7.41	101.22	-98.20	494.81	504.48	481.86	22.62	22.301
4,400.00	4,400.00	4,389.37	4,406.24	15.57	7.57	101.15	-97.34	493.88	503.42	480.27	23.15	21.748
4,500.00	4,500.00	4,489.01	4,505.87	15.93	7.75	101.06	-96.37	492.82	502.19	478.51	23.68	21.209
4,600.00	4,600.00	4,588.99	4,605.84	16.29	7.92	100.99	-95.48	491.82	501.03	476.82	24.21	20.692
4,700.00	4,700.00	4,689.34	4,706.18	16.65	8.11	100.93	-94.74	490.73	499.84	475.08	24.76	20.190
4,800.00	4,800.00	4,788.32	4,805.16	17.01	8.30	100.93	-94.54	489.61	498.69	473.38	25.30	19.709
4,900.00	4,899.50	4,888.85	4,905.68	17.36	8.49	41.90	-94.50	488.48	491.41	465.80	25.61	19.190
5,000.00	4,995.15	4,985.68	5,002.50	17.71	8.68	46.19	-94.36	487.10	489.01	443.56	25.45	18.428
5,100.00	5,082.78	5,072.06	5,088.86	18.06	8.86	53.90	-94.39	485.73	484.35	408.96	25.39	17.107
5,200.00	5,158.55	5,147.00	5,163.80	18.46	9.01	65.01	-94.49	484.61	483.92	366.75	26.16	15.018
5,300.00	5,219.16	5,206.86	5,223.65	18.99	9.13	77.52	-94.51	483.68	483.92	325.28	27.64	12.771
5,400.00	5,261.96	5,248.20	5,264.98	19.70	9.22	87.35	-94.51	483.05	483.05	297.30	28.89	11.291
5,456.04	5,277.42	5,262.89	5,279.67	20.22	9.25	90.41	-94.52	482.83	482.83	292.19	29.47	10.915 CC, ES
5,500.00	5,285.07	5,269.95	5,286.73	20.64	9.26	91.30	-94.52	482.73	482.73	294.68	29.90	10.855 SF
5,600.00	5,289.57	5,273.16	5,289.95	21.79	9.27	90.38	-94.52	482.68	482.68	351.92	31.06	11.330
5,700.00	5,290.87	5,273.17	5,289.95	23.16	9.27	90.36	-94.52	482.68	482.68	400.56	32.42	12.355
5,800.00	5,292.18	5,273.16	5,289.95	24.73	9.27	90.32	-94.52	482.68	482.68	463.41	33.98	13.639
5,900.00	5,293.50	5,273.14	5,289.93	26.47	9.27	90.29	-94.52	482.68	482.68	535.42	35.69	15.001
6,000.00	5,294.83	5,273.11	5,289.89	28.37	9.27	90.25	-94.52	482.68	613.31	575.77	37.54	16.336

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



Phoenix Technology Services LP

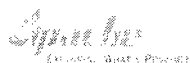
Anticollision Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #1 - OH - Actual Surveys													Offset Site Error: 0.00 usft	
Survey Program: 100-NS-GYRO-MS													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)				
6,100.00	5,296.16	5,273.07	5,289.85	30.39	9.27	90.21	-94.52	482.68	695.02	655.52	39.50	17.595		
6,200.00	5,297.49	5,273.01	5,289.79	32.52	9.27	90.16	-94.52	482.68	779.27	737.72	41.54	18.757		
6,300.00	5,298.82	5,272.94	5,289.72	34.74	9.27	90.12	-94.52	482.68	865.22	821.57	43.66	19.819		
6,400.00	5,300.16	5,272.86	5,289.64	37.04	9.27	90.07	-94.52	482.68	952.34	906.52	45.82	20.786		
6,500.00	5,301.49	5,272.76	5,289.55	39.40	9.27	90.03	-94.52	482.69	1,040.23	992.21	48.01	21.666		
6,600.00	5,302.81	5,272.66	5,289.44	41.81	9.27	89.99	-94.52	482.69	1,128.61	1,078.38	50.23	22.469		
6,700.00	5,304.14	5,272.54	5,289.32	44.26	9.27	89.94	-94.52	482.69	1,217.29	1,164.83	52.46	23.205		
6,800.00	5,305.45	5,272.41	5,289.19	46.75	9.27	89.90	-94.52	482.69	1,306.11	1,251.42	54.69	23.883		
6,900.00	5,306.76	5,272.26	5,289.05	49.27	9.27	89.86	-94.52	482.69	1,394.94	1,338.03	56.91	24.513		
7,000.00	5,308.05	5,272.11	5,288.89	51.81	9.27	89.82	-94.52	482.70	1,483.68	1,424.57	59.11	25.102		
7,100.00	5,309.34	5,271.94	5,288.73	54.37	9.27	89.80	-94.52	482.70	1,572.72	1,511.06	61.66	25.505		
7,200.00	5,310.63	5,271.78	5,288.56	56.95	9.27	89.78	-94.52	482.70	1,662.98	1,598.64	64.34	25.845		
7,300.00	5,311.92	5,271.61	5,288.39	59.57	9.27	89.77	-94.52	482.70	1,754.29	1,687.25	67.04	26.167		
7,400.00	5,313.21	5,271.44	5,288.23	62.20	9.27	89.76	-94.52	482.70	1,846.50	1,776.75	69.76	26.470		
7,500.00	5,314.50	5,271.28	5,288.06	64.86	9.27	89.74	-94.52	482.71	1,939.49	1,867.00	72.49	26.756		
7,600.00	5,315.78	5,271.11	5,287.89	67.54	9.27	89.73	-94.52	482.71	2,033.14	1,957.91	75.23	27.025		
7,700.00	5,317.07	5,270.94	5,287.72	70.23	9.27	89.72	-94.52	482.71	2,127.37	2,049.38	77.98	27.280		
7,800.00	5,318.36	5,270.77	5,287.55	72.93	9.27	89.70	-94.52	482.71	2,222.10	2,141.35	80.75	27.519		
7,900.00	5,319.65	5,270.60	5,287.38	75.65	9.27	89.69	-94.52	482.72	2,317.28	2,233.76	83.52	27.746		
8,000.00	5,320.94	5,270.43	5,287.21	78.38	9.27	89.67	-94.52	482.72	2,412.84	2,326.55	86.30	27.960		
8,100.00	5,322.23	5,270.26	5,287.04	81.12	9.26	89.66	-94.52	482.72	2,508.75	2,419.67	89.08	28.162		
8,200.00	5,323.51	5,270.09	5,286.87	83.87	9.26	89.65	-94.52	482.72	2,604.97	2,513.10	91.87	28.354		
8,300.00	5,324.80	5,269.91	5,286.70	86.62	9.26	89.63	-94.52	482.73	2,701.47	2,606.79	94.67	28.535		
8,400.00	5,326.09	5,269.74	5,286.52	89.39	9.26	89.62	-94.52	482.73	2,798.21	2,700.73	97.47	28.707		
8,500.00	5,327.38	5,269.56	5,286.35	92.16	9.26	89.60	-94.52	482.73	2,895.17	2,794.89	100.28	28.870		
8,600.00	5,328.67	5,269.39	5,286.17	94.94	9.26	89.59	-94.52	482.73	2,992.33	2,889.24	103.09	29.026		
8,700.00	5,329.96	5,269.21	5,286.00	97.72	9.26	89.57	-94.52	482.74	3,089.67	2,983.76	105.91	29.173		
8,800.00	5,331.24	5,269.04	5,285.82	100.51	9.26	89.56	-94.52	482.74	3,187.18	3,078.45	108.73	29.314		
8,900.00	5,332.53	5,268.86	5,285.64	103.30	9.26	89.54	-94.52	482.74	3,284.84	3,173.29	111.55	29.448		
9,000.00	5,333.82	5,268.68	5,285.47	106.10	9.26	89.53	-94.52	482.74	3,382.63	3,268.26	114.37	29.576		
9,100.00	5,335.11	5,268.50	5,285.29	108.90	9.26	89.52	-94.52	482.75	3,480.55	3,363.35	117.20	29.698		
9,200.00	5,336.40	5,268.32	5,285.11	111.71	9.26	89.50	-94.52	482.75	3,578.58	3,458.55	120.03	29.814		
9,300.00	5,337.69	5,268.14	5,284.93	114.52	9.26	89.49	-94.52	482.75	3,676.72	3,553.86	122.86	29.926		
9,400.00	5,338.97	5,267.96	5,284.75	117.33	9.26	89.47	-94.52	482.76	3,774.96	3,649.27	125.70	30.033		
9,402.54	5,339.01	5,267.96	5,284.74	117.40	9.26	89.47	-94.52	482.76	3,777.45	3,651.69	125.76	30.037		



Phoenix Technology Services LP

Anticollision Report

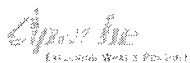


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #10H - OH / Job #1211217 - Surveys (Basic 44)													Offset Site Error:	0.00 usft
Survey Program: 486-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	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)						
0.00	0.00	8.62	1.62	0.00	0.01	80.37	804.30	4,738.00	4,805.78					
100.00	100.00	9,601.00	4,823.74	0.16	133.54	-11.51	773.14	-157.43	4,789.18	4,745.26	43.92	109.050		
200.00	200.00	9,601.00	4,823.74	0.52	133.54	-11.51	773.14	-157.43	4,690.58	4,646.30	44.28	105.940		
300.00	300.00	9,601.00	4,823.74	0.88	133.54	-11.51	773.14	-157.43	4,592.03	4,547.40	44.63	102.882		
400.00	400.00	9,601.00	4,823.74	1.23	133.54	-11.51	773.14	-157.43	4,493.55	4,448.56	44.99	99.873		
500.00	500.00	9,601.00	4,823.74	1.59	133.54	-11.51	773.14	-157.43	4,395.14	4,349.79	45.35	96.914		
600.00	600.00	9,601.00	4,823.74	1.95	133.54	-11.51	773.14	-157.43	4,296.80	4,251.09	45.71	94.002		
700.00	700.00	9,601.00	4,823.74	2.31	133.54	-11.51	773.14	-157.43	4,198.54	4,152.47	46.07	91.138		
800.00	800.00	9,601.00	4,823.74	2.67	133.54	-11.51	773.14	-157.43	4,100.37	4,053.94	46.43	88.320		
900.00	900.00	9,601.00	4,823.74	3.03	133.54	-11.51	773.14	-157.43	4,002.28	3,955.50	46.78	85.546		
1,000.00	1,000.00	9,601.00	4,823.74	3.39	133.54	-11.51	773.14	-157.43	3,904.29	3,857.15	47.14	82.817		
1,100.00	1,100.00	9,601.00	4,823.74	3.74	133.54	-11.51	773.14	-157.43	3,806.41	3,758.91	47.50	80.132		
1,200.00	1,200.00	9,601.00	4,823.74	4.10	133.54	-11.51	773.14	-157.43	3,708.64	3,660.78	47.86	77.489		
1,300.00	1,300.00	9,601.00	4,823.74	4.46	133.54	-11.51	773.14	-157.43	3,610.99	3,562.77	48.22	74.888		
1,400.00	1,400.00	9,601.00	4,823.74	4.82	133.54	-11.51	773.14	-157.43	3,513.48	3,464.90	48.58	72.328		
1,500.00	1,500.00	9,601.00	4,823.74	5.18	133.54	-11.51	773.14	-157.43	3,416.11	3,367.17	48.94	69.808		
1,600.00	1,600.00	9,601.00	4,823.74	5.54	133.54	-11.51	773.14	-157.43	3,318.89	3,269.60	49.29	67.328		
1,700.00	1,700.00	9,601.00	4,823.74	5.90	133.54	-11.51	773.14	-157.43	3,221.84	3,172.19	49.65	64.888		
1,800.00	1,800.00	9,601.00	4,823.74	6.25	133.54	-11.51	773.14	-157.43	3,124.99	3,074.97	50.01	62.486		
1,900.00	1,900.00	9,601.00	4,823.74	6.61	133.54	-11.51	773.14	-157.43	3,028.33	2,977.96	50.37	60.122		
2,000.00	2,000.00	9,601.00	4,823.74	6.97	133.54	-11.51	773.14	-157.43	2,931.90	2,881.17	50.73	57.796		
2,100.00	2,100.00	9,601.00	4,823.74	7.33	133.54	-11.51	773.14	-157.43	2,835.72	2,784.63	51.09	55.508		
2,200.00	2,200.00	9,601.00	4,823.74	7.69	133.54	-11.51	773.14	-157.43	2,739.81	2,688.36	51.45	53.257		
2,300.00	2,300.00	9,599.19	4,823.84	8.05	133.50	-11.38	773.19	-155.62	2,644.20	2,592.14	52.06	50.789		
2,400.00	2,400.00	9,593.79	4,824.13	8.40	133.35	-10.99	773.32	-150.22	2,548.92	2,495.72	53.20	47.916		
2,500.00	2,500.00	9,588.38	4,824.42	8.76	133.20	-10.61	773.45	-144.83	2,454.00	2,399.68	54.33	45.170		
2,600.00	2,600.00	9,582.97	4,824.71	9.12	133.05	-10.22	773.58	-139.43	2,359.50	2,304.04	55.46	42.544		
2,700.00	2,700.00	9,577.56	4,825.01	9.48	132.90	-9.83	773.72	-134.03	2,265.45	2,208.86	56.59	40.033		
2,800.00	2,800.00	9,572.15	4,825.30	9.84	132.76	-9.44	773.85	-128.63	2,171.92	2,114.20	57.72	37.630		
2,900.00	2,900.00	9,566.75	4,825.59	10.20	132.61	-9.05	773.98	-123.23	2,078.97	2,020.13	58.84	35.330		
3,000.00	3,000.00	9,561.34	4,825.88	10.56	132.46	-8.66	774.11	-117.83	1,986.70	1,926.73	59.97	33.129		
3,100.00	3,100.00	9,555.93	4,826.18	10.91	132.31	-8.26	774.24	-112.44	1,895.20	1,834.11	61.09	31.022		
3,200.00	3,200.00	9,550.52	4,826.47	11.27	132.16	-7.87	774.37	-107.04	1,804.58	1,742.37	62.21	29.007		
3,300.00	3,300.00	9,545.11	4,826.76	11.63	132.02	-7.48	774.51	-101.64	1,714.99	1,651.66	63.33	27.080		
3,400.00	3,400.00	9,539.31	4,827.07	11.99	131.86	-7.05	774.65	-95.84	1,626.59	1,562.09	64.50	25.218		
3,500.00	3,500.00	9,533.32	4,827.40	12.35	131.69	-6.62	774.79	-89.87	1,539.60	1,473.90	65.69	23.436		
3,600.00	3,600.00	9,527.44	4,827.71	12.71	131.53	-6.19	774.94	-83.99	1,454.25	1,387.38	66.87	21.747		
3,700.00	3,700.00	9,521.65	4,828.01	13.06	131.37	-5.76	775.08	-78.22	1,370.87	1,302.84	68.03	20.151		
3,800.00	3,800.00	9,515.13	4,828.35	13.42	131.19	-5.28	775.24	-71.70	1,289.82	1,220.54	69.29	18.616		
3,900.00	3,900.00	9,508.68	4,828.67	13.78	131.02	-4.81	775.40	-65.26	1,211.59	1,141.06	70.53	17.179		
4,000.00	4,000.00	9,502.65	4,828.97	14.14	130.85	-4.37	775.55	-59.25	1,136.74	1,065.03	71.71	15.853		
4,100.00	4,100.00	9,497.01	4,829.23	14.50	130.70	-3.95	775.69	-53.61	1,066.00	993.17	72.83	14.637		
4,200.00	4,200.00	9,491.72	4,829.47	14.86	130.55	-3.56	775.83	-48.33	1,000.24	926.34	73.90	13.535		
4,300.00	4,300.00	9,486.74	4,829.69	15.22	130.42	-3.20	775.96	-43.36	940.51	865.59	74.93	12.552		
4,400.00	4,400.00	9,482.06	4,829.89	15.57	130.29	-2.85	776.08	-38.68	888.04	812.13	75.91	11.698		
4,500.00	4,500.00	9,477.64	4,830.07	15.93	130.17	-2.53	776.20	-34.27	844.16	767.31	76.86	10.984		
4,600.00	4,600.00	9,473.46	4,830.24	16.29	130.05	-2.22	776.31	-30.10	810.30	732.53	77.77	10.419		
4,700.00	4,700.00	9,469.51	4,830.40	16.65	129.95	-1.93	776.42	-26.15	787.73	709.08	78.65	10.016		
4,800.00	4,800.00	9,465.76	4,830.54	17.01	129.84	-1.65	776.52	-22.41	777.45	697.95	79.50	9.780		
4,900.00	4,899.50	9,455.44	4,830.92	17.36	129.56	-61.26	776.81	-12.09	776.03	629.65	146.38	5.302 SF		
4,900.77	4,900.25	9,455.30	4,830.92	17.36	129.56	-61.25	776.81	-11.95	776.03	629.67	146.36	5.302		
5,000.00	4,995.15	9,429.19	4,831.74	17.71	128.84	-59.31	777.56	14.14	776.93	633.01	143.92	5.398		

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



Phoenix Technology Services LP

Anticollision Report

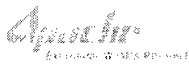


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #10H - OH / Job #1211217 - Surveys (Basic 44)													Offset Site Error: 0.00 usft	
Survey Program: 486-MWD													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)				
5,100.00	5,082.78	9,380.74	4,832.92	18.06	127.52	-56.00	778.83	62.55	778.18	639.57	138.62	5.614		
5,200.00	5,158.55	9,315.68	4,834.11	18.46	125.73	-52.26	779.89	127.59	776.72	646.46	130.26	5.963		
5,300.00	5,219.16	9,234.29	4,836.61	18.99	123.50	-48.74	780.73	208.93	769.16	649.84	119.32	6.446		
5,400.00	5,261.96	9,163.40	4,839.26	19.70	121.56	-47.06	781.59	279.77	753.13	644.31	108.82	6.921		
5,500.00	5,285.07	9,084.45	4,841.03	20.64	119.39	-46.46	782.97	358.69	727.70	628.71	98.99	7.351		
5,600.00	5,289.57	9,000.93	4,841.59	21.79	117.10	-45.90	784.05	442.20	692.74	599.07	93.66	7.396		
5,700.00	5,290.87	8,904.31	4,841.47	23.16	114.45	-43.52	785.00	538.82	659.43	568.49	90.95	7.251		
5,800.00	5,292.18	8,800.47	4,844.46	24.73	111.61	-40.99	784.83	642.61	627.12	539.39	87.73	7.148		
5,900.00	5,293.50	8,714.16	4,846.39	26.47	109.24	-38.87	784.11	728.90	598.46	513.23	85.23	7.022		
6,000.00	5,294.83	8,621.98	4,847.26	28.37	106.71	-36.46	782.91	821.06	573.99	491.98	82.02	6.999		
6,100.00	5,296.16	8,523.77	4,850.56	30.39	104.02	-34.15	783.10	919.21	551.98	473.29	78.69	7.014		
6,200.00	5,297.49	8,435.06	4,853.18	32.52	101.59	-32.18	783.70	1,007.87	533.60	457.67	75.93	7.028		
6,300.00	5,298.82	8,343.09	4,854.53	34.74	99.07	-30.14	784.07	1,099.83	519.11	446.25	72.86	7.125		
6,400.00	5,300.16	8,248.45	4,854.68	37.04	96.47	-27.98	783.04	1,194.46	507.67	438.20	69.47	7.308		
6,500.00	5,301.49	8,158.53	4,853.30	39.40	94.01	-26.02	781.81	1,284.37	500.06	433.68	66.38	7.534		
6,600.00	5,302.81	8,056.71	4,852.90	41.81	91.22	-24.33	782.75	1,386.17	494.64	431.10	63.54	7.785		
6,700.00	5,304.14	7,965.28	4,852.00	44.26	88.72	-23.18	784.59	1,477.58	491.99	430.30	61.70	7.974		
6,800.00	5,305.45	7,859.62	4,852.23	46.75	85.84	-22.42	788.43	1,583.17	490.43	430.12	60.31	8.132		
6,828.66	5,305.83	7,833.93	4,852.32	47.47	85.14	-22.32	789.51	1,608.83	490.28	430.13	60.15	8.151		
6,900.00	5,306.76	7,764.67	4,851.75	49.27	83.26	-22.08	792.15	1,678.04	491.02	431.31	59.71	8.224		
7,000.00	5,308.05	7,657.99	4,852.55	51.81	80.35	-22.09	795.93	1,784.65	491.59	432.09	59.50	8.262		
7,100.00	5,309.34	7,563.13	4,852.08	54.37	77.77	-22.28	799.13	1,879.45	494.19	434.35	59.84	8.259		
7,200.00	5,310.63	7,450.28	4,851.65	56.95	74.69	-22.06	798.65	1,992.29	495.28	435.95	59.33	8.348		
7,300.00	5,311.92	7,340.75	4,852.94	59.57	71.70	-21.74	796.48	2,101.78	494.38	435.67	58.71	8.420		
7,400.00	5,313.21	7,243.06	4,855.25	62.20	69.03	-21.46	794.18	2,199.42	492.26	433.94	58.32	8.441		
7,500.00	5,314.50	7,148.17	4,856.44	64.86	66.44	-21.23	792.75	2,294.29	491.47	433.43	58.04	8.467		
7,565.48	5,315.34	7,084.68	4,856.96	66.61	64.71	-21.09	792.06	2,357.78	491.34	433.46	57.87	8.490		
7,600.00	5,315.78	7,051.29	4,857.01	67.54	63.80	-20.98	791.42	2,391.16	491.38	433.65	57.72	8.513		
7,700.00	5,317.07	6,935.18	4,857.65	70.23	60.64	-20.42	787.45	2,507.19	490.70	434.00	56.70	8.655		
7,800.00	5,318.36	6,839.19	4,860.61	72.93	58.03	-20.08	784.39	2,603.08	487.68	431.43	56.25	8.669		
7,900.00	5,319.65	6,749.08	4,862.44	75.65	55.59	-19.95	783.66	2,693.17	486.46	430.24	56.22	8.652		
7,908.31	5,319.76	6,741.62	4,862.50	75.88	55.39	-19.94	783.60	2,700.63	486.46	430.24	56.22	8.653		
8,000.00	5,320.94	6,651.51	4,863.20	78.38	52.95	-19.87	783.80	2,790.74	486.74	430.55	56.18	8.663		
8,100.00	5,322.23	6,557.86	4,864.26	81.12	50.42	-20.07	786.35	2,884.34	487.58	430.94	56.64	8.609		
8,200.00	5,323.51	6,462.61	4,864.14	83.87	47.86	-20.29	789.48	2,979.54	489.79	432.69	57.10	8.578		
8,300.00	5,324.80	6,345.44	4,864.75	86.62	44.72	-20.47	792.30	3,096.66	491.18	433.92	57.26	8.577		
8,395.95	5,326.04	6,253.85	4,867.11	89.28	42.27	-20.71	794.73	3,188.19	490.67	432.90	57.78	8.493		
8,400.00	5,326.09	6,250.02	4,867.19	89.39	42.17	-20.72	794.85	3,192.01	490.67	432.87	57.80	8.489		
8,500.00	5,327.38	6,150.89	4,869.03	92.16	39.53	-20.95	797.48	3,291.09	490.83	432.56	58.27	8.423		
8,600.00	5,328.67	6,051.48	4,870.33	94.94	36.89	-21.05	799.04	3,390.48	491.12	432.59	58.53	8.391		
8,700.00	5,329.96	5,952.66	4,871.00	97.72	34.28	-20.99	799.44	3,489.30	491.58	433.02	58.56	8.395		
8,800.00	5,331.24	5,856.18	4,870.53	100.51	31.75	-20.73	798.37	3,585.77	492.59	434.28	58.30	8.449		
8,900.00	5,332.53	5,744.50	4,870.75	103.30	28.85	-20.29	795.67	3,697.41	492.49	434.85	57.64	8.545		
9,000.00	5,333.82	5,644.58	4,873.54	106.10	26.29	-20.38	796.62	3,797.28	491.16	433.23	57.93	8.479		
9,100.00	5,335.11	5,539.55	4,877.07	108.90	23.64	-20.71	799.58	3,902.21	489.97	431.38	58.59	8.363		
9,200.00	5,336.40	5,434.23	4,882.78	111.71	21.06	-21.27	803.81	4,007.29	487.28	427.63	59.65	8.169		
9,300.00	5,337.69	5,345.21	4,887.45	114.52	18.96	-21.85	808.26	4,096.07	485.19	424.25	60.94	7.961		
9,330.23	5,338.08	5,319.05	4,888.32	115.37	18.36	-21.98	809.47	4,122.18	485.06	423.76	61.30	7.913 CC, ES		
9,400.00	5,338.97	5,259.28	4,889.16	117.33	17.01	-22.18	811.72	4,181.91	485.78	423.83	61.95	7.841		
9,402.54	5,339.01	5,257.11	4,889.16	117.40	16.97	-22.19	811.78	4,184.08	485.83	423.86	61.97	7.840		

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



Phoenix Technology Services LP

Anticollision Report

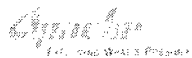


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #11H - OH / Job #1310356 - Surveys (Basic 44)													Offset Site Error: 0.00 usft
Survey Program: 462-MWD													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)			
0.00	0.00	6.10	0.10	0.00	0.01	79.60	869.30	4,738.00	4,817.09				
100.00	100.00	107.81	101.81	0.16	0.12	79.61	869.10	4,738.02	4,817.07	4,816.79	0.28	N/A	
200.00	200.00	209.52	203.52	0.52	0.23	79.61	868.56	4,738.06	4,817.01	4,816.26	0.75	6,440.674	
300.00	300.00	311.23	305.22	0.88	0.34	79.62	867.66	4,738.13	4,816.92	4,815.70	1.22	3,954.850	
400.00	400.00	412.92	406.91	1.23	0.45	79.64	866.41	4,738.23	4,816.80	4,815.11	1.69	2,853.478	
500.00	500.00	520.93	514.91	1.59	0.64	79.66	864.72	4,738.32	4,816.60	4,814.37	2.23	2,159.635	
600.00	600.00	630.87	624.82	1.95	0.89	79.68	862.70	4,738.26	4,816.22	4,813.38	2.83	1,700.247	
700.00	700.00	767.27	761.18	2.31	1.20	79.72	859.18	4,737.64	4,815.31	4,811.81	3.50	1,377.168	
800.00	800.00	873.00	866.84	2.67	1.44	79.76	855.58	4,736.83	4,813.94	4,809.85	4.09	1,176.541	
900.00	900.00	960.46	954.23	3.03	1.64	79.80	852.17	4,736.31	4,812.66	4,808.02	4.64	1,037.321	
1,000.00	1,000.00	1,027.00	1,020.72	3.39	1.78	79.83	849.58	4,736.14	4,811.78	4,806.65	5.13	937.435	
1,100.00	1,100.00	1,111.00	1,104.66	3.74	1.95	79.87	846.37	4,736.37	4,811.40	4,805.74	5.66	850.388	
1,108.27	1,108.27	1,111.00	1,104.66	3.77	1.95	79.87	846.37	4,736.37	4,811.40	4,805.71	5.69	845.957	
1,200.00	1,200.00	1,180.30	1,173.91	4.10	2.09	79.90	843.95	4,736.97	4,811.63	4,805.48	6.15	781.940	
1,300.00	1,300.00	1,268.21	1,261.79	4.46	2.26	79.93	841.37	4,738.06	4,812.34	4,805.66	6.68	720.206	
1,400.00	1,400.00	1,384.99	1,378.53	4.82	2.49	79.96	839.03	4,739.26	4,813.00	4,805.74	7.27	662.344	
1,500.00	1,500.00	1,496.52	1,490.06	5.18	2.71	79.97	838.26	4,739.67	4,813.23	4,805.39	7.85	613.535	
1,600.00	1,600.00	1,581.02	1,574.55	5.54	2.87	79.96	839.14	4,739.79	4,813.57	4,805.19	8.37	574.905	
1,700.00	1,700.00	1,667.88	1,661.39	5.90	3.04	79.94	840.67	4,740.14	4,814.26	4,805.35	8.91	540.465	
1,800.00	1,800.00	1,766.06	1,759.54	6.25	3.24	79.92	843.04	4,740.56	4,815.10	4,805.64	9.47	508.626	
1,900.00	1,900.00	1,876.08	1,869.51	6.61	3.46	79.88	846.58	4,740.77	4,815.86	4,805.81	10.05	479.109	
2,000.00	2,000.00	2,002.92	1,996.25	6.97	3.71	79.82	851.56	4,740.36	4,816.24	4,805.56	10.67	451.256	
2,100.00	2,100.00	2,136.00	2,129.16	7.33	3.99	79.74	857.93	4,738.84	4,815.97	4,804.66	11.31	425.843	
2,200.00	2,200.00	2,262.28	2,255.30	7.69	4.24	79.67	863.71	4,736.67	4,815.09	4,803.16	11.93	403.650	
2,300.00	2,300.00	2,396.58	2,389.47	8.05	4.52	79.60	868.53	4,733.71	4,813.56	4,800.99	12.57	382.998	
2,400.00	2,400.00	2,504.84	2,497.67	8.40	4.75	79.57	870.99	4,731.07	4,811.57	4,798.41	13.15	365.766	
2,500.00	2,500.00	2,611.35	2,604.15	8.76	4.98	79.55	872.45	4,728.55	4,809.49	4,795.75	13.74	350.058	
2,600.00	2,600.00	2,722.34	2,715.10	9.12	5.21	79.53	873.31	4,725.79	4,807.18	4,792.85	14.34	335.337	
2,700.00	2,700.00	2,842.16	2,834.87	9.48	5.47	79.52	873.32	4,722.74	4,804.70	4,789.75	14.95	321.349	
2,800.00	2,800.00	2,950.00	2,942.67	9.84	5.71	79.52	872.72	4,719.54	4,801.67	4,786.13	15.54	308.912	
2,900.00	2,900.00	3,033.00	3,025.63	10.20	5.88	79.53	872.15	4,717.22	4,798.81	4,782.73	16.08	298.460	
3,000.00	3,000.00	3,117.00	3,109.61	10.56	6.06	79.53	871.45	4,715.38	4,796.48	4,779.87	16.61	288.730	
3,100.00	3,100.00	3,174.67	3,167.27	10.91	6.18	79.53	870.84	4,714.49	4,794.72	4,777.63	17.09	280.531	
3,200.00	3,200.00	3,257.06	3,249.65	11.27	6.35	79.55	869.78	4,713.73	4,793.57	4,775.94	17.62	272.006	
3,300.00	3,300.00	3,357.45	3,350.03	11.63	6.57	79.56	868.34	4,712.96	4,792.55	4,774.35	18.19	263.403	
3,400.00	3,400.00	3,459.97	3,452.53	11.99	6.79	79.58	866.62	4,712.15	4,791.47	4,772.69	18.77	255.221	
3,493.55	3,493.55	3,501.00	3,493.55	12.32	6.88	79.59	865.90	4,711.83	4,790.73	4,771.53	19.20	249.549	
3,500.00	3,500.00	3,501.00	3,493.55	12.35	6.88	79.59	865.90	4,711.83	4,790.74	4,771.51	19.22	249.249	
3,600.00	3,600.00	3,501.00	3,493.55	12.71	6.88	79.59	865.90	4,711.83	4,791.91	4,772.33	19.58	244.746	
3,700.00	3,700.00	3,501.00	3,493.55	13.06	6.88	79.59	865.90	4,711.83	4,795.18	4,775.24	19.94	240.509	
3,800.00	3,800.00	3,501.00	3,493.55	13.42	6.88	79.59	865.90	4,711.83	4,800.52	4,780.23	20.30	236.525	
3,900.00	3,900.00	3,501.00	3,493.55	13.78	6.88	79.59	865.90	4,711.83	4,807.94	4,787.29	20.65	232.779	
4,000.00	4,000.00	3,501.00	3,493.55	14.14	6.88	79.59	865.90	4,711.83	4,817.43	4,796.41	21.01	229.259	
4,100.00	4,100.00	3,501.00	3,493.55	14.50	6.88	79.59	865.90	4,711.83	4,828.96	4,807.59	21.37	225.953	
4,200.00	4,200.00	3,501.00	3,493.55	14.86	6.88	79.59	865.90	4,711.83	4,842.54	4,820.81	21.73	222.851	
4,300.00	4,300.00	3,501.00	3,493.55	15.22	6.88	79.59	865.90	4,711.83	4,858.13	4,836.05	22.09	219.940	
4,400.00	4,400.00	3,501.00	3,493.55	15.57	6.88	79.59	865.90	4,711.83	4,875.73	4,853.28	22.45	217.212	
4,500.00	4,500.00	3,501.00	3,493.55	15.93	6.88	79.59	865.90	4,711.83	4,895.31	4,872.50	22.81	214.656	
4,600.00	4,600.00	3,501.00	3,493.55	16.29	6.88	79.59	865.90	4,711.83	4,916.84	4,893.68	23.16	212.264	
4,700.00	4,700.00	3,501.00	3,493.55	16.65	6.88	79.59	865.90	4,711.83	4,940.31	4,916.78	23.52	210.026	
4,800.00	4,800.00	3,501.00	3,493.55	17.01	6.88	79.59	865.90	4,711.83	4,965.67	4,941.79	23.88	207.936	
4,900.00	4,899.50	3,501.00	3,493.55	17.36	6.88	18.67	865.90	4,711.83	4,985.38	4,961.51	23.88	208.810	

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



Phoenix Technology Services LP

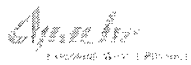
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design Raven Federal - #11H - OH / Job #1310356 - Surveys (Basic 44)														Offset Site Error:	0.00 usft
Survey Program: 462-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)										
5,000.00	4,995.15	3,501.00	3,493.55	17.71	6.88	18.59	865.90	4,711.83	4,987.53	4,964.52	23.01	216.784			
5,100.00	5,082.78	3,501.00	3,493.55	18.06	6.88	19.21	865.90	4,711.83	4,971.91	4,950.55	21.36	232.764			
5,200.00	5,158.55	3,501.00	3,493.55	18.46	6.88	20.63	865.90	4,711.83	4,939.06	4,919.88	19.18	257.512			
5,300.00	5,219.16	3,501.00	3,493.55	18.99	6.88	23.16	865.90	4,711.83	4,890.07	4,873.09	16.98	288.015			
5,400.00	5,261.96	3,501.00	3,493.55	19.70	6.88	27.38	865.90	4,711.83	4,826.63	4,810.87	15.77	306.107			
5,500.00	5,285.07	3,501.00	3,493.55	20.64	6.88	34.54	865.90	4,711.83	4,751.01	4,733.97	17.05	278.724			
5,600.00	5,289.57	3,501.00	3,493.55	21.79	6.88	39.50	865.90	4,711.83	4,666.66	4,647.45	19.21	242.933			
5,700.00	5,290.87	3,501.00	3,493.55	23.16	6.88	36.81	865.90	4,711.83	4,580.56	4,561.38	19.18	238.776			
5,800.00	5,292.18	3,501.00	3,493.55	24.73	6.88	33.95	865.90	4,711.83	4,493.97	4,474.85	19.12	235.100			
5,900.00	5,293.50	3,501.00	3,493.55	26.47	6.88	30.94	865.90	4,711.83	4,406.96	4,388.00	18.96	232.419			
6,000.00	5,294.83	3,501.00	3,493.55	28.37	6.88	27.79	865.90	4,711.83	4,319.62	4,300.93	18.69	231.118			
6,100.00	5,296.16	3,501.00	3,493.55	30.39	6.88	24.50	865.90	4,711.83	4,232.03	4,213.75	18.29	231.435			
6,200.00	5,297.49	3,501.00	3,493.55	32.52	6.88	21.10	865.90	4,711.83	4,144.30	4,126.54	17.76	233.408			
6,300.00	5,298.82	3,501.00	3,493.55	34.74	6.88	17.62	865.90	4,711.83	4,056.52	4,039.39	17.13	236.765			
6,400.00	5,300.16	3,501.00	3,493.55	37.04	6.88	14.08	865.90	4,711.83	3,968.80	3,952.31	16.49	240.709			
6,500.00	5,301.49	3,501.00	3,493.55	39.40	6.88	10.52	865.90	4,711.83	3,881.26	3,865.33	15.93	243.667			
6,600.00	5,302.81	3,501.00	3,493.55	41.81	6.88	6.96	865.90	4,711.83	3,794.01	3,778.41	15.60	243.239			
6,700.00	5,304.14	3,501.00	3,493.55	44.26	6.88	3.45	865.90	4,711.83	3,707.19	3,691.54	15.65	238.881			
6,800.00	5,305.45	3,501.00	3,493.55	46.75	6.88	0.02	865.90	4,711.83	3,620.94	3,604.74	16.20	223.448			
6,900.00	5,306.76	3,501.00	3,493.55	49.27	6.88	-3.31	865.90	4,711.83	3,535.41	3,518.11	17.30	204.311			
7,000.00	5,308.05	3,501.00	3,493.55	51.81	6.88	-6.50	865.90	4,711.83	3,450.76	3,431.86	18.91	182.530			
7,100.00	5,309.34	3,501.00	3,493.55	54.37	6.88	-7.19	865.90	4,711.83	3,367.09	3,347.12	19.97	168.605			
7,200.00	5,310.63	3,501.00	3,493.55	56.95	6.88	-7.19	865.90	4,711.83	3,284.33	3,263.52	20.81	157.837			
7,300.00	5,311.92	3,501.00	3,493.55	59.57	6.88	-7.19	865.90	4,711.83	3,202.56	3,180.91	21.65	147.935			
7,400.00	5,313.21	3,501.00	3,493.55	62.20	6.88	-7.19	865.90	4,711.83	3,121.85	3,099.36	22.49	138.808			
7,500.00	5,314.50	3,501.00	3,493.55	64.86	6.88	-7.19	865.90	4,711.83	3,042.28	3,018.95	23.33	130.382			
7,600.00	5,315.78	3,501.00	3,493.55	67.54	6.88	-7.19	865.90	4,711.83	2,963.96	2,939.78	24.18	122.587			
7,700.00	5,317.07	3,501.00	3,493.55	70.23	6.88	-7.19	865.90	4,711.83	2,886.97	2,861.94	25.02	115.367			
7,800.00	5,318.36	3,501.00	3,493.55	72.93	6.88	-7.19	865.90	4,711.83	2,811.43	2,785.56	25.87	108.671			
7,900.00	5,319.65	3,501.00	3,493.55	75.65	6.88	-7.19	865.90	4,711.83	2,737.46	2,710.74	26.72	102.454			
8,000.00	5,320.94	3,501.00	3,493.55	78.38	6.88	-7.19	865.90	4,711.83	2,665.19	2,637.62	27.57	96.678			
8,100.00	5,322.23	3,501.00	3,493.55	81.12	6.88	-7.19	865.90	4,711.83	2,594.76	2,566.35	28.42	91.310			
8,200.00	5,323.51	3,501.00	3,493.55	83.87	6.88	-7.19	865.90	4,711.83	2,526.33	2,497.06	29.27	86.320			
8,300.00	5,324.80	3,501.00	3,493.55	86.62	6.88	-7.19	865.90	4,711.83	2,460.06	2,429.94	30.12	81.682			
8,400.00	5,326.09	3,501.00	3,493.55	89.39	6.88	-7.19	865.90	4,711.83	2,396.13	2,365.16	30.97	77.372			
8,500.00	5,327.38	3,501.00	3,493.55	92.16	6.88	-7.19	865.90	4,711.83	2,334.74	2,302.92	31.82	73.372			
8,600.00	5,328.67	3,501.00	3,493.55	94.94	6.88	-7.19	865.90	4,711.83	2,276.08	2,243.41	32.67	69.663			
8,700.00	5,329.96	3,501.00	3,493.55	97.72	6.88	-7.19	865.90	4,711.83	2,220.38	2,186.86	33.53	66.230			
8,800.00	5,331.24	3,501.00	3,493.55	100.51	6.88	-7.19	865.90	4,711.83	2,167.87	2,133.49	34.38	63.059			
8,900.00	5,332.53	3,501.00	3,493.55	103.30	6.88	-7.19	865.90	4,711.83	2,118.77	2,083.54	35.23	60.138			
9,000.00	5,333.82	3,501.00	3,493.55	106.10	6.88	-7.19	865.90	4,711.83	2,073.34	2,037.26	36.09	57.457			
9,100.00	5,335.11	3,501.00	3,493.55	108.90	6.88	-7.19	865.90	4,711.83	2,031.82	1,994.89	36.94	55.004			
9,200.00	5,336.40	3,501.00	3,493.55	111.71	6.88	-7.19	865.90	4,711.83	1,994.46	1,956.66	37.79	52.773			
9,300.00	5,337.69	3,501.00	3,493.55	114.52	6.88	-7.19	865.90	4,711.83	1,961.48	1,922.83	38.65	50.753			
9,400.00	5,338.97	3,501.00	3,493.55	117.33	6.88	-7.19	865.90	4,711.83	1,933.12	1,893.62	39.50	48.936			
9,402.54	5,339.01	3,501.00	3,493.55	117.40	6.88	-7.19	865.90	4,711.83	1,932.47	1,892.94	39.52	48.896 CC, ES, SF			

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



Phoenix Technology Services LP

Anticollision Report

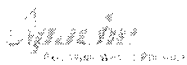


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design													Raven Federal - #12H - OH / Job #1211107 - Surveys (Basic 44)		Offset Site Error: 0.00 usft	
Survey Program: 521-MWD													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	0.00	-7.00	0.00	0.00	78.84	934.30	4,738.00	4,829.25							
100.00	100.00	91.62	84.62	0.16	0.10	78.84	934.44	4,738.12	4,829.41	4,829.15	0.26	N/A				
200.00	200.00	177.24	170.24	0.52	0.20	78.84	934.81	4,738.46	4,829.88	4,829.16	0.71	6,765.846				
300.00	300.00	262.86	255.86	0.88	0.29	78.83	935.42	4,739.00	4,830.64	4,829.48	1.17	4,139.547				
400.00	400.00	348.47	341.46	1.23	0.39	78.83	936.27	4,739.76	4,831.71	4,830.09	1.62	2,982.479				
500.00	500.00	434.07	427.05	1.59	0.48	78.82	937.36	4,740.73	4,833.07	4,830.99	2.07	2,331.324				
600.00	600.00	521.00	513.96	1.95	0.58	78.80	938.71	4,741.94	4,834.72	4,832.20	2.53	1,912.748				
700.00	700.00	647.92	640.86	2.31	0.83	78.79	940.11	4,743.50	4,836.13	4,832.99	3.13	1,542.896				
800.00	800.00	749.07	742.00	2.67	1.03	78.79	940.47	4,744.68	4,837.34	4,833.64	3.69	1,309.492				
900.00	900.00	855.00	847.92	3.03	1.25	78.79	940.30	4,745.87	4,838.40	4,834.13	4.27	1,132.736				
1,000.00	1,000.00	946.97	939.88	3.39	1.44	78.80	940.01	4,746.96	4,839.51	4,834.69	4.82	1,003.164				
1,100.00	1,100.00	10,573.00	5,826.81	3.74	133.20	-9.80	912.69	-157.70	4,816.70	4,765.43	51.27	93.945				
1,200.00	1,200.00	10,573.00	5,826.81	4.10	133.20	-9.80	912.69	-157.70	4,718.61	4,666.98	51.63	91.393				
1,300.00	1,300.00	1,300.00	5,826.83	4.46	43.72	-9.77	912.68	-157.19	4,620.60	4,580.23	40.36	114.477				
1,400.00	1,400.00	10,581.61	5,826.45	4.82	133.43	-10.32	912.90	-166.30	4,522.67	4,471.34	51.33	88.113				
1,500.00	1,500.00	10,575.13	5,826.73	5.18	133.26	-9.93	912.74	-159.82	4,424.84	4,372.38	52.45	84.357				
1,600.00	1,600.00	10,568.82	5,826.99	5.54	133.08	-9.55	912.59	-153.52	4,327.10	4,273.54	53.56	80.793				
1,700.00	1,700.00	10,562.68	5,827.24	5.90	132.91	-9.18	912.44	-147.39	4,229.47	4,174.83	54.64	77.405				
1,800.00	1,800.00	10,556.71	5,827.48	6.25	132.75	-8.81	912.30	-141.42	4,131.94	4,076.24	55.70	74.177				
1,900.00	1,900.00	10,550.90	5,827.72	6.61	132.59	-8.46	912.17	-135.62	4,034.53	3,977.78	56.75	71.098				
2,000.00	2,000.00	10,545.23	5,827.94	6.97	132.44	-8.11	912.04	-129.96	3,937.24	3,879.47	57.77	68.154				
2,100.00	2,100.00	10,539.72	5,828.16	7.33	132.28	-7.77	911.91	-124.45	3,840.08	3,781.31	58.77	65.336				
2,200.00	2,200.00	10,534.34	5,828.36	7.69	132.14	-7.44	911.79	-119.08	3,743.07	3,683.31	59.76	62.633				
2,300.00	2,300.00	10,529.10	5,828.56	8.05	131.99	-7.12	911.68	-113.84	3,646.21	3,585.48	60.73	60.038				
2,400.00	2,400.00	10,523.99	5,828.76	8.40	131.85	-6.80	911.57	-108.74	3,549.53	3,487.84	61.69	57.542				
2,500.00	2,500.00	10,519.00	5,828.94	8.76	131.72	-6.49	911.46	-103.75	3,453.02	3,390.40	62.62	55.140				
2,600.00	2,600.00	10,513.76	5,829.13	9.12	131.57	-6.17	911.35	-98.52	3,356.72	3,293.13	63.59	52.788				
2,700.00	2,700.00	10,508.12	5,829.34	9.48	131.42	-5.82	911.23	-92.89	3,260.63	3,196.04	64.60	50.476				
2,800.00	2,800.00	10,502.71	5,829.53	9.84	131.27	-5.48	911.12	-87.47	3,164.78	3,099.20	65.58	48.259				
2,900.00	2,900.00	10,497.49	5,829.71	10.20	131.12	-5.16	911.02	-82.26	3,069.19	3,002.65	66.54	46.129				
3,000.00	3,000.00	10,492.48	5,829.88	10.56	130.99	-4.85	910.92	-77.25	2,973.88	2,906.41	67.47	44.079				
3,100.00	3,100.00	10,487.65	5,830.04	10.91	130.85	-4.55	910.82	-72.43	2,878.88	2,810.51	68.38	42.104				
3,200.00	3,200.00	10,482.99	5,830.19	11.27	130.73	-4.26	910.73	-67.77	2,784.23	2,714.97	69.26	40.198				
3,300.00	3,300.00	10,478.50	5,830.34	11.63	130.60	-3.98	910.65	-63.29	2,689.96	2,619.83	70.13	38.357				
3,400.00	3,400.00	10,474.17	5,830.47	11.99	130.48	-3.70	910.57	-58.95	2,596.11	2,525.14	70.98	36.577				
3,500.00	3,500.00	10,469.98	5,830.60	12.35	130.37	-3.44	910.49	-54.77	2,502.74	2,430.93	71.81	34.854				
3,600.00	3,600.00	10,465.94	5,830.73	12.71	130.26	-3.19	910.41	-50.73	2,409.89	2,337.27	72.62	33.186				
3,700.00	3,700.00	10,462.03	5,830.84	13.06	130.15	-2.94	910.34	-46.82	2,317.63	2,244.22	73.41	31.570				
3,800.00	3,800.00	10,458.25	5,830.95	13.42	130.05	-2.71	910.27	-43.04	2,226.03	2,151.84	74.19	30.003				
3,900.00	3,900.00	10,454.59	5,831.06	13.78	129.95	-2.48	910.21	-39.39	2,135.19	2,060.23	74.96	28.485				
4,000.00	4,000.00	10,451.04	5,831.16	14.14	129.85	-2.26	910.15	-35.84	2,045.19	1,969.48	75.71	27.014				
4,100.00	4,100.00	10,447.54	5,831.26	14.50	129.75	-2.04	910.08	-32.34	1,956.16	1,879.71	76.45	25.586				
4,200.00	4,200.00	10,443.61	5,831.37	14.86	129.65	-1.79	910.02	-28.42	1,868.23	1,790.99	77.24	24.186				
4,300.00	4,300.00	10,439.82	5,831.47	15.22	129.54	-1.55	909.95	-24.63	1,781.58	1,703.56	78.02	22.835				
4,400.00	4,400.00	10,436.17	5,831.57	15.57	129.44	-1.32	909.88	-20.98	1,696.38	1,617.61	78.78	21.534				
4,500.00	4,500.00	10,432.63	5,831.66	15.93	129.34	-1.10	909.81	-17.44	1,612.88	1,533.36	79.52	20.283				
4,600.00	4,600.00	10,429.22	5,831.75	16.29	129.25	-0.88	909.75	-14.03	1,531.35	1,451.11	80.25	19.083				
4,700.00	4,700.00	10,425.92	5,831.83	16.65	129.16	-0.68	909.69	-10.73	1,452.13	1,371.17	80.96	17.936				
4,800.00	4,800.00	10,422.72	5,831.91	17.01	129.07	-0.47	909.62	-7.54	1,375.61	1,293.95	81.67	16.844				
4,900.00	4,899.50	10,410.88	5,832.20	17.36	128.75	-71.24	909.38	4.30	1,299.83	1,156.28	143.55	9.055				
5,000.00	4,995.15	10,378.03	5,832.89	17.71	127.84	-83.34	908.65	37.13	1,222.59	1,087.45	135.14	9.047				
5,100.00	5,082.78	10,328.30	5,833.68	18.06	126.48	-94.87	907.37	86.84	1,145.87	1,022.18	123.70	9.264				

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



Phoenix Technology Services LP

Anticollision Report

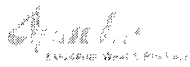


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #12H - OH / Job #1211107 - Surveys (Basic 44)													Offset Site Error:	0.00 usft
Survey Program: 521-MWD													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)		Between Centres (usft)	Between Ellipses (usft)				Offset	Well	Design
5,200.00	5,158.55	10,265.53	5,834.23	18.46	124.76	-105.37	905.67	149.59	1,071.60	959.34	112.26	9.546		
5,300.00	5,219.16	10,207.90	5,834.82	18.99	123.17	-114.95	904.10	207.19	1,002.06	899.21	102.84	9.744		
5,400.00	5,261.96	10,140.41	5,836.86	19.70	121.32	-123.00	902.42	274.63	940.36	843.58	96.78	9.716		
5,500.00	5,285.07	10,053.82	5,839.35	20.64	118.95	-129.98	900.60	361.17	888.29	794.90	93.39	9.512		
5,600.00	5,289.57	9,966.00	5,840.82	21.79	116.54	-134.17	899.33	448.96	847.44	755.51	91.92	9.219		
5,700.00	5,290.87	9,893.00	5,842.27	23.16	114.54	-135.49	898.86	521.94	812.40	721.29	91.10	8.917		
5,800.00	5,292.18	9,815.92	5,845.05	24.73	112.43	-136.98	899.07	598.97	782.48	692.57	89.91	8.703		
5,900.00	5,293.50	9,724.12	5,848.82	26.47	109.92	-138.80	900.39	690.68	757.13	669.27	87.86	8.618		
6,000.00	5,294.83	9,621.33	5,851.12	28.37	107.11	-140.71	902.28	793.42	734.03	648.69	85.34	8.601		
6,100.00	5,296.16	9,527.79	5,852.19	30.39	104.55	-142.30	904.19	886.94	713.37	630.00	83.36	8.557		
6,200.00	5,297.49	9,435.83	5,855.01	32.52	102.04	-143.95	904.87	978.86	696.27	615.06	81.21	8.574		
6,300.00	5,298.82	9,338.83	5,857.62	34.74	99.39	-145.54	906.25	1,075.81	682.10	603.13	78.97	8.638		
6,400.00	5,300.16	9,241.43	5,860.05	37.04	96.73	-146.97	907.78	1,173.17	670.41	593.55	76.86	8.722		
6,500.00	5,301.49	9,137.88	5,862.49	39.40	93.90	-148.33	909.32	1,276.68	660.96	586.26	74.71	8.847		
6,600.00	5,302.81	9,039.13	5,864.30	41.81	91.20	-149.47	909.89	1,375.40	652.79	579.86	72.92	8.952		
6,700.00	5,304.14	8,943.45	5,867.58	44.26	88.59	-150.55	909.05	1,471.02	647.29	576.08	71.22	9.089		
6,800.00	5,305.45	8,839.78	5,870.21	46.75	85.77	-151.33	909.75	1,574.65	643.73	573.90	69.84	9.218		
6,900.00	5,306.76	8,731.83	5,871.97	49.27	82.82	-151.89	909.80	1,682.59	640.84	572.12	68.73	9.324		
7,000.00	5,308.05	8,628.97	5,872.55	51.81	80.02	-152.10	909.85	1,785.45	638.70	570.49	68.20	9.364		
7,100.00	5,309.34	8,528.91	5,872.41	54.37	77.29	-152.03	910.84	1,885.51	637.52	569.22	68.30	9.335		
7,200.00	5,310.63	8,427.84	5,872.13	56.95	74.55	-151.94	911.93	1,986.57	636.31	567.86	68.46	9.295		
7,300.00	5,311.92	8,322.42	5,871.66	59.57	71.68	-151.91	912.08	2,091.99	634.51	566.05	68.45	9.269		
7,400.00	5,313.21	8,229.98	5,871.73	62.20	69.17	-151.93	911.85	2,184.43	632.98	564.42	68.56	9.233		
7,500.00	5,314.50	8,125.14	5,871.51	64.86	66.33	-151.86	912.61	2,289.26	631.66	563.02	68.64	9.202		
7,600.00	5,315.78	8,021.34	5,869.71	67.54	63.52	-151.66	914.18	2,393.03	629.37	560.40	68.97	9.125		
7,700.00	5,317.07	7,930.88	5,868.82	70.23	61.08	-151.48	915.91	2,483.47	627.92	558.47	69.45	9.041		
7,800.00	5,318.36	7,830.45	5,868.70	72.93	58.38	-151.37	917.34	2,583.89	627.02	557.32	69.70	8.995		
7,899.92	5,319.65	7,736.03	5,869.06	75.65	55.84	-151.29	918.45	2,678.30	626.45	556.47	69.98	8.952		
7,900.00	5,319.65	7,735.96	5,869.06	75.65	55.84	-151.29	918.45	2,678.37	626.45	556.47	69.98	8.952		
8,000.00	5,320.94	7,648.00	5,870.75	78.38	53.48	-151.23	920.18	2,766.30	627.59	557.26	70.33	8.923		
8,100.00	5,322.23	7,530.59	5,873.02	81.12	50.33	-151.31	920.45	2,883.68	627.88	557.83	70.05	8.964		
8,200.00	5,323.51	7,424.81	5,873.01	83.87	47.51	-151.28	920.81	2,989.45	626.56	556.45	70.11	8.937		
8,300.00	5,324.80	7,321.22	5,871.61	86.62	44.75	-151.13	921.91	3,093.03	624.41	554.00	70.41	8.868		
8,400.00	5,326.09	7,217.42	5,870.04	89.39	42.01	-151.02	922.45	3,196.82	621.87	551.20	70.66	8.800		
8,500.00	5,327.38	7,123.48	5,868.56	92.16	39.54	-150.96	922.33	3,290.74	618.98	548.01	70.97	8.722		
8,600.00	5,328.67	7,026.94	5,869.07	94.94	37.01	-151.02	921.94	3,387.28	617.75	546.67	71.08	8.691		
8,700.00	5,329.96	6,919.57	5,868.76	97.72	34.23	-151.07	921.13	3,494.64	615.66	544.61	71.05	8.665		
8,800.00	5,331.24	6,827.32	5,868.00	100.51	31.86	-151.07	920.75	3,586.88	613.29	541.95	71.34	8.596		
8,900.00	5,332.53	6,728.38	5,868.74	103.30	29.35	-151.10	920.80	3,685.83	612.49	540.98	71.52	8.564		
9,000.00	5,333.82	6,631.37	5,868.94	106.10	26.94	-151.11	920.79	3,782.83	611.20	539.43	71.78	8.516		
9,058.16	5,334.57	6,577.56	5,869.51	107.73	25.62	-151.11	921.06	3,836.64	611.02	539.05	71.98	8.489		
9,100.00	5,335.11	6,537.63	5,870.00	108.90	24.65	-151.10	921.52	3,876.57	611.09	538.94	72.15	8.470		
9,200.00	5,336.40	6,447.64	5,871.47	111.71	22.53	-151.01	923.34	3,966.52	612.05	539.32	72.73	8.416		
9,300.00	5,337.69	6,343.99	5,874.44	114.52	20.18	-150.92	926.13	4,070.10	614.41	541.18	73.22	8.391		
9,400.00	5,338.97	6,246.61	5,876.92	117.33	10.67	-88.37	931.09	4,687.55	584.58	457.50	127.08	4.600		
9,402.54	5,339.01	6,246.65	5,876.96	117.40	10.67	-88.37	931.09	4,687.55	582.40	455.26	127.14	4.581 CC, ES, SF		

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



Phoenix Technology Services LP

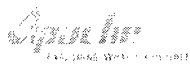
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design Raven Federal - #14H - WB1 - Plan #2 04-30-14												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												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)		Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.00	16.00	0.00	0.00	100.96	-793.30	4,095.70	4,171.85				
100.00	100.00	84.00	100.00	0.16	0.08	100.96	-793.30	4,095.70	4,171.82	4,171.58	0.24	N/A	
200.00	200.00	184.00	200.00	0.52	0.28	100.96	-793.30	4,095.70	4,171.82	4,171.02	0.80	5,199.692	
300.00	300.00	284.00	300.00	0.88	0.51	100.96	-793.30	4,095.70	4,171.82	4,170.43	1.39	3,010.931	
400.00	400.00	384.00	400.00	1.23	0.73	100.96	-793.30	4,095.70	4,171.82	4,169.85	1.97	2,118.970	
500.00	500.00	484.00	500.00	1.59	0.96	100.96	-793.30	4,095.70	4,171.82	4,169.27	2.55	1,634.704	
600.00	600.00	584.00	600.00	1.95	1.18	100.96	-793.30	4,095.70	4,171.82	4,168.68	3.14	1,330.609	
700.00	700.00	8,993.07	4,787.47	2.31	114.01	-147.97	-113.05	-70.72	4,089.65	3,995.75	93.90	43.555	
800.00	800.00	8,991.32	4,787.50	2.67	113.96	-148.61	-113.04	-68.98	3,989.70	3,896.24	93.46	42.691	
900.00	900.00	8,989.57	4,787.53	3.03	113.91	-149.25	-113.02	-67.23	3,889.76	3,796.76	93.00	41.827	
1,000.00	1,000.00	8,987.82	4,787.56	3.39	113.87	-149.91	-113.01	-65.48	3,789.81	3,697.30	92.51	40.965	
1,100.00	1,100.00	8,986.08	4,787.59	3.74	113.82	-150.58	-113.00	-63.73	3,689.88	3,597.87	92.01	40.104	
1,200.00	1,200.00	8,984.33	4,787.62	4.10	113.77	-151.25	-112.99	-61.99	3,589.94	3,498.46	91.48	39.242	
1,300.00	1,300.00	8,982.58	4,787.66	4.46	113.72	-151.93	-112.98	-60.24	3,490.00	3,399.07	90.93	38.380	
1,400.00	1,400.00	8,980.83	4,787.69	4.82	113.68	-152.63	-112.97	-58.49	3,390.07	3,299.71	90.36	37.518	
1,500.00	1,500.00	8,979.08	4,787.72	5.18	113.63	-153.33	-112.96	-56.74	3,290.15	3,200.38	89.76	36.653	
1,600.00	1,600.00	8,977.34	4,787.75	5.54	113.58	-154.04	-112.94	-54.99	3,190.22	3,101.08	89.15	35.787	
1,700.00	1,700.00	8,975.59	4,787.78	5.90	113.53	-154.76	-112.93	-53.25	3,090.30	3,001.80	88.50	34.918	
1,800.00	1,800.00	8,973.84	4,787.81	6.25	113.49	-155.48	-112.92	-51.50	2,990.38	2,902.55	87.84	34.045	
1,900.00	1,900.00	8,972.09	4,787.84	6.61	113.44	-156.22	-112.91	-49.75	2,890.47	2,803.33	87.15	33.168	
2,000.00	2,000.00	8,970.34	4,787.87	6.97	113.39	-156.97	-112.90	-48.00	2,790.57	2,704.13	86.43	32.286	
2,100.00	2,100.00	8,968.59	4,787.90	7.33	113.34	-157.72	-112.89	-46.26	2,690.67	2,604.97	85.69	31.399	
2,200.00	2,200.00	8,966.85	4,787.93	7.69	113.30	-158.48	-112.87	-44.51	2,590.77	2,505.84	84.93	30.504	
2,300.00	2,300.00	8,965.10	4,787.96	8.05	113.25	-159.25	-112.86	-42.76	2,490.89	2,406.74	84.15	29.602	
2,400.00	2,400.00	8,963.35	4,787.99	8.40	113.20	-160.03	-112.85	-41.01	2,391.01	2,307.67	83.33	28.692	
2,500.00	2,500.00	8,961.60	4,788.02	8.76	113.16	-160.81	-112.84	-39.26	2,291.14	2,208.64	82.50	27.771	
2,600.00	2,600.00	8,959.85	4,788.05	9.12	113.11	-161.61	-112.83	-37.52	2,191.28	2,109.64	81.64	26.840	
2,700.00	2,700.00	8,958.11	4,788.08	9.48	113.06	-162.41	-112.82	-35.77	2,091.43	2,010.67	80.76	25.897	
2,800.00	2,800.00	8,956.36	4,788.11	9.84	113.01	-163.22	-112.81	-34.02	1,991.60	1,911.75	79.86	24.940	
2,900.00	2,900.00	8,954.61	4,788.14	10.20	112.97	-164.03	-112.79	-32.27	1,891.79	1,812.86	78.93	23.969	
3,000.00	3,000.00	8,952.86	4,788.17	10.56	112.92	-164.86	-112.78	-30.52	1,791.99	1,714.01	77.98	22.981	
3,100.00	3,100.00	8,951.11	4,788.21	10.91	112.87	-165.68	-112.77	-28.78	1,692.21	1,615.21	77.00	21.976	
3,200.00	3,200.00	8,949.36	4,788.24	11.27	112.82	-166.52	-112.76	-27.03	1,592.46	1,516.45	76.01	20.951	
3,300.00	3,300.00	8,947.62	4,788.27	11.63	112.78	-167.36	-112.75	-25.28	1,492.75	1,417.75	74.99	19.905	
3,400.00	3,400.00	8,945.87	4,788.30	11.99	112.73	-168.21	-112.74	-23.53	1,393.07	1,319.11	73.96	18.836	
3,500.00	3,500.00	8,944.12	4,788.33	12.35	112.68	-169.06	-112.73	-21.79	1,293.43	1,220.53	72.90	17.742	
3,600.00	3,600.00	8,942.37	4,788.36	12.71	112.64	-169.92	-112.71	-20.04	1,193.86	1,122.03	71.83	16.621	
3,700.00	3,700.00	8,940.62	4,788.39	13.06	112.59	-170.78	-112.70	-18.29	1,094.36	1,023.63	70.73	15.471	
3,800.00	3,800.00	8,938.88	4,788.42	13.42	112.54	-171.65	-112.69	-16.54	994.96	925.34	69.62	14.290	
3,900.00	3,900.00	8,937.13	4,788.45	13.78	112.49	-172.52	-112.68	-14.79	895.69	827.19	68.50	13.076	
4,000.00	4,000.00	8,935.38	4,788.48	14.14	112.45	-173.40	-112.67	-13.05	796.60	729.24	67.36	11.827	
4,100.00	4,100.00	8,933.63	4,788.51	14.50	112.40	-174.27	-112.66	-11.30	697.76	631.56	66.20	10.540	
4,200.00	4,200.00	8,931.88	4,788.54	14.86	112.35	-175.15	-112.65	-9.55	599.30	534.27	65.03	9.216	
4,300.00	4,300.00	8,930.14	4,788.57	15.22	112.30	-176.04	-112.63	-7.80	501.45	437.60	63.85	7.854	
4,400.00	4,400.00	8,928.39	4,788.60	15.57	112.26	-176.92	-112.62	-6.05	404.64	341.98	62.66	6.458	
4,500.00	4,500.00	8,926.64	4,788.63	15.93	112.21	-177.81	-112.61	-4.31	309.85	248.39	61.46	5.042	
4,600.00	4,600.00	8,924.89	4,788.66	16.29	112.16	-178.70	-112.60	-2.56	219.73	159.47	60.25	3.647	
4,700.00	4,700.00	8,923.14	4,788.69	16.65	112.11	-179.59	-112.59	-0.81	143.33	84.29	59.04	2.428	
4,788.72	4,788.72	8,921.59	4,788.72	16.97	112.07	-179.62	-112.58	0.74	112.58	54.62	57.96	1.942 CC	
4,800.00	4,800.00	8,921.39	4,788.72	17.01	112.07	-179.52	-112.58	0.94	113.14	55.32	57.82	1.957	
4,900.00	4,899.50	8,912.54	4,788.88	17.36	111.83	-108.43	-112.52	9.79	160.72	38.59	122.13	1.316 Level 3, ES, SF	
5,000.00	4,995.15	8,886.00	4,789.34	17.71	111.11	78.79	-112.34	36.32	243.76	152.78	90.98	2.679	

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



Phoenix Technology Services LP

Anticollision Report

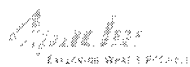


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #14H - WB1 - Plan #2 04-30-14													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance						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)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,082.78	8,842.82	4,790.10	18.06	109.94	51.77	-112.06	79.49	330.77	278.52	52.25	6.330		
5,200.00	5,158.55	8,784.89	4,791.11	18.46	108.38	38.42	-111.68	137.42	411.84	372.07	39.77	10.356		
5,300.00	5,219.16	8,714.73	4,792.34	18.99	106.48	32.74	-111.22	207.57	482.46	442.37	40.09	12.035		
5,400.00	5,261.96	8,635.41	4,793.72	19.70	104.34	30.79	-110.70	286.87	540.08	495.66	44.42	12.159		
5,500.00	5,285.07	8,550.39	4,795.21	20.64	102.05	30.97	-110.14	371.87	583.36	531.11	52.25	11.165		
5,600.00	5,289.57	8,463.17	4,796.74	21.79	99.70	33.54	-109.57	459.08	613.53	553.21	60.32	10.171		
5,700.00	5,290.87	8,374.45	4,798.29	23.16	97.31	37.20	-108.98	547.78	641.89	576.61	65.28	9.833		
5,800.00	5,292.18	8,284.19	4,799.86	24.73	94.89	40.42	-108.39	638.03	670.08	600.30	69.78	9.603		
5,900.00	5,293.50	8,192.47	4,801.47	26.47	92.43	43.22	-107.79	729.73	697.51	623.71	73.80	9.452		
6,000.00	5,294.83	8,099.42	4,803.09	28.37	89.94	45.64	-107.18	822.77	723.72	646.36	77.35	9.356		
6,100.00	5,296.16	8,005.15	4,804.74	30.39	87.41	47.72	-106.56	917.02	748.31	667.84	80.47	9.300		
6,200.00	5,297.49	7,909.77	4,806.41	32.52	84.87	49.50	-105.93	1,012.38	771.00	687.83	83.17	9.270		
6,300.00	5,298.82	7,813.40	4,808.09	34.74	82.30	50.99	-105.30	1,108.73	791.54	706.04	85.49	9.258		
6,400.00	5,300.16	7,716.16	4,809.79	37.04	79.72	52.25	-104.66	1,205.96	809.73	722.27	87.46	9.258		
6,500.00	5,301.49	7,618.17	4,811.51	39.40	77.12	53.27	-104.02	1,303.93	825.42	736.32	89.11	9.263		
6,600.00	5,302.81	7,519.54	4,813.23	41.81	74.51	54.10	-103.37	1,402.54	838.50	748.06	90.44	9.271		
6,700.00	5,304.14	7,420.40	4,814.96	44.26	71.90	54.73	-102.72	1,501.67	848.86	757.37	91.49	9.278		
6,800.00	5,305.45	7,320.86	4,816.70	46.75	69.29	55.18	-102.06	1,601.19	856.44	764.17	92.28	9.281		
6,900.00	5,306.76	7,221.05	4,818.45	49.27	66.67	55.46	-101.41	1,700.98	861.18	768.38	92.80	9.280		
7,000.00	5,308.05	7,121.09	4,820.20	51.81	64.07	55.58	-100.75	1,800.93	863.05	769.98	93.07	9.273		
7,100.00	5,309.34	7,021.09	4,821.94	54.37	61.48	55.60	-100.10	1,900.91	862.92	769.81	93.10	9.268		
7,200.00	5,310.63	6,921.09	4,823.69	56.95	58.91	55.63	-99.44	2,000.89	862.71	769.58	93.13	9.264		
7,300.00	5,311.92	6,821.09	4,825.44	59.57	56.35	55.66	-98.78	2,100.87	862.50	769.32	93.17	9.257		
7,400.00	5,313.21	6,721.10	4,827.19	62.20	53.81	55.69	-98.13	2,200.85	862.29	769.05	93.24	9.248		
7,500.00	5,314.50	6,621.10	4,828.94	64.86	51.29	55.71	-97.47	2,300.83	862.08	768.76	93.32	9.238		
7,600.00	5,315.78	6,521.10	4,830.69	67.54	48.80	55.74	-96.81	2,400.81	861.87	768.45	93.42	9.226		
7,700.00	5,317.07	6,421.10	4,832.43	70.23	46.35	55.77	-96.16	2,500.80	861.66	768.12	93.54	9.212		
7,731.17	5,317.47	6,392.02	4,832.94	71.07	45.64	55.78	-95.96	2,529.87	861.60	767.97	93.63	9.202		
7,800.00	5,318.36	6,340.32	4,833.85	72.93	44.37	55.82	-96.32	2,581.56	862.25	768.12	94.13	9.161		
7,900.00	5,319.65	6,267.58	4,835.14	75.65	42.58	55.96	-99.20	2,654.23	865.84	770.84	95.00	9.114		
8,000.00	5,320.94	6,200.00	4,836.35	78.38	40.91	56.19	-104.35	2,721.60	872.61	776.53	96.08	9.082		
8,100.00	5,322.23	6,123.38	4,837.74	81.12	39.01	56.55	-113.07	2,797.70	882.50	785.37	97.12	9.086		
8,200.00	5,323.51	6,052.33	4,839.03	83.87	37.23	56.97	-123.87	2,867.91	895.57	797.19	98.38	9.104		
8,300.00	5,324.80	5,982.21	4,840.31	86.62	35.48	57.47	-137.09	2,936.75	911.81	812.06	99.75	9.141		
8,400.00	5,326.09	5,900.00	4,841.83	89.39	33.43	58.15	-155.79	3,016.79	931.34	830.27	101.07	9.215		
8,500.00	5,327.38	5,845.45	4,842.83	92.16	32.07	58.65	-170.10	3,069.41	953.76	850.91	102.85	9.274		
8,600.00	5,328.67	5,779.09	4,844.06	94.94	30.42	59.30	-189.51	3,132.86	979.44	874.88	104.55	9.368		
8,700.00	5,329.96	5,700.00	4,845.52	97.72	28.47	60.13	-215.52	3,207.53	1,008.36	902.14	106.21	9.494		
8,800.00	5,331.24	5,650.96	4,846.43	100.51	27.28	60.67	-233.19	3,253.26	1,040.03	931.77	108.26	9.607		
8,900.00	5,332.53	5,600.00	4,847.36	103.30	26.04	61.24	-252.79	3,300.30	1,074.93	964.61	110.31	9.744		
9,000.00	5,333.82	5,529.50	4,848.66	106.10	24.36	62.06	-281.96	3,364.46	1,112.58	1,000.28	112.30	9.907		
9,100.00	5,335.11	5,471.40	4,849.72	108.90	22.99	62.75	-307.76	3,416.50	1,153.15	1,038.71	114.44	10.077		
9,200.00	5,336.40	5,400.00	4,851.02	111.71	21.34	63.61	-341.62	3,479.34	1,196.62	1,080.08	116.54	10.268		
9,300.00	5,337.69	5,360.60	4,851.74	114.52	20.47	64.09	-361.31	3,513.47	1,242.45	1,123.53	118.92	10.448		
9,400.00	5,338.97	5,300.00	4,852.83	117.33	19.13	64.82	-392.95	3,565.14	1,291.02	1,169.81	121.21	10.651		
9,402.54	5,339.01	5,300.00	4,852.83	117.40	19.13	64.82	-392.95	3,565.14	1,292.27	1,171.00	121.26	10.657		

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



Phoenix Technology Services LP

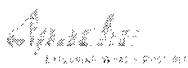
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design Raven Federal - #15H - WB1 - Plan#2 04-30-14													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													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)			
0.00	0.00	0.00	16.00	0.00	0.00	100.08	-728.30	4,095.30	4,159.59				
100.00	100.00	84.00	100.00	0.16	0.08	100.08	-728.30	4,095.30	4,159.56	4,159.32	0.24	N/A	
200.00	200.00	184.00	200.00	0.52	0.28	100.08	-728.30	4,095.30	4,159.56	4,158.75	0.80	5,184.405	
300.00	300.00	284.00	300.00	0.88	0.51	100.08	-728.30	4,095.30	4,159.56	4,158.17	1.39	3,002.079	
400.00	400.00	384.00	400.00	1.23	0.73	100.08	-728.30	4,095.30	4,159.56	4,157.59	1.97	2,112.741	
500.00	500.00	484.00	500.00	1.59	0.96	100.08	-728.30	4,095.30	4,159.56	4,157.00	2.55	1,629.899	
600.00	600.00	584.00	600.00	1.95	1.18	100.08	-728.30	4,095.30	4,159.56	4,156.42	3.14	1,326.697	
700.00	700.00	684.00	700.00	2.31	1.41	100.08	-728.30	4,095.30	4,159.56	4,155.84	3.72	1,118.609	
800.00	800.00	784.00	800.00	2.67	1.63	100.08	-728.30	4,095.30	4,159.56	4,155.25	4.30	966.946	
900.00	900.00	884.00	900.00	3.03	1.86	100.08	-728.30	4,095.30	4,159.56	4,154.67	4.88	851.498	
1,000.00	1,000.00	984.00	1,000.00	3.39	2.08	100.08	-728.30	4,095.30	4,159.56	4,154.09	5.47	760.678	
1,100.00	1,100.00	1,084.00	1,100.00	3.74	2.31	100.08	-728.30	4,095.30	4,159.56	4,153.50	6.05	687.364	
1,200.00	1,200.00	9,590.69	5,296.96	4.10	115.50	-124.13	-83.39	-123.04	4,099.66	3,982.72	116.94	35.058	
1,300.00	1,300.00	9,587.67	5,297.06	4.46	115.42	-124.78	-83.37	-120.03	3,999.73	3,882.80	116.93	34.207	
1,400.00	1,400.00	9,584.66	5,297.15	4.82	115.34	-125.46	-83.35	-117.01	3,899.79	3,782.90	116.89	33.363	
1,500.00	1,500.00	9,581.64	5,297.24	5.18	115.26	-126.17	-83.33	-114.00	3,799.86	3,683.04	116.83	32.526	
1,600.00	1,600.00	9,578.63	5,297.33	5.54	115.17	-126.89	-83.31	-110.99	3,699.93	3,583.20	116.73	31.696	
1,700.00	1,700.00	9,575.61	5,297.42	5.90	115.09	-127.65	-83.29	-107.97	3,600.00	3,483.39	116.61	30.873	
1,800.00	1,800.00	9,572.60	5,297.51	6.25	115.01	-128.43	-83.27	-104.96	3,500.07	3,383.63	116.45	30.057	
1,900.00	1,900.00	9,569.58	5,297.60	6.61	114.93	-129.24	-83.25	-101.94	3,400.15	3,283.90	116.25	29.248	
2,000.00	2,000.00	9,566.57	5,297.69	6.97	114.85	-130.07	-83.23	-98.93	3,300.22	3,184.21	116.02	28.446	
2,100.00	2,100.00	9,563.55	5,297.78	7.33	114.77	-130.94	-83.21	-95.92	3,200.30	3,084.56	115.74	27.651	
2,200.00	2,200.00	9,560.54	5,297.87	7.69	114.68	-131.84	-83.19	-92.90	3,100.38	2,984.96	115.42	26.862	
2,300.00	2,300.00	9,557.52	5,297.96	8.05	114.60	-132.78	-83.17	-89.89	3,000.46	2,885.42	115.05	26.081	
2,400.00	2,400.00	9,554.51	5,298.06	8.40	114.52	-133.75	-83.15	-86.88	2,900.55	2,785.93	114.62	25.306	
2,500.00	2,500.00	9,551.49	5,298.15	8.76	114.44	-134.75	-83.13	-83.86	2,800.64	2,686.50	114.14	24.537	
2,600.00	2,600.00	9,548.48	5,298.24	9.12	114.36	-135.79	-83.11	-80.85	2,700.73	2,587.13	113.59	23.775	
2,700.00	2,700.00	9,545.46	5,298.33	9.48	114.28	-136.87	-83.09	-77.83	2,600.82	2,487.84	112.98	23.019	
2,800.00	2,800.00	9,542.45	5,298.42	9.84	114.20	-137.99	-83.07	-74.82	2,500.92	2,388.61	112.31	22.269	
2,900.00	2,900.00	9,539.43	5,298.51	10.20	114.11	-139.15	-83.05	-71.81	2,401.02	2,289.47	111.55	21.524	
3,000.00	3,000.00	9,536.42	5,298.60	10.56	114.03	-140.36	-83.03	-68.79	2,301.13	2,190.41	110.72	20.784	
3,100.00	3,100.00	9,533.40	5,298.69	10.91	113.95	-141.61	-83.01	-65.78	2,201.24	2,091.44	109.80	20.048	
3,200.00	3,200.00	9,530.39	5,298.78	11.27	113.87	-142.90	-82.99	-62.77	2,101.36	1,992.57	108.79	19.316	
3,300.00	3,300.00	9,527.37	5,298.87	11.63	113.79	-144.24	-82.97	-59.75	2,001.49	1,893.81	107.68	18.587	
3,400.00	3,400.00	9,524.36	5,298.96	11.99	113.71	-145.63	-82.95	-56.74	1,901.62	1,795.15	106.47	17.860	
3,500.00	3,500.00	9,521.34	5,299.06	12.35	113.62	-147.06	-82.93	-53.72	1,801.77	1,696.61	105.16	17.134	
3,600.00	3,600.00	9,518.33	5,299.15	12.71	113.54	-148.55	-82.91	-50.71	1,701.92	1,598.19	103.73	16.407	
3,700.00	3,700.00	9,515.31	5,299.24	13.06	113.46	-150.08	-82.89	-47.70	1,602.09	1,499.91	102.19	15.678	
3,800.00	3,800.00	9,512.29	5,299.33	13.42	113.38	-151.67	-82.87	-44.68	1,502.28	1,401.76	100.52	14.945	
3,900.00	3,900.00	9,509.28	5,299.42	13.78	113.30	-153.30	-82.86	-41.67	1,402.49	1,303.76	98.73	14.205	
4,000.00	4,000.00	9,506.26	5,299.51	14.14	113.22	-154.98	-82.84	-38.66	1,302.72	1,205.91	96.81	13.456	
4,100.00	4,100.00	9,503.25	5,299.60	14.50	113.13	-156.71	-82.82	-35.64	1,202.98	1,108.23	94.76	12.695	
4,200.00	4,200.00	9,500.23	5,299.69	14.86	113.05	-158.49	-82.80	-32.63	1,103.29	1,010.71	92.57	11.918	
4,300.00	4,300.00	9,497.22	5,299.78	15.22	112.97	-160.31	-82.78	-29.62	1,003.64	913.38	90.26	11.120	
4,400.00	4,400.00	9,494.20	5,299.87	15.57	112.89	-162.18	-82.76	-26.60	904.06	816.26	87.81	10.296	
4,500.00	4,500.00	9,491.19	5,299.96	15.93	112.81	-164.09	-82.74	-23.59	804.58	719.35	85.23	9.440	
4,600.00	4,600.00	9,488.17	5,300.06	16.29	112.73	-166.03	-82.72	-20.57	705.23	622.70	82.52	8.546	
4,700.00	4,700.00	9,485.16	5,300.15	16.65	112.65	-168.01	-82.70	-17.56	606.07	526.37	79.70	7.605	
4,800.00	4,800.00	9,482.14	5,300.24	17.01	112.56	-170.02	-82.68	-14.55	507.23	430.47	76.76	6.608	
4,900.00	4,899.50	9,472.03	5,300.54	17.36	112.29	151.10	-82.61	-4.44	410.47	290.76	119.70	3.429	
5,000.00	4,995.15	9,444.29	5,301.38	17.71	111.54	154.04	-82.43	23.29	322.46	209.43	113.02	2.853	
5,100.00	5,082.78	9,400.01	5,302.71	18.06	110.34	149.75	-82.14	67.54	252.59	143.13	109.45	2.308	

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



Phoenix Technology Services LP

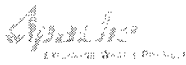
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design Raven Federal - #15H - WB1 - Plan#2 04-30-14													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							
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	Warning	
5,200.00	5,158.55	9,341.13	5,304.49	18.46	108.75	140.33	-81.75	126.40	213.59	106.25	107.34	1.990	1.959 CC, ES, SF	
5,248.94	5,190.29	9,307.75	5,305.50	18.71	107.85	134.07	-81.53	159.76	208.84	102.24	106.60			
5,300.00	5,219.16	9,270.22	5,306.63	18.99	106.84	126.71	-81.28	197.27	213.55	107.79	105.76	2.019		
5,400.00	5,261.96	9,190.39	5,309.03	19.70	104.68	111.97	-80.76	277.07	243.63	140.20	103.43	2.355		
5,500.00	5,285.07	9,105.11	5,311.61	20.64	102.39	100.11	-80.20	362.31	287.89	187.03	100.85	2.855		
5,600.00	5,289.57	9,017.85	5,314.24	21.79	100.04	95.19	-79.63	449.53	336.23	235.71	100.51	3.345		
5,700.00	5,290.87	8,929.15	5,316.91	23.16	97.65	94.74	-79.04	538.19	382.35	280.52	101.83	3.755		
5,800.00	5,292.18	8,838.89	5,319.63	24.73	95.23	94.41	-78.45	628.40	425.36	322.25	103.11	4.125		
5,900.00	5,293.50	8,747.18	5,322.40	26.47	92.77	94.17	-77.85	720.06	465.21	360.86	104.35	4.458		
6,000.00	5,294.83	8,654.14	5,325.20	28.37	90.27	93.99	-77.24	813.06	501.85	396.33	105.52	4.756		
6,100.00	5,296.16	8,559.88	5,328.04	30.39	87.75	93.86	-76.62	907.27	535.22	428.61	106.61	5.020		
6,200.00	5,297.49	8,464.52	5,330.92	32.52	85.21	93.76	-75.99	1,002.59	565.30	457.69	107.61	5.253		
6,300.00	5,298.82	8,368.16	5,333.83	34.74	82.64	93.70	-75.36	1,098.90	592.03	483.52	108.51	5.456		
6,400.00	5,300.16	8,270.94	5,336.76	37.04	80.06	93.66	-74.72	1,196.08	615.39	506.09	109.30	5.630		
6,500.00	5,301.49	8,172.95	5,339.71	39.40	77.46	93.65	-74.08	1,294.02	635.35	525.38	109.98	5.777		
6,600.00	5,302.81	8,074.34	5,342.68	41.81	74.85	93.66	-73.43	1,392.59	651.89	541.35	110.54	5.897		
6,700.00	5,304.14	7,975.21	5,345.67	44.26	72.24	93.69	-72.78	1,491.67	664.98	553.99	110.99	5.991		
6,800.00	5,305.45	7,875.68	5,348.67	46.75	69.63	93.75	-72.12	1,591.15	674.62	563.28	111.33	6.059		
6,900.00	5,306.76	7,775.89	5,351.68	49.27	67.02	93.82	-71.47	1,690.90	680.78	569.22	111.57	6.102		
7,000.00	5,308.05	7,675.94	5,354.70	51.81	64.42	93.92	-70.81	1,790.80	683.47	571.78	111.69	6.119		
7,100.00	5,309.34	7,575.96	5,357.71	54.37	61.83	94.06	-70.15	1,890.73	683.74	572.07	111.68	6.123		
7,200.00	5,310.63	7,475.97	5,360.73	56.95	59.25	94.20	-69.50	1,990.67	683.93	572.27	111.66	6.125		
7,300.00	5,311.92	7,375.99	5,363.74	59.57	56.69	94.35	-68.84	2,090.61	684.11	572.45	111.66	6.127		
7,400.00	5,313.21	7,276.00	5,366.76	62.20	54.15	94.49	-68.18	2,190.54	684.31	572.62	111.69	6.127		
7,500.00	5,314.50	7,176.02	5,369.77	64.86	51.63	94.63	-67.53	2,290.48	684.51	572.76	111.75	6.126		
7,600.00	5,315.78	7,076.03	5,372.78	67.54	49.14	94.78	-66.87	2,390.42	684.71	572.89	111.82	6.123		
7,700.00	5,317.07	6,976.05	5,375.80	70.23	46.68	94.92	-66.21	2,490.36	684.91	572.99	111.92	6.120		
7,800.00	5,318.36	6,885.13	5,378.54	72.93	44.46	95.05	-65.78	2,581.23	685.35	573.07	112.28	6.104		
7,900.00	5,319.65	6,800.00	5,381.14	75.65	42.39	95.15	-68.25	2,666.28	688.94	576.12	112.82	6.107		
8,000.00	5,320.94	6,738.31	5,383.04	78.38	40.87	95.21	-72.41	2,727.79	696.09	582.11	113.99	6.107		
8,100.00	5,322.23	6,665.56	5,385.30	81.12	39.07	95.26	-79.86	2,800.12	707.18	592.28	114.89	6.155		
8,200.00	5,323.51	6,600.00	5,387.35	83.87	37.46	95.29	-88.93	2,865.02	722.04	606.04	116.00	6.224		
8,300.00	5,324.80	6,522.39	5,389.79	86.62	35.53	95.30	-102.54	2,941.38	740.51	623.66	116.85	6.337		
8,400.00	5,326.09	6,452.33	5,392.01	89.39	33.80	95.29	-117.49	3,009.79	762.63	644.70	117.93	6.467		
8,500.00	5,327.38	6,383.51	5,394.19	92.16	32.11	95.27	-134.60	3,076.41	788.27	669.19	119.08	6.620		
8,600.00	5,328.67	6,316.07	5,396.33	94.94	30.46	95.23	-153.69	3,141.05	817.32	697.01	120.31	6.793		
8,700.00	5,329.96	6,250.13	5,398.43	97.72	28.86	95.18	-174.55	3,203.56	849.69	728.06	121.63	6.986		
8,800.00	5,331.24	6,200.00	5,400.02	100.51	27.65	95.14	-191.85	3,250.59	885.42	762.10	123.33	7.179		
8,900.00	5,332.53	6,123.15	5,402.46	103.30	25.83	95.07	-220.74	3,321.75	923.90	799.37	124.53	7.419		
9,000.00	5,333.82	6,062.25	5,404.38	106.10	24.42	95.00	-245.66	3,377.28	965.50	839.38	126.13	7.655		
9,100.00	5,335.11	6,000.00	5,406.34	108.90	22.99	94.92	-272.95	3,433.19	1,009.94	882.21	127.73	7.907		
9,200.00	5,336.40	5,945.87	5,408.04	111.71	21.79	94.85	-298.15	3,481.06	1,057.07	927.48	129.59	8.157		
9,300.00	5,337.69	5,900.00	5,409.47	114.52	20.79	94.79	-320.57	3,521.06	1,106.84	975.24	131.60	8.411		
9,400.00	5,338.97	5,836.85	5,411.43	117.33	19.47	94.71	-352.98	3,575.22	1,158.94	1,025.51	133.43	8.686		
9,402.54	5,339.01	5,835.51	5,411.47	117.40	19.44	94.70	-353.69	3,576.35	1,160.30	1,026.82	133.47	8.693		

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



Phoenix Technology Services LP

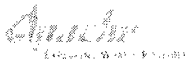
Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design										Offset Site Error: 0.00 usft	
Survey Program: 100-PHX_SPT_GTD, 4819-PHX+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)	Offset Wellbore Centre +E/-W (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	173.40	-175.40	20.30	176.57		
100.00	100.00	98.72	98.72	0.16	0.17	173.37	-175.75	20.42	176.93	176.61	0.32 548.383
200.00	200.00	200.00	200.00	0.52	0.52	173.49	-175.95	20.07	177.09	176.07	1.02 173.011
248.39	248.39	248.27	248.27	0.69	0.69	173.66	-175.92	19.55	177.01	175.64	1.37 129.237
300.00	300.00	298.98	298.97	0.88	0.88	173.88	-176.16	18.88	177.17	175.44	1.74 102.101
400.00	400.00	397.59	397.57	1.23	1.23	173.94	-177.14	18.79	178.15	175.72	2.43 73.199
500.00	500.00	497.72	497.69	1.59	1.59	173.54	-178.33	20.19	179.49	176.35	3.14 57.159
600.00	600.00	598.08	598.03	1.95	1.95	173.11	-179.36	21.68	180.68	176.82	3.86 46.785
700.00	700.00	698.29	698.23	2.31	2.32	172.66	-180.21	23.22	181.71	177.12	4.59 39.570
800.00	800.00	798.63	798.55	2.67	2.69	172.20	-180.90	24.78	182.60	177.27	5.33 34.272
900.00	900.00	902.69	902.60	3.03	3.04	171.98	-180.45	25.41	182.25	176.20	6.05 30.127
1,000.00	1,000.00	1,000.38	1,000.28	3.39	3.37	171.69	-179.55	26.22	181.46	174.71	6.75 26.899
1,083.36	1,083.36	1,083.47	1,083.36	3.68	3.67	171.16	-179.24	27.87	181.39	174.04	7.35 24.668
1,100.00	1,100.00	1,100.06	1,099.94	3.74	3.73	171.05	-179.19	28.21	181.39	173.92	7.47 24.268
1,200.00	1,200.00	1,200.00	1,199.86	4.10	4.10	170.37	-178.88	30.35	181.44	173.23	8.21 22.108
1,300.00	1,300.00	1,298.97	1,298.80	4.46	4.48	169.66	-178.84	32.64	181.80	172.86	8.94 20.338
1,400.00	1,400.00	1,398.24	1,398.04	4.82	4.86	168.95	-179.27	35.00	182.67	172.99	9.68 18.879
1,500.00	1,500.00	1,497.81	1,497.58	5.18	5.24	168.33	-180.05	37.20	183.86	173.45	10.42 17.654
1,600.00	1,600.00	1,597.91	1,597.66	5.54	5.62	167.78	-180.94	39.20	185.16	174.00	11.16 16.595
1,700.00	1,700.00	1,697.86	1,697.59	5.90	6.01	167.28	-181.85	41.03	186.43	174.53	11.90 15.667
1,800.00	1,800.00	1,797.94	1,797.65	6.25	6.39	166.85	-182.77	42.70	187.71	175.06	12.64 14.847
1,900.00	1,900.00	1,897.86	1,897.55	6.61	6.77	166.52	-183.76	44.05	188.98	175.60	13.38 14.121
2,000.00	2,000.00	1,998.45	1,998.14	6.97	7.16	166.26	-184.67	45.15	190.12	175.99	14.12 13.460
2,100.00	2,100.00	2,099.49	2,099.17	7.33	7.55	165.96	-185.12	46.30	190.83	175.95	14.87 12.832
2,200.00	2,200.00	2,200.00	2,199.68	7.69	7.89	165.96	-185.32	46.34	191.03	175.46	15.57 12.272
2,300.00	2,300.00	2,299.05	2,298.73	8.05	8.22	166.01	-185.66	46.26	191.34	175.09	16.26 11.771
2,400.00	2,400.00	2,399.49	2,399.16	8.40	8.61	165.73	-185.98	47.29	191.90	174.90	17.00 11.288
2,500.00	2,500.00	2,499.89	2,499.56	8.76	8.99	165.44	-186.06	48.34	192.24	174.49	17.74 10.834
2,600.00	2,600.00	2,599.68	2,599.34	9.12	9.33	165.43	-186.33	48.42	192.52	174.08	18.44 10.439
2,700.00	2,700.00	2,699.46	2,699.12	9.48	9.64	165.68	-186.93	47.73	192.92	173.82	19.11 10.097
2,800.00	2,800.00	2,799.07	2,798.72	9.84	10.00	165.71	-187.50	47.74	193.48	173.67	19.81 9.767
2,900.00	2,900.00	2,899.29	2,898.95	10.20	10.38	165.60	-187.99	48.25	194.09	173.54	20.55 9.446
3,000.00	3,000.00	3,001.22	3,000.87	10.56	10.75	165.48	-187.93	48.67	194.13	172.86	21.27 9.125
3,100.00	3,100.00	3,100.85	3,100.50	10.91	11.06	165.46	-187.57	48.64	193.78	171.83	21.95 8.828
3,200.00	3,200.00	3,200.76	3,200.41	11.27	11.36	165.52	-187.39	48.41	193.54	170.93	22.61 8.559
3,300.00	3,300.00	3,301.53	3,301.18	11.63	11.67	165.53	-187.00	48.25	193.13	169.84	23.29 8.293
3,400.00	3,400.00	3,401.11	3,400.76	11.99	12.00	165.42	-186.42	48.50	192.63	168.64	23.98 8.031
3,500.00	3,500.00	3,502.35	3,501.99	12.35	12.35	165.25	-185.55	48.85	191.88	167.19	24.69 7.771
3,546.02	3,546.02	3,546.65	3,546.29	12.51	12.50	165.21	-185.26	48.91	191.61	166.60	25.01 7.660
3,600.00	3,600.00	3,600.00	3,599.64	12.71	12.69	165.15	-185.42	49.16	191.83	166.43	25.39 7.554
3,700.00	3,700.00	3,702.22	3,701.86	13.06	13.05	164.96	-185.22	49.77	191.81	165.69	26.12 7.343
3,800.00	3,800.00	3,803.11	3,802.74	13.42	13.39	164.93	-184.02	49.55	190.59	163.78	26.81 7.109
3,900.00	3,900.00	3,902.45	3,902.07	13.78	13.72	164.85	-182.74	49.49	189.33	161.83	27.50 6.885
4,000.00	4,000.00	4,002.48	4,002.09	14.14	14.07	164.52	-181.39	50.25	188.23	160.02	28.21 6.673
4,100.00	4,100.00	4,102.29	4,101.88	14.50	14.43	164.15	-180.04	51.12	187.17	158.25	28.92 6.472
4,192.31	4,192.31	4,193.54	4,193.12	14.83	14.76	163.87	-179.16	51.81	186.50	156.92	29.58 6.305
4,200.00	4,200.00	4,200.00	4,199.59	14.86	14.78	163.85	-179.12	51.85	186.47	156.84	29.63 6.294
4,300.00	4,300.00	4,298.54	4,298.12	15.22	15.15	163.67	-179.24	52.53	186.78	156.44	30.35 6.155
4,400.00	4,400.00	4,401.28	4,400.86	15.57	15.52	163.38	-179.24	53.52	187.06	155.98	31.09 6.018
4,426.17	4,426.17	4,426.81	4,426.39	15.67	15.62	163.28	-179.08	53.78	186.99	155.71	31.27 5.979
4,500.00	4,500.00	4,500.00	4,499.57	15.93	15.88	163.15	-179.22	54.27	187.26	155.45	31.80 5.888 ES
4,600.00	4,600.00	4,598.98	4,598.55	16.29	16.23	163.18	-180.02	54.41	188.07	155.56	32.51 5.784

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



Phoenix Technology Services LP

Anticollision Report

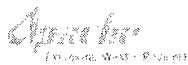


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design										Offset Site Error: 0.00 usft	
Survey Program: 100-PHX_SPT_GTD, 4819-PHX+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)		Between Centres (usft)	Between Ellipses (usft)			
4,700.00	4,700.00	4,696.57	4,696.13	16.65	16.52	162.99	-180.56	55.23	188.85	155.69	5.694 SF
4,800.00	4,800.00	4,787.54	4,786.90	17.01	16.70	161.76	-183.11	60.35	193.25	159.55	5.734
4,900.00	4,899.50	4,861.00	4,859.49	17.36	16.77	99.40	-188.18	69.89	206.15	172.35	6.099
5,000.00	4,995.15	4,925.02	4,919.81	17.71	16.79	96.68	-198.83	88.16	236.54	202.37	6.922
5,100.00	5,082.78	4,980.30	4,967.97	18.06	16.82	92.97	-213.68	110.75	282.69	248.09	34.60
5,200.00	5,158.55	5,032.00	5,010.00	18.46	16.85	88.48	-231.21	135.21	339.64	304.57	35.07
5,300.00	5,219.16	5,074.00	5,042.21	18.99	16.89	82.45	-247.45	156.69	404.19	368.77	35.42
5,400.00	5,261.96	5,117.00	5,072.90	19.70	16.94	75.89	-266.20	180.24	474.62	439.18	35.44
5,500.00	5,285.07	5,137.64	5,086.75	20.64	16.98	66.30	-275.88	192.09	548.26	513.92	34.34
5,600.00	5,289.57	5,160.00	5,101.19	21.79	17.02	63.01	-286.66	205.33	623.34	588.91	34.43
5,700.00	5,290.87	5,186.98	5,117.93	23.16	17.10	67.25	-299.97	221.78	701.28	664.40	36.88
5,800.00	5,292.18	5,224.95	5,140.44	24.73	17.24	72.06	-318.99	245.71	781.17	741.62	39.55
5,900.00	5,293.50	5,273.99	5,167.91	26.47	17.50	76.93	-343.49	278.11	861.39	819.16	42.23
6,000.00	5,294.83	5,311.93	5,187.94	28.37	17.75	80.09	-362.63	304.02	941.50	896.88	44.62
6,100.00	5,296.16	5,350.69	5,206.61	30.39	18.05	82.65	-382.99	331.21	1,021.58	974.58	47.00
6,200.00	5,297.49	5,394.46	5,225.45	32.52	18.45	84.86	-406.73	362.77	1,101.00	1,051.58	49.42
6,300.00	5,298.82	5,438.82	5,241.84	34.74	18.91	86.52	-431.70	395.56	1,179.57	1,127.68	51.89
6,400.00	5,300.16	5,505.48	5,259.28	37.04	19.74	88.03	-470.64	446.68	1,256.76	1,202.19	54.56
6,500.00	5,301.49	5,583.76	5,266.36	39.40	20.88	88.60	-516.63	509.53	1,330.92	1,273.46	57.46
6,600.00	5,302.81	5,953.65	5,282.09	41.81	28.01	89.47	-698.89	830.12	1,393.50	1,328.98	64.52
6,700.00	5,304.14	6,186.84	5,290.83	44.26	33.38	89.76	-777.90	1,049.18	1,437.66	1,366.05	71.61
6,800.00	5,305.45	6,315.86	5,297.25	46.75	36.52	89.95	-816.12	1,172.24	1,476.98	1,399.83	77.16
6,900.00	5,306.76	6,772.72	5,310.08	49.27	48.02	90.20	-897.20	1,620.39	1,506.54	1,415.27	91.27
7,000.00	5,308.05	6,937.88	5,317.32	51.81	52.16	90.36	-899.76	1,785.36	1,510.86	1,412.36	98.49
7,100.00	5,309.34	7,043.60	5,320.99	54.37	54.84	90.45	-899.65	1,891.01	1,511.56	1,407.53	104.03
7,200.00	5,310.63	7,145.27	5,323.92	56.95	57.44	90.51	-899.33	1,992.64	1,511.99	1,402.51	109.47
7,300.00	5,311.92	7,245.42	5,325.92	59.57	60.04	90.53	-898.98	2,092.76	1,512.36	1,397.46	114.90
7,400.00	5,313.21	7,330.49	5,327.06	62.20	62.27	90.53	-899.08	2,177.83	1,513.20	1,393.25	119.96
7,500.00	5,314.50	7,447.12	5,329.06	64.86	65.35	90.55	-899.78	2,294.43	1,514.61	1,388.71	125.90
7,600.00	5,315.78	7,576.14	5,333.75	67.54	68.76	90.67	-897.57	2,423.35	1,513.55	1,381.35	132.20
7,700.00	5,317.07	7,685.38	5,336.82	70.23	71.66	90.73	-894.58	2,532.50	1,511.55	1,373.57	137.97
7,800.00	5,318.36	7,785.29	5,339.43	72.93	74.33	90.78	-891.42	2,632.33	1,509.12	1,365.62	143.51
7,900.00	5,319.65	7,868.24	5,341.53	75.65	76.55	90.82	-889.41	2,715.23	1,507.43	1,358.84	148.58
7,995.38	5,320.88	7,946.56	5,343.21	78.25	78.68	90.85	-888.38	2,793.52	1,506.88	1,353.46	153.42
8,000.00	5,320.94	7,950.33	5,343.27	78.38	78.78	90.85	-888.36	2,797.30	1,506.88	1,353.23	153.65
8,100.00	5,322.23	8,031.86	5,344.03	81.12	81.00	90.84	-888.31	2,878.82	1,507.54	1,348.82	158.72
8,200.00	5,323.51	8,112.10	5,344.28	83.87	83.21	90.81	-889.30	2,959.05	1,509.48	1,345.71	163.77
8,300.00	5,324.80	8,218.42	5,344.69	86.62	86.14	90.77	-891.45	3,065.34	1,512.22	1,342.66	169.56
8,400.00	5,326.09	8,326.41	5,346.59	89.39	89.13	90.79	-892.47	3,173.32	1,513.87	1,338.47	175.40
8,500.00	5,327.38	8,420.83	5,348.80	92.16	91.74	90.82	-893.51	3,267.70	1,515.71	1,334.84	180.87
8,600.00	5,328.67	8,516.62	5,351.75	94.94	94.41	90.89	-894.86	3,363.44	1,517.86	1,331.47	186.39
8,700.00	5,329.96	8,647.65	5,356.54	97.72	98.04	91.00	-895.68	3,494.38	1,519.28	1,326.39	192.90
8,800.00	5,331.24	8,750.59	5,360.02	100.51	100.90	91.09	-894.97	3,597.26	1,519.35	1,320.73	198.62
8,900.00	5,332.53	8,851.85	5,363.07	103.30	103.71	91.15	-894.24	3,698.46	1,519.37	1,315.08	204.30
9,000.00	5,333.82	8,951.59	5,366.62	106.10	106.49	91.24	-893.41	3,798.14	1,519.31	1,309.37	209.94
9,004.53	5,333.88	8,955.96	5,366.76	106.23	106.61	91.24	-893.38	3,802.51	1,519.31	1,309.12	210.19
9,100.00	5,335.11	9,049.64	5,369.00	108.90	109.23	91.28	-892.79	3,896.15	1,519.41	1,303.88	215.54
9,200.00	5,336.40	9,170.00	5,369.99	111.71	112.58	91.26	-891.27	4,016.50	1,518.86	1,297.08	221.78
9,300.00	5,337.69	9,260.96	5,370.19	114.52	115.12	91.22	-889.79	4,107.45	1,517.93	1,290.74	227.19
9,397.73	5,338.95	9,349.00	5,370.64	117.27	117.59	91.20	-888.71	4,195.48	1,517.43	1,284.97	232.46
9,400.00	5,338.97	9,349.00	5,370.64	117.33	117.59	91.20	-888.71	4,195.48	1,517.43	1,284.91	232.52
9,402.54	5,339.01	9,349.00	5,370.64	117.40	117.59	91.20	-888.71	4,195.48	1,517.44	1,284.85	232.59

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

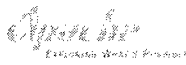


Phoenix Technology Services LP

Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum



Phoenix Technology Services LP

Anticollision Report

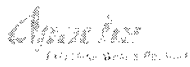


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design Raven Federal - #23H - OH / Job #1514630 - Surveys (Capstar 114)													Offset Site Error:	0.00 usft
Survey Program: 100-CB-GYRO-MS, 4349-PHX+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)				
0.00	0.00	0.00	1.00	0.00	0.00	169.69	-110.50	20.10	112.32					
100.00	100.00	98.94	99.94	0.16	0.55	169.60	-110.49	20.28	112.34	111.63	0.71	157.737		
200.00	200.00	198.40	199.40	0.52	1.39	169.51	-110.74	20.50	112.63	110.72	1.91	58.935		
300.00	300.00	298.74	299.74	0.88	2.32	169.72	-111.20	20.17	113.02	109.82	3.20	35.317		
400.00	400.00	398.50	399.49	1.23	3.24	170.20	-111.70	19.29	113.35	108.88	4.47	25.339		
500.00	500.00	498.49	499.48	1.59	4.08	170.74	-112.32	18.32	113.81	108.13	5.68	20.046		
600.00	600.00	598.38	599.36	1.95	4.99	171.23	-112.98	17.44	114.32	107.37	6.95	16.459		
700.00	700.00	699.82	700.79	2.31	5.86	171.61	-113.04	16.68	114.27	106.09	8.17	13.981		
800.00	800.00	799.85	800.82	2.67	6.75	171.86	-112.41	16.09	113.56	104.14	9.42	12.060		
900.00	900.00	899.56	900.53	3.03	7.63	172.00	-111.87	15.72	112.97	102.31	10.66	10.599		
1,000.00	1,000.00	999.77	1,000.74	3.39	8.51	172.00	-111.31	15.65	112.40	100.51	11.89	9.452		
1,100.00	1,100.00	1,099.95	1,100.92	3.74	9.39	171.68	-110.48	16.16	111.66	98.53	13.13	8.502		
1,200.00	1,200.00	1,199.87	1,200.83	4.10	10.27	171.06	-109.52	17.24	110.88	96.51	14.37	7.717		
1,300.00	1,300.00	1,299.61	1,300.55	4.46	11.14	170.30	-108.67	18.58	110.25	94.65	15.60	7.066		
1,387.22	1,387.22	1,386.29	1,387.22	4.77	11.90	169.61	-108.22	19.85	110.03	93.36	16.67	6.599		
1,400.00	1,400.00	1,398.99	1,399.92	4.82	12.01	169.51	-108.20	20.04	110.04	93.21	16.83	6.538		
1,500.00	1,500.00	1,498.79	1,499.70	5.18	12.89	168.80	-108.11	21.40	110.21	92.15	18.06	6.101		
1,600.00	1,600.00	1,600.06	1,600.97	5.54	13.77	168.36	-107.65	22.18	109.91	90.61	19.31	5.693		
1,700.00	1,700.00	1,700.09	1,701.00	5.90	14.65	168.31	-106.75	22.09	109.01	88.46	20.55	5.305		
1,800.00	1,800.00	1,800.00	1,800.91	6.25	15.52	168.34	-105.91	21.86	108.14	86.37	21.77	4.967		
1,866.16	1,866.16	1,865.26	1,866.16	6.49	16.09	168.29	-105.63	21.89	107.87	85.30	22.58	4.778		
1,900.00	1,900.00	1,898.64	1,899.55	6.61	16.38	168.28	-105.69	21.92	107.94	84.96	22.99	4.696		
2,000.00	2,000.00	1,998.88	1,999.78	6.97	17.23	168.23	-105.99	22.09	108.26	84.06	24.20	4.474		
2,100.00	2,100.00	2,099.58	2,100.49	7.33	18.12	168.17	-105.85	22.16	108.14	82.70	25.44	4.250		
2,200.00	2,200.00	2,199.14	2,200.04	7.69	18.98	168.29	-105.65	21.89	107.90	81.23	26.67	4.046		
2,212.70	2,212.70	2,211.80	2,212.70	7.73	19.09	168.32	-105.66	21.84	107.89	81.07	26.82	4.022		
2,300.00	2,300.00	2,298.82	2,299.72	8.05	19.84	168.42	-105.81	21.68	108.01	80.12	27.89	3.873		
2,400.00	2,400.00	2,399.26	2,400.16	8.40	20.71	168.37	-105.85	21.78	108.06	78.95	29.12	3.711		
2,500.00	2,500.00	2,499.13	2,500.03	8.76	21.58	168.31	-105.73	21.88	107.97	77.63	30.34	3.558		
2,600.00	2,600.00	2,599.16	2,600.06	9.12	22.45	168.26	-105.68	21.96	107.93	76.36	31.57	3.419		
2,700.00	2,700.00	2,699.11	2,700.02	9.48	23.33	168.19	-105.62	22.07	107.90	75.09	32.81	3.289		
2,704.01	2,704.01	2,703.11	2,704.01	9.49	23.37	168.19	-105.61	22.08	107.90	75.04	32.86	3.284		
2,800.00	2,800.00	2,798.60	2,799.50	9.84	24.20	168.23	-105.84	22.06	108.12	74.08	34.04	3.177		
2,900.00	2,900.00	2,899.17	2,900.07	10.20	25.07	168.26	-106.06	22.03	108.33	73.06	35.26	3.072		
3,000.00	3,000.00	2,999.10	3,000.00	10.56	25.93	168.27	-106.03	22.01	108.29	71.81	36.49	2.968		
3,000.17	3,000.17	2,999.27	3,000.17	10.56	25.93	168.27	-106.03	22.01	108.29	71.80	36.49	2.968		
3,100.00	3,100.00	3,098.84	3,099.74	10.91	26.79	168.31	-106.16	21.97	108.41	70.71	37.71	2.875		
3,200.00	3,200.00	3,199.21	3,200.11	11.27	27.66	168.35	-106.25	21.91	108.48	69.55	38.93	2.787		
3,261.19	3,261.19	3,260.29	3,261.19	11.49	28.19	168.38	-106.22	21.85	108.45	68.77	39.68	2.733		
3,300.00	3,300.00	3,299.02	3,299.92	11.63	28.52	168.35	-106.23	21.90	108.46	68.31	40.15	2.701		
3,400.00	3,400.00	3,399.34	3,400.24	11.99	29.40	168.30	-106.13	21.98	108.39	67.00	41.39	2.619		
3,500.00	3,500.00	3,499.13	3,500.03	12.35	30.27	168.37	-106.03	21.83	108.26	65.64	42.62	2.540		
3,600.00	3,600.00	3,599.53	3,600.43	12.71	31.14	168.47	-105.86	21.60	108.04	64.20	43.85	2.464		
3,700.00	3,700.00	3,699.89	3,700.78	13.06	32.02	168.69	-105.39	21.08	107.48	62.39	45.09	2.384		
3,800.00	3,800.00	3,799.80	3,800.70	13.42	32.89	169.05	-104.84	20.29	106.79	60.47	46.31	2.306		
3,900.00	3,900.00	3,900.34	3,901.22	13.78	33.78	168.99	-103.93	20.22	105.88	58.32	47.56	2.226		
4,000.00	4,000.00	4,000.41	4,001.29	14.14	34.66	168.74	-102.67	20.43	104.69	55.89	48.80	2.145		
4,100.00	4,100.00	4,100.31	4,101.18	14.50	35.53	168.58	-101.44	20.50	103.50	53.47	50.03	2.069		
4,200.00	4,200.00	4,199.72	4,200.58	14.86	36.05	167.99	-100.35	21.35	102.60	51.69	50.91	2.015		
4,277.97	4,277.97	4,277.13	4,277.97	15.14	36.40	167.00	-99.75	23.03	102.37	50.84	51.54	1.986 CC		
4,300.00	4,300.00	4,298.99	4,299.82	15.22	36.50	166.64	-99.62	23.66	102.39	50.68	51.71	1.980 ES, SF		
4,400.00	4,400.00	4,393.61	4,394.18	15.57	36.72	163.39	-99.58	29.70	104.08	51.78	52.30	1.990		

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



Phoenix Technology Services LP

Anticollision Report

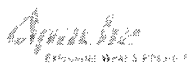


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design													Raven Federal - #23H - OH / Job #1514630 - Surveys (Capstar 114)		Offset Site Error:	0.00 usft
Survey Program: 100-CB-GYRO-MS, 4349-PHX+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)						
4,500.00	4,500.00	4,477.00	4,474.46	15.93	36.74	152.82	-100.47	51.58	115.79	63.12	52.67	2.198				
4,600.00	4,600.00	4,552.42	4,541.99	16.29	36.76	140.56	-103.14	84.85	145.61	92.57	53.05	2.745				
4,700.00	4,700.00	4,615.91	4,594.20	16.65	36.78	131.88	-108.12	120.58	193.46	140.03	53.42	3.621				
4,800.00	4,800.00	4,671.66	4,636.40	17.01	36.83	125.96	-113.59	156.56	253.33	199.53	53.81	4.708				
4,900.00	4,899.50	4,720.71	4,670.47	17.36	36.90	54.95	-119.28	191.37	318.78	264.92	53.86	5.918				
5,000.00	4,995.15	4,776.00	4,704.96	17.71	37.02	47.41	-126.16	234.00	381.98	329.32	52.66	7.254				
5,100.00	5,082.78	4,818.00	4,728.10	18.06	37.14	42.44	-131.18	268.67	440.35	390.46	49.89	8.826				
5,200.00	5,158.55	4,861.00	4,748.51	18.46	37.29	39.18	-136.22	306.16	493.46	447.63	45.84	10.766				
5,300.00	5,219.16	4,904.00	4,766.31	18.99	37.49	37.22	-141.36	344.96	539.87	498.64	41.22	13.096				
5,400.00	5,261.96	4,946.00	4,781.56	19.70	37.71	36.25	-146.94	383.68	579.08	541.88	37.20	15.568				
5,500.00	5,285.07	4,989.00	4,794.53	20.64	37.98	36.15	-153.54	424.14	611.71	576.48	35.23	17.365				
5,600.00	5,289.57	5,032.00	4,803.98	21.79	38.29	37.67	-160.60	465.47	639.85	602.97	36.88	17.350				
5,700.00	5,290.87	5,080.00	4,809.95	23.16	38.69	40.56	-168.13	512.48	673.26	632.93	40.33	16.695				
5,800.00	5,292.18	5,163.12	4,814.57	24.73	39.52	44.27	-178.12	594.85	709.82	665.01	44.81	15.840				
5,900.00	5,293.50	5,267.79	4,819.36	26.47	40.69	47.90	-187.12	699.03	744.42	694.81	49.61	15.005				
6,000.00	5,294.83	5,376.40	4,824.08	28.37	42.09	50.87	-192.95	807.37	775.79	721.52	54.27	14.295				
6,100.00	5,296.16	5,509.98	4,829.44	30.39	44.06	53.52	-193.52	940.82	801.97	742.65	59.32	13.519				
6,200.00	5,297.49	5,605.21	4,832.44	32.52	45.62	54.96	-190.47	1,035.95	823.60	760.19	63.41	12.988				
6,300.00	5,298.82	5,708.95	4,835.05	34.74	47.42	56.19	-186.41	1,139.58	842.52	774.83	67.69	12.447				
6,400.00	5,300.16	5,814.28	4,838.91	37.04	49.35	57.25	-181.81	1,244.73	857.79	785.70	72.09	11.899				
6,500.00	5,301.49	5,909.86	4,842.65	39.40	51.19	58.04	-177.19	1,340.13	869.81	793.51	76.30	11.400				
6,600.00	5,302.81	5,982.96	4,844.43	41.81	52.66	58.52	-174.71	1,413.16	880.96	800.94	80.02	11.009				
6,700.00	5,304.14	6,060.27	4,844.83	44.26	54.26	58.90	-173.78	1,490.47	892.02	808.23	83.79	10.646				
6,800.00	5,305.45	6,147.00	4,844.83	46.75	56.10	59.22	-174.52	1,577.19	902.26	814.53	87.73	10.285				
6,900.00	5,306.76	6,267.40	4,845.88	49.27	58.75	59.55	-175.84	1,697.57	909.20	816.82	92.38	9.842				
7,000.00	5,308.05	6,405.52	4,852.23	51.81	61.88	59.87	-174.41	1,835.53	909.41	811.99	97.43	9.334				
7,100.00	5,309.34	6,513.62	4,858.13	54.37	64.38	60.01	-170.71	1,943.39	905.05	803.02	102.03	8.871				
7,200.00	5,310.63	6,609.72	4,861.81	56.95	66.65	60.02	-166.15	2,039.32	900.30	793.90	106.39	8.462				
7,300.00	5,311.92	6,709.47	4,864.30	59.57	69.03	59.95	-161.15	2,138.91	895.97	785.18	110.79	8.087				
7,400.00	5,313.21	6,812.69	4,866.19	62.20	71.53	59.81	-155.15	2,241.93	891.29	776.06	115.23	7.735				
7,500.00	5,314.50	6,910.00	4,869.08	64.86	73.91	59.76	-149.94	2,339.06	886.44	766.78	119.66	7.408				
7,600.00	5,315.78	6,994.08	4,871.92	67.54	76.01	59.77	-146.66	2,423.03	882.66	758.74	123.91	7.123				
7,700.00	5,317.07	7,081.89	4,874.08	70.23	78.22	59.79	-144.76	2,510.79	880.79	752.51	128.28	6.866				
7,800.00	5,318.36	7,177.31	4,875.59	72.93	80.64	59.77	-143.05	2,606.18	879.71	746.91	132.80	6.624				
7,900.00	5,319.65	7,276.11	4,876.64	75.65	83.17	59.72	-141.32	2,704.96	878.94	741.56	137.39	6.398				
8,000.00	5,320.94	7,382.00	4,877.72	78.38	85.90	59.66	-139.22	2,810.82	877.98	735.85	142.13	6.177				
8,100.00	5,322.23	7,492.43	4,879.43	81.12	88.76	59.60	-136.14	2,921.20	876.07	729.07	147.00	5.960				
8,200.00	5,323.51	7,597.05	4,881.90	83.87	91.49	59.57	-132.36	3,025.72	873.02	721.25	151.78	5.752				
8,300.00	5,324.80	7,696.32	4,884.73	86.62	94.10	59.57	-129.18	3,124.90	870.09	713.58	156.51	5.559				
8,400.00	5,326.09	7,808.31	4,888.96	89.39	97.05	59.62	-125.18	3,236.74	866.36	704.75	161.62	5.361				
8,500.00	5,327.38	7,912.35	4,893.88	92.16	99.80	59.71	-120.93	3,340.57	861.72	695.10	166.62	5.172				
8,600.00	5,328.67	8,004.01	4,898.33	94.94	102.24	59.80	-117.34	3,432.05	857.16	685.81	171.35	5.002				
8,700.00	5,329.96	8,092.98	4,901.65	97.72	104.62	59.86	-114.61	3,520.92	853.90	677.91	175.99	4.852				
8,800.00	5,331.24	8,182.86	4,904.60	100.51	107.03	59.93	-112.87	3,610.74	851.85	671.16	180.69	4.714				
8,900.00	5,332.53	8,280.48	4,907.50	103.30	109.67	60.00	-111.67	3,708.31	850.56	664.96	185.60	4.583				
9,000.00	5,333.82	8,384.13	4,910.48	106.10	112.47	60.08	-110.35	3,811.90	849.29	658.62	190.67	4.454				
9,100.00	5,335.11	8,475.35	4,913.77	108.90	114.95	60.19	-109.13	3,903.05	847.65	652.14	195.51	4.336				
9,115.50	5,335.31	8,486.00	4,914.06	109.34	115.24	60.20	-109.11	3,913.70	847.61	651.44	196.17	4.321				
9,200.00	5,336.40	8,544.05	4,914.87	111.71	116.82	60.24	-109.77	3,971.73	848.93	649.19	199.73	4.250				
9,300.00	5,337.69	8,645.85	4,914.79	114.52	119.60	60.28	-112.76	4,073.49	852.79	648.04	204.75	4.165				
9,400.00	5,338.97	8,757.76	4,916.95	117.33	122.66	60.41	-114.74	4,185.36	854.59	644.41	210.19	4.066				
9,402.54	5,339.01	8,760.30	4,917.01	117.40	122.73	60.42	-114.78	4,187.90	854.63	644.32	210.31	4.064				

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



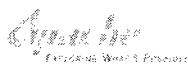
Phoenix Technology Services LP

Anticollision Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum



Phoenix Technology Services LP

Anticollision Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 725H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3734.00usft
Reference Site:	Cedar Lake Federal CA	MD Reference:	GL + KB @ 3734.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	725H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan 1 08-30-16	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error: 0.00 usft	
Survey Program: 100-PHX_SPT_GTD, 4234-PHX+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)				
0.00	0.00	1.00	0.00	0.00	0.00	156.33	-45.40	19.90	49.57					
100.00	100.00	101.02	100.02	0.16	0.18	156.13	-45.31	20.06	49.55	49.22	0.33	149.609		
200.00	200.00	201.21	200.21	0.52	0.52	156.54	-45.24	19.63	49.32	48.29	1.03	47.924		
276.76	276.76	277.77	276.76	0.79	0.78	158.02	-45.58	18.40	49.15	47.58	1.58	31.192 CC		
300.00	300.00	300.95	299.93	0.88	0.87	158.67	-45.80	17.88	49.17	47.43	1.74	28.231		
400.00	400.00	400.57	399.48	1.23	1.24	162.80	-47.50	14.71	49.73	47.26	2.47	20.140		
500.00	500.00	500.30	499.10	1.59	1.61	168.00	-50.00	10.63	51.13	47.93	3.20	15.988		
600.00	600.00	600.25	598.94	1.95	2.00	172.76	-52.58	6.68	53.02	49.09	3.92	13.515		
700.00	700.00	700.22	698.83	2.31	2.38	176.32	-54.97	3.54	55.10	50.46	4.64	11.873		
800.00	800.00	800.10	798.65	2.67	2.76	178.87	-57.32	1.13	57.34	51.99	5.35	10.715		
900.00	900.00	900.20	898.70	3.03	3.15	-178.94	-59.59	-1.11	59.61	53.55	6.06	9.834		
1,000.00	1,000.00	1,000.91	999.39	3.39	3.54	-177.36	-61.14	-2.82	61.20	54.43	6.77	9.037		
1,100.00	1,100.00	1,101.17	1,099.64	3.74	3.92	-176.84	-61.90	-3.41	61.99	54.52	7.47	8.297		
1,200.00	1,200.00	1,200.96	1,199.43	4.10	4.27	-177.20	-62.66	-3.06	62.74	54.58	8.16	7.689		
1,300.00	1,300.00	1,301.02	1,299.48	4.46	4.60	-177.94	-63.56	-2.29	63.60	54.75	8.85	7.185		
1,400.00	1,400.00	1,400.87	1,399.32	4.82	4.94	-178.95	-64.52	-1.18	64.54	54.99	9.55	6.758		
1,500.00	1,500.00	1,500.51	1,498.94	5.18	5.28	179.85	-65.87	0.17	65.87	55.62	10.25	6.425		
1,600.00	1,600.00	1,600.45	1,598.86	5.54	5.64	178.83	-67.50	1.38	67.52	56.56	10.96	6.161		
1,700.00	1,700.00	1,700.68	1,699.07	5.90	6.01	178.07	-69.00	2.33	69.05	57.37	11.67	5.915		
1,800.00	1,800.00	1,800.88	1,799.26	6.25	6.38	177.55	-70.18	3.01	70.25	57.86	12.39	5.671		
1,900.00	1,900.00	1,901.01	1,899.39	6.61	6.75	177.21	-71.12	3.47	71.20	58.10	13.10	5.434		
2,000.00	2,000.00	2,001.14	1,999.51	6.97	7.13	177.08	-71.88	3.66	71.97	58.15	13.82	5.208		
2,100.00	2,100.00	2,101.23	2,099.60	7.33	7.52	177.03	-72.48	3.76	72.58	58.05	14.53	4.994		
2,200.00	2,200.00	2,201.21	2,199.58	7.69	7.90	176.87	-73.04	3.99	73.15	57.89	15.25	4.795		
2,300.00	2,300.00	2,301.39	2,299.76	8.05	8.26	176.49	-73.46	4.50	73.60	57.62	15.98	4.607		
2,400.00	2,400.00	2,401.48	2,399.84	8.40	8.63	176.20	-73.70	4.89	73.87	57.17	16.70	4.424		
2,500.00	2,500.00	2,501.25	2,499.61	8.76	9.01	176.17	-74.07	4.96	74.24	56.82	17.42	4.262		
2,600.00	2,600.00	2,601.26	2,599.62	9.12	9.38	175.85	-74.56	5.41	74.75	56.62	18.14	4.121		
2,700.00	2,700.00	2,701.63	2,699.99	9.48	9.73	175.36	-74.76	6.06	75.00	56.14	18.86	3.976		
2,800.00	2,800.00	2,801.29	2,799.65	9.84	10.08	175.07	-74.97	6.47	75.25	55.66	19.59	3.842		
2,900.00	2,900.00	2,901.47	2,899.83	10.20	10.45	174.57	-75.26	7.15	75.60	55.28	20.31	3.722		
3,000.00	3,000.00	3,001.87	3,000.22	10.56	10.76	174.24	-75.18	7.58	75.56	54.54	21.02	3.595		
3,047.92	3,047.92	3,049.56	3,047.92	10.73	10.92	174.21	-75.10	7.62	75.49	54.13	21.35	3.535		
3,100.00	3,100.00	3,101.41	3,099.77	10.91	11.09	174.05	-75.16	7.83	75.57	53.85	21.72	3.479		
3,200.00	3,200.00	3,201.43	3,199.78	11.27	11.46	173.89	-75.44	8.08	75.87	53.43	22.44	3.381		
3,300.00	3,300.00	3,301.46	3,299.81	11.63	11.83	173.77	-75.69	8.26	76.14	52.98	23.16	3.288		
3,400.00	3,400.00	3,401.76	3,400.12	11.99	12.17	173.75	-75.73	8.30	76.19	52.33	23.86	3.193		
3,500.00	3,500.00	3,502.01	3,500.37	12.35	12.47	173.93	-75.43	8.02	75.86	51.32	24.54	3.092		
3,592.76	3,592.76	3,594.41	3,592.76	12.68	12.76	173.91	-75.21	8.03	75.64	50.45	25.19	3.003		
3,600.00	3,600.00	3,601.63	3,599.98	12.71	12.79	173.89	-75.21	8.04	75.64	50.40	25.24	2.997		
3,700.00	3,700.00	3,701.70	3,700.05	13.06	13.13	173.56	-75.13	8.48	75.61	49.65	25.96	2.912		
3,718.55	3,718.55	3,720.20	3,718.55	13.13	13.20	173.49	-75.12	8.57	75.61	49.51	26.10	2.897		
3,800.00	3,800.00	3,801.43	3,799.78	13.42	13.49	173.39	-75.23	8.72	75.73	49.05	26.68	2.839		
3,900.00	3,900.00	3,902.03	3,900.38	13.78	13.84	173.19	-75.08	8.97	75.62	48.23	27.39	2.761		
4,000.00	4,000.00	4,001.67	4,000.02	14.14	14.17	172.74	-74.77	9.52	75.37	47.27	28.10	2.682		
4,100.00	4,100.00	4,102.34	4,100.68	14.50	14.50	172.31	-74.21	10.01	74.88	46.06	28.82	2.598		
4,200.00	4,200.00	4,201.85	4,200.19	14.86	14.82	171.87	-73.54	10.50	74.29	44.77	29.52	2.516		
4,213.67	4,213.67	4,215.33	4,213.67	14.91	14.84	171.83	-73.52	10.56	74.27	44.68	29.59	2.510		
4,300.00	4,300.00	4,301.44	4,299.78	15.22	14.88	171.77	-73.75	10.67	74.52	44.58	29.94	2.489		
4,400.00	4,400.00	4,401.40	4,399.74	15.57	14.89	171.58	-74.01	10.95	74.82	44.51	30.31	2.468		
4,500.00	4,500.00	4,501.30	4,499.64	15.93	14.91	171.39	-74.39	11.27	75.23	44.55	30.69	2.452		
4,600.00	4,600.00	4,601.32	4,599.66	16.29	14.94	171.55	-74.91	11.12	75.73	44.65	31.07	2.437		

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



Phoenix Technology Services LP

Anticollision Report

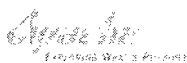


Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Offset Design - Raven Federal - #24H - OH / Job #1514707 - Surveys (Capstar 114)													Offset Site Error: 0.00 usft
Survey Program: 100-PHX_SPT_GTD, 4234-PHX+MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance							
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	Warning
4,700.00	4,700.00	4,701.35	4,699.68	16.65	14.97	172.27	-75.46	10.24	76.16	44.68	31.47	2.420	
4,800.00	4,800.00	4,801.97	4,800.30	17.01	15.02	172.38	-75.63	10.12	76.31	44.43	31.88	2.394	
4,810.79	4,810.79	4,812.86	4,811.18	17.05	15.02	112.03	-75.55	10.34	76.30	44.27	32.03	2.382	ES, SF
4,900.00	4,899.50	4,902.78	4,900.53	17.36	15.07	110.69	-73.10	19.12	78.09	45.77	32.32	2.416	
5,000.00	4,995.15	5,000.89	4,994.00	17.71	15.14	107.62	-68.18	47.82	87.87	55.27	32.60	2.695	
5,100.00	5,082.78	5,101.15	5,080.45	18.06	15.26	102.89	-58.93	97.31	103.69	70.64	33.05	3.138	
5,200.00	5,158.55	5,194.38	5,148.38	18.46	15.50	97.61	-46.99	159.73	125.22	91.42	33.80	3.704	
5,300.00	5,219.16	5,282.88	5,198.00	18.99	15.95	92.14	-35.87	231.97	154.53	119.65	34.88	4.430	
5,400.00	5,261.96	5,377.21	5,237.14	19.70	16.77	88.36	-22.67	316.68	186.92	150.60	36.32	5.147	
5,500.00	5,285.07	5,464.16	5,260.98	20.64	17.83	86.02	-9.36	399.16	220.45	182.31	38.13	5.781	
5,600.00	5,289.57	5,555.42	5,272.95	21.79	19.25	86.30	4.09	488.53	255.38	214.78	40.60	6.291	
5,700.00	5,290.87	5,652.41	5,278.09	23.16	20.99	87.56	19.53	584.15	287.16	243.47	43.68	6.574	
5,800.00	5,292.18	5,738.13	5,279.84	24.73	22.70	87.89	32.71	668.82	316.40	269.46	46.94	6.741	
5,900.00	5,293.50	5,818.80	5,279.36	26.47	24.39	87.78	41.85	748.96	346.30	295.94	50.36	6.876	
6,000.00	5,294.83	5,895.42	5,278.77	28.37	26.11	87.68	46.81	825.41	377.51	323.56	53.95	6.997	
6,100.00	5,296.16	5,977.44	5,279.04	30.39	28.02	87.73	48.31	907.41	409.70	351.86	57.84	7.083	
6,200.00	5,297.49	6,064.78	5,281.25	32.52	30.11	88.03	47.96	994.72	440.68	378.66	62.03	7.105	
6,300.00	5,298.82	6,156.58	5,284.87	34.74	32.39	88.45	46.36	1,086.44	469.58	403.11	66.47	7.065	
6,400.00	5,300.16	6,249.66	5,289.23	37.04	34.75	88.89	43.97	1,179.37	495.91	424.86	71.05	6.979	
6,500.00	5,301.49	6,348.52	5,294.59	39.40	37.29	89.39	40.97	1,278.05	519.36	443.49	75.87	6.846	
6,600.00	5,302.81	6,457.42	5,300.65	41.81	40.14	89.89	39.37	1,386.77	537.87	456.87	81.00	6.640	
6,700.00	5,304.14	6,561.84	5,305.49	44.26	42.91	90.23	39.34	1,491.07	551.57	465.51	86.06	6.409	
6,800.00	5,305.45	6,661.01	5,308.48	46.75	45.58	90.37	39.79	1,590.19	561.32	470.33	90.99	6.169	
6,900.00	5,306.76	6,760.51	5,310.32	49.27	48.27	90.39	40.15	1,689.68	567.69	471.79	95.90	5.919	
7,000.00	5,308.05	6,860.67	5,313.55	51.81	51.00	90.56	40.51	1,789.79	570.59	469.80	100.79	5.661	
7,100.00	5,309.34	6,961.01	5,317.88	54.37	53.74	90.86	40.97	1,890.03	570.96	464.89	106.07	5.383	
7,200.00	5,310.63	7,058.11	5,321.54	56.95	56.41	91.10	41.18	1,987.06	571.51	460.09	111.42	5.129	
7,300.00	5,311.92	7,161.90	5,324.38	59.57	59.28	91.25	41.33	2,090.81	572.12	455.13	116.99	4.890	
7,400.00	5,313.21	7,263.27	5,327.01	62.20	62.09	91.38	42.23	2,192.14	571.98	449.47	122.51	4.669	
7,432.63	5,313.63	7,295.25	5,327.43	63.07	62.98	91.38	42.47	2,224.12	571.97	447.67	124.29	4.602	
7,500.00	5,314.50	7,359.75	5,327.63	64.86	64.78	91.32	42.80	2,288.61	572.09	444.16	127.93	4.472	
7,600.00	5,315.78	7,451.80	5,327.80	67.54	67.34	91.22	42.32	2,380.66	573.31	440.06	133.25	4.303	
7,700.00	5,317.07	7,550.61	5,328.56	70.23	70.11	91.16	40.95	2,479.46	575.40	436.63	138.77	4.146	
7,800.00	5,318.36	7,651.47	5,330.22	72.93	72.94	91.19	39.59	2,580.30	577.47	433.11	144.36	4.000	
7,900.00	5,319.65	7,753.57	5,332.04	75.65	75.81	91.24	38.49	2,682.37	579.28	429.28	150.00	3.862	
8,000.00	5,320.94	7,856.46	5,334.43	78.38	78.70	91.34	37.88	2,785.24	580.61	424.93	155.67	3.730	
8,100.00	5,322.23	7,956.53	5,336.73	81.12	81.52	91.44	37.53	2,885.28	581.70	420.42	161.28	3.607	
8,200.00	5,323.51	8,055.85	5,338.78	83.87	84.32	91.51	37.14	2,984.58	582.83	415.96	166.87	3.493	
8,300.00	5,324.80	8,160.40	5,341.22	86.62	87.28	91.61	36.85	3,089.10	583.86	411.25	172.61	3.383	
8,400.00	5,326.09	8,270.06	5,343.41	89.39	90.38	91.69	38.11	3,198.72	583.46	404.95	178.51	3.269	
8,500.00	5,327.38	8,376.51	5,345.18	92.16	93.38	91.74	41.01	3,305.12	581.45	397.13	184.32	3.155	
8,600.00	5,328.67	8,486.53	5,346.23	94.94	95.99	91.73	43.19	3,397.11	579.79	390.06	189.73	3.056	
8,700.00	5,329.96	8,586.91	5,346.98	97.72	98.77	91.68	44.59	3,495.48	579.07	383.73	195.33	2.965	
8,800.00	5,331.24	8,665.78	5,347.74	100.51	101.58	91.63	45.92	3,594.33	578.43	377.47	200.96	2.878	
8,900.00	5,332.53	8,763.52	5,347.96	103.30	104.35	91.53	46.89	3,692.07	578.12	371.56	206.56	2.799	
8,924.56	5,332.85	8,787.47	5,348.04	103.99	105.03	91.51	47.07	3,716.02	578.11	370.17	207.94	2.780	
9,000.00	5,333.82	8,861.07	5,348.60	106.10	107.12	91.47	47.47	3,789.61	578.23	366.07	212.16	2.725	
9,100.00	5,335.11	8,959.45	5,349.69	108.90	109.92	91.45	47.71	3,887.99	578.70	360.91	217.79	2.657	
9,200.00	5,336.40	9,059.19	5,350.80	111.71	112.75	91.43	47.76	3,987.72	579.36	355.91	223.46	2.593	
9,300.00	5,337.69	9,159.06	5,353.00	114.52	115.60	91.52	47.89	4,087.56	579.98	350.85	229.12	2.531	
9,400.00	5,338.97	9,258.46	5,356.06	117.33	118.43	91.69	47.90	4,186.92	580.73	345.96	234.77	2.474	
9,402.54	5,339.01	9,261.00	5,356.14	117.40	118.50	91.70	47.90	4,189.46	580.75	345.84	234.91	2.472	

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



Phoenix Technology Services LP

Anticollision Report



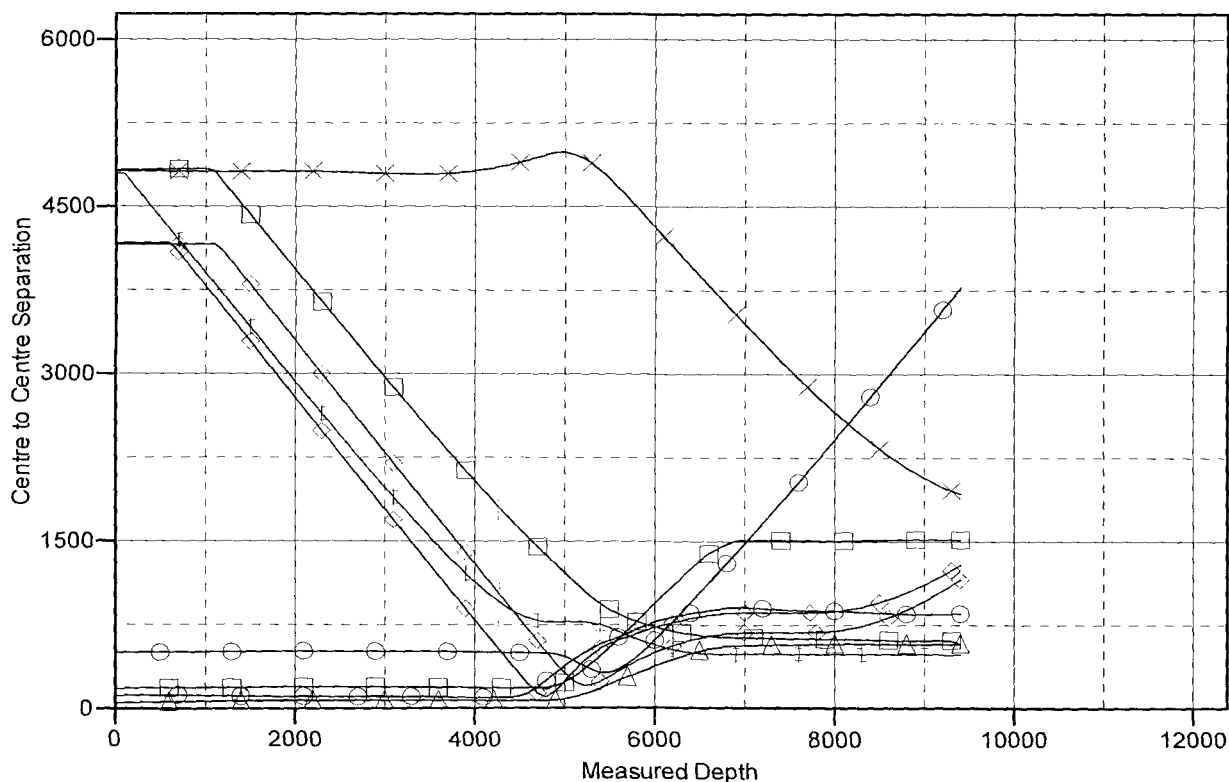
Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan 1 08-30-16

Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Reference Depths are relative to GL + KB @ 3734.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

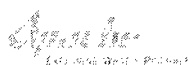
Coordinates are relative to: 725H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.23°

Ladder Plot



LEGEND

H, OH / Job #1514540, Surveys (Capstar 114) V0
OH, Actual Surveys V0
H, WB1, Plan #2 04-30-14 V0
#11H, OH / Job #1310356, Surveys (Basic 44) V0
#12H, OH / Job #1211107, Surveys (Basic 44) V0
#24H, OH / Job #1514707, Surveys (Capstar 114) V0
#23H, OH / Job #1514630, Surveys (Capst
#15H, WB1, Plan#2 04-30-14 V0
#10H, OH / Job #1211217, Surveys (Basic



Phoenix Technology Services LP

Anticollision Report



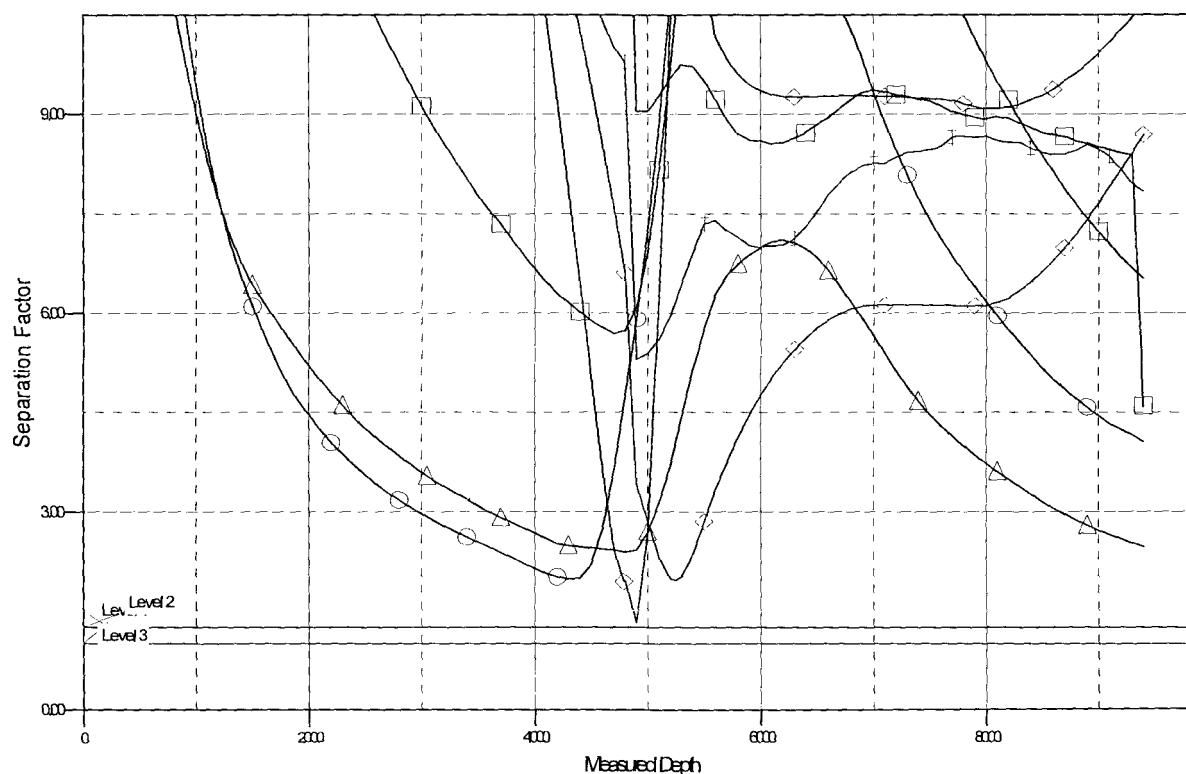
Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Reference Site: Cedar Lake Federal CA
Site Error: 0.00 usft
Reference Well: 725H
Well Error: 0.00 usft
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Local Co-ordinate Reference: Well 725H
TVD Reference: GL + KB @ 3734.00usft
MD Reference: GL + KB @ 3734.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR
Offset TVD Reference: Reference Datum

Reference Depths are relative to GL + KB @ 3734.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: 725H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.23°

Separation Factor Plot



LEGEND

H, OH / Job #1514540, Surveys (Capstar 114) V0
OH, Actual Surveys V0
H, WB1, Plan #2 04-30-14 V0
#11H, OH / Job #1310356, Surveys (Basic 44) V0
#12H, OH / Job #1211107, Surveys (Basic 44) V0
#24H, OH / Job #1514707, Surveys (Capstar 114) V0
#23H, OH / Job #1514630, Surveys (Capstar 114) V0
#15H, WB1, Plan #2 04-30-14 V0
#10H, OH / Job #1211217, Surveys (Basic 44) V0

CEMENT: SURFACEStage Tool Depth: N/A**Lead:**Top MD of
Segment: 0Btm MD of
Segment: 400Cmt Type: CI CCmt Additives: 1% CaCLQuantity (sks): 342Yield (cu/ft/sk): 1.33 Volume (cu/ft): 454.86Density (lbs/gal): 14.8 Percent Excess: 50%**Tail:**Top MD of
Segment: Btm MD of
Segment: Cmt Type: Cmt Additives: Quantity (sks): Yield (cu/ft/sk): Volume (cu/ft): Density (lbs/gal): Percent Excess: **CEMENT: INTERMEDIATE**

Single Stage

Lead:Top MD of
Segment: 0Btm MD of
Segment: 2575.38Cmt Type: CCmt Additives: 5% Salt + 6% Bentonite +
1#/sk Kolseal + 0.125#/sk
CelloflakeQuantity (sks): 565Yield (cu/ft/sk): 1.84 Volume (cu/ft): 1039.6Density (lbs/gal): 12.9 Percent Excess: 30%**Tail:**Top MD of
Segment: 2575.38Btm MD of
Segment: 3500Cmt Type: CCmt Additives: 0.1% Retarder

Quantity (sks):	<u>300</u>		
Yield (cu/ft/sk):	<u>1.32</u>	Volume (cu/ft):	<u>396</u>
Density (lbs/gal):	<u>14.8</u>	Percent Excess:	<u>30%</u>

2 Stage Cement Job CONTINGENCY

* DVT depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DVT will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with 500psi comp strength time for cmt will be onsite for review.

*If lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 9-5/8" csg & ECP may be placed below DVT.

1st Stage

Lead:

Top MD of Segment:	<u>700</u>	Btm MD of Segment:	<u>2575.38</u>
--------------------	------------	--------------------	----------------

Cmt Type:	<u>C</u>	Cmt Additives:	<u>5% Salt + 6% Bentonite + 1#/sk Kolseal + 0.125#/sk Celloflake</u>
-----------	----------	----------------	--

Quantity (sks):	<u>465</u>		
Yield (cu/ft/sk):	<u>1.84</u>	Volume (cu/ft):	<u>855.6</u>
Density (lbs/gal):	<u>12.9</u>	Percent Excess:	<u>30%</u>

Tail:

Top MD of Segment:	<u>2575.38</u>	Btm MD of Segment:	<u>3500</u>
--------------------	----------------	--------------------	-------------

Cmt Type:	<u>C</u>	Cmt Additives:	<u>0.1% Retarder</u>
-----------	----------	----------------	----------------------

Quantity (sks):	<u>300</u>		
Yield (cu/ft/sk):	<u>1.32</u>	Volume (cu/ft):	<u>396</u>
Density (lbs/gal):	<u>14.8</u>	Percent Excess:	<u>30%</u>

Stage Tool Depth: 700'

2nd Stage

Lead:

Top MD of Segment:	<u>N/A</u>	Btm MD of Segment:	<u>N/A</u>
--------------------	------------	--------------------	------------

Cmt Type: N/A

Cmt Additives: N/A

Quantity (sks): N/A

Yield (cu/ft/sk): N/A

Volume (cu/ft): N/A

Density (lbs/gal): N/A

Percent Excess: N/A

Tail:

Top MD of
Segment: 0

Btm MD of
Segment: 700

Cmt Type: C

Cmt Additives: 1-2% Calcium Chloride

Quantity (sks): 206

Yield (cu/ft/sk): 1.33

Volume (cu/ft): 273.98

Density (lbs/gal): 14.8

Percent Excess: 30%

CEMENT: PRODUCTION

Stage Tool Depth: 4811

This will have an openhole completion attached to the 5-1/2" casing. 5-1/2" will crossover to 7" where a DVT will be placed at the bottom of the 7". The 5-1/2" casing will be uncemented and the 7" from the DVT to surface will be cemented.

Lead:

Top MD of
Segment: 0

Btm MD of
Segment: 2883.14

Cmt Type: C

Cmt Additives: 5% Salt + 6% Bentonite

Quantity (sks): 245

Yield (cu/ft/sk): 1.97

Volume (cu/ft): 482.65

Density (lbs/gal): 12.6

Percent Excess: 20%

Tail:

Top MD of
Segment: 2883.14

Btm MD of
Segment: 4811

Cmt Type: TXI Lite

Cmt Additives: 3% Gas Migration Expansion Additive + 0.3% Fluid Loss Agent + 1.5% Sodium Metasilicate

Quantity (sks): 210

Yield (cu/ft/sk): 1.44

Volume (cu/ft): 302.4

Density (lbs/gal): 13

Percent Excess: 20%



APD ID: 10400005377

Submission Date: 09/23/2016

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Map_Cedar Lake Fed CA 725H_762H_07-05-2016.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

CedarLakeFedCA 725H_1 Mi Radius_09-20-2016.pdf

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

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: A pipeline to transport production will be installed from proposed well to proposed production facility. Apache plans to install a 4 inch buried polyethylene pipeline from proposed well to offsite production facility. The proposed length of the pipeline will be 2092.31 feet with WP of 750psi. A 30 feet wide disturbance will be needed to install buried pipeline. In areas where blading is allowed, topsoil will be stockpiled and separated from excavated trench mineral material. Final reclamation procedures will match procedures in plans for surface reclamation. When excavated soil is backfilled, it will be compacted to prevent subsidence. No berm over pipeline will be evident. Proposed pipeline does not cross lease boundaries, so a ROW will not need to be acquired from BLM. Proposed production facility will have a secondary containment structure that is constructed to hold the capacity of 1-1/2 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Production Facilities map:

CedarLakeFedCA 725H_Flowline_09-19-2016.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL,
INTERMEDIATE/PRODUCTION CASING, SURFACE CASING
Describe type:

Source latitude: 32.819386

Source datum: NAD83

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: TRUCKING

Source transportation land ownership: PRIVATE

Water source volume (barrels): 22142.857

Source volume (gal): 930000

Water source type: GW WELL

Source longitude: -103.98483

Water source use type: INTERMEDIATE/PRODUCTION CASING

Describe type:

Source latitude: 32.87279

Source datum: NAD83

Water source permit type: PRIVATE CONTRACT

Source land ownership: STATE

Water source transport method: TRUCKING

Water source type: OTHER

Source longitude: -103.5045

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Source transportation land ownership: STATE

Water source volume (barrels): 22142.857

Source volume (acre-feet): 2.8540614

Source volume (gal): 930000

Water source and transportation map:

CedarLakeFedCA 725H Fresh WtrSources_09-19-2016.pdf

CedarLakeFedCA 725H BrineWtrSources_09-19-2016.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:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Caliche will be hauled /trucked from a BLM approved pit. No surface materials will be distributed except those necessary for actual grading and construction of the drill site and access road

Construction Materials source location attachment:

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluid from well, during drilling operations, will be stored safely and recycled to next well. Any excess will be hauled to approved NMOCD disposal facility

Amount of waste: 2500 barrels

Waste disposal frequency : One Time Only

Safe containment description: Drilling fluids will be stored in sealed frac tanks

Safe containmant attachment:

Waste disposal type: RECYCLE

Disposal location ownership: OTHER

Disposal type description:

Disposal location description: Operators next well

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of at a state approved disposal facility. All trash on and around well site will be collected for disposal

Amount of waste: 1500 pounds

Waste disposal frequency : Weekly

Safe containment description: Garbage will be disposed of in portable trash trailers

Safe containmant attachment:

Waste disposal type: OTHER

Disposal location ownership: STATE

Disposal type description: land fill

Disposal location description: Lea County landfill

Waste type: SEWAGE

Waste content description: Human waste and grey water will be properly contained and disposed of at a state approved facility

Amount of waste: 2000 gallons

Waste disposal frequency : Weekly

Safe containment description: Sewage will be stored in steel waste tanks

Safe containmant attachment:

Waste disposal type: OTHER

Disposal location ownership: STATE

Disposal type description: Municipal waste facility

Disposal location description: Hobbs Municipal Waste Facility

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Waste type: DRILLING

Waste content description: Excess cement returns

Amount of waste: 40 barrels

Waste disposal frequency : Weekly

Safe containment description: Cement returns will be stored in steel roll off bins then transferred to disposal vacuum trucks

Safe containmant attachment:

Waste disposal type: OTHER

Disposal location ownership: PRIVATE

Disposal type description: Haul to private facility

Disposal location description: R360, 6601 W. Hobbs Hwy, Carlsbad, NM 88220

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? YES

Description of cuttings location Cutting will be stored in steel haul off bins and taken to an NMOCD approved disposal facility

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

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

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

CedarLakeFedCA 725H_RigLayout_09-23-2016.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: PAD EXPANSION

Recontouring attachment:

Drainage/Erosion control construction: Slight slope for water drainage

Drainage/Erosion control reclamation: Reclamation is going to follow natural terrain to control erosion, runoff and siltation of surrounding area

Wellpad long term disturbance (acres): 0

Wellpad short term disturbance (acres): 0.2594

Access road long term disturbance (acres): 0

Access road short term disturbance (acres): 0

Pipeline long term disturbance (acres): 0

Pipeline short term disturbance (acres): 0

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 0

Total short term disturbance: 0.2594

Reconstruction method: Areas planned for interim reclamation will be contoured to original contour if feasible, or if not feasible, to an interim contour that blends with surrounding topography as much as possible. Where applicable, fill material of well pad will be back filled into the cut to bring area back to original contour.

Topsoil redistribution: Topsoil that was spread over interim reclamation areas will be stockpiled prior to recontouring. Topsoil will be redistributed evenly over entire disturbed site to ensure successful revegetation

Soil treatment: No soil treatment expected.

Existing Vegetation at the well pad: Plants are sparse but include grasses, some mesquite and shinnery oak

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Plants are sparse but include grasses, some mesquite and shinnery oak

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Plants are sparse but include grasses, some mesquite and shinnery oak

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Plants are sparse but include grasses, some mesquite and shinnery oak

Existing Vegetation Community at other disturbances attachment:

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

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:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Operator Name: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Weed treatment plan description: Operator will consult with authorized officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

Weed treatment plan attachment:

Monitoring plan description: Interim reclamation, reclaimed areas, will be monitored periodically to ensure vegetation has re-established, that area is not re-disturbed, and erosion is controlled

Monitoring plan attachment:

Success standards: Objective of interim reclamation is to restore vegetative cover and a portion of landform sufficient to maintain healthy, biologically active topsoil, control erosion, and minimize habitat and forage loss, visual impact, and weed infestation during life of well or facilities. Long term objective of final reclamation is to return land to a condition similar to what existed prior to disturbance. This includes restoration of 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. BLM will be notified 3 days prior to commencement of any reclamation procedures. If circumstances allow, interim and/or final reclamation actions will be completed no later than 6 months from when the final well on location has been completed or plugged. We will gain written permission from BLM if more time is needed.

Pit closure description: Not applicable

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: APACHE CORPORATION

Well Name: CEDAR LAKE FEDERAL CA

Well Number: 725H

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

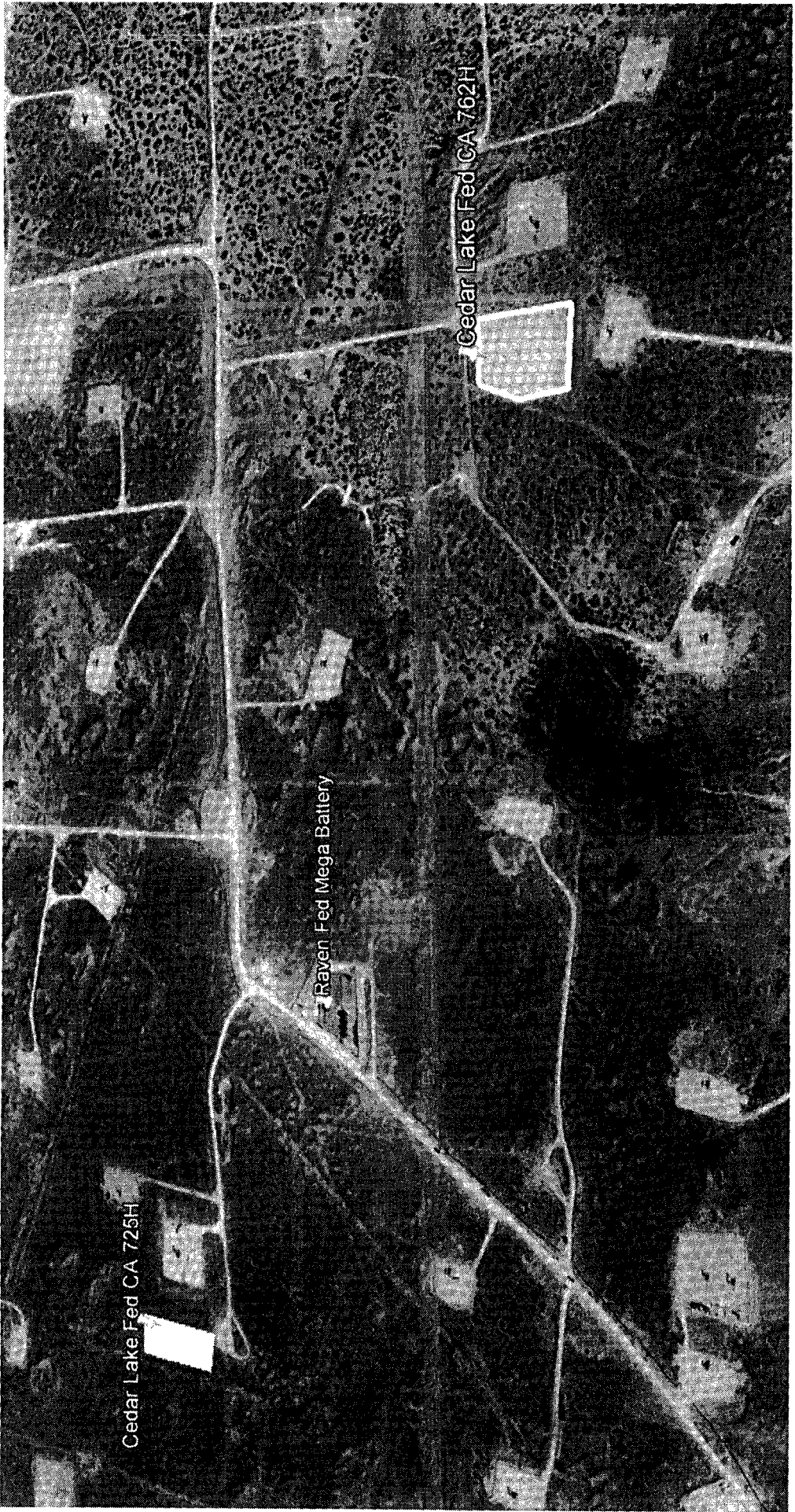
ROW Applications

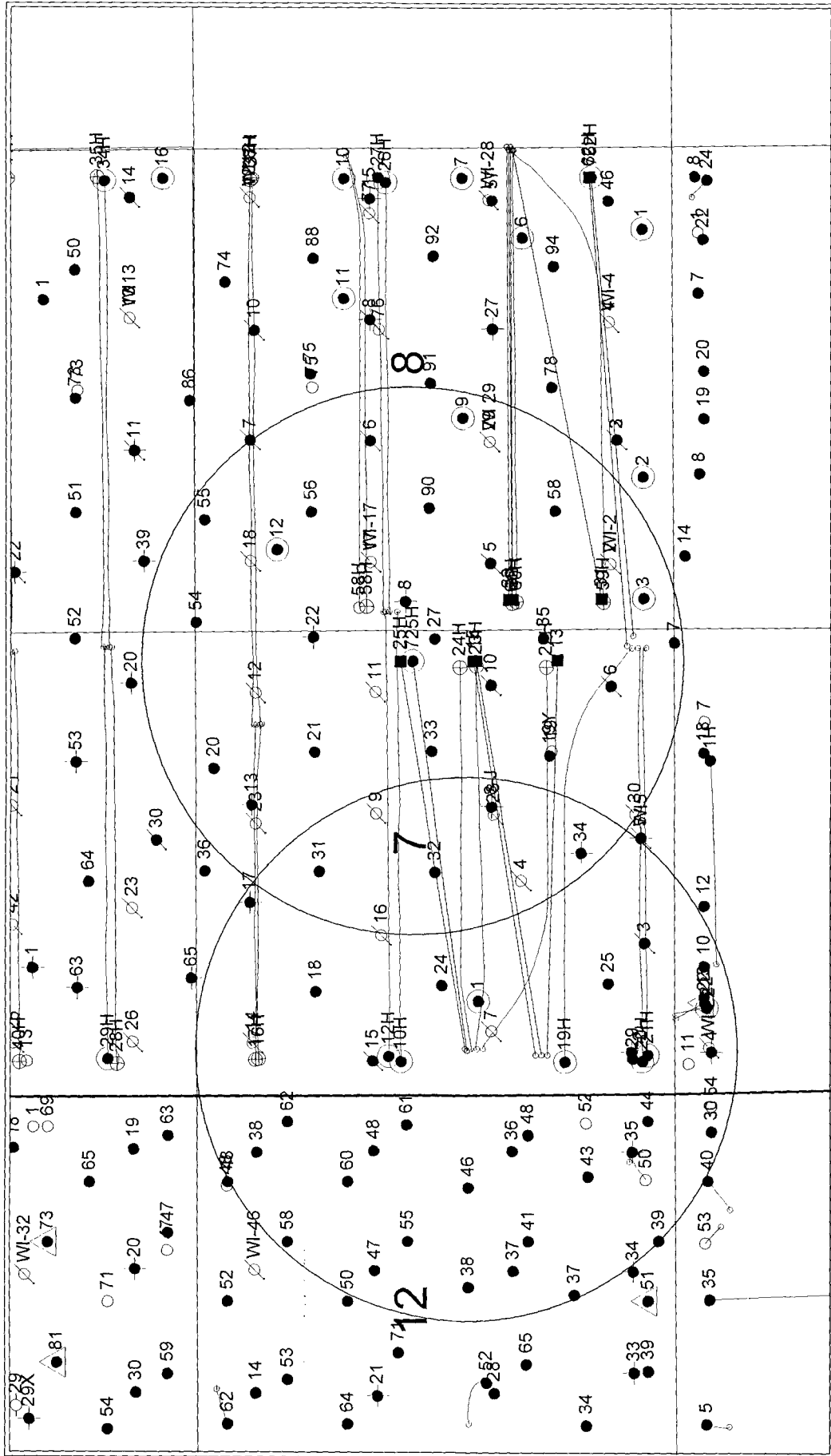
SUPO Additional Information: An additional 40' will be added to the North side of the existing pad and then reclaim the same 40' after all drilling and completion operations are finished. Approved during onsite by Jeffery Robertson.

Use a previously conducted onsite? YES

Previous Onsite information: Onsite conducted on 8/18/16 with BLM rep: Jeffery Robertson.

Other SUPO Attachment





Apache Corporation

Cedar Lake Fed CA 725H

1 mile radius at SHL & BHL

SEC. 7 & 8, T17 S31E

Shawnee County, OK

0 1,000 FEET

POSTED WELL DATA

Well Number

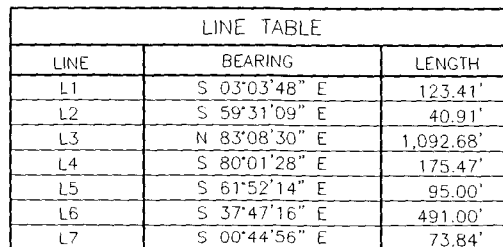
WELL SYMBOLS

- Abandoned Coal Bed Methane
- Dry Hole
- Injection Well
- Location
- Oil Well
- Active Producer
- P&A Oil
- Proposed Location
- Permitted Location
- Drilled

By: [Name] [Initials]

September 20, 2018

(N 89°48' E - GLO - 5000.16')
N 89°37'05" E 5000.90'



SCALE: 1" = 1000'
DATE: 8-19-2016
SURVEYED BY: JM/HD
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET: 1 OF 2

APACHE CORPORATION
PROPOSED 4" SURFACE POLY LINE FROM THE CEDAR LAKE
FEDERAL CA #725H PAD TO THE RAVEN BATTERY
SECTION 7, T17S, R31E,
N. M. P. M., EDDY CO., NEW MEXICO

DESCRIPTION

A strip of land 30 feet wide, being 2,092.31 feet or 126.807 rods in length, lying in Section 7, Township 17 South, Range 31 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. land:

BEGINNING at Engr. Sta. 0+00, a point in the Southwest quarter of Section 7, which bears, S 40°42'36" E, 873.76 feet from a 1" iron pipe, found for the West quarter corner of Section 7;

Thence S 03°03'48" E, 123.41 feet, to Engr. Sta. 1+23.41, a P. I. of 56°27'21" left;

Thence S 59°31'09" E, 40.91 feet, to Engr. Sta. 1+64.32, a P. I. of 37°20'21" left;

Thence N 83°08'30" E, 1,092.68 feet, to Engr. Sta. 12+57.00, a P. I. of 16°50'02" right;

Thence S 80°01'28" E, 175.47 feet, to Engr. Sta. 14+32.47, a P. I. of 18°09'14" right;

Thence S 61°52'14" E, 95.00 feet, to Engr. Sta. 15+27.47, a P. I. of 24°04'58" right;

Thence S 37°47'16" E, 491.00 feet, to Engr. Sta. 20+18.47, a P. I. of 37°02'20" right;

Thence S 00°44'56" E, 73.84 feet, to Engr. Sta. 20+92.31, the End of Survey, a point in the Southwest quarter of Section 7, which bears, N 05°08'11" W, 1,417.47 feet from a brass cap, stamped "1916", found for the South quarter corner of Section 7.

Said strip of land contains 1.441 acres, more or less, and is allocated by forties as follows:

LOT 3	36.778 Rods	0.418 Acres
NE 1/4 SW 1/4	90.029 Rods	1.023 Acres

Firm No., TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.: LS1608260		
DWG. NO.: 1608260-2		

RRC

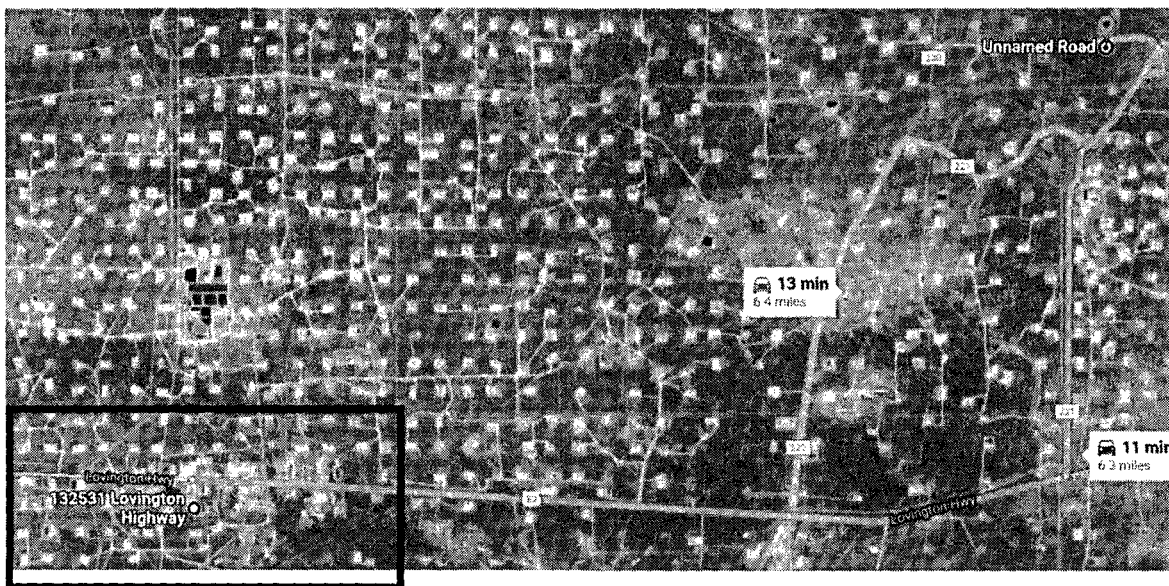
308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 8-19-2016
SURVEYED BY: JM/HO
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET: 2 OF 2

Cedar Lake Federal CA 725H Fresh Water Sources

Source:

Mor-West Corporation



Loco Hills, New Mexico

132531 Lovington Highway

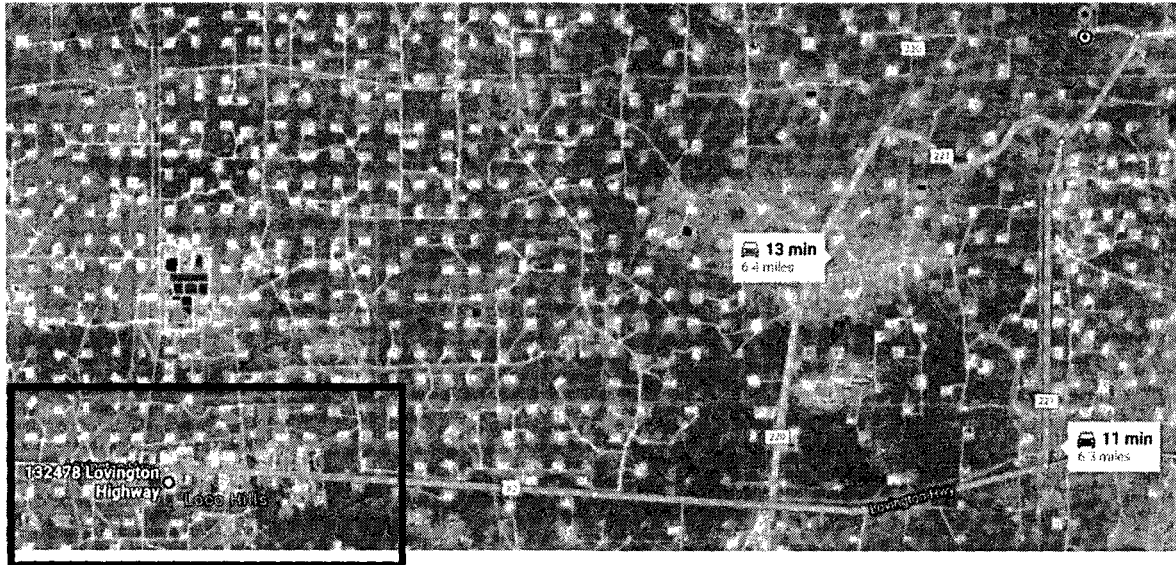
Loco Hills, NM 88255

- ↑ Head east on US-82 E toward Goat Ropers Rd
4.0 mi
- ↙ Turn left onto Skelly Rd
1.5 mi
- ↗ Slight right
0.5 mi
- ↙ Turn left
0.3 mi

Destination: Cedar Lake Federal CA 725H

Source:

Loco Hills Water Solutions, LLC



Loco Hills, New Mexico

132478 Lovington Highway

Loco Hills, NM 86657

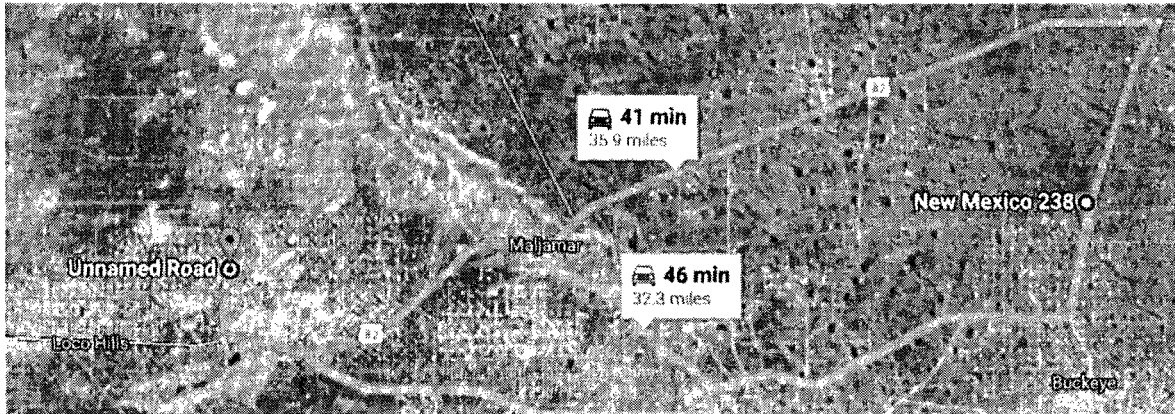
- ↑ Head east on US-82 E toward Goat Ropers Rd
4.0 mi
- ↙ Turn left onto Skelly Rd
1.6 mi
- ↗ Slight right
0.4 mi
- ↙ Turn left
0.3 mi

Destination: Cedar Lake Federal CA 725H

Cedar Lake Federal CA 725H Brine Water Sources

Source:

Wasserhund



New Mexico 238

Lexington, NM 89260

↑ Head north on NM-238 N

5.3 mi

↙ Turn left onto US-82 W

28.3 mi

↘ Turn right onto Skelly Rd

1.5 mi

↗ Slight right

0.6 mi

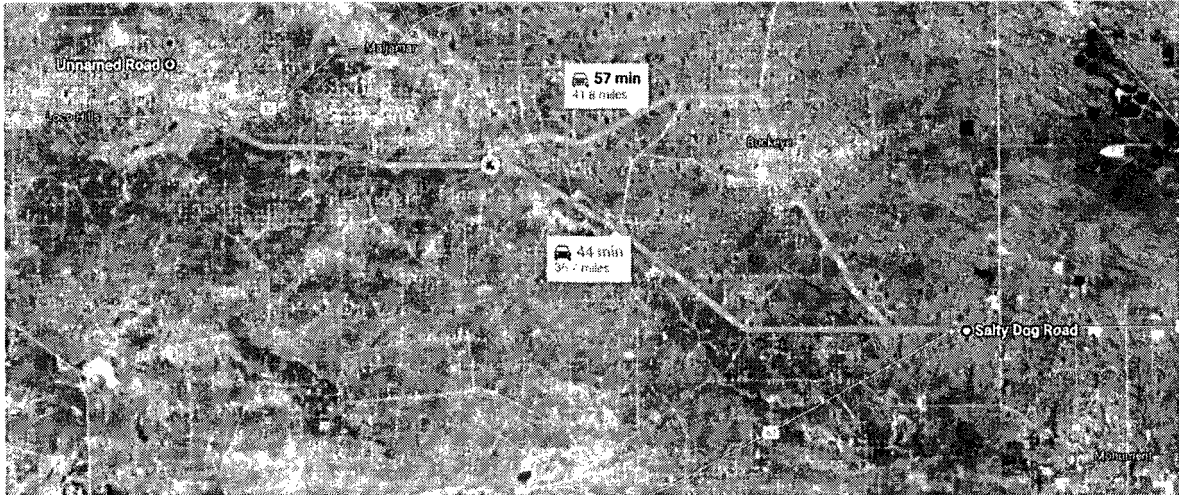
↙ Turn left

0.3 mi

Destination: Cedar Lake Federal CA 725H

Source:

Salty Dog

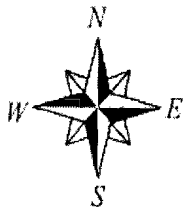


Salty Dog Road

Hood, NV 892-2

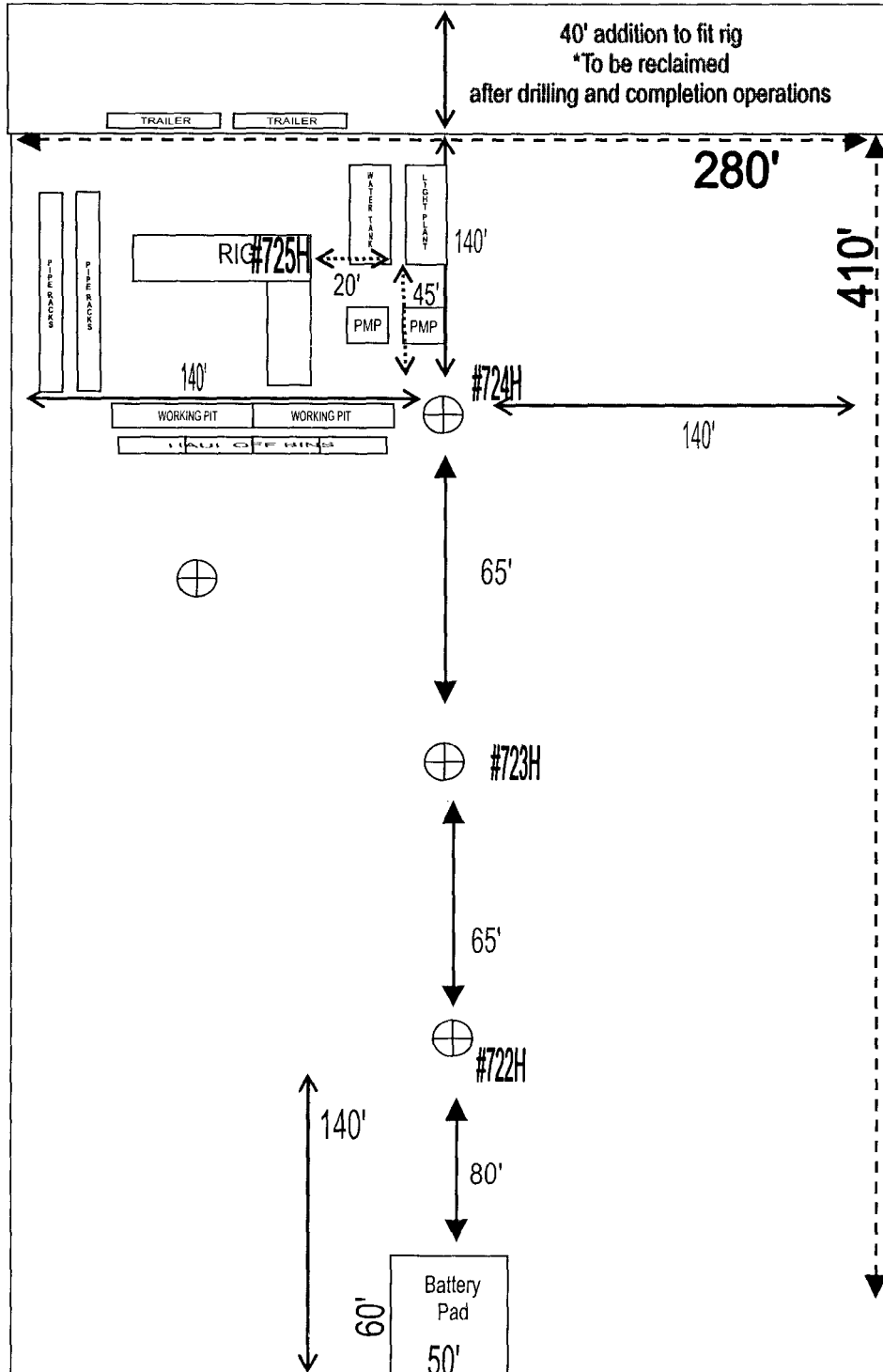
- ↑ Head north on Salty Dog Rd toward US-180 E/US-62 E
452 ft
- ↙ Turn left at the 1st cross street onto US-180 W/US-62 W
0.3 mi
- ↘ Turn right onto NM-529
31.2 mi
- ↙ Turn left onto US-82 W
2.5 mi
- ↘ Turn right onto Skelly Rd
1.5 mi
- ↘ Slight right
2.6 mi
- ↙ Turn left
0.3 mi

Destination: Cedar Lake Federal CA 725H



RIG ORIENTATION & LAYOUT Cedar Lake Federal CA 725H

V DOOR



Existing Pad
JL Keel A #7



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

PWD Data Report

08/14/2017

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:



AFMSS

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

Bond Info Data Report

08/14/2017

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000736

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: