OCD Artesia NM OIL CONSERVATION
ARTESIA DISTRICT

APR 28 2017

RECEIVED

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.	NMLC028784A
6. If Indian, Allotee or Tribe Name	
7. If Unit or CA Agreement, Name and No.	BURCH-KEELY / NMNM88525X
8. Lease Name and Well No.	BURCH KEELY UNIT 955H
9. API Well No.	30-015-44150
10. Field and Pool, or Exploratory	BURCH KEELY / GLORIETA-UPPER YE
11. Sec., T. R. M. or Blk. and Survey or Area	SEC 24 / T17S / R29E / NMP
12. County or Parish	EDDY
13. State	NM

1a. Type of work: ☑ DRILL ☐ REENTER

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

2. Name of Operator: COG OPERATING LLC

3a. Address: 600 West Illinois Ave Midland TX 79701

3b. Phone No. *(include area code)*: (432)683-7443

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NWNW / 1035 FNL / 222 FWL / LAT 32.8244451 / LONG -104.0361339

At proposed prod. zone: LOT 1 / 990 FSL / 350 FWL / LAT 32.8245607 / LONG -104.0185249

14. Distance in miles and direction from nearest town or post office*: 3 miles

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 222 feet	16. No. of acres in lease: 640	17. Spacing Unit dedicated to this well: 197.43
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 9 feet	19. Proposed Depth: 4893 feet / 10135 feet	20. BLM/BIA Bond No. on file: FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3602 feet	22. Approximate date work will start*: 06/13/2017	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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature: (Electronic Submission)	Name *(Printed/Typed)*: Robyn Odom / Ph: (432)685-4385	Date: 01/31/2017
Title: Regulatory Analyst		
Approved by *(Signature)*: (Electronic Submission)	Name *(Printed/Typed)*: Ty Allen / Ph: (575)234-5978	Date: 04/25/2017
Title: Wildlife Biologist	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

RWP 5-1-17

AFMSS OCD Artesia

U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 04/26/2017 12:58 PM

APD ID: 10400002596	Well Status: AAPD
APD Received Date: 01/31/2017 02:46 PM	Well Name: BURCH KEELY UNIT
Operator: COG OPERATING LLC	Well Number: 955H

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 1 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 5 file(s)
  -- Hydrogen sulfide drilling operations plan: 2 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
  -- Other Facets: 3 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 1 file(s)
  -- New road access plan attachment: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Water source and transportation map: 2 file(s)
  -- Construction Materials source location attachment: 3 file(s)
  -- Well Site Layout Diagram: 2 file(s)
  -- Other SUPO Attachment: 1 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report

- Bond Attachments
  -- None

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING LLC.
LEASE NO.:	NMLC028784A
WELL NAME & NO.:	955H – Burch Keely Unit
SURFACE HOLE FOOTAGE:	1035'/N & 222'/W
BOTTOM HOLE FOOTAGE	990'/N & 350'/W
LOCATION:	Section 24 T.17 S., R.29 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 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 of water flows in the Salado and Artesia Group.
Possibility of lost circulation in the Rustler, Artesia Group, and San Andres.

1. The **13-3/8** inch surface casing shall be set at approximately **300** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that

string.

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 a DV tool and 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.

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

Option #1 (Single Stage):

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

Option #2:

Operator has proposed a DV tool and 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 should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

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)** annular. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. 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.

F. SPECIAL REQUIREMENT(S)

Unit Wells
The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers.

MHH 04182017

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING LLC.
LEASE NO.:	NMLC028784A
WELL NAME & NO.:	955H – Burch Keely Unit
SURFACE HOLE FOOTAGE:	1035'/N & 222'/W
BOTTOM HOLE FOOTAGE	990'/N & 350'/W
LOCATION:	Section 24 T.17 S., R.29 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.

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.

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. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

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.

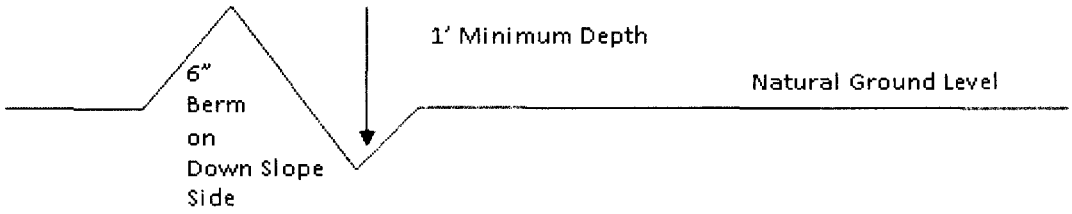
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping 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 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ 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

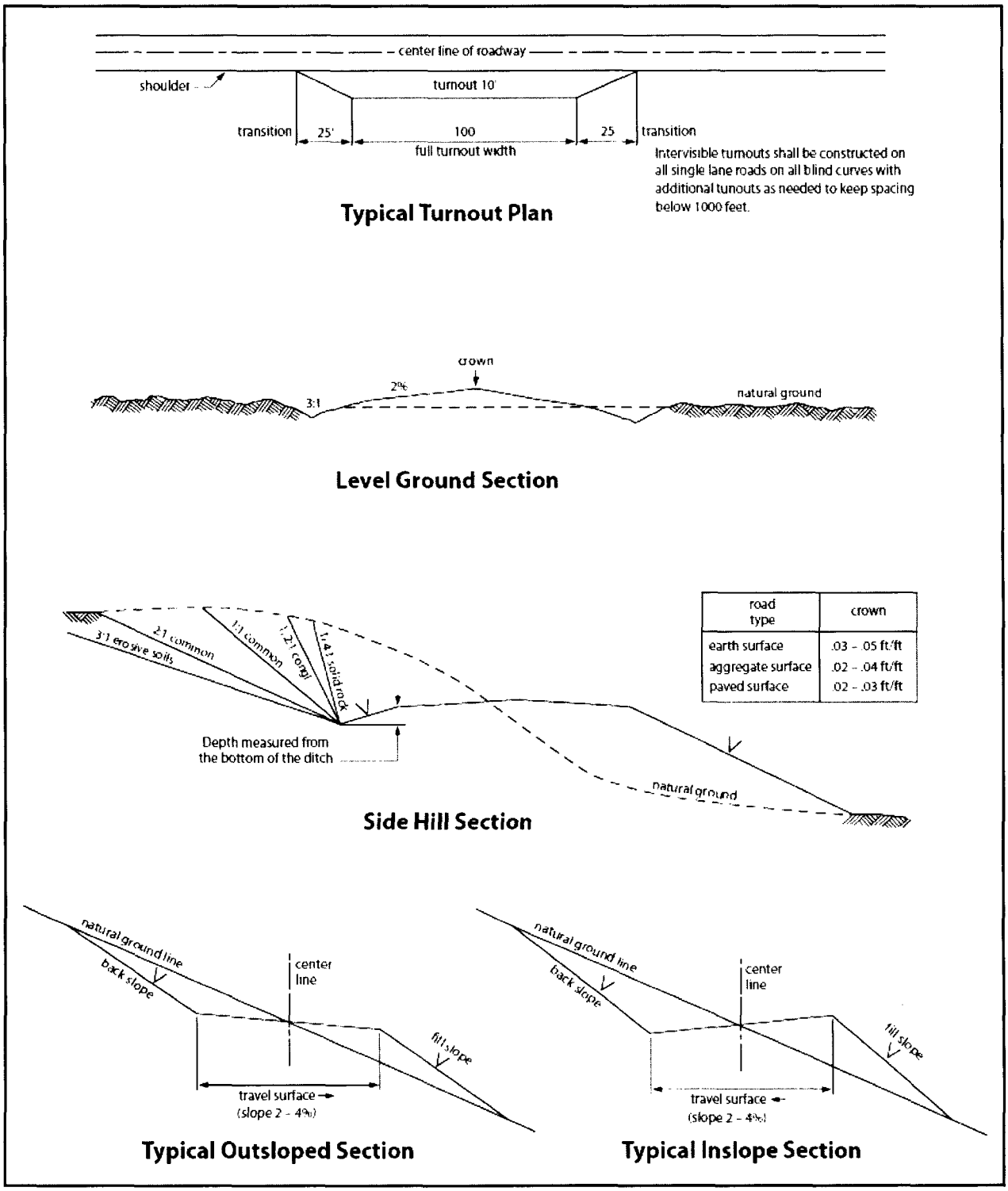


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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).

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:

Species	lb/acre
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

AFMSS

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

ator Certification Data Report

04/26/2017

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: Robyn Odom **Signed on:** 01/31/2017

Title: Regulatory Analyst

Street Address: 600 W Illinois Ave

City: Midland **State:** TX **Zip:** 79701

Phone: (432)685-4385

Email address: rodom@concho.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

APD ID: 10400002596 **Submission Date:** 01/31/2017

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

APD ID: 10400002596 **Tie to previous NOS?** **Submission Date:** 01/31/2017

BLM Office: CARLSBAD **User:** Robyn Odom **Title:** Regulatory Analyst

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMLC028784A **Lease Acres:** 640

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? YES **Federal or Indian agreement:** FEDERAL

Agreement number: NMNM88525X

Agreement name: BURCH-KEELY

Keep application confidential? NO

Permitting Agent? NO **APD Operator:** COG OPERATING LLC

Operator letter of designation:

Keep application confidential? NO

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: 600 West Illinois Ave **Zip:** 79701

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)683-7443

Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: BURCH KEELY UNIT **Well Number:** 955H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BURCH KEELY **Pool Name:** GLORIETA-UPPER YESO

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Describe other minerals:

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

Type of Well Pad: SINGLE WELL **Multiple Well Pad Name:** **Number:**

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: 3 Miles **Distance to nearest well:** 9 FT **Distance to lease line:** 222 FT

Reservoir well spacing assigned acres Measurement: 197.43 Acres

Well plat: Burch Keely Unit 955H C102_03-01-2017.pdf

Well work start Date: 06/13/2017 **Duration:** 15 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** EDDY
	Latitude: 32.8244451	**Longitude:** -104.0361339	
SHL	**Elevation:** 3602	**MD:** 0	**TVD:** 0
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMLC028784A	
	NS-Foot: 1035	**NS Indicator:** FNL	
	EW-Foot: 222	**EW Indicator:** FWL	
	Twsp: 17S	**Range:** 29E	**Section:** 24
	Aliquot: NWNW	**Lot:**	**Tract:**

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** EDDY
	Latitude: 32.8244451	**Longitude:** -104.0361339	
KOP	**Elevation:** 3602	**MD:** 0	**TVD:** 0
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMLC028784A	
	NS-Foot: 1035	**NS Indicator:** FNL	
	EW-Foot: 222	**EW Indicator:** FWL	
	Twsp: 17S	**Range:** 29E	**Section:** 24
	Aliquot: NWNW	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** EDDY
	Latitude: 32.8244451	**Longitude:** -104.0361339	
PPP	**Elevation:** -1127	**MD:** 4750	**TVD:** 4729
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMLC028784A	
	NS-Foot: 990	**NS Indicator:** FNL	
	EW-Foot: 330	**EW Indicator:** FWL	
	Twsp: 17S	**Range:** 29E	**Section:** 24
	Aliquot: NWNW	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** EDDY
	Latitude: 32.8245607	**Longitude:** -104.0185249	
EXIT	**Elevation:** -1291	**MD:** 10135	**TVD:** 4893
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMLC028793A	
	NS-Foot: 990	**NS Indicator:** FSL	
	EW-Foot: 350	**EW Indicator:** FWL	
	Twsp: 17S	**Range:** 29E	**Section:** 19
	Aliquot:	**Lot:** 1	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** EDDY
	Latitude: 32.8245607	**Longitude:** -104.0185249	
BHL	**Elevation:** -1291	**MD:** 10135	**TVD:** 4893
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMLC028793A	
	NS-Foot: 990	**NS Indicator:** FSL	
	EW-Foot: 350	**EW Indicator:** FWL	

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Twsp: 17S	**Range:** 29E	**Section:** 19
Aliquot:	**Lot:** 1	**Tract:**

NM OIL CONSERVATION
ARTESIA DISTRICT
APR 28 2017
RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-44150	97918	Burch Keely; Glorieta-Upper Yeso

[4] Property Code	[5] Property Name	[6] Well Number
308086	BURCH KEELY UNIT	955H

[7] OGRID No.	[8] Operator Name	[9] Elevation
229137	COG OPERATING, LLC	3602'

[10] Surface Location

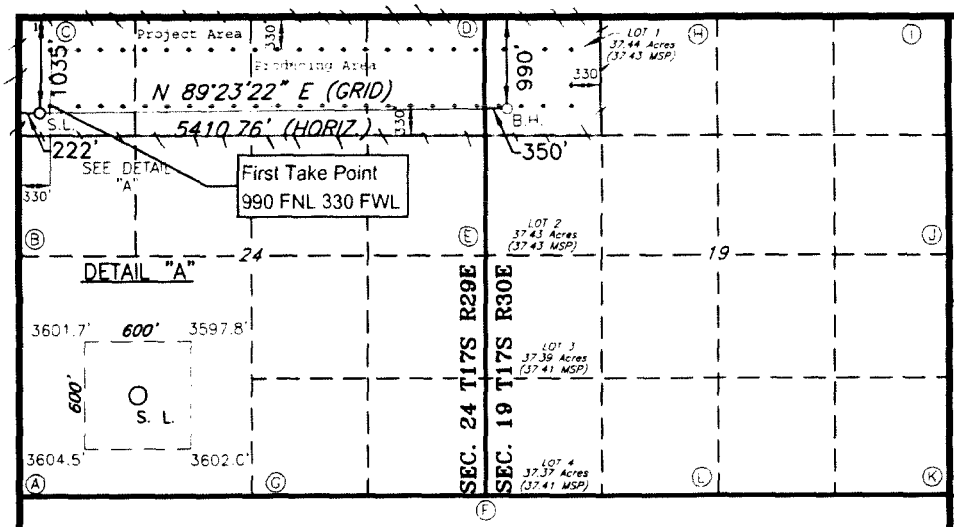
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	24	17-S	29-E		1035	NORTH	222	WEST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	19	17-S	30-E		990	NORTH	350	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
197.43			

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



CORNER DATA
NAD 83 GRID – NM EAST

A: FND 2" GALVINIZED IP
N 659552.3 – E 632418.3
B: FND 3/4 " IP
N 662189.9 – E 632413.4
C: FND 1" STEEL PIPE W/1/2" RBR INSIDE
N 664828.6 – E 632407.9
D: FND USGLO BC 1914
N 664840.4 – E 637685.9
E: FND USGLO BC 1914
N 662203.0 – E 637700.0
F: 2 1/2" STL PIPE BC BROKE OFF
N 659567.0 – E 637708.9
G: FND 1/2" RBR @ FNC LN
N 659559.8 – E 635063.4

GEODETIC DATA
NAD 83 GRID – NM EAST

SURFACE LOCATION
N 663794.3
E 632632.1
LAT: 32.82444512° N
LONG: 104.03613387° W

BOTTOM LOCATION
N 663852.0
E 638041.1
LAT: 32.82456066° N
LONG: 104.01852492° W

CORNER DATA
NAD 83 GRID – NM EAST

H: FND BLM BC 1997
N 664849.8 – E 640242.9
I: FND USGLO BC 1916
N 664860.0 – E 642884.4
J: FND BLM BC 1990
N 662220.5 – E 642893.7
K: FND USGLO BC 1916
N 659581.0 – E 642902.6
L: FND USGLO BC 1916
N 659574.2 – E 640262.1

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 03/01/2017

Robyn M. Russell
Printed Name

Rrussell@concho.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

5/7/13
Date of Survey

Signature and Seal of Professional Surveyor:

ROBERT M. HOWETT
NEW MEXICO
19680
PROFESSIONAL SURVEYOR

19680
Certificate Number

REVISED: OCT 25, 2013 B.H. LOC.

APD ID: 10400002596 **Submission Date:** 01/31/2017

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - Geologic Formations

ID: Surface formation **Name:** UNKNOWN

Lithology(ies):

ALLUVIUM

Elevation: 3602 **True Vertical Depth:** 0 **Measured Depth:** 0

Mineral Resource(s):

USEABLE WATER

Is this a producing formation? N

ID: Formation 1 **Name:** TOP SALT

Lithology(ies):

SALT

Elevation: 3243 **True Vertical Depth:** 359 **Measured Depth:** 359

Mineral Resource(s):

OTHER - Salt

Is this a producing formation? N

ID: Formation 2 **Name:** TANSILL

Lithology(ies):

DOLOMITE

Elevation: 2665 **True Vertical Depth:** 937 **Measured Depth:** 937

Mineral Resource(s):

NONE

Is this a producing formation? N

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

ID: Formation 3 **Name:** YATES

Lithology(ies):

SANDSTONE

DOLOMITE

Elevation: 2559 **True Vertical Depth:** 1043 **Measured Depth:** 1043

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 4 **Name:** SEVEN RIVERS

Lithology(ies):

SANDSTONE

DOLOMITE

Elevation: 2266 **True Vertical Depth:** 1336 **Measured Depth:** 1336

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 5 **Name:** QUEEN

Lithology(ies):

SANDSTONE

Elevation: 1655 **True Vertical Depth:** 1947 **Measured Depth:** 1947

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 6 **Name:** GRAYBURG

Lithology(ies):

SANDSTONE

DOLOMITE

Elevation: 1259 **True Vertical Depth:** 2343 **Measured Depth:** 2343

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 7 **Name:** SAN ANDRES

Lithology(ies):

DOLOMITE

ANHYDRITE

Elevation: 935 **True Vertical Depth:** 2667 **Measured Depth:** 2667

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 8 **Name:** GLORIETA

Lithology(ies):

SANDSTONE

SILTSTONE

Elevation: -473 **True Vertical Depth:** 4075 **Measured Depth:** 4075

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 9 **Name:** PADDOCK

Lithology(ies):

DOLOMITE

Elevation: -540 **True Vertical Depth:** 4142 **Measured Depth:** 4142

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 10 **Name:** BLINEBRY

Lithology(ies):

DOLOMITE

Elevation: -1134 **True Vertical Depth:** 4736 **Measured Depth:** 4736

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? Y

ID: Formation 11 **Name:** TUBB

Lithology(ies):

SANDSTONE

DOLOMITE

Elevation: -2046 **True Vertical Depth:** 5648 **Measured Depth:** 5648

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

Section 2 - Blowout Prevention

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Pressure Rating (PSI): 2M **Rating Depth:** 9500

Equipment: ALL REQUIRED EQUIPMENT PER FEDERAL AND STATE REGULATIONS TO BE IN PLACE PRIOR TO DRILLING OUT THE SURFACE CASING.
Requesting Variance? NO

Variance request:

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Choke Diagram Attachment:

2M Choke Schematic 1-12-16.pdf

BOP Diagram Attachment:

2M ANNULAR BOP 2-1-16.pdf

Section 3 - Casing

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

String Type: SURFACE **Other String Type:**

Hole Size: 17.5

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -1127

Bottom setting depth MD: 300 **Bottom setting depth TVD:** 300

Bottom setting depth MSL: -1427

Calculated casing length MD: 300

Casing Size: 13.375 **Other Size**

Grade: H-40 **Other Grade:**

Weight: 48

Joint Type: STC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 6.94 **Burst Design Safety Factor:** 3.28

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 28.79

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 28.79

Casing Design Assumptions and Worksheet(s):

Casing Design Attachement_06-27-2016.pdf

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

String Type: INTERMEDIATE **Other String Type:**

Hole Size: 12.25

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -1127

Bottom setting depth MD: 1060 **Bottom setting depth TVD:** 1060

Bottom setting depth MSL: -2187

Calculated casing length MD: 1060

Casing Size: 9.625 **Other Size**

Grade: J-55 **Other Grade:**

Weight: 40

Joint Type: LTC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 5.17 **Burst Design Safety Factor:** 1.67

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 13.6

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 13.6

Casing Design Assumptions and Worksheet(s):

Casing Design Attachement_06-27-2016.pdf

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

String Type: PRODUCTION **Other String Type:**

Hole Size: 8.75

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -1127

Bottom setting depth MD: 4429 **Bottom setting depth TVD:** 4429

Bottom setting depth MSL: -5556

Calculated casing length MD: 4429

Casing Size: 7.0 **Other Size**

Grade: L-80 **Other Grade:**

Weight: 29

Joint Type: LTC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 3.31 **Burst Design Safety Factor:** 1.33

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 2.68

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 2.68

Casing Design Assumptions and Worksheet(s):

Casing Design Attachement_06-27-2016.pdf

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

String Type: PRODUCTION **Other String Type:**

Hole Size: 8.75

Top setting depth MD: 4429 **Top setting depth TVD:** 4429

Top setting depth MSL: -5556

Bottom setting depth MD: 5157 **Bottom setting depth TVD:** 4850

Bottom setting depth MSL: -5977

Calculated casing length MD: 728

Casing Size: 5.5 **Other Size**

Grade: L-80 **Other Grade:**

Weight: 17

Joint Type: LTC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 2.66 **Burst Design Safety Factor:** 1.26

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 3.74

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 3.74

Casing Design Assumptions and Worksheet(s):

Casing Design Attachement_06-27-2016.pdf

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

String Type: PRODUCTION **Other String Type:**

Hole Size: 7.875

Top setting depth MD: 5157 **Top setting depth TVD:** 4850

Top setting depth MSL: -5977

Bottom setting depth MD: 10041 **Bottom setting depth TVD:** 4765

Bottom setting depth MSL: -5892

Calculated casing length MD: 4884

Casing Size: 5.5 **Other Size**

Grade: L-80 **Other Grade:**

Weight: 17

Joint Type: LTC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 2.66 **Burst Design Safety Factor:** 1.26

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 7.68

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 7.68

Casing Design Assumptions and Worksheet(s):

Casing Design Attachement_06-27-2016.pdf

Section 4 - Cement

Casing String Type: SURFACE

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 300 **Cement Type:** Class C

Additives: 2% CaCl2+0.25pps CF **Quantity (sks):** 350 **Yield (cu.ff./sk):** 1.32

Density: 14.8 **Volume (cu.ft.):** 462 **Percent Excess:** 96

Casing String Type: INTERMEDIATE

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 1060 **Cement Type:** 50:50:10 C:Poz:Gel

Additives: 5%Salt+5pps LCM+0.25pps CF **Quantity (sks):** 250 **Yield (cu.ff./sk):** 2.45

Density: 11.8 **Volume (cu.ft.):** 612.5 **Percent Excess:** 208

Tail

Top MD of Segment: 0 **Bottom MD Segment:** 1060 **Cement Type:** Class C

Additives: 2% CaCl2 **Quantity (sks):** 200 **Yield (cu.ff./sk):** 1.32

Density: 14.8 **Volume (cu.ft.):** 264 **Percent Excess:** 208

Casing String Type: PRODUCTION

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 35:65:6 C:Poz:Gel

Additives: 5%Salt+5pps LCM+0.25pps CF **Quantity (sks):** 500 **Yield (cu.ff./sk):** 2.01

Density: 12.5 **Volume (cu.ft.):** 1206 **Percent Excess:** 107

Tail

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 50:50:2 C:Poz:Gel

Additives: 5%salt+3pps LCM+0.6%SMS+1%FL-25+1%Ba- **Quantity (sks):** 1600 **Yield (cu.ff./sk):** 1.37

Density: 14 **Volume (cu.ft.):** 1918 **Percent Excess:** 107

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 35:65:6 C:Poz:Gel
Additives: 5%Salt+5pps LCM+0.25pps CF **Quantity (sks):** 500 **Yield (cu.ff./sk):** 2.01
Density: 12.5 **Volume (cu.ft.):** 1206 **Percent Excess:** 107

Tail

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 50:50:2 C:Poz:Gel
Additives: 5%salt+3pps LCM+0.6%SMS+1%FL-25+1%Ba- **Quantity (sks):** 1600 **Yield (cu.ff./sk):** 1.37
Density: 14 **Volume (cu.ft.):** 1918 **Percent Excess:** 107

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 35:65:6 C:Poz:Gel
Additives: 5%Salt+5pps LCM+0.25pps CF **Quantity (sks):** 500 **Yield (cu.ff./sk):** 2.01
Density: 12.5 **Volume (cu.ft.):** 1206 **Percent Excess:** 107

Tail

Top MD of Segment: 0 **Bottom MD Segment:** 10041 **Cement Type:** 50:50:2 C:Poz:Gel
Additives: 5%salt+3pps LCM+0.6%SMS+1%FL-25+1%Ba- **Quantity (sks):** 1600 **Yield (cu.ff./sk):** 1.37
Density: 14 **Volume (cu.ft.):** 1918 **Percent Excess:** 107

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: SUFFICIENT MUD MATERIALS TO MAINTAIN MUD PROPERTIES AND MEET MINIMUM LOST CIRCULATION AND WEIGHT INCREASE REQUIREMENTS WILL BE KEPT ON LOCATION AT ALL TIMES.
Describe the mud monitoring system utilized: PVT/PASON/VISUAL MONITORING

Circulating Medium Table

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Top Depth: 0 **Bottom Depth:** 300

Mud Type: WATER-BASED MUD

Min Weight (lbs./gal.): 8.6 **Max Weight (lbs./gal.):** 8.8

Density (lbs/cu.ft.): **Gel Strength (lbs/100 sq.ft.):**

PH: **Viscosity (CP):**

Filtration (cc): **Salinity (ppm):**

Additional Characteristics:

Top Depth: 0 **Bottom Depth:** 5157

Mud Type: SALT SATURATED

Min Weight (lbs./gal.): 10 **Max Weight (lbs./gal.):** 10.2

Density (lbs/cu.ft.): **Gel Strength (lbs/100 sq.ft.):**

PH: **Viscosity (CP):**

Filtration (cc): **Salinity (ppm):**

Additional Characteristics:

Top Depth: 5157 **Bottom Depth:** 10041

Mud Type: WATER-BASED MUD

Min Weight (lbs./gal.): 8.5 **Max Weight (lbs./gal.):** 9.2

Density (lbs/cu.ft.): **Gel Strength (lbs/100 sq.ft.):**

PH: **Viscosity (CP):**

Filtration (cc): **Salinity (ppm):**

Additional Characteristics:

Section 6 - Test, Logging, Coring

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

INTERVAL PERFORATING, FRACTURE STIMULATING, FLOW BACK TESTING.

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

CNL,MUDLOG

Coring operation description for the well:

N/A

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 2134 **Anticipated Surface Pressure:** 1057.54

Anticipated Bottom Hole Temperature(F): 105

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2S Plan_05-20-2016.pdf

Burch Keely Unit 955H_H2S Schematic_01-31-2017.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Burch Keely Unit 955H Design 1 Rpt_01-17-2017.pdf

Other proposed operations facets description:

COG does not anticipate losing circulation or encountering water flows while drilling this well. If these situations arise, COG requests approval in this APD to set DV tools where necessary immediately without having to shut down the rig and wait for sundry approval.
Lost Circulation or Water flow Contingent DV Tool Cement Plans are as follows:
1. If lost circulation occurs while drilling the 12 ¼" intermediate hole, it may become necessary to set a DV tool in the 9 5/8" casing. The DV tool depth will be based on hole conditions and cement volumes will be adjusted proportionally. If the DV Tool is needed, it will be set a minimum of 50 feet below the previous casing and a minimum of 200 feet above the current shoe.
2. If water flows in the San Andres are encountered, it may become necessary to set a DV tool in the 7" casing. These water flows normally occur in areas where produced water disposal is happening. This dense cement is used to combat water flows. This cement recipe also has a right angle set time and is mixed a little under saturated so the water flow will be absorbed by cement. The DV tool depth will be based on hole conditions and cement volumes will be adjusted proportionally. If the DV tool is needed, it will be set a minimum of 50 feet below the previous casing and a minimum of 200 feet above the current shoe.

Other proposed operations facets attachment:

A Blank C-144 Closed Loop_06-27-2016.pdf

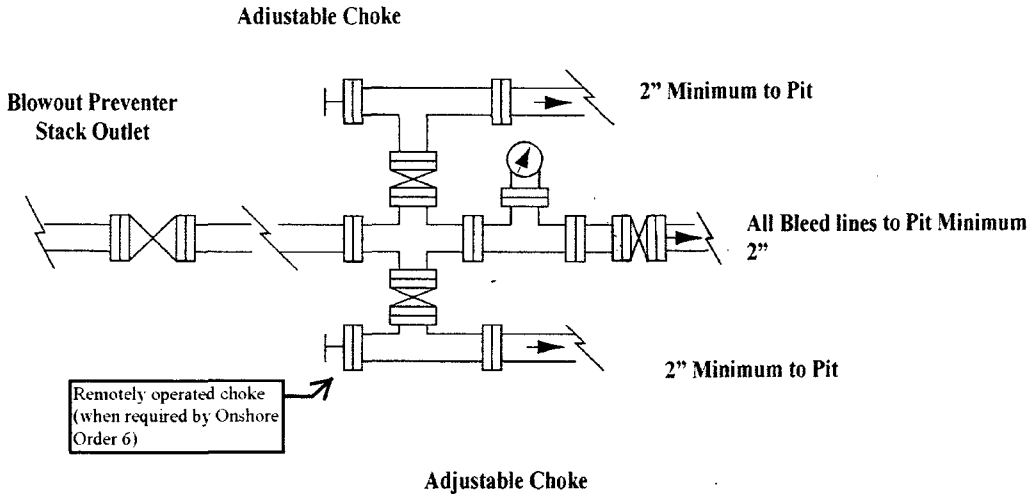
Burch Keely Unit 955H Design 1 AC Rpt_01-17-2017.pdf

BKU 955H Production Cement Breakdown_01-31-2017.pdf

Other Variance attachment:

COG Operating LLC
Exhibit #9
Choke Schematic

Choke Manifold Requirement (2000 psi WP)



NOTES REGARDING THE BLOWOUT PREVENTERS

Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.

2. Wear ring to be properly installed in head.

3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.

4. All fittings to be flanged.

5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.

6. All choke and fill lines to be securely anchored especially ends of choke lines.

7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.

8. Kelly cock on Kelly.

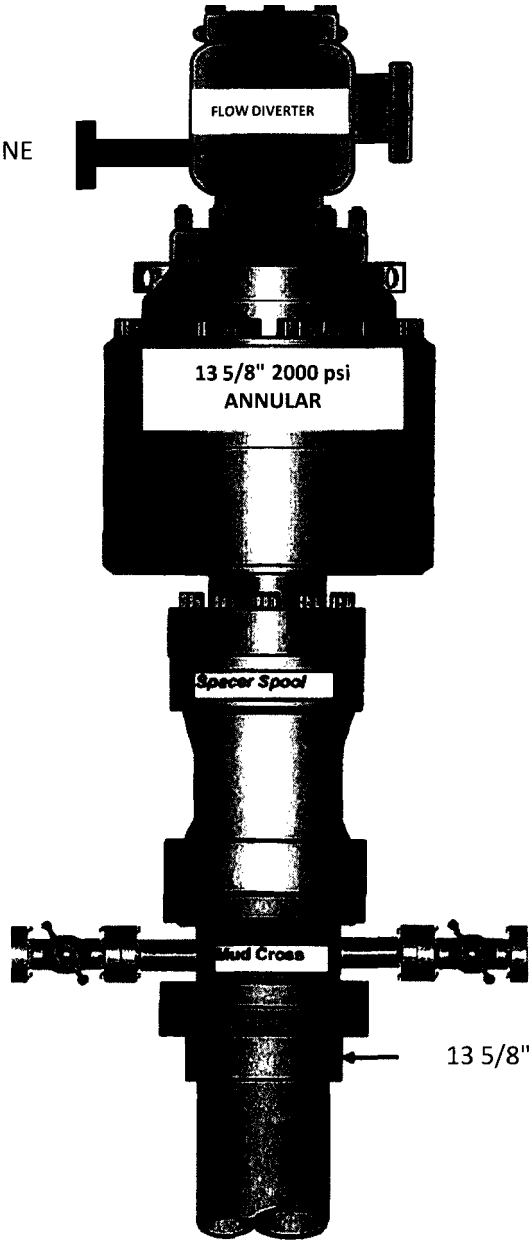
9. Extension wrenches and hands wheels to be properly installed.

10. Blow out preventer control to be located as close to driller's position as feasible.

11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Exhibit #10

13 5/8" 2K ANNULAR



FILL LINE

4-1/16",2K VALVES

13 5/8" 3K "A" SECTION

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.
Casing design does meet and/or exceed BLM's minimum standards.
The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.
This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.
We will not be pre-setting casing.
All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.
Casing design does meet and/or exceed BLM's minimum standards.
The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.
This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.
We will not be pre-setting casing.
All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.
Casing design does meet and/or exceed BLM's minimum standards.
The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.
This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.
We will not be pre-setting casing.
All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.
Casing design does meet and/or exceed BLM's minimum standards.
The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.
This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.
We will not be pre-setting casing.
All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.
Casing design does meet and/or exceed BLM's minimum standards.
The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.
This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.
We will not be pre-setting casing.
All completion intervals are planned to be fracture stimulated.

COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

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

1. The hazards an characteristics of hydrogen sulfide (H2S)

2. The proper use and maintenance of personal protective equipment and life support systems.

3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.

4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well be trained in their special maintenance requirements.

2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) 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. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. **Well Control Equipment:**

   A. Flare line.

   B. Choke manifold with minimum of one remotely operated choke.

   C. Closed Loop Blow Down Tank

   D. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

   E. Auxiliary equipment may include if applicable: mud-gas separator, annular preventer & rotating head.

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

   A. SCBA (Self contained breathing apparatus) 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. **H2S detection and monitoring equipment:**

   A. Portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. **Visual warning systems:**

   A. Wind direction indicators as shown on well site diagram.

   B. Caution/Danger signs (Exhibit #7) 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. See example attached.

5. **Mud program:**

   A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

6. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.

   B. Land line (telephone) communication at Office.

8. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING IN DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH COG OPERATING FOREMAN AT

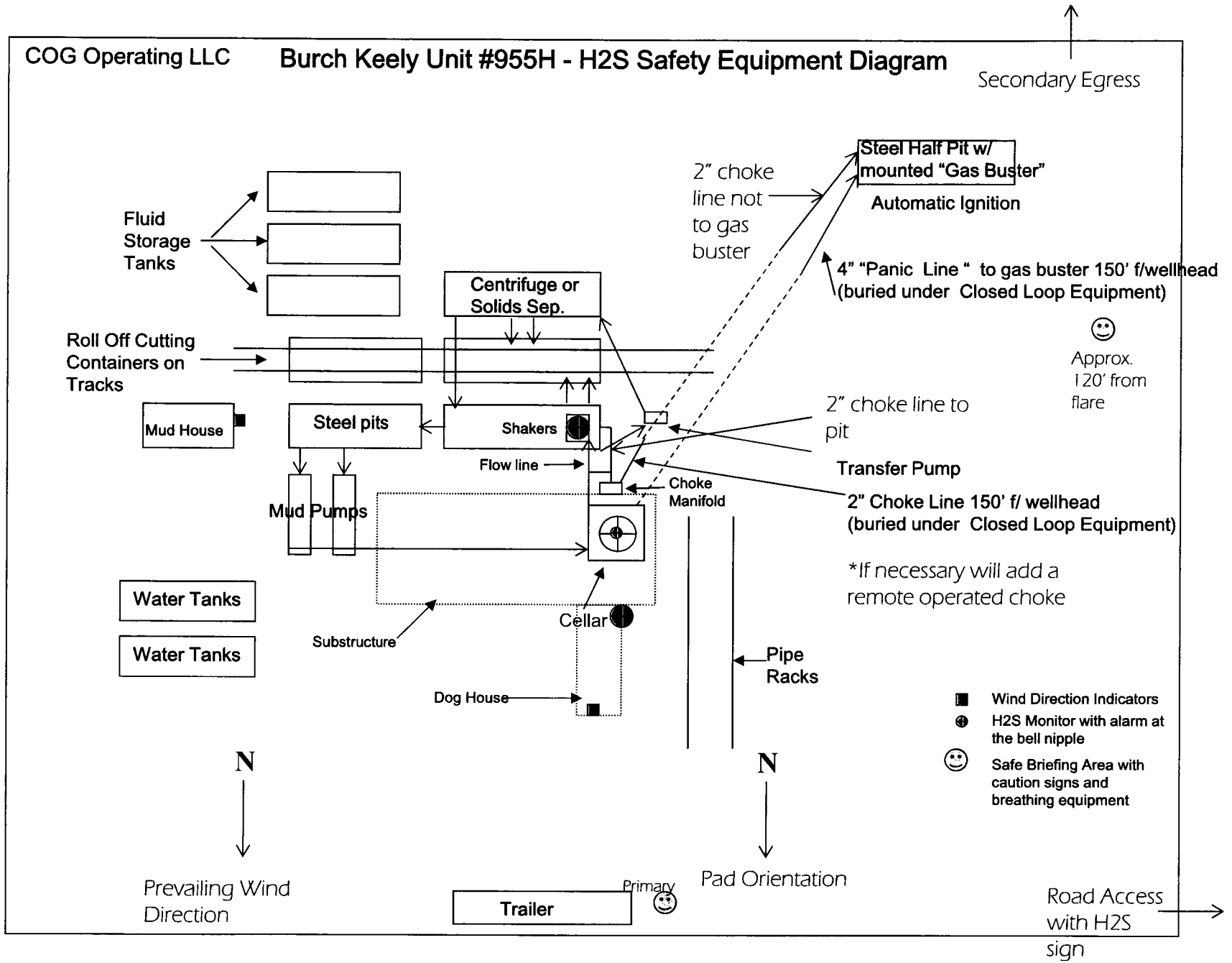
COG OPERATING LLC
1-432-683-7443
1-575-746-2010

EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

LEA COUNTY EMERGENCY NUMBERS
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

Burch Keely Unit #955H - H2S Safety Equipment Diagram



COG Operating LLC

Eddy County, NM (NAD-27 2015)
Burch Keely Unit #955H
SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D
PP: 989' FNL, 569' FWL, Sec 24, T17S, R29E, Unit D
BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D

Plan: Design #1

Standard Planning Report

12 December, 2016

TERRA DIRECTIONAL SERVICES, L.L.C.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site:	Burch Keely Unit #955H	**North Reference:**	Grid
Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D		
Design:	Design #1		

Project	Eddy County, NM (NAD-27 2015)		
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 Burch Keely Unit #955H

Site Position:		**Northing:**	663,730.90 usft	**Latitude:**	32° 49' 27.586 N
From:	Map	**Easting:**	591,453.10 usft	**Longitude:**	104° 2' 8.249 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.16 °

Well SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D

Well Position	**+N/-S**	0.00 usft	**Northing:**	663,730.90 usft	**Latitude:**	32° 49' 27.586 N
	+E/-W	0.00 usft	**Easting:**	591,453.10 usft	**Longitude:**	104° 2' 8.249 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	3,602.00 usft

Wellbore BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/7/2016	7.27	60.54	48,297

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	89.39	

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	
4,422.56	0.00	0.00	4,422.56	0.00	0.00	0.00	0.00	0.00	0.00	
5,250.17	91.04	82.38	4,943.35	70.32	525.61	11.00	11.00	0.00	82.38	
5,655.34	91.04	90.48	4,936.00	95.51	929.60	2.00	0.00	2.00	89.93	
6,318.22	91.04	90.48	4,924.00	89.90	1,592.34	0.00	0.00	0.00	0.00	
6,360.25	90.41	90.48	4,923.47	89.54	1,634.37	1.50	-1.50	0.00	180.00	
8,541.87	90.41	90.48	4,908.00	71.08	3,815.86	0.00	0.00	0.00	0.00	
8,550.75	90.54	90.48	4,907.92	71.01	3,824.74	1.50	1.50	0.00	0.05	
10,135.14	90.54	90.48	4,893.00	57.60	5,409.00	0.00	0.00	0.00	0.00	PBHL (BKU#955H/L1

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site:	Burch Keely Unit #955H	**North Reference:**	Grid
Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D		
Design:	Design #1		

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
4,422.56	0.00	0.00	4,422.56	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 11.00									
4,450.00	3.02	82.38	4,449.99	0.10	0.72	0.72	11.00	11.00	0.00
4,500.00	8.52	82.38	4,499.72	0.76	5.70	5.70	11.00	11.00	0.00
4,550.00	14.02	82.38	4,548.73	2.06	15.38	15.40	11.00	11.00	0.00
4,600.00	19.52	82.38	4,596.59	3.97	29.67	29.71	11.00	11.00	0.00
4,650.00	25.02	82.38	4,642.84	6.48	48.44	48.51	11.00	11.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site:	Burch Keely Unit #955H	**North Reference:**	Grid
Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D		
Design:	Design #1		

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)
4,700.00	30.52	82.38	4,687.07	9.57	71.52	71.62	11.00	11.00	0.00
4,750.00	36.02	82.38	4,728.86	13.20	98.70	98.83	11.00	11.00	0.00
4,800.00	41.52	82.38	4,767.82	17.35	129.72	129.89	11.00	11.00	0.00
4,850.00	47.02	82.38	4,803.61	21.98	164.30	164.52	11.00	11.00	0.00
4,900.00	52.52	82.38	4,835.90	27.04	202.12	202.39	11.00	11.00	0.00
4,950.00	58.02	82.38	4,864.37	32.49	242.83	243.16	11.00	11.00	0.00
5,000.00	63.52	82.38	4,888.78	38.27	286.06	286.45	11.00	11.00	0.00
5,050.00	69.02	82.38	4,908.89	44.34	331.41	331.86	11.00	11.00	0.00
5,100.00	74.52	82.38	4,924.53	50.63	378.46	378.98	11.00	11.00	0.00
5,150.00	80.02	82.38	4,935.55	57.10	426.78	427.37	11.00	11.00	0.00
5,200.00	85.52	82.38	4,941.84	63.67	475.93	476.58	11.00	11.00	0.00
5,250.17	91.04	82.38	4,943.35	70.32	525.62	526.33	11.00	11.00	0.00
Start DLS 2.00 TFO 89.93									
5,300.00	91.04	83.38	4,942.44	76.50	575.05	575.83	2.00	0.00	2.00
5,400.00	91.04	85.38	4,940.63	86.29	674.55	675.43	2.00	0.00	2.00
5,500.00	91.04	87.38	4,938.82	92.61	774.33	775.27	2.00	0.00	2.00
5,600.00	91.04	89.38	4,937.00	95.44	874.27	875.23	2.00	0.00	2.00
5,655.34	91.04	90.48	4,936.00	95.51	929.60	930.56	2.00	0.00	2.00
Start 662.88 hold at 5655.34 MD									
5,700.00	91.04	90.48	4,935.19	95.13	974.25	975.21	0.00	0.00	0.00
5,800.00	91.04	90.48	4,933.38	94.28	1,074.23	1,075.17	0.00	0.00	0.00
5,900.00	91.04	90.48	4,931.57	93.44	1,174.21	1,175.14	0.00	0.00	0.00
6,000.00	91.04	90.48	4,929.76	92.59	1,274.19	1,275.10	0.00	0.00	0.00
6,100.00	91.04	90.48	4,927.95	91.74	1,374.17	1,375.07	0.00	0.00	0.00
6,200.00	91.04	90.48	4,926.14	90.90	1,474.15	1,475.03	0.00	0.00	0.00
6,300.00	91.04	90.48	4,924.33	90.05	1,574.13	1,575.00	0.00	0.00	0.00
6,318.22	91.04	90.48	4,924.00	89.90	1,592.34	1,593.21	0.00	0.00	0.00
Start Drop -1.50									
6,360.25	90.41	90.48	4,923.47	89.54	1,634.37	1,635.23	1.50	-1.50	0.00
Start 2181.62 hold at 6360.25 MD									
6,400.00	90.41	90.48	4,923.19	89.21	1,674.12	1,674.97	0.00	0.00	0.00
6,500.00	90.41	90.48	4,922.48	88.36	1,774.11	1,774.95	0.00	0.00	0.00
6,600.00	90.41	90.48	4,921.77	87.51	1,874.10	1,874.93	0.00	0.00	0.00
6,700.00	90.41	90.48	4,921.06	86.67	1,974.10	1,974.91	0.00	0.00	0.00
6,800.00	90.41	90.48	4,920.35	85.82	2,074.09	2,074.89	0.00	0.00	0.00
6,900.00	90.41	90.48	4,919.64	84.98	2,174.09	2,174.87	0.00	0.00	0.00
7,000.00	90.41	90.48	4,918.94	84.13	2,274.08	2,274.85	0.00	0.00	0.00
7,100.00	90.41	90.48	4,918.23	83.28	2,374.07	2,374.83	0.00	0.00	0.00
7,200.00	90.41	90.48	4,917.52	82.44	2,474.07	2,474.81	0.00	0.00	0.00
7,300.00	90.41	90.48	4,916.81	81.59	2,574.06	2,574.79	0.00	0.00	0.00
7,400.00	90.41	90.48	4,916.10	80.75	2,674.06	2,674.76	0.00	0.00	0.00
7,500.00	90.41	90.48	4,915.39	79.90	2,774.05	2,774.74	0.00	0.00	0.00
7,600.00	90.41	90.48	4,914.68	79.05	2,874.04	2,874.72	0.00	0.00	0.00
7,700.00	90.41	90.48	4,913.97	78.21	2,974.04	2,974.70	0.00	0.00	0.00
7,800.00	90.41	90.48	4,913.26	77.36	3,074.03	3,074.68	0.00	0.00	0.00
7,900.00	90.41	90.48	4,912.55	76.51	3,174.03	3,174.66	0.00	0.00	0.00
8,000.00	90.41	90.48	4,911.84	75.67	3,274.02	3,274.64	0.00	0.00	0.00
8,100.00	90.41	90.48	4,911.13	74.82	3,374.01	3,374.62	0.00	0.00	0.00
8,200.00	90.41	90.48	4,910.42	73.98	3,474.01	3,474.60	0.00	0.00	0.00
8,300.00	90.41	90.48	4,909.71	73.13	3,574.00	3,574.58	0.00	0.00	0.00
8,400.00	90.41	90.48	4,909.00	72.28	3,674.00	3,674.56	0.00	0.00	0.00
8,500.00	90.41	90.48	4,908.29	71.44	3,773.99	3,774.54	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site:	Burch Keely Unit #955H	**North Reference:**	Grid
Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D		
Design:	Design #1		

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)
8,541.87	90.41	90.48	4,908.00	71.08	3,815.86	3,816.40	0.00	0.00	0.00
Start DLS 1.50 TFO 0.05									
8,550.75	90.54	90.48	4,907.92	71.01	3,824.74	3,825.28	1.50	1.50	0.00
Start 1584.39 hold at 8550.75 MD									
8,600.00	90.54	90.48	4,907.46	70.59	3,873.98	3,874.51	0.00	0.00	0.00
8,700.00	90.54	90.48	4,906.52	69.75	3,973.97	3,974.49	0.00	0.00	0.00
8,800.00	90.54	90.48	4,905.58	68.90	4,073.97	4,074.47	0.00	0.00	0.00
8,900.00	90.54	90.48	4,904.63	68.05	4,173.96	4,174.45	0.00	0.00	0.00
9,000.00	90.54	90.48	4,903.69	67.21	4,273.95	4,274.42	0.00	0.00	0.00
9,100.00	90.54	90.48	4,902.75	66.36	4,373.94	4,374.40	0.00	0.00	0.00
9,200.00	90.54	90.48	4,901.81	65.51	4,473.93	4,474.38	0.00	0.00	0.00
9,300.00	90.54	90.48	4,900.87	64.67	4,573.93	4,574.36	0.00	0.00	0.00
9,400.00	90.54	90.48	4,899.92	63.82	4,673.92	4,674.33	0.00	0.00	0.00
9,500.00	90.54	90.48	4,898.98	62.98	4,773.91	4,774.31	0.00	0.00	0.00
9,600.00	90.54	90.48	4,898.04	62.13	4,873.90	4,874.29	0.00	0.00	0.00
9,700.00	90.54	90.48	4,897.10	61.28	4,973.89	4,974.26	0.00	0.00	0.00
9,800.00	90.54	90.48	4,896.16	60.44	5,073.89	5,074.24	0.00	0.00	0.00
9,900.00	90.54	90.48	4,895.21	59.59	5,173.88	5,174.22	0.00	0.00	0.00
10,000.00	90.54	90.48	4,894.27	58.74	5,273.87	5,274.20	0.00	0.00	0.00
10,100.00	90.54	90.48	4,893.33	57.90	5,373.86	5,374.17	0.00	0.00	0.00
10,135.14	90.54	90.48	4,893.00	57.60	5,409.00	5,409.31	0.00	0.00	0.00
TD at 10135.14									

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
KOP-D1 (BKU#955H/L1 - plan hits target center - Point	0.00	0.01	4,422.56	0.00	0.00	663,730.90	591,453.10	32° 49' 27.586 N	104° 2' 8.249 W
PBHL (BKU#955H/L1) - plan hits target center - Point	0.00	0.00	4,893.00	57.60	5,409.00	663,788.50	596,862.10	32° 49' 28.000 N	104° 1' 4.859 W
PP-D1 (BKU#955H/L1) - plan hits target center - Point	0.00	0.00	4,914.44	46.35	346.44	663,777.25	591,799.55	32° 49' 28.034 N	104° 2' 4.187 W
END TURN-D1 (BKU#9 - plan hits target center - Point	0.00	0.00	4,936.00	95.51	929.60	663,826.41	592,382.70	32° 49' 28.505 N	104° 1' 57.352 W
EOC/TURN-D1 (BKU#9 - plan hits target center - Point	0.00	0.00	4,943.35	70.32	525.62	663,801.22	591,978.72	32° 49' 28.267 N	104° 2' 2.087 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site:	Burch Keely Unit #955H	**North Reference:**	Grid
Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D		
Design:	Design #1		

Plan Annotations

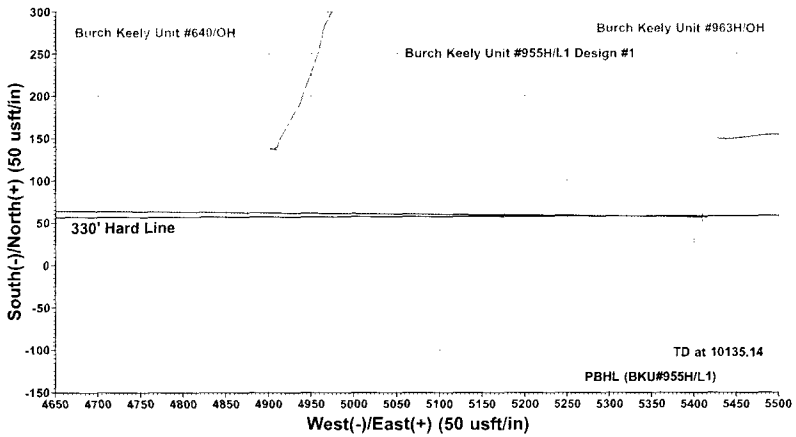
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,422.56	4,422.56	0.00	0.00	Start Build 11.00
5,250.17	4,943.35	70.32	525.62	Start DLS 2.00 TFO 89.93
5,655.34	4,936.00	95.51	929.60	Start 662.88 hold at 5655.34 MD
6,318.22	4,924.00	89.90	1,592.34	Start Drop -1.50
6,360.25	4,923.47	89.54	1,634.37	Start 2181.62 hold at 6360.25 MD
8,541.87	4,908.00	71.08	3,815.86	Start DLS 1.50 TFO 0.05
8,550.75	4,907.92	71.01	3,824.74	Start 1584.39 hold at 8550.75 MD
10,135.14	4,893.00	57.60	5,409.00	TD at 10135.14

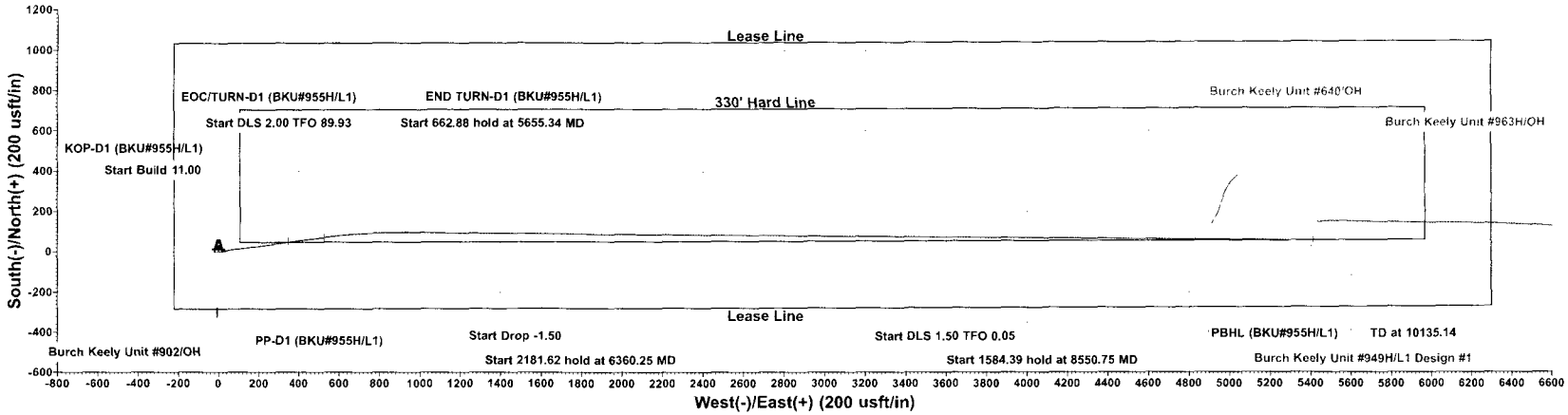
CONCHO

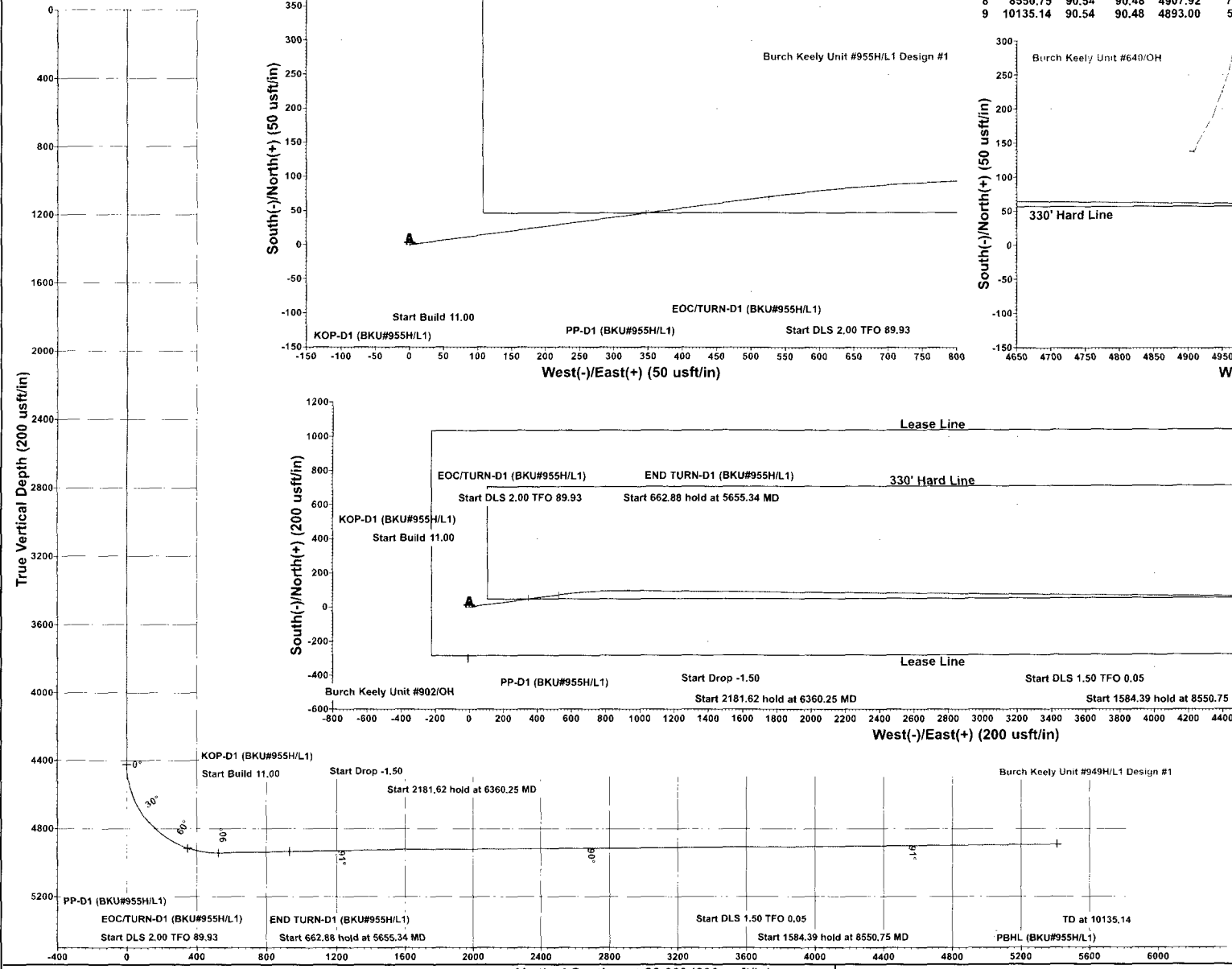
COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Burch Keely Unit #955H
Well: SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D
Wellbore: BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D
Plan: Design #1 (SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D/BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D)

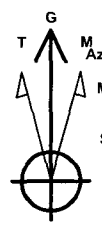
Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4422.56	0.00	0.00	4422.56	0.00	0.00	0.00	0.00	0.00	
3	5250.17	91.04	82.38	4943.35	70.32	525.61	11.00	82.38	526.33	
4	5655.34	91.04	90.48	4936.00	95.51	929.60	2.00	89.93	930.56	
5	6318.22	91.04	90.48	4924.00	89.90	1592.34	0.00	0.00	1593.21	
6	6360.25	90.41	90.48	4923.47	89.54	1634.37	1.50	180.00	1635.23	
7	8541.87	90.41	90.48	4908.00	71.08	3815.86	0.00	0.00	3816.40	
8	8550.75	90.54	90.48	4907.92	71.01	3824.74	1.50	0.05	3825.28	
9	10135.14	90.54	90.48	4893.00	57.60	5409.00	0.00	0.00	5409.31	PBHL (BKU#955H/L1)









Azimuths to Grid North
True North: -0.16°
Magnetic North: 7.11°

Magnetic Field
Strength: 48297.4snT
Dip Angle: 60.54°
Date: 12/7/2016
Model: IGRF2015

TDS
Terra Directional Services LLC
3705 South County Road 1210, Midland, TX 79706
Phone: 432-618-1210

Ground Elevation:: 3602.00
RKB Elevation: KB @ 3620.00usft (Silver Oak 3)

Northing	Easting	Latitude	Longitude
663730.90	591453.10	32° 49' 27.586 N	104° 2' 8.249 W

PROJECT DETAILS: Eddy County, NM (NAD-27 2015)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

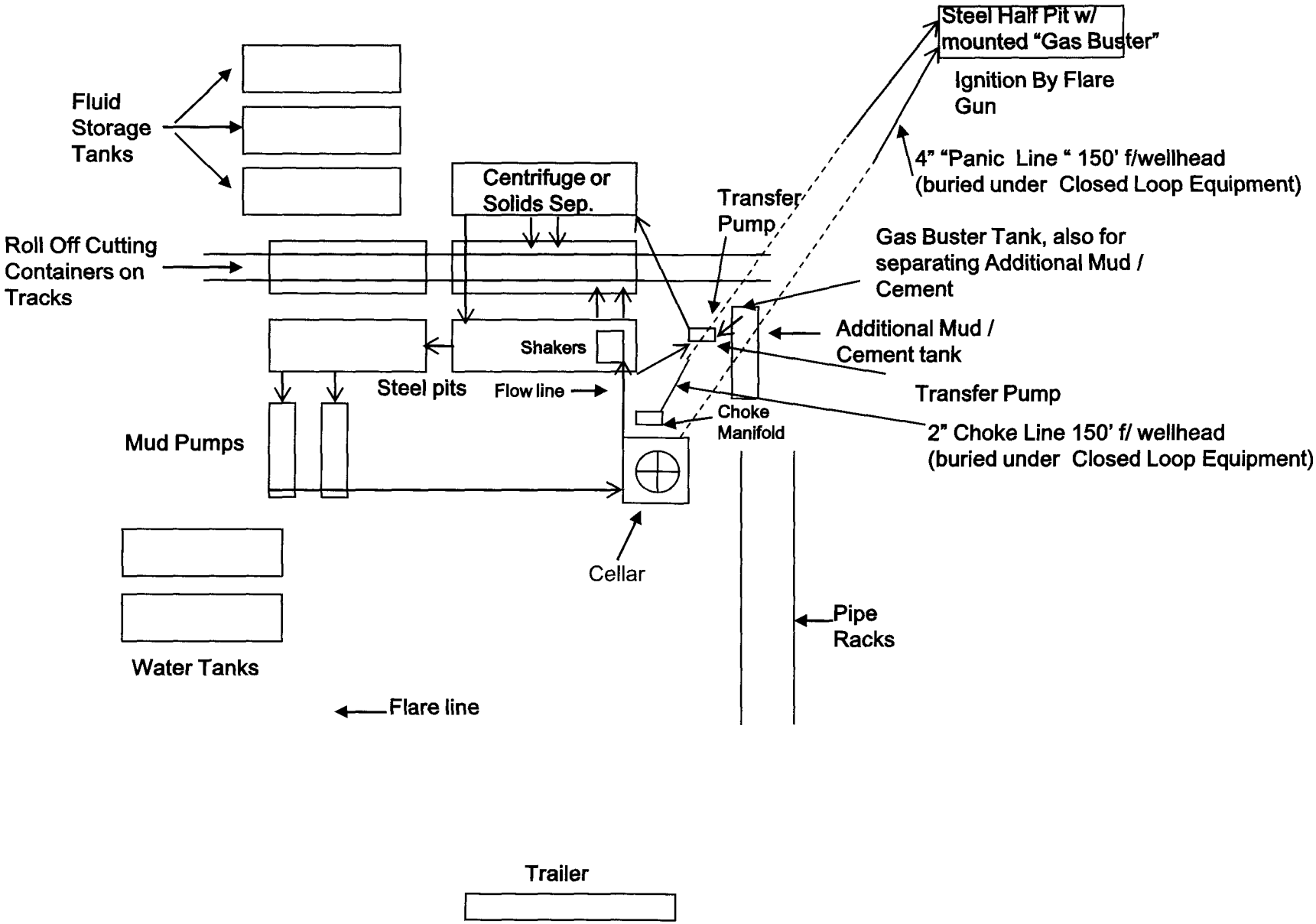
Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Closed Loop Equipment Diagram



COG Operating LLC

Eddy County, NM (NAD-27 2015)
Burch Keely Unit #955H
SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D
PP: 989' FNL, 569' FWL, Sec 24, T17S, R29E, Unit D
BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D
Design #1

Anticollision Report

12 December, 2016

TERRA DIRECTIONAL SERVICES, L.L.C.

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 12/12/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	10,135.14	Design #1 (BHL: 990' FNL, 350' FWL, Sec	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Eddy County Offset Wells						
Burch Keely Unit #640 - OH - OH	9,763.54	4,847.00	334.48	191.40	2.338	CC, ES, SF
Burch Keely Unit #902 - OH - OH	4,439.22	4,424.95	279.62	181.59	2.852	CC
Burch Keely Unit #902 - OH - OH	4,500.00	4,485.45	280.25	180.73	2.816	ES
Burch Keely Unit #902 - OH - OH	4,800.00	4,753.64	325.85	202.12	2.633	SF
Burch Keely Unit #963H - OH - OH	10,135.14	4,743.84	297.39	241.08	5.282	CC, ES, SF

Offset Design Eddy County Offset Wells - Burch Keely Unit #640 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 1114-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	19.85	19.85	0.00	0.02	88.41	136.60	4,909.68	4,911.59				
100.00	100.00	161.06	161.06	0.09	0.21	88.41	136.58	4,908.57	4,910.73	4,910.44	0.29	N/A	
200.00	200.00	267.21	267.20	0.32	0.40	88.40	136.91	4,907.40	4,909.65	4,908.94	0.71	6,914.764	
300.00	300.00	391.88	391.86	0.54	0.63	88.40	137.22	4,905.68	4,908.28	4,907.11	1.17	4,195.988	
400.00	400.00	480.17	480.13	0.77	0.79	88.39	137.55	4,904.27	4,906.70	4,905.15	1.56	3,150.480	
500.00	500.00	564.11	564.06	0.99	0.95	88.39	137.85	4,903.20	4,905.44	4,903.50	1.94	2,530.989	
600.00	600.00	652.67	652.63	1.22	1.12	88.39	137.80	4,902.35	4,904.47	4,902.14	2.33	2,106.096	
700.00	700.00	737.87	737.82	1.44	1.27	88.39	137.67	4,901.70	4,903.72	4,901.00	2.71	1,807.248	
800.00	800.00	822.52	822.47	1.67	1.43	88.39	137.61	4,901.42	4,903.36	4,900.27	3.10	1,583.468	
900.00	900.00	925.77	925.72	1.89	1.62	88.39	137.80	4,901.05	4,903.01	4,899.50	3.51	1,396.404	
979.17	979.17	987.77	987.72	2.07	1.72	88.39	137.94	4,900.94	4,902.88	4,899.10	3.78	1,296.478	
1,000.00	1,000.00	1,002.80	1,002.75	2.12	1.73	88.39	137.96	4,900.95	4,902.90	4,899.05	3.84	1,275.885	
1,100.00	1,100.00	1,074.95	1,074.89	2.34	1.80	88.39	137.97	4,901.26	4,903.33	4,899.19	4.14	1,185.684	
1,200.00	1,200.00	1,179.06	1,179.00	2.56	1.86	88.39	137.72	4,902.15	4,904.18	4,899.76	4.42	1,110.511	
1,300.00	1,300.00	1,210.00	1,209.94	2.79	1.87	88.39	137.58	4,902.32	4,905.27	4,900.62	4.65	1,054.926	
1,400.00	1,400.00	1,269.30	1,269.23	3.01	1.90	88.39	137.49	4,903.30	4,907.25	4,902.34	4.90	1,000.521	
1,500.00	1,500.00	1,305.00	1,304.91	3.24	1.92	88.39	137.65	4,904.58	4,910.80	4,905.65	5.15	954.193	
1,600.00	1,600.00	1,393.83	1,393.63	3.46	1.98	88.37	139.54	4,908.41	4,915.15	4,909.72	5.43	904.366	
1,700.00	1,700.00	1,536.85	1,536.22	3.69	2.13	88.26	149.39	4,912.94	4,918.29	4,912.48	5.80	847.461	
1,800.00	1,800.00	1,592.00	1,591.16	3.91	2.19	88.21	153.62	4,915.14	4,922.40	4,916.31	6.09	807.991	
1,900.00	1,900.00	1,719.31	1,718.05	4.14	2.37	88.11	162.40	4,920.47	4,926.89	4,920.40	6.49	758.927	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #640 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 1114-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,000.00	2,000.00	1,874.73	1,873.10	4.36	2.62	88.00	172.18	4,925.23	4,930.14	4,923.18	6.96	708.500	
2,100.00	2,100.00	1,924.30	1,922.55	4.59	2.71	87.96	175.18	4,926.73	4,933.41	4,926.14	7.27	678.946	
2,200.00	2,200.00	1,974.00	1,972.09	4.81	2.80	87.93	178.56	4,928.77	4,937.74	4,930.17	7.57	651.949	
2,300.00	2,300.00	2,096.69	2,094.35	5.04	3.04	87.83	187.37	4,934.05	4,942.32	4,934.29	8.03	615.635	
2,400.00	2,400.00	2,244.64	2,241.66	5.26	3.35	87.68	199.93	4,939.63	4,946.54	4,937.99	8.55	578.379	
2,500.00	2,500.00	2,388.19	2,384.81	5.49	3.65	87.57	210.03	4,942.92	4,948.96	4,939.89	9.07	545.486	
2,600.00	2,600.00	2,452.00	2,448.42	5.71	3.79	87.51	214.77	4,944.70	4,952.00	4,942.57	9.43	525.242	
2,700.00	2,700.00	2,557.43	2,553.46	5.94	4.03	87.42	223.16	4,947.92	4,955.42	4,945.54	9.88	501.485	
2,800.00	2,800.00	2,666.15	2,661.79	6.16	4.27	87.32	231.87	4,950.88	4,958.53	4,948.18	10.35	479.164	
2,900.00	2,900.00	2,776.59	2,771.86	6.39	4.53	87.22	240.48	4,953.57	4,961.33	4,950.51	10.82	458.527	
3,000.00	3,000.00	2,869.55	2,864.51	6.61	4.74	87.14	247.71	4,955.88	4,964.20	4,952.95	11.25	441.181	
3,100.00	3,100.00	2,980.12	2,974.71	6.84	4.99	87.04	256.46	4,958.64	4,967.11	4,955.39	11.73	423.531	
3,200.00	3,200.00	3,107.43	3,101.59	7.06	5.29	86.93	266.50	4,961.21	4,969.55	4,957.30	12.25	405.712	
3,300.00	3,300.00	3,217.00	3,210.79	7.28	5.56	86.82	275.35	4,962.83	4,971.45	4,958.72	12.73	390.462	
3,400.00	3,400.00	3,269.53	3,263.15	7.51	5.68	86.78	279.46	4,963.80	4,973.83	4,960.76	13.08	380.370	
3,500.00	3,500.00	3,316.45	3,309.91	7.73	5.79	86.74	283.05	4,965.26	4,977.34	4,963.94	13.41	371.283	
3,600.00	3,600.00	3,408.00	3,401.13	7.96	6.01	86.66	290.12	4,968.61	4,981.45	4,967.61	13.84	359.938	
3,700.00	3,700.00	3,493.26	3,486.04	8.18	6.22	86.58	297.00	4,971.90	4,985.80	4,971.53	14.26	349.529	
3,800.00	3,800.00	3,612.57	3,604.87	8.41	6.51	86.47	306.82	4,976.43	4,990.09	4,975.32	14.78	337.711	
3,900.00	3,900.00	3,695.00	3,686.95	8.63	6.72	86.40	313.67	4,979.46	4,994.32	4,979.12	15.20	328.626	
4,000.00	4,000.00	3,780.04	3,771.64	8.86	6.93	86.32	320.51	4,982.88	4,998.87	4,983.25	15.62	320.007	
4,100.00	4,100.00	3,877.50	3,868.74	9.08	7.17	86.24	327.80	4,987.10	5,003.69	4,987.61	16.07	311.340	
4,200.00	4,200.00	3,954.12	3,945.09	9.31	7.35	86.18	333.16	4,990.60	5,008.72	4,992.25	16.47	304.145	
4,300.00	4,300.00	4,035.46	4,026.17	9.53	7.54	86.13	338.26	4,994.74	5,014.22	4,997.35	16.87	297.163	
4,400.00	4,400.00	4,130.98	4,121.37	9.76	7.77	86.06	344.18	4,999.84	5,019.98	5,002.66	17.31	289.953	
4,422.56	4,422.56	4,154.74	4,145.05	9.81	7.83	86.05	345.66	5,001.10	5,021.27	5,003.85	17.42	288.285	
4,450.00	4,449.99	4,182.18	4,172.39	9.87	7.90	3.64	347.38	5,002.55	5,022.12	5,004.58	17.54	286.361	
4,500.00	4,499.72	4,228.12	4,218.18	9.97	8.01	3.63	350.27	5,005.00	5,019.98	5,002.24	17.74	282.933	
4,550.00	4,548.73	4,274.66	4,264.56	10.08	8.12	3.65	353.23	5,007.52	5,013.12	4,995.16	17.95	279.239	
4,600.00	4,596.59	4,327.16	4,316.87	10.19	8.25	3.71	356.55	5,010.35	5,001.54	4,983.36	18.18	275.122	
4,650.00	4,642.84	4,375.70	4,365.26	10.32	8.37	3.82	359.59	5,012.93	4,985.33	4,966.94	18.40	270.986	
4,700.00	4,687.07	4,416.21	4,405.62	10.47	8.47	3.97	362.12	5,015.11	4,964.70	4,946.11	18.59	266.998	
4,750.00	4,728.86	4,459.00	4,448.26	10.65	8.57	4.18	364.81	5,017.45	4,939.86	4,921.07	18.80	262.810	
4,800.00	4,767.82	4,492.06	4,481.21	10.89	8.65	4.47	366.87	5,019.29	4,911.02	4,892.05	18.97	258.862	
4,850.00	4,803.61	4,526.76	4,515.79	11.20	8.74	4.86	369.02	5,021.25	4,878.44	4,859.29	19.15	254.786	
4,900.00	4,835.90	4,558.87	4,547.78	11.58	8.82	5.37	370.98	5,023.08	4,842.40	4,823.09	19.31	250.753	
4,950.00	4,864.37	4,590.42	4,579.23	12.06	8.89	6.08	372.89	5,024.89	4,803.23	4,783.77	19.47	246.729	
5,000.00	4,888.78	4,618.01	4,606.72	12.64	8.96	7.08	374.54	5,026.47	4,761.28	4,741.68	19.61	242.843	
5,050.00	4,908.89	4,641.38	4,630.01	13.32	9.02	8.57	375.93	5,027.80	4,716.94	4,697.21	19.73	239.127	
5,100.00	4,924.53	4,660.27	4,648.83	14.10	9.06	10.93	377.04	5,028.88	4,670.60	4,650.78	19.82	235.606	
5,150.00	4,935.55	4,674.52	4,663.04	14.97	9.10	15.20	377.87	5,029.69	4,622.71	4,602.81	19.90	232.299	
5,200.00	4,941.84	4,684.07	4,672.56	15.91	9.12	24.71	378.42	5,030.24	4,573.71	4,553.75	19.95	229.218	
5,250.17	4,943.35	4,688.84	4,677.31	16.90	9.13	56.31	378.70	5,030.51	4,523.87	4,503.88	19.99	226.359	
5,300.00	4,942.44	4,691.14	4,679.61	17.94	9.14	48.05	378.83	5,030.64	4,474.16	4,454.16	20.00	223.662	
5,400.00	4,940.63	4,695.62	4,684.07	20.16	9.15	17.56	379.09	5,030.90	4,374.31	4,354.28	20.03	218.359	
5,500.00	4,938.82	4,699.92	4,688.35	22.49	9.16	-26.60	379.34	5,031.14	4,274.41	4,254.35	20.05	213.172	
5,600.00	4,937.00	4,704.01	4,692.44	24.90	9.17	-53.14	379.57	5,031.38	4,174.58	4,154.52	20.06	208.103	
5,655.34	4,936.00	4,706.20	4,694.61	26.27	9.18	-60.95	379.70	5,031.50	4,119.41	4,099.35	20.06	205.340	
5,700.00	4,935.19	4,707.94	4,696.34	27.38	9.18	-61.19	379.80	5,031.60	4,074.93	4,054.87	20.06	203.108	
5,800.00	4,933.38	4,711.83	4,700.22	29.89	9.19	-61.75	380.02	5,031.82	3,975.34	3,955.27	20.07	198.058	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #640 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 1114-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,900.00	4,931.57	4,715.72	4,704.10	32.45	9.20	-62.31	380.24	5,032.05	3,875.77	3,855.68	20.09	192.945	
6,000.00	4,929.76	4,719.61	4,707.98	35.04	9.21	-62.87	380.46	5,032.27	3,776.21	3,756.10	20.11	187.763	
6,100.00	4,927.95	4,723.50	4,711.86	37.65	9.22	-63.44	380.69	5,032.49	3,676.67	3,656.53	20.15	182.508	
6,200.00	4,926.14	4,727.39	4,715.74	40.28	9.23	-64.02	380.91	5,032.71	3,577.16	3,556.97	20.19	177.174	
6,300.00	4,924.33	4,731.28	4,719.61	42.93	9.24	-64.60	381.13	5,032.94	3,477.67	3,457.42	20.25	171.758	
6,318.22	4,924.00	4,731.99	4,720.32	43.42	9.24	-64.70	381.17	5,032.98	3,459.55	3,439.29	20.26	170.762	
6,360.25	4,923.47	4,733.86	4,722.18	44.53	9.24	-59.71	381.27	5,033.08	3,417.75	3,397.46	20.29	168.448	
6,400.00	4,923.19	4,735.84	4,724.16	45.59	9.25	-59.98	381.39	5,033.20	3,378.24	3,357.91	20.32	166.239	
6,500.00	4,922.48	4,740.84	4,729.14	48.27	9.26	-60.68	381.67	5,033.48	3,278.85	3,258.44	20.41	160.613	
6,600.00	4,921.77	4,745.84	4,734.13	50.95	9.27	-61.38	381.95	5,033.77	3,179.50	3,158.97	20.53	154.892	
6,700.00	4,921.06	4,750.94	4,739.21	53.64	9.28	-62.11	382.24	5,034.06	3,080.18	3,059.52	20.66	149.073	
6,800.00	4,920.35	4,756.04	4,744.29	56.34	9.30	-62.84	382.52	5,034.35	2,980.90	2,960.08	20.82	143.155	
6,900.00	4,919.64	4,761.14	4,749.37	59.04	9.31	-63.58	382.81	5,034.64	2,881.66	2,860.65	21.01	137.138	
7,000.00	4,918.94	4,766.22	4,754.45	61.75	9.32	-64.33	383.09	5,034.93	2,782.47	2,761.23	21.24	131.023	
7,100.00	4,918.23	4,771.31	4,759.51	64.46	9.33	-65.08	383.37	5,035.22	2,683.32	2,661.82	21.50	124.813	
7,200.00	4,917.52	4,776.39	4,764.58	67.18	9.35	-65.85	383.65	5,035.51	2,584.23	2,562.43	21.81	118.515	
7,300.00	4,916.81	4,781.46	4,769.63	69.90	9.36	-66.62	383.93	5,035.80	2,485.21	2,463.05	22.16	112.137	
7,400.00	4,916.10	4,786.53	4,774.68	72.62	9.37	-67.39	384.21	5,036.09	2,386.25	2,363.68	22.58	105.692	
7,500.00	4,915.39	4,791.59	4,779.73	75.35	9.38	-68.18	384.48	5,036.37	2,287.38	2,264.32	23.06	99.196	
7,600.00	4,914.68	4,796.65	4,784.77	78.08	9.39	-68.97	384.76	5,036.66	2,188.59	2,164.98	23.62	92.669	
7,700.00	4,913.97	4,801.63	4,789.74	80.81	9.41	-69.75	385.03	5,036.95	2,089.91	2,065.65	24.26	86.135	
7,800.00	4,913.26	4,806.56	4,794.66	83.54	9.42	-70.54	385.29	5,037.23	1,991.35	1,966.34	25.01	79.621	
7,900.00	4,912.55	4,811.49	4,799.57	86.28	9.43	-71.33	385.56	5,037.51	1,892.93	1,867.06	25.87	73.158	
8,000.00	4,911.84	4,816.42	4,804.48	89.01	9.44	-72.12	385.83	5,037.79	1,794.67	1,767.80	26.87	66.779	
8,100.00	4,911.13	4,821.35	4,809.40	91.75	9.45	-72.92	386.09	5,038.07	1,696.60	1,668.56	28.03	60.521	
8,200.00	4,910.42	4,826.28	4,814.31	94.49	9.47	-73.73	386.36	5,038.35	1,598.75	1,569.37	29.38	54.420	
8,300.00	4,909.71	4,831.20	4,819.22	97.23	9.48	-74.54	386.63	5,038.63	1,501.17	1,470.22	30.94	48.513	
8,400.00	4,909.00	4,836.13	4,824.14	99.97	9.49	-75.36	386.89	5,038.91	1,403.91	1,371.14	32.77	42.839	
8,500.00	4,908.29	4,841.06	4,829.05	102.71	9.50	-76.18	387.16	5,039.19	1,307.05	1,272.13	34.92	37.432	
8,541.87	4,908.00	4,843.12	4,831.11	103.86	9.51	-76.53	387.27	5,039.30	1,266.62	1,230.70	35.93	35.256	
8,550.75	4,907.92	4,843.55	4,831.53	104.10	9.51	-77.07	387.30	5,039.33	1,258.07	1,221.92	36.15	34.802	
8,600.00	4,907.46	4,845.86	4,833.84	105.46	9.51	-77.46	387.42	5,039.46	1,210.66	1,173.21	37.45	32.328	
8,700.00	4,906.52	4,847.00	4,834.97	108.20	9.52	-77.65	387.48	5,039.52	1,114.90	1,074.46	40.44	27.567	
8,800.00	4,905.58	4,847.00	4,834.97	110.94	9.52	-77.65	387.48	5,039.52	1,019.95	975.92	44.03	23.167	
8,900.00	4,904.63	4,847.00	4,834.97	113.69	9.52	-77.65	387.48	5,039.52	926.06	877.70	48.36	19.150	
9,000.00	4,903.69	4,847.00	4,834.97	116.44	9.52	-77.65	387.48	5,039.52	833.59	779.93	53.66	15.535	
9,100.00	4,902.75	4,847.00	4,834.97	119.18	9.52	-77.65	387.48	5,039.52	743.08	682.87	60.21	12.341	
9,200.00	4,901.81	4,847.00	4,834.97	121.93	9.52	-77.65	387.48	5,039.52	655.33	586.92	68.41	9.580	
9,300.00	4,900.87	4,847.00	4,834.97	124.68	9.52	-77.65	387.48	5,039.52	571.62	492.90	78.72	7.261	
9,400.00	4,899.92	4,847.00	4,834.97	127.43	9.52	-77.65	387.48	5,039.52	494.01	402.37	91.64	5.391	
9,500.00	4,898.98	4,847.00	4,834.97	130.18	9.52	-77.65	387.48	5,039.52	425.83	318.56	107.27	3.970	
9,600.00	4,898.04	4,847.00	4,834.97	132.93	9.52	-77.65	387.48	5,039.52	372.32	248.03	124.29	2.996	
9,700.00	4,897.10	4,847.00	4,834.97	135.68	9.52	-77.65	387.48	5,039.52	340.46	202.00	138.47	2.459	
9,763.54	4,896.50	4,847.00	4,834.97	137.43	9.52	-77.65	387.48	5,039.52	334.48	191.40	143.09	2.338	CC, ES, SF
9,800.00	4,896.16	4,847.00	4,834.97	138.43	9.52	-77.65	387.48	5,039.52	336.46	192.82	143.64	2.342	
9,900.00	4,895.21	4,847.00	4,834.97	141.18	9.52	-77.65	387.48	5,039.52	361.25	223.32	137.93	2.619	
10,000.00	4,894.27	4,847.00	4,834.97	143.93	9.52	-77.65	387.48	5,039.52	409.62	283.77	125.86	3.255	
10,100.00	4,893.33	4,847.00	4,834.97	146.68	9.52	-77.65	387.48	5,039.52	474.43	361.78	112.64	4.212	
10,135.14	4,893.00	4,847.00	4,834.97	147.65	9.52	-77.65	387.48	5,039.52	499.96	391.69	108.27	4.618	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #902 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 223-INC

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-178.50	-324.00	-8.50	324.51				
100.00	100.00	84.64	84.64	0.09	1.32	-178.50	-323.92	-8.50	324.03	322.81	1.22	265.702	
200.00	200.00	185.41	185.41	0.32	2.90	-178.50	-323.60	-8.50	323.71	320.93	2.79	116.193	
300.00	300.00	286.26	286.26	0.54	6.18	-178.49	-323.03	-8.50	323.15	318.10	5.04	64.060	
400.00	400.00	387.17	387.16	0.77	10.47	-178.49	-322.18	-8.50	322.31	314.59	7.71	41.778	
500.00	500.00	488.07	488.05	0.99	14.76	-178.48	-321.05	-8.50	321.19	310.80	10.38	30.929	
600.00	600.00	588.96	588.94	1.22	19.04	-178.48	-319.63	-8.50	319.78	306.73	13.05	24.496	
700.00	700.00	689.74	689.70	1.44	23.95	-178.47	-317.94	-8.50	318.10	302.50	15.60	20.390	
800.00	800.00	790.24	790.18	1.67	30.38	-178.46	-316.06	-8.50	316.23	298.39	17.84	17.724	
900.00	900.00	890.73	890.66	1.89	36.82	-178.45	-314.01	-8.50	314.19	294.11	20.08	15.645	
1,000.00	1,000.00	991.08	990.98	2.12	43.14	-178.44	-311.80	-8.50	311.99	289.69	22.31	13.987	
1,100.00	1,100.00	1,090.07	1,089.95	2.34	48.32	-178.43	-309.74	-8.50	309.92	285.56	24.35	12.727	
1,200.00	1,200.00	1,189.06	1,188.93	2.56	53.50	-178.42	-308.00	-8.50	308.16	281.76	26.40	11.674	
1,300.00	1,300.00	1,288.07	1,287.92	2.79	58.68	-178.41	-306.57	-8.50	306.72	278.27	28.44	10.784	
1,400.00	1,400.00	1,387.08	1,386.93	3.01	63.87	-178.41	-305.47	-8.50	305.60	275.11	30.49	10.023	
1,500.00	1,500.00	1,486.98	1,486.82	3.24	68.05	-178.40	-304.56	-8.50	304.69	272.08	32.61	9.344	
1,600.00	1,600.00	1,587.19	1,587.03	3.46	71.85	-178.40	-303.60	-8.50	303.73	268.97	34.76	8.738	
1,700.00	1,700.00	1,687.41	1,687.24	3.69	75.66	-178.39	-302.56	-8.50	302.70	265.79	36.91	8.201	
1,800.00	1,800.00	1,787.63	1,787.45	3.91	79.46	-178.38	-301.45	-8.50	301.59	262.53	39.06	7.722	
1,900.00	1,900.00	1,887.84	1,887.66	4.14	83.27	-178.38	-300.26	-8.50	300.41	259.20	41.21	7.291	
2,000.00	2,000.00	1,987.42	1,987.24	4.36	86.60	-178.37	-299.11	-8.50	299.25	255.88	43.38	6.899	
2,100.00	2,100.00	2,086.98	2,086.79	4.59	89.92	-178.37	-298.11	-8.50	298.24	252.69	45.55	6.547	
2,200.00	2,200.00	2,186.55	2,186.35	4.81	93.24	-178.36	-297.25	-8.50	297.38	249.66	47.73	6.231	
2,300.00	2,300.00	2,286.11	2,285.91	5.04	96.55	-178.36	-296.54	-8.50	296.66	246.76	49.90	5.945	
2,400.00	2,400.00	2,385.79	2,385.59	5.26	99.80	-178.35	-295.96	-8.50	296.09	244.01	52.08	5.685	
2,500.00	2,500.00	2,486.00	2,485.80	5.49	102.68	-178.35	-295.39	-8.50	295.52	241.23	54.28	5.444	
2,600.00	2,600.00	2,586.21	2,586.01	5.71	105.56	-178.35	-294.74	-8.50	294.87	238.39	56.49	5.220	
2,700.00	2,700.00	2,686.43	2,686.22	5.94	108.44	-178.34	-294.02	-8.50	294.15	235.46	58.69	5.012	
2,800.00	2,800.00	2,786.64	2,786.43	6.16	111.31	-178.34	-293.23	-8.50	293.36	232.47	60.89	4.818	
2,900.00	2,900.00	2,886.81	2,886.59	6.39	114.50	-178.33	-292.37	-8.50	292.50	229.36	63.14	4.632	
3,000.00	3,000.00	2,986.91	2,986.69	6.61	118.16	-178.33	-291.46	-8.50	291.60	226.13	65.47	4.454	
3,100.00	3,100.00	3,087.01	3,086.79	6.84	121.82	-178.32	-290.52	-8.50	290.66	222.86	67.79	4.287	
3,200.00	3,200.00	3,187.11	3,186.89	7.06	125.49	-178.32	-289.54	-8.50	289.68	219.56	70.12	4.131	
3,300.00	3,300.00	3,287.21	3,286.98	7.28	129.15	-178.31	-288.52	-8.50	288.66	216.22	72.44	3.985	
3,400.00	3,400.00	3,387.18	3,386.95	7.51	132.77	-178.31	-287.49	-8.50	287.63	212.93	74.69	3.851	
3,500.00	3,500.00	3,487.07	3,486.83	7.73	136.37	-178.30	-286.48	-8.50	286.62	209.72	76.90	3.727	
3,600.00	3,600.00	3,586.96	3,586.72	7.96	139.97	-178.29	-285.51	-8.50	285.65	206.55	79.10	3.611	
3,700.00	3,700.00	3,686.86	3,686.61	8.18	143.57	-178.29	-284.58	-8.50	284.72	203.41	81.30	3.502	
3,800.00	3,800.00	3,786.75	3,786.49	8.41	147.17	-178.28	-283.68	-8.50	283.82	200.31	83.51	3.399	
3,900.00	3,900.00	3,886.56	3,886.30	8.63	150.22	-178.28	-282.84	-8.50	282.97	197.19	85.78	3.299	
4,000.00	4,000.00	3,986.35	3,986.09	8.86	153.16	-178.27	-282.06	-8.50	282.20	194.12	88.08	3.204	
4,100.00	4,100.00	4,086.14	4,085.88	9.08	156.11	-178.27	-281.36	-8.50	281.49	191.13	90.37	3.115	
4,200.00	4,200.00	4,185.93	4,185.67	9.31	159.05	-178.27	-280.73	-8.50	280.86	188.20	92.66	3.031	
4,300.00	4,300.00	4,285.73	4,285.47	9.53	161.97	-178.26	-280.17	-8.50	280.31	185.36	94.95	2.952	
4,400.00	4,400.00	4,385.73	4,385.46	9.76	164.43	-178.26	-279.65	-8.50	279.78	182.63	97.16	2.880	
4,422.56	4,422.56	4,408.29	4,408.02	9.81	164.98	-178.26	-279.53	-8.50	279.67	182.01	97.66	2.864	
4,439.22	4,439.21	4,424.95	4,424.68	9.84	165.39	99.42	-279.45	-8.50	279.62	181.59	98.03	2.852	CC
4,450.00	4,449.99	4,435.72	4,435.45	9.87	165.65	99.51	-279.39	-8.50	279.64	181.36	98.28	2.845	
4,500.00	4,499.72	4,485.45	4,485.18	9.97	166.87	100.45	-279.13	-8.50	280.25	180.73	99.53	2.816	ES
4,550.00	4,548.73	4,534.47	4,534.20	10.08	168.07	102.19	-278.87	-8.50	281.95	180.83	101.12	2.788	
4,600.00	4,596.59	4,582.34	4,582.07	10.19	169.25	104.57	-278.62	-8.50	285.16	181.80	103.36	2.759	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #902 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 223-INC

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,650.00	4,642.84	4,628.60	4,628.33	10.32	170.38	107.38	-278.38	-8.50	290.50	183.88	106.62	2.725	
4,700.00	4,687.07	4,672.85	4,672.57	10.47	171.47	110.37	-278.15	-8.50	298.64	187.50	111.14	2.687	
4,750.00	4,728.86	4,714.65	4,714.38	10.65	172.49	113.28	-277.93	-8.50	310.24	193.30	116.94	2.653	
4,800.00	4,767.82	4,753.64	4,753.37	10.89	173.45	115.86	-277.72	-8.50	325.85	202.12	123.73	2.633 SF	
4,850.00	4,803.61	4,789.46	4,789.18	11.20	174.32	117.89	-277.54	-8.50	345.79	214.76	131.03	2.639	
4,900.00	4,835.90	4,791.00	4,790.73	11.58	174.36	115.12	-277.53	-8.50	371.45	234.22	137.23	2.707	
4,950.00	4,864.37	4,791.00	4,790.73	12.06	174.36	110.94	-277.53	-8.50	403.24	260.85	142.39	2.832	
5,000.00	4,888.78	4,791.00	4,790.73	12.64	174.36	105.39	-277.53	-8.50	439.58	292.74	146.84	2.994	
5,050.00	4,908.89	4,791.00	4,790.73	13.32	174.36	98.41	-277.53	-8.50	479.14	328.35	150.79	3.178	
5,100.00	4,924.53	4,791.00	4,790.73	14.10	174.36	90.10	-277.53	-8.50	520.87	366.49	154.39	3.374	
5,150.00	4,935.55	4,791.00	4,790.73	14.97	174.36	80.79	-277.53	-8.50	563.95	406.25	157.70	3.576	
5,200.00	4,941.84	4,791.00	4,790.73	15.91	174.36	71.13	-277.53	-8.50	607.74	446.97	160.77	3.780	
5,250.17	4,943.35	4,791.00	4,790.73	16.90	174.36	61.78	-277.53	-8.50	651.87	488.27	163.60	3.984	
5,300.00	4,942.44	4,791.00	4,790.73	17.94	174.36	62.67	-277.53	-8.50	695.91	529.79	166.11	4.189	
5,400.00	4,940.63	4,791.00	4,790.73	20.16	174.36	64.49	-277.53	-8.50	785.40	615.19	170.21	4.614	
5,500.00	4,938.82	4,791.00	4,790.73	22.49	174.36	66.30	-277.53	-8.50	875.94	702.56	173.38	5.052	
5,600.00	4,937.00	4,791.00	4,790.73	24.90	174.36	68.07	-277.53	-8.50	967.14	791.23	175.91	5.498	
5,655.34	4,936.00	4,791.00	4,790.73	26.27	174.36	69.01	-277.53	-8.50	1,017.79	840.69	177.10	5.747	
5,700.00	4,935.19	4,791.00	4,790.73	27.38	174.36	69.01	-277.53	-8.50	1,058.85	880.90	177.96	5.950	
5,800.00	4,933.38	4,791.00	4,790.73	29.89	174.36	69.01	-277.53	-8.50	1,151.77	972.21	179.56	6.414	
5,900.00	4,931.57	4,791.00	4,790.73	32.45	174.36	69.01	-277.53	-8.50	1,245.79	1,064.97	180.82	6.890	
6,000.00	4,929.76	4,791.00	4,790.73	35.04	174.36	69.01	-277.53	-8.50	1,340.68	1,158.85	181.83	7.373	
6,100.00	4,927.95	4,791.00	4,790.73	37.65	174.36	69.01	-277.53	-8.50	1,436.26	1,253.61	182.65	7.864	
6,200.00	4,926.14	4,791.00	4,790.73	40.28	174.36	69.01	-277.53	-8.50	1,532.40	1,349.08	183.32	8.359	
6,300.00	4,924.33	4,791.00	4,790.73	42.93	174.36	69.01	-277.53	-8.50	1,629.01	1,445.13	183.87	8.859	
6,318.22	4,924.00	4,791.00	4,790.73	43.42	174.36	69.01	-277.53	-8.50	1,646.65	1,462.69	183.96	8.951	
6,360.25	4,923.47	4,791.00	4,790.73	44.53	174.36	71.38	-277.53	-8.50	1,687.42	1,503.26	184.16	9.163	
6,400.00	4,923.19	4,791.00	4,790.73	45.59	174.36	71.38	-277.53	-8.50	1,726.05	1,541.72	184.33	9.364	
6,500.00	4,922.48	4,791.00	4,790.73	48.27	174.36	71.38	-277.53	-8.50	1,823.45	1,638.73	184.72	9.871	
6,600.00	4,921.77	4,791.00	4,790.73	50.95	174.36	71.38	-277.53	-8.50	1,921.12	1,736.06	185.06	10.381	
6,700.00	4,921.06	4,791.00	4,790.73	53.64	174.36	71.38	-277.53	-8.50	2,019.01	1,833.67	185.35	10.893	
6,800.00	4,920.35	4,791.00	4,790.73	56.34	174.36	71.38	-277.53	-8.50	2,117.10	1,931.50	185.60	11.407	
6,900.00	4,919.64	4,791.00	4,790.73	59.04	174.36	71.38	-277.53	-8.50	2,215.37	2,029.55	185.82	11.922	
7,000.00	4,918.94	4,791.00	4,790.73	61.75	174.36	71.38	-277.53	-8.50	2,313.78	2,127.76	186.01	12.439	
7,100.00	4,918.23	4,791.00	4,790.73	64.46	174.36	71.38	-277.53	-8.50	2,412.32	2,226.13	186.19	12.956	
7,200.00	4,917.52	4,791.00	4,790.73	67.18	174.36	71.38	-277.53	-8.50	2,510.98	2,324.63	186.34	13.475	
7,300.00	4,916.81	4,791.00	4,790.73	69.90	174.36	71.38	-277.53	-8.50	2,609.73	2,423.25	186.48	13.994	
7,400.00	4,916.10	4,791.00	4,790.73	72.62	174.36	71.38	-277.53	-8.50	2,708.58	2,521.97	186.61	14.515	
7,500.00	4,915.39	4,791.00	4,790.73	75.35	174.36	71.38	-277.53	-8.50	2,807.52	2,620.79	186.73	15.035	
7,600.00	4,914.68	4,791.00	4,790.73	78.08	174.36	71.38	-277.53	-8.50	2,906.52	2,719.69	186.83	15.557	
7,700.00	4,913.97	4,791.00	4,790.73	80.81	174.36	71.38	-277.53	-8.50	3,005.59	2,818.66	186.93	16.079	
7,800.00	4,913.26	4,791.00	4,790.73	83.54	174.36	71.38	-277.53	-8.50	3,104.72	2,917.70	187.02	16.601	
7,900.00	4,912.55	4,791.00	4,790.73	86.28	174.36	71.38	-277.53	-8.50	3,203.91	3,016.80	187.10	17.124	
8,000.00	4,911.84	4,791.00	4,790.73	89.01	174.36	71.38	-277.53	-8.50	3,303.14	3,115.96	187.18	17.647	
8,100.00	4,911.13	4,791.00	4,790.73	91.75	174.36	71.38	-277.53	-8.50	3,402.42	3,215.16	187.25	18.170	
8,200.00	4,910.42	4,791.00	4,790.73	94.49	174.36	71.38	-277.53	-8.50	3,501.74	3,314.42	187.32	18.694	
8,300.00	4,909.71	4,791.00	4,790.73	97.23	174.36	71.38	-277.53	-8.50	3,601.09	3,413.71	187.39	19.217	
8,400.00	4,909.00	4,791.00	4,790.73	99.97	174.36	71.38	-277.53	-8.50	3,700.49	3,513.04	187.45	19.741	
8,500.00	4,908.29	4,791.00	4,790.73	102.71	174.36	71.38	-277.53	-8.50	3,799.91	3,612.40	187.51	20.265	
8,541.87	4,908.00	4,791.00	4,790.73	103.86	174.36	71.38	-277.53	-8.50	3,841.55	3,654.02	187.53	20.485	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #902 - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 223-INC

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,550.75	4,907.92	4,791.00	4,790.73	104.10	174.36	70.19	-277.53	-8.50	3,850.38	3,662.84	187.54	20.531	
8,600.00	4,907.46	4,791.00	4,790.73	105.46	174.36	70.19	-277.53	-8.50	3,899.36	3,711.80	187.56	20.790	
8,700.00	4,906.52	4,791.00	4,790.73	108.20	174.36	70.19	-277.53	-8.50	3,998.83	3,811.21	187.62	21.314	
8,800.00	4,905.58	4,791.00	4,790.73	110.94	174.36	70.19	-277.53	-8.50	4,098.33	3,910.66	187.67	21.838	
8,900.00	4,904.63	4,791.00	4,790.73	113.69	174.36	70.19	-277.53	-8.50	4,197.85	4,010.13	187.72	22.362	
9,000.00	4,903.69	4,791.00	4,790.73	116.44	174.36	70.19	-277.53	-8.50	4,297.40	4,109.63	187.77	22.887	
9,100.00	4,902.75	4,791.00	4,790.73	119.18	174.36	70.19	-277.53	-8.50	4,396.96	4,209.15	187.81	23.411	
9,200.00	4,901.81	4,791.00	4,790.73	121.93	174.36	70.19	-277.53	-8.50	4,496.55	4,308.69	187.86	23.936	
9,300.00	4,900.87	4,791.00	4,790.73	124.68	174.36	70.19	-277.53	-8.50	4,596.15	4,408.25	187.90	24.460	
9,400.00	4,899.92	4,791.00	4,790.73	127.43	174.36	70.19	-277.53	-8.50	4,695.77	4,507.82	187.95	24.984	
9,500.00	4,898.98	4,791.00	4,790.73	130.18	174.36	70.19	-277.53	-8.50	4,795.40	4,607.41	187.99	25.509	
9,600.00	4,898.04	4,791.00	4,790.73	132.93	174.36	70.19	-277.53	-8.50	4,895.05	4,707.02	188.03	26.033	
9,700.00	4,897.10	4,791.00	4,790.73	135.68	174.36	70.19	-277.53	-8.50	4,994.72	4,806.65	188.07	26.557	
9,800.00	4,896.16	4,791.00	4,790.73	138.43	174.36	70.19	-277.53	-8.50	5,094.40	4,906.28	188.11	27.082	
9,900.00	4,895.21	4,791.00	4,790.73	141.18	174.36	70.19	-277.53	-8.50	5,194.08	5,005.93	188.15	27.606	
10,000.00	4,894.27	4,791.00	4,790.73	143.93	174.36	70.19	-277.53	-8.50	5,293.79	5,105.60	188.19	28.130	
10,100.00	4,893.33	4,791.00	4,790.73	146.68	174.36	70.19	-277.53	-8.50	5,393.50	5,205.27	188.23	28.654	
10,135.14	4,893.00	4,791.00	4,790.73	147.65	174.36	70.19	-277.53	-8.50	5,428.54	5,240.30	188.24	28.838	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #963H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 4288-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	4,262.00	4,261.84	0.00	0.00	88.41	150.86	5,427.44	6,895.62				
100.00	100.00	4,262.00	4,261.84	0.09	0.00	88.41	150.86	5,427.44	6,834.42	6,832.69	1.73	3,942.579	
200.00	200.00	4,262.00	4,261.84	0.32	0.00	88.41	150.86	5,427.44	6,774.15	6,772.45	1.71	3,966.166	
300.00	300.00	4,262.00	4,261.84	0.54	0.00	88.41	150.86	5,427.44	6,714.83	6,713.13	1.70	3,941.120	
400.00	400.00	4,262.00	4,261.84	0.77	0.00	88.41	150.86	5,427.44	6,656.49	6,654.77	1.72	3,865.629	
500.00	500.00	4,262.00	4,261.84	0.99	0.00	88.41	150.86	5,427.44	6,599.14	6,597.38	1.76	3,743.659	
600.00	600.00	4,262.00	4,261.84	1.22	0.00	88.41	150.86	5,427.44	6,542.82	6,540.99	1.83	3,584.050	
700.00	700.00	4,262.00	4,261.84	1.44	0.00	88.41	150.86	5,427.44	6,487.55	6,485.64	1.91	3,398.319	
800.00	800.00	4,262.00	4,261.84	1.67	0.00	88.41	150.86	5,427.44	6,433.36	6,431.35	2.01	3,198.197	
900.00	900.00	4,262.00	4,261.84	1.89	0.00	88.41	150.86	5,427.44	6,380.28	6,378.15	2.13	2,993.816	
1,000.00	1,000.00	4,262.00	4,261.84	2.12	0.00	88.41	150.86	5,427.44	6,328.34	6,326.07	2.27	2,792.856	
1,100.00	1,100.00	4,262.00	4,261.84	2.34	0.00	88.41	150.86	5,427.44	6,277.55	6,275.14	2.41	2,600.485	
1,200.00	1,200.00	4,262.00	4,261.84	2.56	0.00	88.41	150.86	5,427.44	6,227.96	6,225.39	2.57	2,419.752	
1,300.00	1,300.00	4,262.00	4,261.84	2.79	0.00	88.41	150.86	5,427.44	6,179.59	6,176.85	2.74	2,252.115	
1,400.00	1,400.00	4,262.00	4,261.84	3.01	0.00	88.41	150.86	5,427.44	6,132.47	6,129.54	2.92	2,097.948	
1,500.00	1,500.00	4,262.00	4,261.84	3.24	0.00	88.41	150.86	5,427.44	6,086.62	6,083.51	3.11	1,956.941	
1,600.00	1,600.00	4,262.00	4,261.84	3.46	0.00	88.41	150.86	5,427.44	6,042.09	6,038.78	3.30	1,828.389	
1,700.00	1,700.00	4,262.00	4,261.84	3.69	0.00	88.41	150.86	5,427.44	5,998.89	5,995.38	3.51	1,711.388	
1,800.00	1,800.00	4,262.00	4,261.84	3.91	0.00	88.41	150.86	5,427.44	5,957.05	5,953.34	3.71	1,604.963	
1,900.00	1,900.00	4,262.00	4,261.84	4.14	0.00	88.41	150.86	5,427.44	5,916.61	5,912.69	3.92	1,508.139	
2,000.00	2,000.00	4,262.00	4,261.84	4.36	0.00	88.41	150.86	5,427.44	5,877.60	5,873.46	4.14	1,419.989	
2,100.00	2,100.00	4,262.00	4,261.84	4.59	0.00	88.41	150.86	5,427.44	5,840.03	5,835.67	4.36	1,339.652	
2,200.00	2,200.00	4,262.00	4,261.84	4.81	0.00	88.41	150.86	5,427.44	5,803.95	5,799.36	4.58	1,266.343	
2,300.00	2,300.00	4,262.00	4,261.84	5.04	0.00	88.41	150.86	5,427.44	5,769.37	5,764.56	4.81	1,199.353	
2,400.00	2,400.00	4,262.00	4,261.84	5.26	0.00	88.41	150.86	5,427.44	5,736.33	5,731.29	5.04	1,138.051	
2,500.00	2,500.00	4,262.00	4,261.84	5.49	0.00	88.41	150.86	5,427.44	5,704.85	5,699.58	5.27	1,081.872	
2,600.00	2,600.00	4,262.00	4,261.84	5.71	0.00	88.41	150.86	5,427.44	5,674.96	5,669.45	5.51	1,030.313	
2,700.00	2,700.00	4,262.00	4,261.84	5.94	0.00	88.41	150.86	5,427.44	5,646.68	5,640.93	5.74	982.930	
2,800.00	2,800.00	4,262.00	4,261.84	6.16	0.00	88.41	150.86	5,427.44	5,620.04	5,614.05	5.98	939.328	
2,900.00	2,900.00	4,262.00	4,261.84	6.39	0.00	88.41	150.86	5,427.44	5,595.05	5,588.83	6.22	899.155	
3,000.00	3,000.00	4,262.00	4,261.84	6.61	0.00	88.41	150.86	5,427.44	5,571.76	5,565.29	6.46	862.098	
3,100.00	3,100.00	4,262.00	4,261.84	6.84	0.00	88.41	150.86	5,427.44	5,550.16	5,543.46	6.70	827.881	
3,200.00	3,200.00	4,262.00	4,261.84	7.06	0.00	88.41	150.86	5,427.44	5,530.29	5,523.35	6.95	796.254	
3,300.00	3,300.00	4,262.00	4,261.84	7.28	0.00	88.41	150.86	5,427.44	5,512.16	5,504.98	7.19	766.997	
3,400.00	3,400.00	4,262.00	4,261.84	7.51	0.00	88.41	150.86	5,427.44	5,495.80	5,488.37	7.43	739.912	
3,500.00	3,500.00	4,262.00	4,261.84	7.73	0.00	88.41	150.86	5,427.44	5,481.21	5,473.54	7.67	714.820	
3,600.00	3,600.00	4,262.00	4,261.84	7.96	0.00	88.41	150.86	5,427.44	5,468.41	5,460.50	7.91	691.563	
3,700.00	3,700.00	4,262.00	4,261.84	8.18	0.00	88.41	150.86	5,427.44	5,457.41	5,449.26	8.15	669.996	
3,800.00	3,800.00	4,262.00	4,261.84	8.41	0.00	88.41	150.86	5,427.44	5,448.22	5,439.84	8.38	649.989	
3,900.00	3,900.00	4,262.00	4,261.84	8.63	0.00	88.41	150.86	5,427.44	5,440.86	5,432.24	8.62	631.426	
4,000.00	4,000.00	4,262.00	4,261.84	8.86	0.00	88.41	150.86	5,427.44	5,435.33	5,426.48	8.85	614.201	
4,100.00	4,100.00	4,262.00	4,261.84	9.08	0.00	88.41	150.86	5,427.44	5,431.63	5,422.55	9.08	598.216	
4,200.00	4,200.00	4,262.00	4,261.84	9.31	0.00	88.41	150.86	5,427.44	5,429.77	5,420.47	9.31	583.384	
4,250.84	4,250.84	4,262.00	4,261.84	9.42	0.00	88.41	150.86	5,427.44	5,429.54	5,420.11	9.42	576.260	
4,300.00	4,300.00	4,288.00	4,287.84	9.53	0.04	88.41	150.51	5,427.49	5,429.63	5,420.06	9.56	567.804	
4,400.00	4,400.00	4,319.00	4,318.83	9.76	0.10	88.42	150.10	5,427.83	5,430.69	5,420.84	9.85	551.127	
4,422.56	4,422.56	4,319.00	4,318.83	9.81	0.10	88.42	150.10	5,427.83	5,431.12	5,421.21	9.91	548.277	
4,450.00	4,449.99	4,319.00	4,318.83	9.87	0.10	6.04	150.10	5,427.83	5,431.05	5,421.08	9.97	544.933	
4,500.00	4,499.72	4,319.00	4,318.83	9.97	0.10	6.08	150.10	5,427.83	5,427.59	5,417.51	10.07	538.738	
4,550.00	4,548.73	4,319.00	4,318.83	10.08	0.10	6.17	150.10	5,427.83	5,419.84	5,409.65	10.19	531.986	
4,600.00	4,596.59	4,350.00	4,349.79	10.19	0.21	6.33	149.76	5,429.27	5,407.72	5,397.37	10.35	522.507	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #963H - OH - OH

Offset Site Error: 0.00 usft

Survey Program: 4288-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,650.00	4,642.84	4,350.00	4,349.79	10.32	0.21	6.55	149.76	5,429.27	5,391.31	5,380.86	10.45	515.763	
4,700.00	4,687.07	4,350.00	4,349.79	10.47	0.21	6.84	149.76	5,429.27	5,370.88	5,360.33	10.56	508.722	
4,750.00	4,728.86	4,350.00	4,349.79	10.65	0.21	7.21	149.76	5,429.27	5,346.57	5,335.91	10.66	501.451	
4,800.00	4,767.82	4,350.00	4,349.79	10.89	0.21	7.69	149.76	5,429.27	5,318.54	5,307.77	10.77	494.017	
4,850.00	4,803.61	4,350.00	4,349.79	11.20	0.21	8.32	149.76	5,429.27	5,286.99	5,276.13	10.87	486.487	
4,900.00	4,835.90	4,350.00	4,349.79	11.58	0.21	9.13	149.76	5,429.27	5,252.17	5,241.20	10.97	478.934	
4,950.00	4,864.37	4,350.00	4,349.79	12.06	0.21	10.20	149.76	5,429.27	5,214.32	5,203.26	11.06	471.427	
5,000.00	4,888.78	4,366.53	4,366.26	12.64	0.29	11.71	149.60	5,430.71	5,173.43	5,162.26	11.17	463.121	
5,050.00	4,908.89	4,382.00	4,381.62	13.32	0.36	13.87	149.47	5,432.54	5,130.53	5,119.25	11.28	454.919	
5,100.00	4,924.53	4,382.00	4,381.62	14.10	0.36	16.98	149.47	5,432.54	5,085.30	5,073.96	11.35	448.238	
5,150.00	4,935.55	4,382.00	4,381.62	14.97	0.36	21.97	149.47	5,432.54	5,038.38	5,026.97	11.40	441.807	
5,200.00	4,941.84	4,382.00	4,381.62	15.91	0.36	30.95	149.47	5,432.54	4,990.15	4,978.70	11.45	435.667	
5,250.17	4,943.35	4,382.00	4,381.62	16.90	0.36	49.75	149.47	5,432.54	4,940.87	4,929.37	11.50	429.818	
5,300.00	4,942.44	4,382.00	4,381.62	17.94	0.36	45.21	149.47	5,432.54	4,891.57	4,880.04	11.53	424.275	
5,400.00	4,940.63	4,382.00	4,381.62	20.16	0.36	33.52	149.47	5,432.54	4,792.43	4,780.84	11.59	413.557	
5,500.00	4,938.82	4,382.00	4,381.62	22.49	0.36	17.91	149.47	5,432.54	4,693.08	4,681.44	11.64	403.296	
5,600.00	4,937.00	4,382.00	4,381.62	24.90	0.36	-0.54	149.47	5,432.54	4,593.64	4,581.97	11.67	393.655	
5,655.34	4,936.00	4,382.00	4,381.62	26.27	0.36	-10.77	149.47	5,432.54	4,538.62	4,526.94	11.68	388.606	
5,700.00	4,935.19	4,382.00	4,381.62	27.38	0.36	-10.77	149.47	5,432.54	4,494.23	4,482.54	11.69	384.611	
5,800.00	4,933.38	4,382.00	4,381.62	29.89	0.36	-10.77	149.47	5,432.54	4,394.84	4,383.14	11.70	375.626	
5,900.00	4,931.57	4,382.00	4,381.62	32.45	0.36	-10.77	149.47	5,432.54	4,295.49	4,283.77	11.72	366.593	
6,000.00	4,929.76	4,382.00	4,381.62	35.04	0.36	-10.77	149.47	5,432.54	4,196.16	4,184.42	11.74	357.512	
6,100.00	4,927.95	4,382.00	4,381.62	37.65	0.36	-10.77	149.47	5,432.54	4,096.87	4,085.11	11.76	348.382	
6,200.00	4,926.14	4,382.00	4,381.62	40.28	0.36	-10.77	149.47	5,432.54	3,997.61	3,985.83	11.79	339.202	
6,300.00	4,924.33	4,382.00	4,381.62	42.93	0.36	-10.77	149.47	5,432.54	3,898.39	3,886.58	11.81	329.972	
6,318.22	4,924.00	4,382.00	4,381.62	43.42	0.36	-10.77	149.47	5,432.54	3,880.32	3,868.50	11.82	328.285	
6,360.25	4,923.47	4,382.00	4,381.62	44.53	0.36	-9.93	149.47	5,432.54	3,838.66	3,826.83	11.83	324.381	
6,400.00	4,923.19	4,382.00	4,381.62	45.59	0.36	-9.93	149.47	5,432.54	3,799.30	3,787.46	11.85	320.668	
6,500.00	4,922.48	4,382.00	4,381.62	48.27	0.36	-9.93	149.47	5,432.54	3,700.32	3,688.43	11.89	311.259	
6,600.00	4,921.77	4,382.00	4,381.62	50.95	0.36	-9.93	149.47	5,432.54	3,601.40	3,589.46	11.93	301.791	
6,700.00	4,921.06	4,382.00	4,381.62	53.64	0.36	-9.93	149.47	5,432.54	3,502.53	3,490.55	11.98	292.262	
6,800.00	4,920.35	4,382.00	4,381.62	56.34	0.36	-9.93	149.47	5,432.54	3,403.74	3,391.70	12.04	282.671	
6,900.00	4,919.64	4,382.00	4,381.62	59.04	0.36	-9.93	149.47	5,432.54	3,305.01	3,292.91	12.11	273.017	
7,000.00	4,918.94	4,397.36	4,396.80	61.75	0.45	-10.21	149.40	5,434.85	3,206.08	3,193.90	12.17	263.336	
7,100.00	4,918.23	4,399.43	4,398.85	64.46	0.46	-10.25	149.40	5,435.19	3,107.43	3,095.18	12.25	253.673	
7,200.00	4,917.52	4,413.00	4,412.18	67.18	0.53	-10.53	149.42	5,437.71	3,009.03	2,996.69	12.33	243.967	
7,300.00	4,916.81	4,413.00	4,412.18	69.90	0.53	-10.53	149.42	5,437.71	2,910.49	2,898.06	12.42	234.297	
7,400.00	4,916.10	4,413.00	4,412.18	72.62	0.53	-10.53	149.42	5,437.71	2,812.05	2,799.53	12.52	224.558	
7,500.00	4,915.39	4,413.00	4,412.18	75.35	0.53	-10.53	149.42	5,437.71	2,713.72	2,701.09	12.64	214.753	
7,600.00	4,914.68	4,413.00	4,412.18	78.08	0.53	-10.53	149.42	5,437.71	2,615.53	2,602.76	12.77	204.881	
7,700.00	4,913.97	4,413.00	4,412.18	80.81	0.53	-10.53	149.42	5,437.71	2,517.48	2,504.56	12.91	194.945	
7,800.00	4,913.26	4,413.00	4,412.18	83.54	0.53	-10.53	149.42	5,437.71	2,419.58	2,406.50	13.08	184.950	
7,900.00	4,912.55	4,413.00	4,412.18	86.28	0.53	-10.53	149.42	5,437.71	2,321.87	2,308.59	13.28	174.901	
8,000.00	4,911.84	4,425.85	4,424.73	89.01	0.60	-10.81	149.53	5,440.42	2,224.15	2,210.70	13.46	165.266	
8,100.00	4,911.13	4,430.04	4,428.82	91.75	0.63	-10.91	149.58	5,441.38	2,126.72	2,113.03	13.69	155.382	
8,200.00	4,910.42	4,444.00	4,442.35	94.49	0.70	-11.25	149.84	5,444.79	2,029.60	2,015.69	13.91	145.898	
8,300.00	4,909.71	4,444.00	4,442.35	97.23	0.70	-11.25	149.84	5,444.79	1,932.51	1,918.29	14.22	135.928	
8,400.00	4,909.00	4,444.00	4,442.35	99.97	0.70	-11.25	149.84	5,444.79	1,835.73	1,821.15	14.57	125.960	
8,500.00	4,908.29	4,444.00	4,442.35	102.71	0.70	-11.25	149.84	5,444.79	1,739.31	1,724.32	14.99	116.023	
8,541.87	4,908.00	4,444.00	4,442.35	103.86	0.70	-11.25	149.84	5,444.79	1,699.06	1,683.88	15.19	111.879	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Eddy County Offset Wells - Burch Keely Unit #963H - OH - OH

Offset Site Error: 0.00 usft

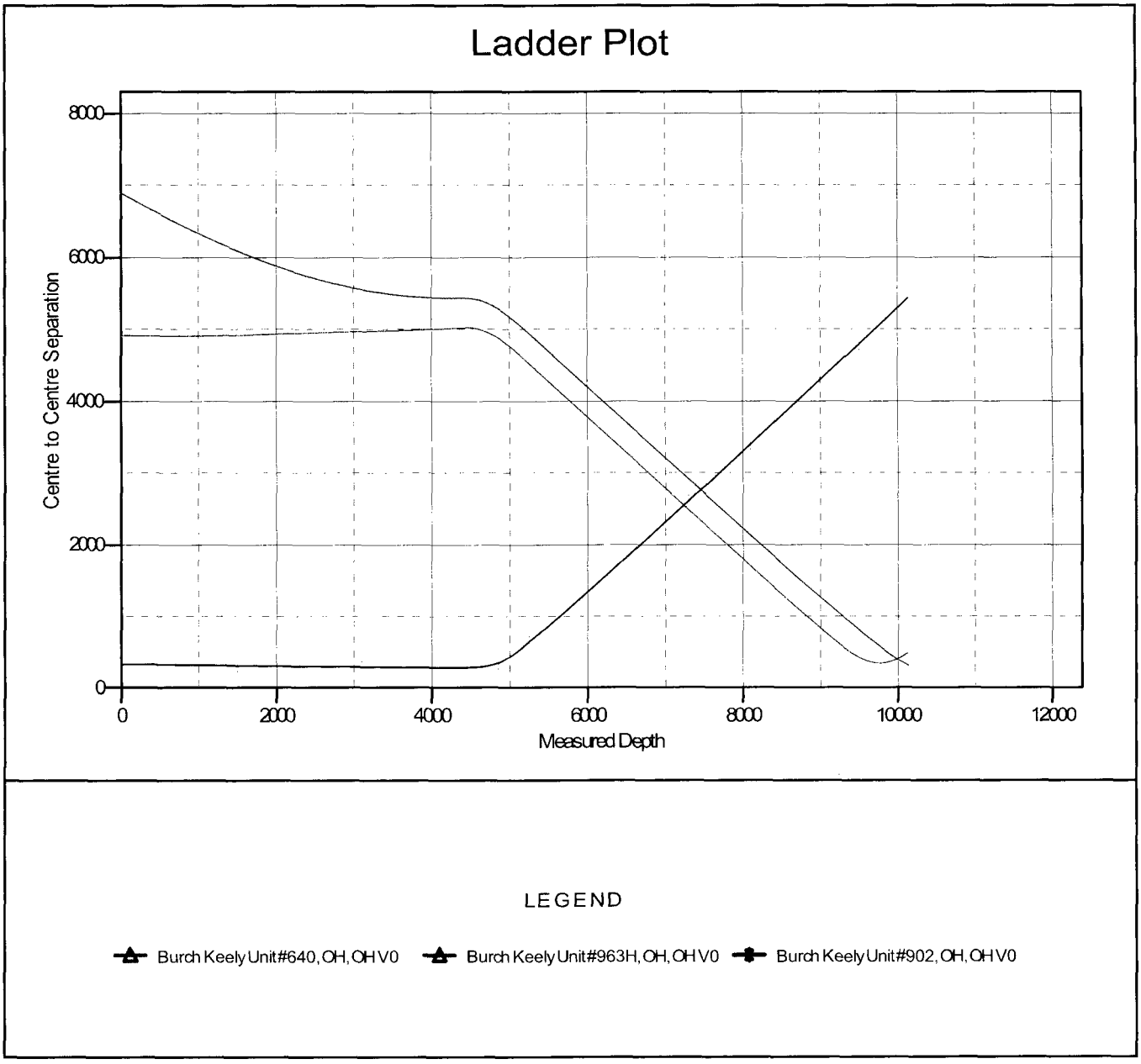
Survey Program: 4288-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,550.75	4,907.92	4,444.00	4,442.35	104.10	0.70	-11.34	149.84	5,444.79	1,690.54	1,675.31	15.23	111.002	
8,600.00	4,907.46	4,456.66	4,454.54	105.46	0.77	-11.69	150.17	5,448.20	1,643.09	1,627.69	15.39	106.738	
8,700.00	4,906.52	4,475.00	4,472.03	108.20	0.86	-12.24	150.83	5,453.67	1,547.43	1,531.61	15.82	97.837	
8,800.00	4,905.58	4,475.00	4,472.03	110.94	0.86	-12.24	150.83	5,453.67	1,451.87	1,435.42	16.44	88.287	
8,900.00	4,904.63	4,475.00	4,472.03	113.69	0.86	-12.24	150.83	5,453.67	1,356.94	1,339.75	17.20	78.912	
9,000.00	4,903.69	4,487.44	4,483.78	116.44	0.93	-12.64	151.36	5,457.74	1,262.58	1,244.62	17.97	70.278	
9,100.00	4,902.75	4,506.00	4,501.09	119.18	1.03	-13.29	152.19	5,464.36	1,169.05	1,150.23	18.81	62.147	
9,200.00	4,901.81	4,506.00	4,501.09	121.93	1.03	-13.29	152.19	5,464.36	1,076.09	1,056.03	20.06	53.646	
9,300.00	4,900.87	4,520.47	4,514.41	124.68	1.10	-13.83	152.83	5,469.98	984.20	962.82	21.38	46.032	
9,400.00	4,899.92	4,539.00	4,531.22	127.43	1.20	-14.55	153.60	5,477.73	893.50	870.57	22.93	38.966	
9,500.00	4,898.98	4,551.83	4,542.70	130.18	1.27	-15.07	154.06	5,483.45	804.14	779.18	24.96	32.220	
9,600.00	4,898.04	4,570.00	4,558.72	132.93	1.40	-15.82	154.52	5,492.01	716.46	689.08	27.38	26.166	
9,700.00	4,897.10	4,602.00	4,586.32	135.68	1.73	-17.16	154.58	5,508.19	630.65	600.58	30.07	20.971	
9,800.00	4,896.16	4,633.00	4,612.20	138.43	2.10	-18.49	153.83	5,525.24	547.21	513.71	33.50	16.335	
9,900.00	4,895.21	4,654.57	4,629.56	141.18	2.38	-19.47	153.10	5,538.01	466.77	428.39	38.39	12.160	
10,000.00	4,894.27	4,687.93	4,655.23	143.93	2.84	-21.15	152.01	5,559.27	390.73	346.26	44.47	8.786	
10,100.00	4,893.33	4,726.00	4,682.68	146.68	3.44	-23.41	151.19	5,585.63	320.43	267.65	52.78	6.071	
10,135.14	4,893.00	4,743.84	4,694.86	147.65	3.75	-24.62	151.01	5,598.67	297.39	241.08	56.31	5.282	CC, ES, SF

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

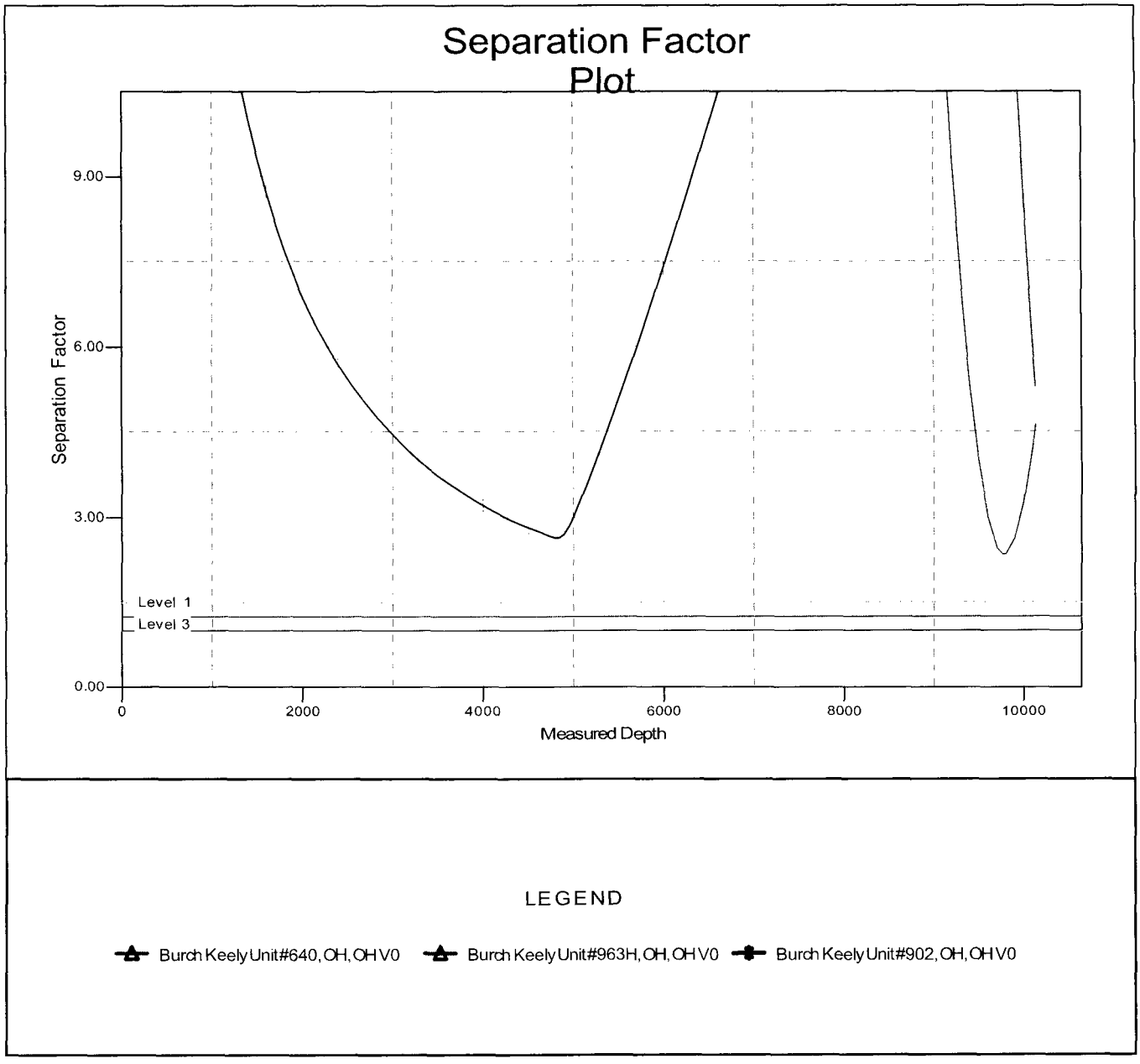
Reference Depths are relative to KB @ 3620.00usft (Silver Oak 3)	Coordinates are relative to: Burch Keely Unit #955H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.16°



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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Site Burch Keely Unit #955H
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Reference Site:	Burch Keely Unit #955H	**MD Reference:**	KB @ 3620.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 1035' FNL, 222' FWL, Sec 24, T17S, R29E, Unit D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 350' FWL, Sec 19, T17S, R30E, Unit D	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3620.00usft (Silver Oak 3)	Coordinates are relative to: Burch Keely Unit #955H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.16°



Well: BKU 955H

Hole Volumes						
Hole	**Hole Section (Length)**	**Casing**	**Capacity (ft3/Lin.ft)**	**Cu.Ft**	**Total Cu.Ft**	**% Excess**
Prod	0-1060 (1060)	7"	0.1585	168.01	168.01	0
Prod	1060-4229 (3169)	7"	0.1503	476.3	1557.1	107.4
Prod	4229-5157 (928)	5.5"	0.2526	234.4		107.4
Prod	5157-10041 (4884)	5.5"	0.1733	846.4		107.4

Cement Volumes					
Blend	**Cement Sacks**	**Yield**	**Weight**	**Volume**	**Total Volume**
35:65:6	500	2.01	12.5	1206	3398
50:50:02	1600	1.37	14	2192	

% Excess Calculation			
Total Volume	3398		3229.99
Cu.Ft	-168.01		/1557.1
	3229.99		**107%excess**

APD ID: 10400002596 **Submission Date:** 01/31/2017

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Burch Keely Unit 955H Vicinity Plat_02-28-2017.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? YES

New Road Map:

Burch Keely Unit 955H New Road Plat_01-31-2017.pdf

New road type: RESOURCE

Length: 87.5 Feet **Width (ft.):** 20

Max slope (%): 3 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 16

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
New road access plan or profile prepared? YES

New road access plan attachment:

Burch Keely Unit 955H_New Access Road Plan_01-31-2017.pdf

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: BOTH

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description: Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. Secondary candidate source will be NMSLO Caliche Pit located in S2/SW4 of Sec 32, T16S, R30E. A third candidate source will be Caswell Ranch owned Caliche Pit located in NESE of Sec 9, T17S, R32E.
Onsite topsoil removal process: See attached New Access Road Plan

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: N/A

Road Drainage Control Structures (DCS) description: *Water will be diverted where necessary to avoid ponding, prevent* erosion, maintain good drainage, and to be consistent with local drainage patterns.
Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Burch Keely Unit 955H_1mileRadius Map_01-17-2017.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: If the well is productive, contemplated facilities will be as follows: Two (2) proposed flowlines, will follow an archaeologically approved route to the BKU 13-C Federal Tank Battery located in Section 13 at the existing BKU #392 well site at 660' FSL 830' FEL in T17S R29E. The flowlines will be SDR 7 3" poly line laid on the surface and will be approximately 5369 feet in length. Normal working pressure of the flowlines will be below 70 psi and carry a mixture of produced oil, water, and gas. Flowlines will follow existing well-traveled or proposed roads. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Section 5 - Location and Types of Water Supply

Water Source Table

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

Water source type: GW WELL

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: COMMERCIAL

Water source transport method: PIPELINE,TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 8000

Source volume (acre-feet): 1.0311447

Source volume (gal): 336000

Water source and transportation map:

Loco Hills Water Disposal Co Water Supply_01-31-2017.pdf

Caswell Ranch_Water Supply_01-31-2017.pdf

Water source comments: The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. Water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Vicinity Map. A fresh water source is nearby and fast line may be laid along existing road ROW's and fresh water pumped to the well. Water will originate from private wells location described on the attached "Loco Hills Water Disposal Co" map attached to this APD. James R. Maloney, 575-677-2118. A secondary water source will be from 1 and/or all of the 3 private wells location depicted on the attached "Caswell Ranch Water Supply" Map. No water well will be drilled on the location.

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: Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. Secondary candidate source will be NMSLO Caliche Pit located in S2/SW4 of Sec 32, T16S, R30E. A third candidate source will be Caswell Ranch owned Caliche Pit located in NESE of Sec 9, T17S, R32E.
Construction Materials source location attachment:

Construction Turn-Over Procedure_01-31-2017.pdf

NMSLO Caliche Pit_01-31-2017.pdf

Caswell Ranch Caliche Pit_01-31-2017.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS AND DRILLING FLUIDS

Amount of waste: 100 barrels

Waste disposal frequency : Daily

Safe containment description: CLOSED LOOP SYSTEM

Safe containmant attachment:

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

Disposal location description: R360'S DISPOSAL SITE LOCATED AT 4507 WEST CARLSBAD HIGHWAY, HOBBS, NM 88240.

Waste type: PRODUCED WATER

Waste content description: PRODUCED WATER

Amount of waste: 100 barrels

Waste disposal frequency : Daily

Safe containment description: STEEL TANKS

Safe containmant attachment:

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

Disposal location description: NMOCD APPROVED COMMERCIAL DISPOSAL FACILITY. R360'S DISPOSAL SITE LOCATED AT 4507 WEST CARLSBAD HIGHWAY, HOBBS, NM 88240.

Waste type: GARBAGE

Waste content description: GARBAGE AND TRASH PRODUCED DURING DRILLING AND COMPLETION OPERATIONS.
Amount of waste: 100 pounds

Waste disposal frequency : Weekly

Safe containment description: TRASH BIN

Safe containmant attachment:

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

Disposal location description: GARBAGE AND TRASH TO BE COLLECTED IN TRASH BIN AND HAULED TO LEA LANDFILL LLC. LOCATED AT MILE MARKER 64, HIGHWAY 62-180 EAST, PO BOX 3247, CARLSBAD, NM 88221. NO TOXIC WASTE OR HAZARDOUS CHEMICALS WILL BE PRODUCED BY THIS OPERATION.

Waste type: SEWAGE

Waste content description: HUMAN WASTE AND GREY WATER.

Amount of waste: 100 gallons

Waste disposal frequency : Weekly

Safe containment description: PORTABLE SEPTIC SYSTEM AND/OR PORTABLE WASTE GATHERING SYSTEM.

Safe containmant attachment:

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

Disposal location description: HAULED TO NMOCD APPROVED WASTE DISPOSAL FACILTY.

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

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location CLOSED LOOP MUD SYSTEM: ROLL-OFF STYLE MUD BOX.

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Burch Keely Unit 955H Well Site Plat_01-17-2017.pdf

Burch Keely Unit 955H Interim Reclamation Plat_01-17-2017.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: NEW

Recontouring attachment:

Drainage/Erosion control construction: NO SEDIMENTATION OR EROSION CONTROL WILL BE NECESSARY ON THIS LOCATION AS IT IS GENERALLY FLAT WITH LITTLE TO NO SLOPE OR CUT AND FILL.

Drainage/Erosion control reclamation: NO SEDIMENTATION OR EROSION CONTROL WILL BE NECESSARY ON THIS LOCATION AS IT IS GENERALLY FLAT WITH LITTLE TO NO SLOPE OR CUT AND FILL.

Wellpad long term disturbance (acres): 1.49 **Wellpad short term disturbance (acres):** 2.41

Access road long term disturbance (acres): 0.04 **Access road short term disturbance (acres):** 0.04

Pipeline long term disturbance (acres): 0.122022726 **Pipeline short term disturbance (acres):** 0.122022726

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

Total long term disturbance: 1.6520227 **Total short term disturbance:** 2.5720227

Reconstruction method: AFTER WELL IS COMPLETED, THE PAD WILL BE DOWNSIZED BY RECLAIMING THE AREAS NOT NEEDED FOR PRODUCTION OPERATIONS. THE PORTIONS OF THE PAD THAT ARE NOT NEEDED FOR PRODUCTION OPERATIONS WILL BE RE-CONTOURED TO ITS ORIGINAL STATE AS MUSH AS POSSIBLE. THE CALICHE THAT IS REMOVED WILL BE REUSED TO EITHER BUILD ANOTHER PAD SITE OR FOR ROAD REPAIRS WITHIN THE LEASE.
Topsoil redistribution: THE STOCKPILED TOPSOIL WILL BE SPREAD OUT ON RECLAIMED AREA AND RESEEDED WITH A BLM APPROVED SEED MIXTURE.
Soil treatment: INTERIM RECLAMATION AS IDENTIFIED DURING ONSITE.

Existing Vegetation at the well pad: GRASSLAND AREA WITH SANDY TOPSOIL. VEGETATION IS MODERATELY SPARSE WITH NATIVE PRAIRIE GRASSES, SOME MESQUITE AND SHINNERY OAK.
Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: GRASSLAND AREA WITH SANDY TOPSOIL. VEGETATION IS MODERATELY SPARSE WITH NATIVE PRAIRIE GRASSES, SOME MESQUITE AND SHINNERY OAK.
Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: GRASSLAND AREA WITH SANDY TOPSOIL. VEGETATION IS MODERATELY SPARSE WITH NATIVE PRAIRIE GRASSES, SOME MESQUITE AND SHINNERY OAK.
Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: GRASSLAND AREA WITH SANDY TOPSOIL. VEGETATION IS MODERATELY SPARSE WITH NATIVE PRAIRIE GRASSES, SOME MESQUITE AND SHINNERY OAK.
Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: **Seed source:**

Seed name:

Source name: **Source address:**

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: **Proposed seeding season:**

Seed Summary

Total pounds/Acre:

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

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:

Weed treatment plan description: APPROVED EPA AND BLM REQUIREMENTS AND POLICIES FOR WEED CONTROL METHODS WILL BE FOLLOWED.
Weed treatment plan attachment:

Monitoring plan description: EVALUATION OF GROWTH WILL BE MADE AFTER THE COMPLETION OF ONE FULL GROWING SEASON AFTER SEEDING. -OR- BLM REPRESENTATIVE WILL BE CONTACTED PRIOR TO COMMENCING CONSTRUCTION OF WELL PAD AND ROAD. BLM REPERSENTATIVE WILL ALSO BE CONTACTED PRIOR TO COMMENCING RECLAMATION WORK.
Monitoring plan attachment:

Success standards: 80% COVERAGE BY 2ND GROWING SEASON OF NATIVE SPECIES WITH LESS THAN 5% INVASIVE SPECIES.
Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: EXISTING ACCESS ROAD

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:

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

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:**

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: 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:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

Operator Name: COG OPERATING LLC

Well Name: BURCH KEELY UNIT **Well Number:** 955H

ROW Applications

SUPO Additional Information: 1. It will be necessary to run electric power if this well is productive. Power will be provided by CVE. There will be no necessary electric line construction for this well. CVE operates an existing primary line parallel to the well pad; therefor no poles will be set off the well pad disturbance. There is no permanent or live water in the immediate area. 2. There are no dwellings within 2 miles of this location. 3. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of New Mexico, LLC. Carlsbad, NM, 88220. 506 E Chapman Rd., phone # 575.887.7667 and the results will be forwarded to your office in the near future. Otherwise, COG will be participating in the Permian Basin MOA Program.

Use a previously conducted onsite? YES

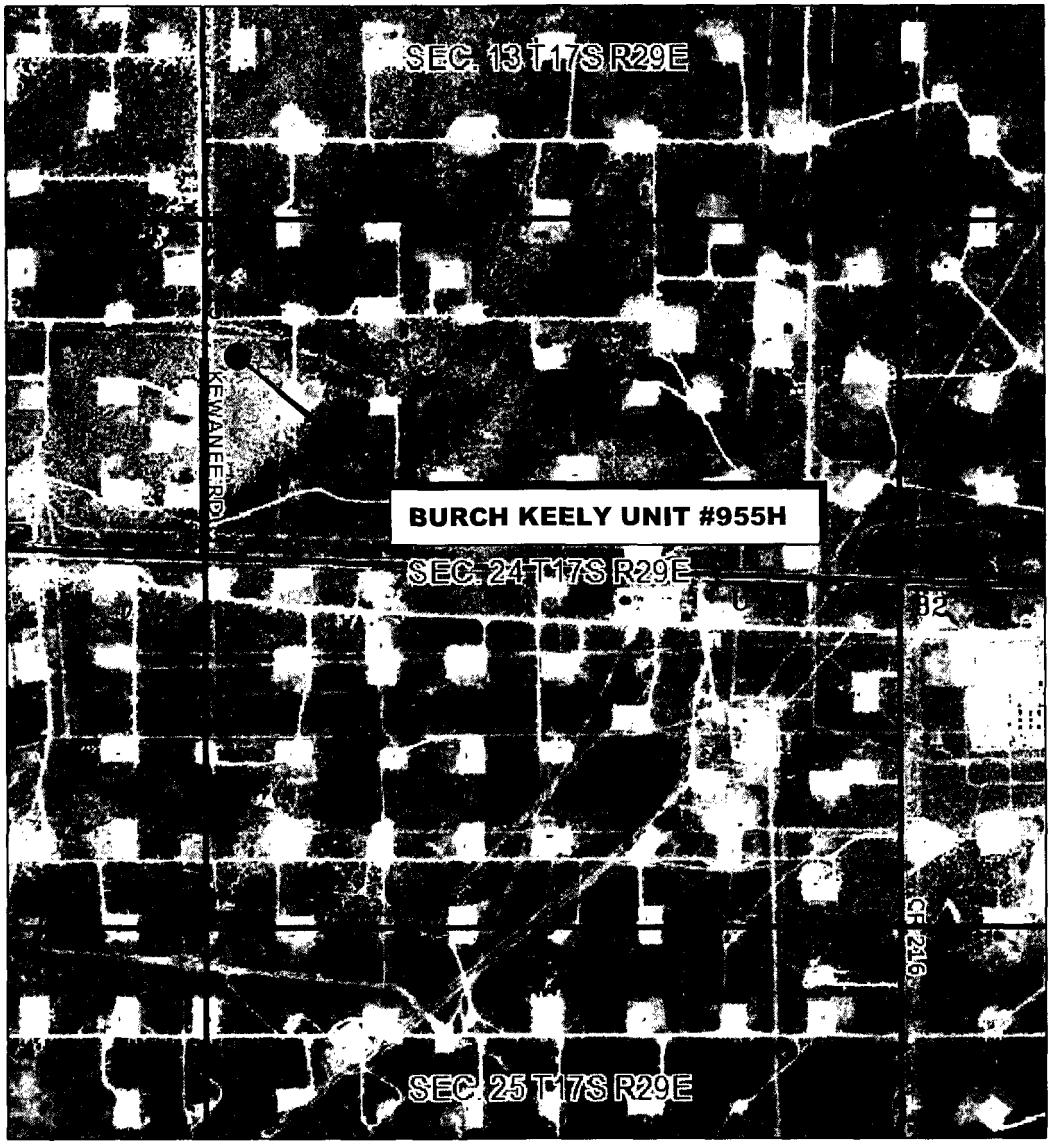
Previous Onsite information: Onsite performed on 04/25/2013 by Tanner Nygren (BLM), Caden Jameson (COG), Gary Box (P.C.)

Other SUPO Attachment

Burch Keely Unit 955H_Flowline Map_01-31-2017.pdf

VICINITY MAP

NOT TO SCALE



SECTION 24, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Burch Keely Unit
WELL NO.: 955H

LOCATION: 1035' FNL & 222' FWL
ELEVATION: 3602'

NO.	REVISION	DATE

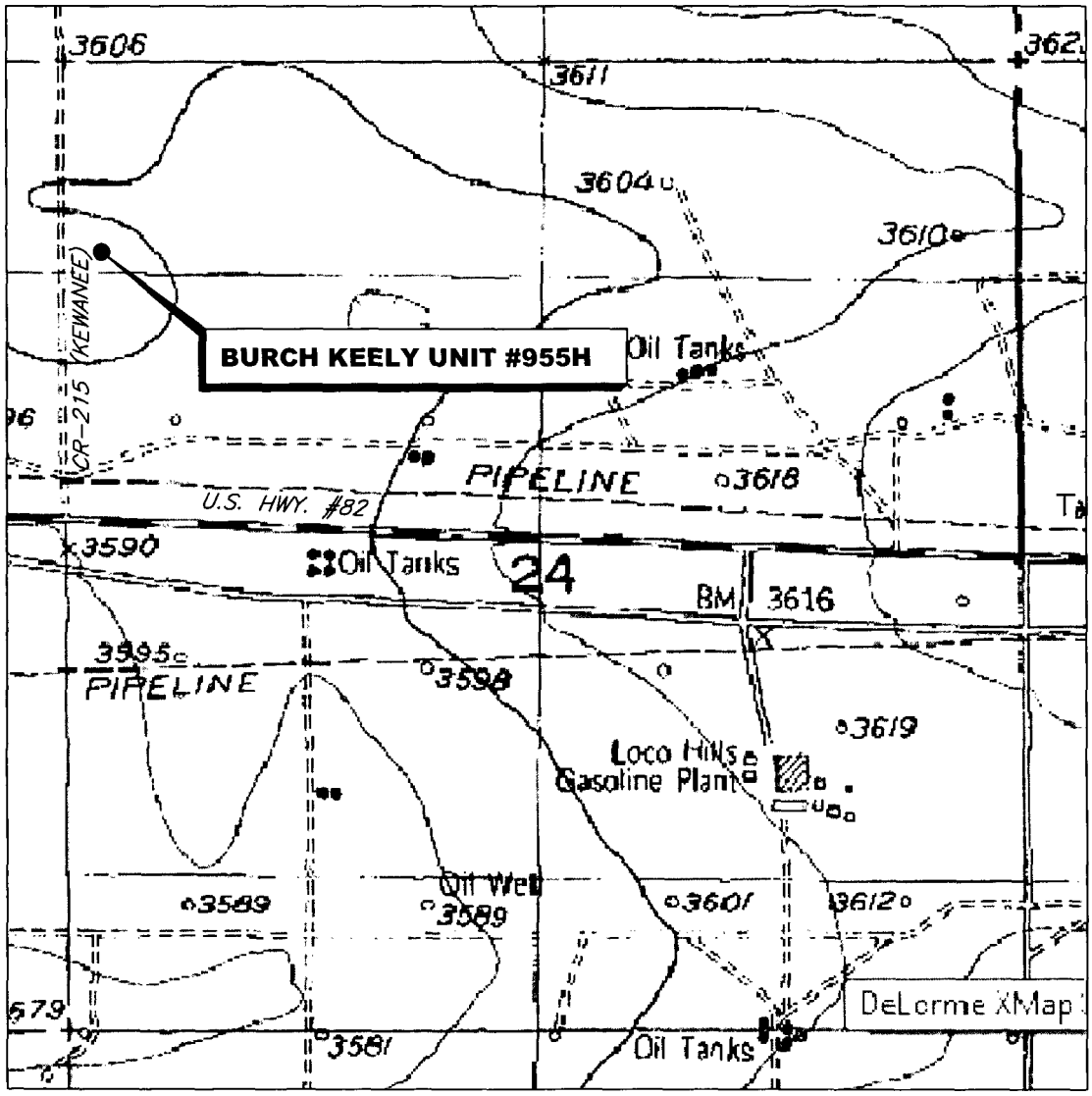
JOB NO.: LS130150
DWG. NO.: 130150VM

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 1000'
DATE: 5/7/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 24, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Burch Keely Unit
WELL NO.: 955H
ELEVATION: 3602'

LOCATION: 1035' FNL & 222' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Loco Hills, NM (P. E. 1985)

NO.	REVISION	DATE

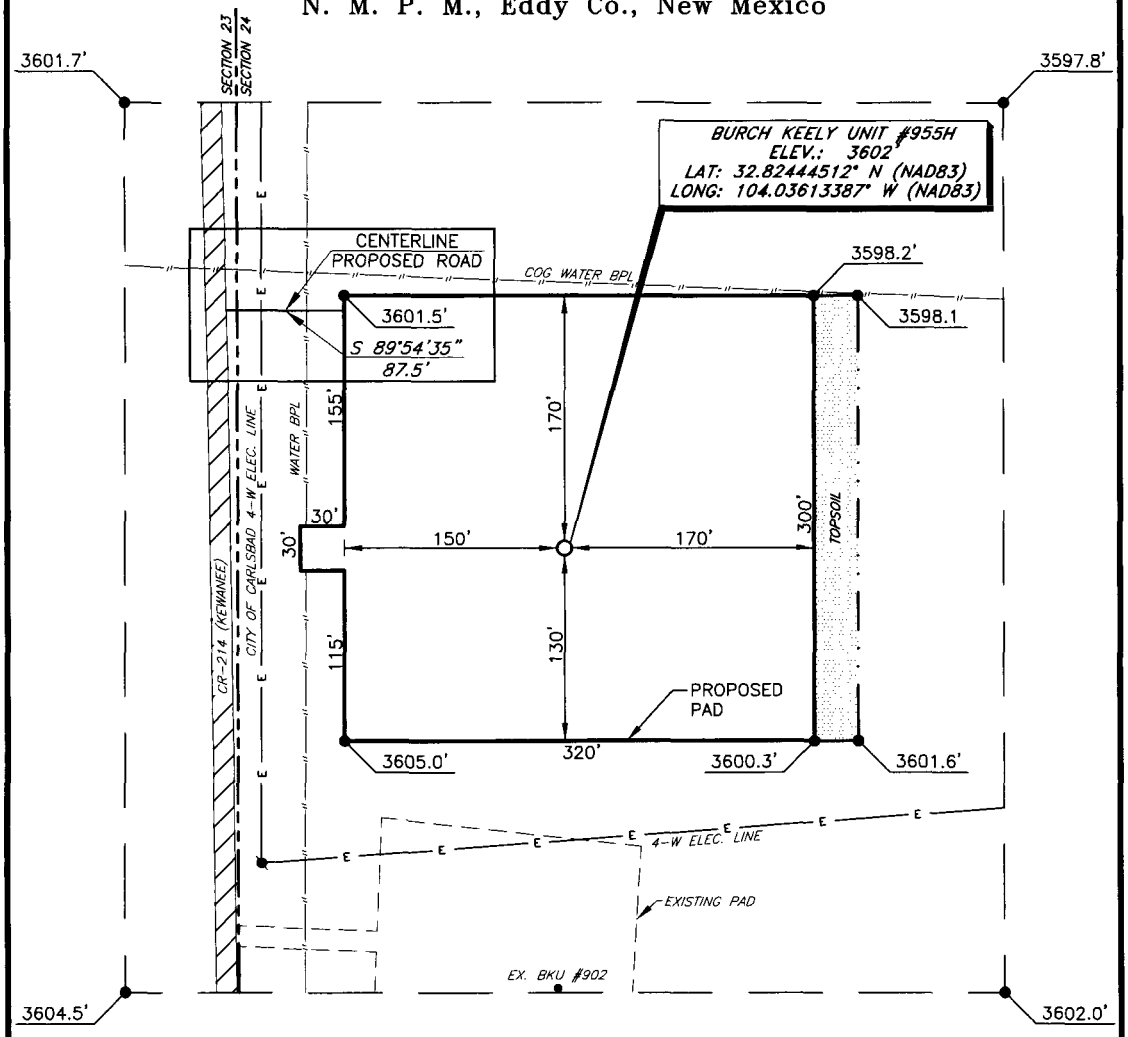
JOB NO.: LS130150
DWG. NO.: 130150LVM

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664
o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 1000'
DATE: 5/7/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

COG OPERATING, LLC
Burch Keely Unit #955H
(1035' FNL & 222' FWL)
Section 24, T-17-S, R-29-E,
N. M. P. M., Eddy Co., New Mexico



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-215 (Kewanee):

Go North on CR-215 approx. 0.3 mile.

The location is approx. 235 feet East of CR-215.

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY. BOUNDARY DATA IS SHOWN FROM A PREVIOUS SURVEY REFERENCED HEREON.

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

ROBERT M. HOWETT
NEW MEXICO
19680
7/08/16
PROFESSIONAL SURVEYOR

SCALE: 1" = 100'
0 50 100
BEARINGS ARE NAD 27 - NM EAST DISTANCES ARE GROUND.

NO.	REVISION	DATE

JOB NO.: LS130150
DWG. NO.: 130150PAD

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2067 f (512) 251-2518

SCALE: 1" = 100'
DATE: 5/7/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

NEW ACCESS ROAD PLAN

1. Proposed Access Road:

The Access Road Plat shows the footage of new access road will be required for this location. The new access road will be constructed as follows:

A. The maximum width of the running surface will be 20'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

B. The average grade will be less than 1%.

C. No turnouts are planned.

D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.

E. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. Secondary and Tertiary candidate sources are identified the "Offsite topsoil source description" in Section 2 of the SUPO.

2. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

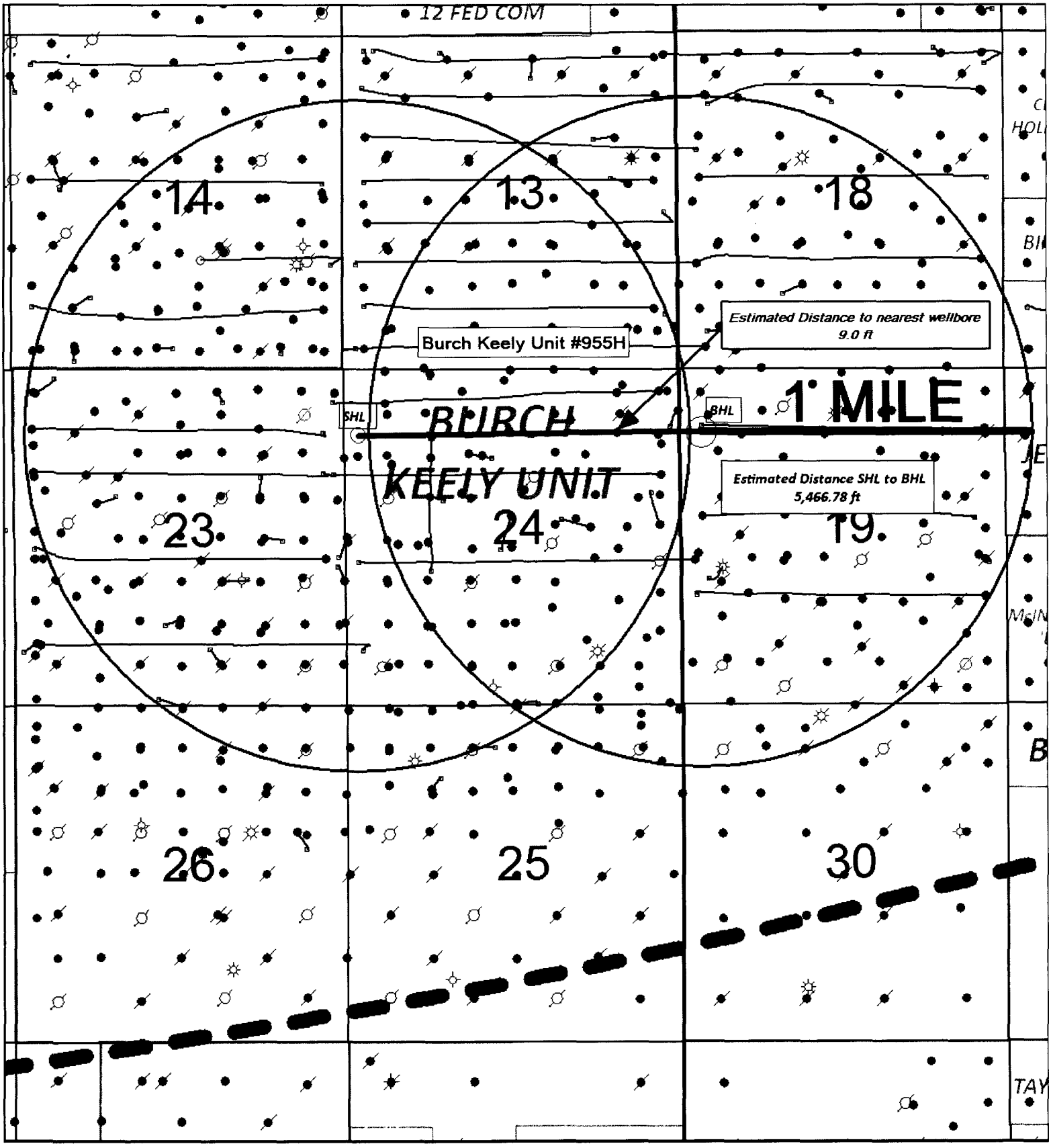
B. An approximate 120' X 120' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and piled alongside the 120' by 120' area within the pad site.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.



SENM Shelf Area
Eddy County, New Mexico

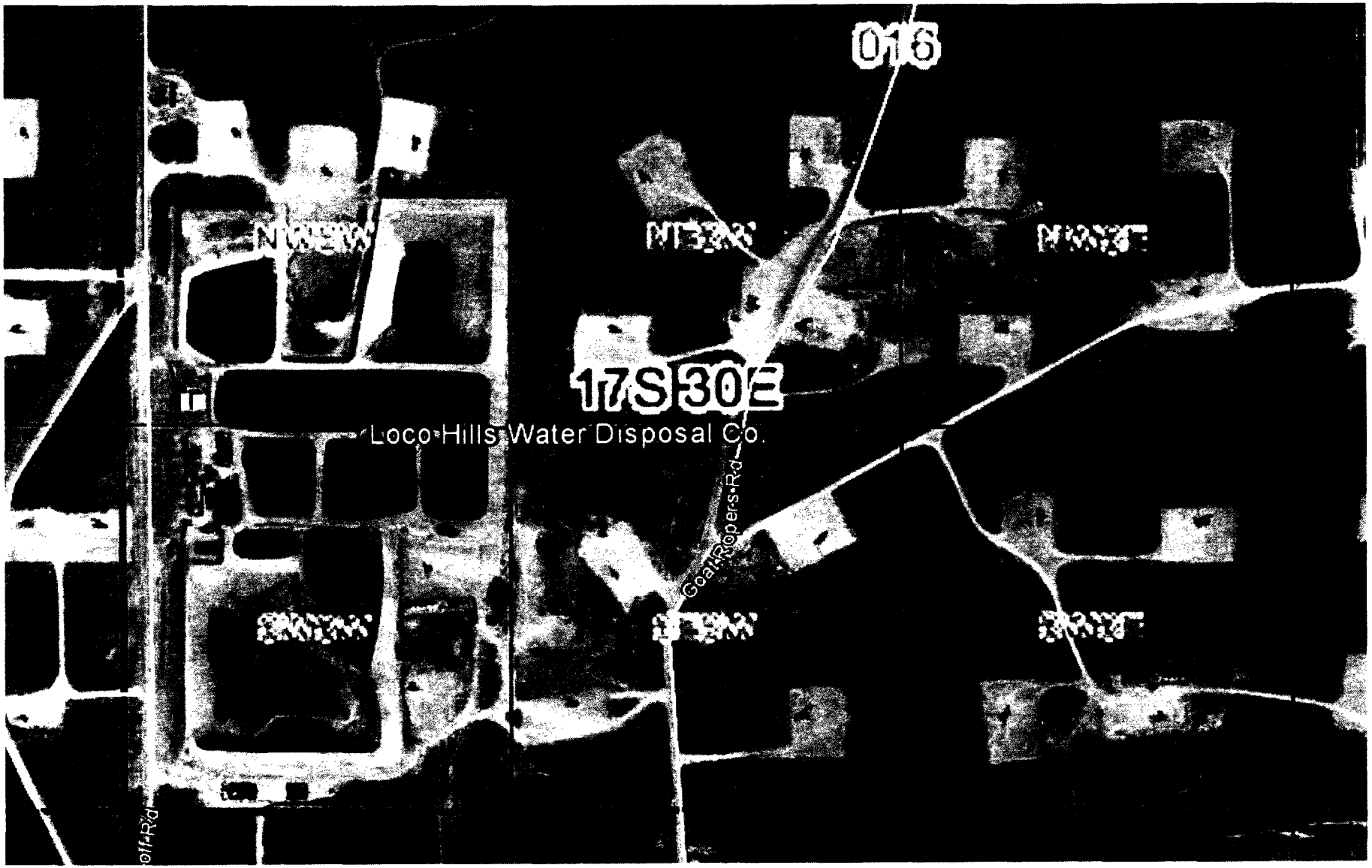
Burch Keely Unit #955H

SHL: 1035' FNL 222' FWL, SEC. 24 T17S-R29E, UNIT D
BHL: 990' FNL 350' FWL, SEC. 19 T17S-R30E, UNIT D

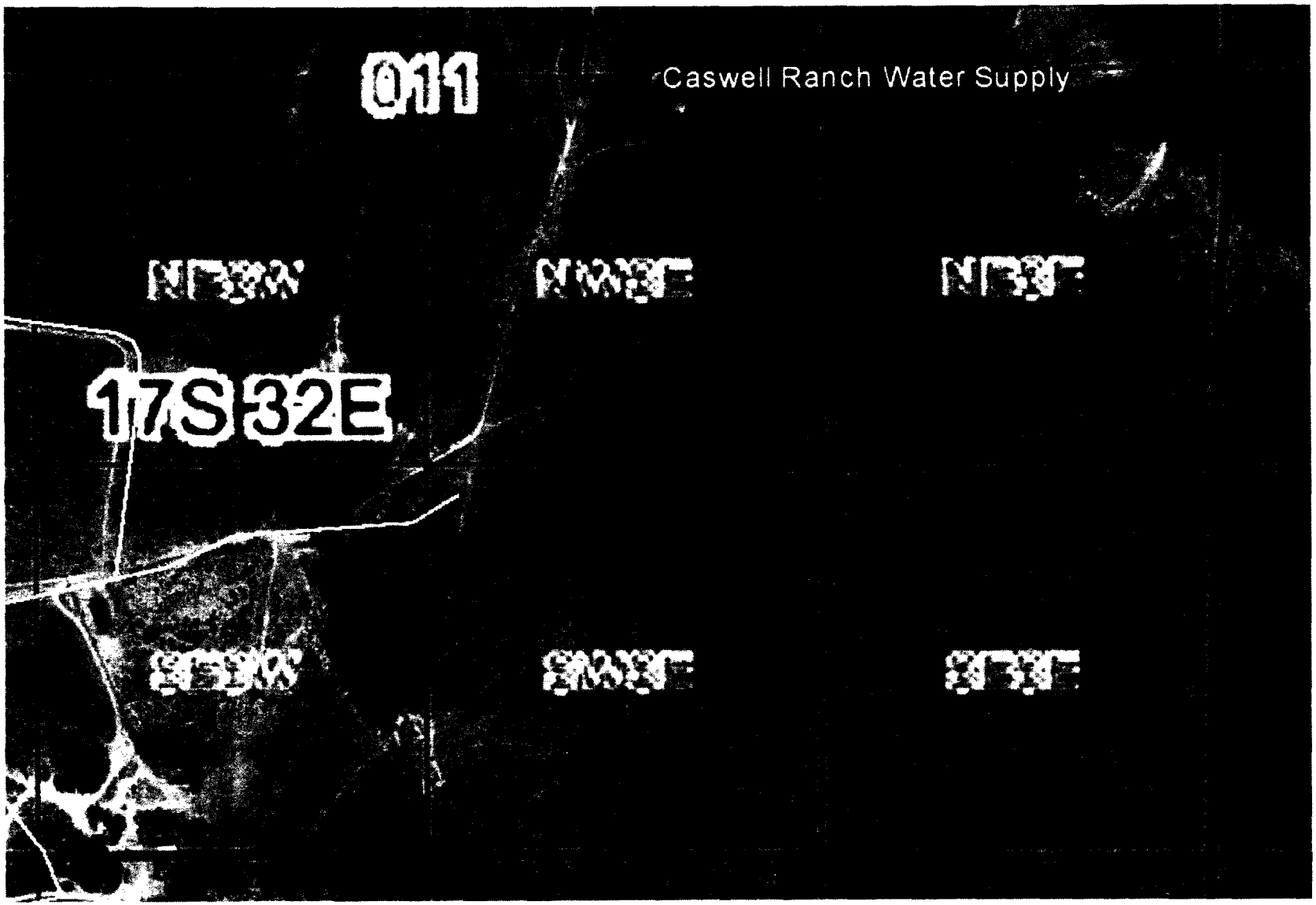
Author: VG	Wells: All Wells Scale: 1:2000	Date: 12.13.16

AOI: VG_SHELF
File Path: VG_1MileRadius\Well_Map.gmp

Loco Hills Water Disposal Co. Water Well Map



Caswell Ranch Water Supply Map



WELL SITE AND ROAD CONSTRUCTION

1. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 120' X 120' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and piled alongside the 120' by 120' area within the pad site.

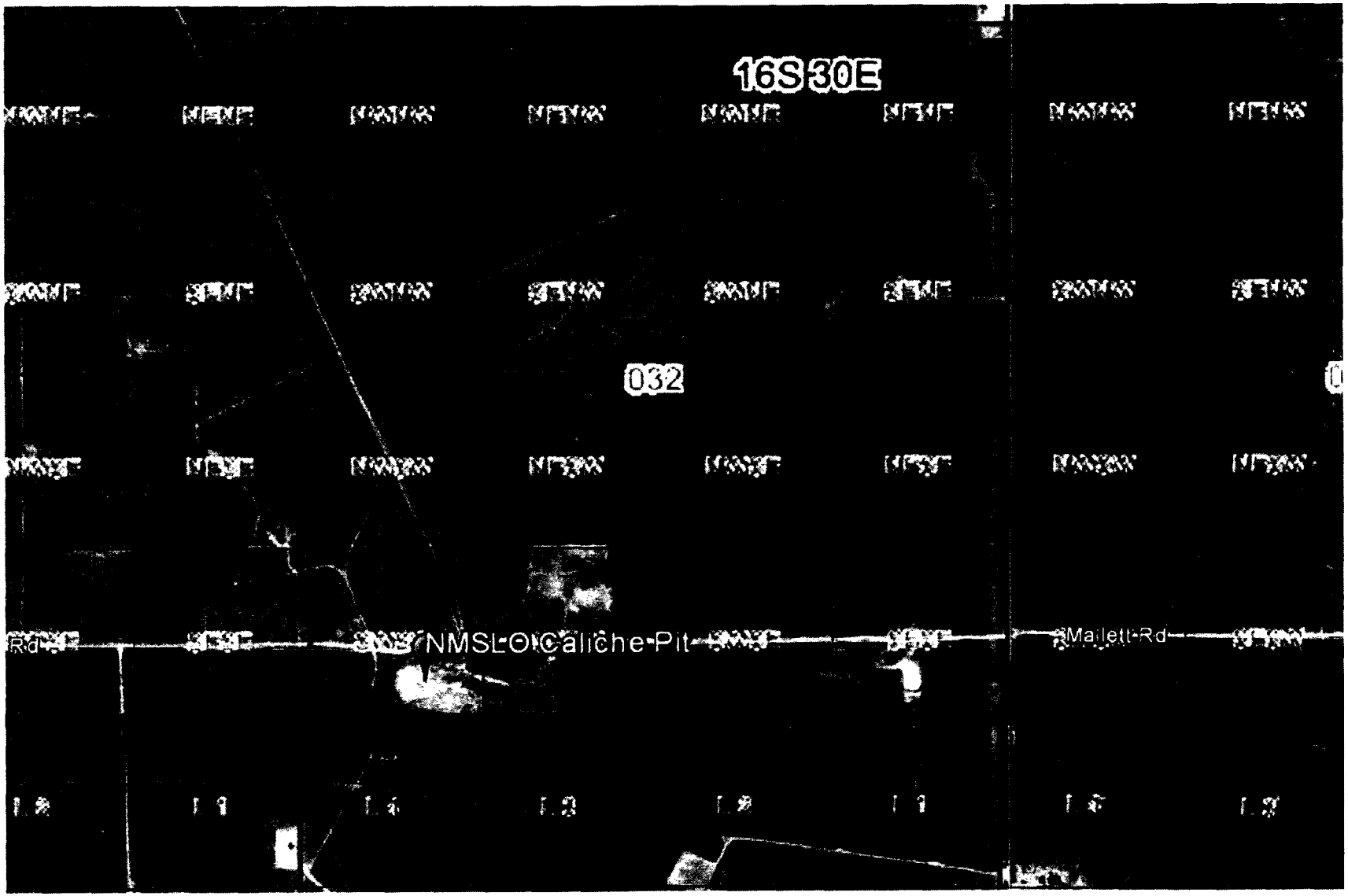
D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

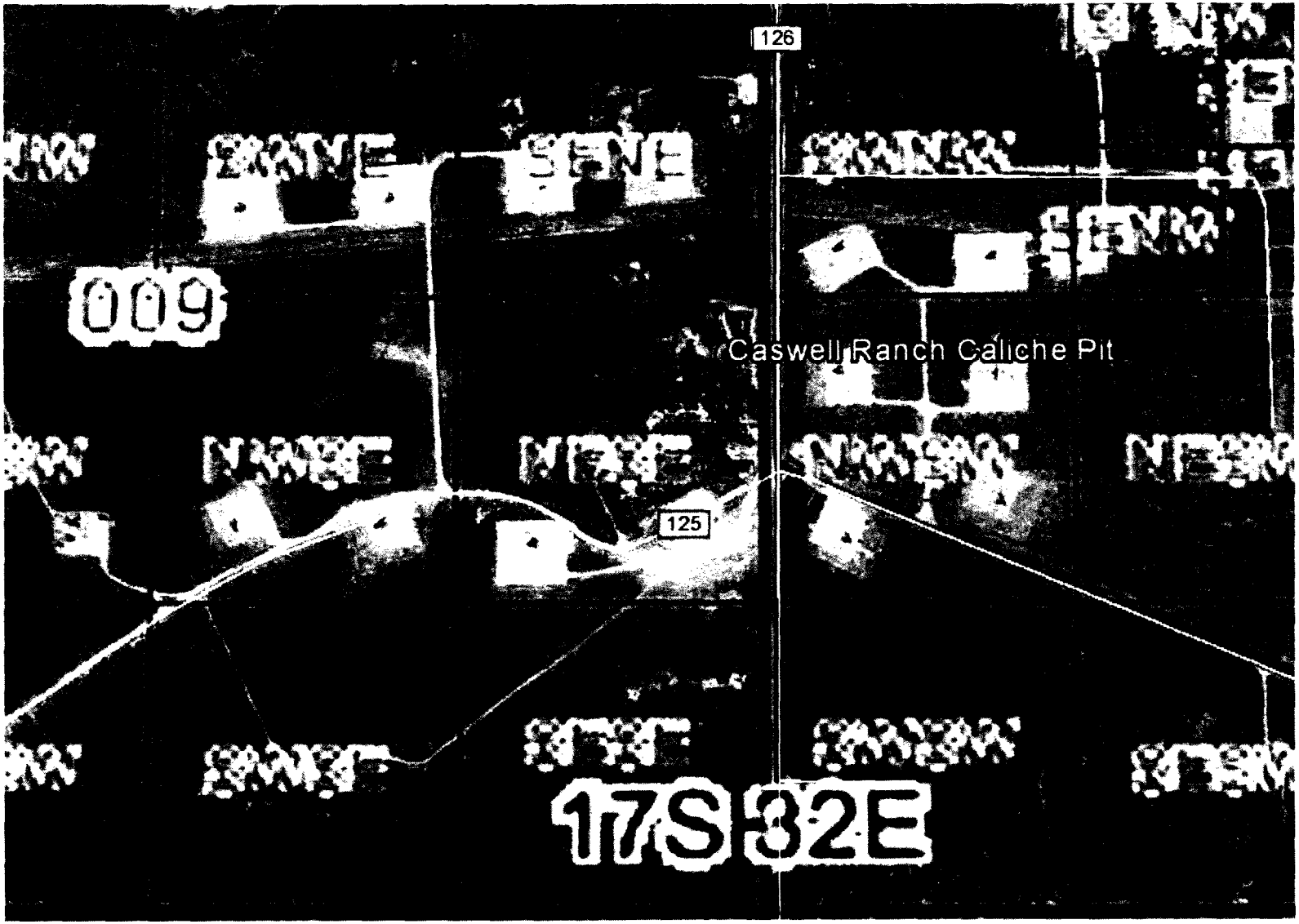
F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.

- In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit.

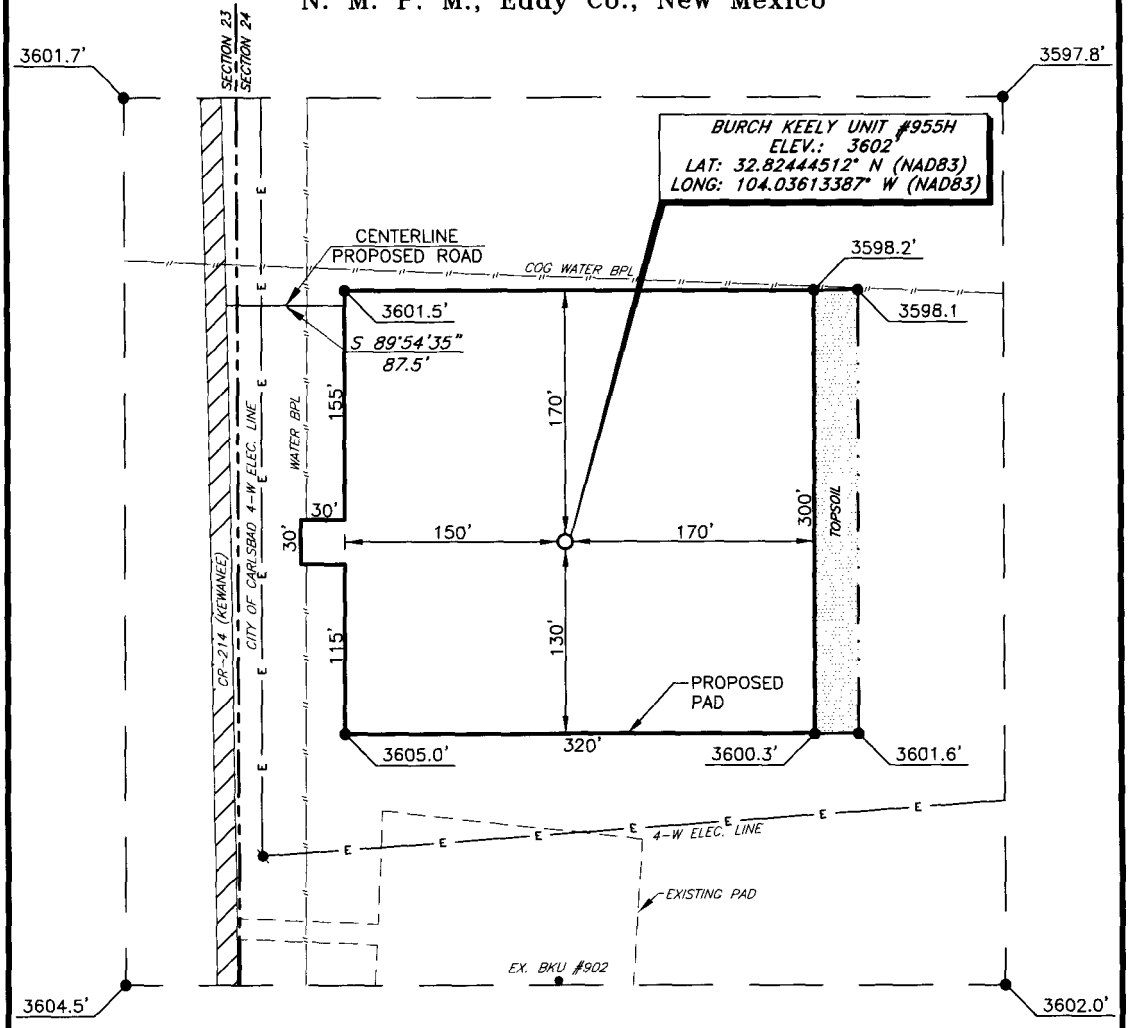
NMSLO Caliche Pit



Caswell Ranch Caliche Pit Map



COG OPERATING, LLC
Burch Keely Unit #955H
(1035' FNL & 222' FWL)
Section 24, T-17-S, R-29-E,
N. M. P. M., Eddy Co., New Mexico



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-215 (Kewanee):

Go North on CR-215 approx. 0.3 mile.

The location is approx. 235 feet East of CR-215.

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY. BOUNDARY DATA IS SHOWN FROM A PREVIOUS SURVEY REFERENCED HEREON.

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

ROBERT M. HOWETT
NEW MEXICO
19680
7/08/16
PROFESSIONAL SURVEYOR

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 27 - NM EAST DISTANCES ARE GROUND.

NO.	REVISION	DATE

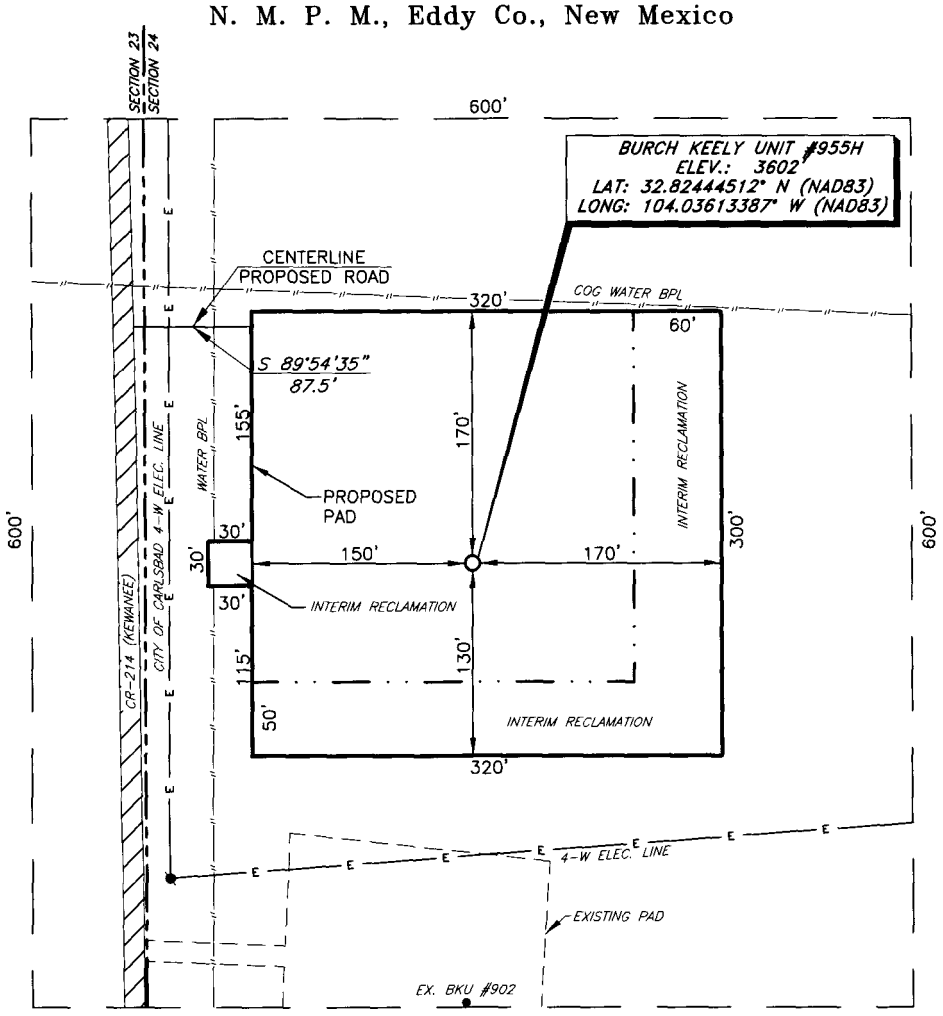
JOB NO.: LS130150
DWG. NO.: 130150PAD

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2067 f (512) 251-2518

SCALE: 1" = 100'
DATE: 5/7/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

COG OPERATING, LLC
Interim Reclamation
Burch Keely Unit #955H
(1035' FNL & 222' FWL)
Section 24, T-17-S, R-29-E,
N. M. P. M., Eddy Co., New Mexico



SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 27 - NM EAST
DISTANCES ARE GROUND.

DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-215 (Kewanee):

Go North on CR-215 approx. 0.3 mile.

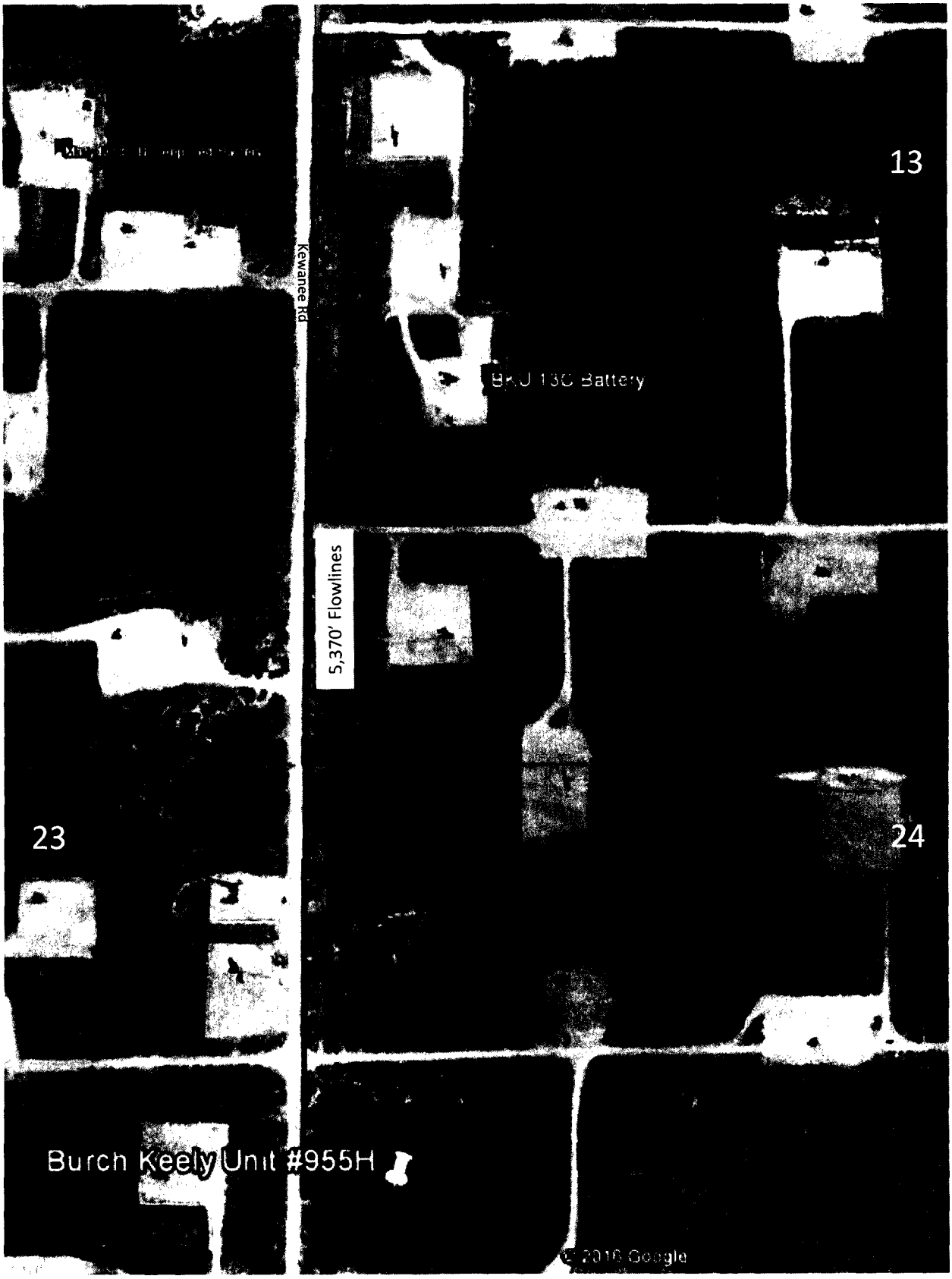
The location is approx. 235 feet East of CR-215.

NO.	REVISION	DATE
1	LS1607241	8/16
JOB NO.: LS130150		
DWG. NO.: 130150REC		

PROSPERITY CONSULTANTS, LLC
2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2087 f (512) 251-2518

SCALE:	1" = 100'
DATE:	5/7/13
SURVEYED BY:	GB/SM
DRAWN BY:	AF
APPROVED BY:	LWB
SHEET :	1 OF 1

Burch Keely Unit #955H Surface Flowlines Map



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:

Decribe 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:

Decribe 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

04/26/2017

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

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: